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HENVINET

Report on raising public participation and awareness and report from final project meeting

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Preface

This report is deliverable D3.9 of a project 'Health and Environment Network (HENVINET)'. The HENVINET was funded under EU Sixth Framework Programme of Research Thematic Area "Sustainable Development, Global Change and Ecosystems", Contract Number GOCE-CT-2006-037019. The aim of this project is to establish long-term cooperation between researchers, policy makers and other stakeholders in the area of environment and health research and assessment with the help of a common platform, www.henvinet.eu.

The project contains 32 partners:

- Norwegian Institute for Air Research (NILU), NO
- National Veterinary Institute (NVI), NO
- The Ecobaby Foundation, NL
- University Hospitals Bristol NHS Foundation Trust, UK
- Public Health Services Gelderland Midden, NL
- Food and Environment Research Agency, UK
- Slovak Medical University, SK
- Institute of Food Bioresources (IBA), RO
- Italian National Agency for New Technologies, Energy
- and the Environment (ENEA), IT
- World Health Organization (WHO) –European Centre
- for Environment and Health, INO
- University of Hertfordshire, UK
- Netherlands Organisation for Applied Scientific
- Research (TNO), NL
- Finnish Meteorological Institute (FMI), FI
- Directorate General Joint Research Centre (JRC), INO
- Piemonte Region, IT
- Institute for Medical Research and Occupational Health, CR
- Umeå University, SE
- Slovak Technical University, SK
- Norwegian School of Veterinary Science (NVH), NO

- Stockholm University, SE
- University of Southern Denmark, DK
- Wageningen University, NL
- National Centre for Scientific Research “Demokritos”, GR
- University of Oslo, NO
- Argentinean Association of Doctors for the Environment (AAMMA),AR
- Peking University School of Public Health, CN
- Integral University, IN
- National Cancer Research Institute, Genoa, IT
- eThekwini Municipality, ZA
- National Institute for Public Health of Mexico (INSP), MX
- National Institute of Health (ISS), IT
- University of Antwerp, BE

In addition to the main outcome–scientific results from the four thematic topics (asthma and allergies, cancer, neurodevelopmental disorders and endocrine disruptors), HENVINET strived to communicate about its strategic role and place in the interactive field of environmental health.

This report provides a brief description of raising public participation and awareness of HENVINET project and its main products. Furthermore, it also summarizes the main outcome from the HENVINET final conference as well. .

For more information, please contact the project coordinator Dr. Alena Bartonova, E-mail: aba@nilu.no or project manager Dr. Hai-Ying Liu, E-mail: hyl@nilu.no.

Contents

HENVINET

Report on raising public participation and awareness and report from final project meeting

1 Report on raising public participation and awareness

1.1 Introduction

HENVINET is a coordinated action funded under the EU Sixth Framework Programme. The network has been coordinated from the Norwegian Institute for Air Research (NILU) in Norway, and comprises 32 partners from 17 countries, including five countries outside of Europe. HENVINET focuses on four priority health challenges: asthma and allergies, cancer, neurodevelopmental disorders and endocrine disruptors. HENVINET supports the development of integrated health and environment policies, including environment and health action plans and related information systems. Its main objective is to establish long-term cooperation between researchers, policy makers and other stakeholders in the area of environment and health research and assessment with the help of a common platform, www.henvinet.eu.

One of the challenges was to establish a link between the scientific and policy making community. The idea was born to develop a virtual network in the form of a portal on internet.

1.2 Background

The projects' main outcome was the scientific results from the four thematic projects. These results had to be communicated to different stakeholders. In addition to these scientific results, HENVINET strived to communicate about its strategic role and place in the interactive field of environmental health. This means that the communication had to have a content level as well as a strategic level. Most scientific results were generated at the end of the project in 2009 and in early 2010. Until that time ongoing activities within the project were communicated mainly within the consortium.
The identification of target audiences was important to send the right messages from the project and to guarantee a valid usage of the outcomes of the project. In a wider circle of dissemination the general public should benefit of the outcome of the projects through change or adjustment in policy.

The communication and dissemination plan has to reckon with the heterogeneity of the stakeholders in the field of environment and health. Besides, the topic of environment and health can sometimes be politically sensitive. This made the dissemination and communication an area of careful consideration and preparation.

This starting point gave the HENVINET project an interesting challenge to reach the aims in a few years time.

1.3 Communication objectives

The overall aim of the project was to build long-term scientific co-operation and collaboration between researchers, policy makers and other stakeholders in the area of environment and health. Such collaboration would be of little value if it were confined only to the limited number of consortium members. Thus the project consortium, a highly interdisciplinary group, faced two challenges: to find a common language within the consortium, and to find a durable way to promote communication with their peers outside the consortium. These challenges had to be overcome while working on the specific aims, and had to be integral to the processes leading to dissemination of knowledge and best practices, towards defining a common framework for validation and exploitation of research results and research-based tools and methods, and towards providing this information in a form that could be used by the policy-oriented stakeholders.

The objectives of the communication within HENVINET were to:

- Establish and maintain the dialogue between policy makers, authorities, relevant institutions and the research community and to disseminate information on the state of the art in health and environmental science including the various sub-disciplines involved;
- Set up a structured interaction with Health and Environment programmes and related DG-Environment programmes;
- Provide the framework for and materials for dissemination of project findings to various stakeholders;
- Organise an internal discussion forum.

These objectives were linked to an integration of different disciplines active at the research institutes, governments, as well as universities. The work was related to the translation of actual questions from daily practice into scientific objectives; and the application of academic knowledge and expertise in practical policy-making decisions for addressing environment and health problems

Work package 3 had as its main task to devise appropriate formats for information dissemination, so that end users were able to get the information in the form and with the contents they readily could use for their purposes. Supported by intensive communication with other WPs, the WP 3 communicated the results of the project to policy makers, the scientific community, the external advisory group and the general public. The two-way interaction with policy makers (external advisory group) had to bring important feedback to the various work packages and complement the iterative process of identifying knowledge gaps and information needs. The topic groups organised expert meetings with stakeholders from outside the consortium to discuss the scientific results and to incorporate the feedback in additional output.

The main activity within WP 3 resulted in the development and launch of a network portal. This portal became the crucial backbone of the project for

dissemination of the project results and for the network between the different stakeholders in the field of Health and Environment.

1.4 Structure

HENVINET included five Work Packages (WP), four topics, one Project Steering Group (PSG) and one external advisory group. The scientific work was particularly highlighted in WP1, WP3 and WP4. This was accomplished through the following actions:

- Evaluation of knowledge on environmental factors related to asthma/allergies, cancer, neurodevelopmental disorders, endocrine disruptors, as identified in the SCALE (Science, Children, Awareness, EU Legislation and Continuous Evaluation) consultation process by EU scientific experts
- Information on and evaluation of Decision Support Tools (DSTs) for practitioners related to the health end points
- Direct stakeholder communication and interviews with environment and health actors
- Creation of a science-policy-interface based portal to facilitate access to relevant information and encourage contact and socialisation between environment and health professionals

HENVINET was structured into two parts: scientific research, and the network portal. Under the banner of scientific research HENVINET reviewed, exploited, and disseminated knowledge on environmental health issues based on research and practices, leading to the validation of tools and results with emphasis on the four priority health diseases of the European Environment and Health Action Plan (EHAP) 2004-2010 and providing a structured information overview.

Building on previous research and policy initiatives, HENVINET has collected and evaluated material and presented it in a consistent manner. HENVINET has established an overview of results, activities, projects and tools existing in Europe and promotes stakeholder networking through workshops and annual project meetings.

Knowledge, best practice, and Decision Support Tools (DSTs) have been reviewed to allow wider exploitation by the relevant stakeholders. HENVINET has collected and reviewed about 80 DSTs.

Recognising that dissemination of knowledge, best practices and DSTs were crucial in supporting the implementation of the EHAP, HENVINET defined ways to disseminate information, with emphasis on the needs of users of information. To allow for efficient data gathering, information exchanges, and targeted dissemination, the project utilised state-of-the-art internet solutions and methodologies. The final products were scientific reviews, the evaluation tools for diagrams, the stakeholder interviews, the database of DSTs, and the social networking portal.

The participants who developed HENVINET came from universities, hospitals, public and private institutes concerned with occupational and environmental safety, health authorities, and regulatory bodies. In order to take into account the needs of developing countries to improve their capacity to participate, five partners from outside Europe with high expertise in the environmental health field were included.

HENVINET has interviewed more than 20 stakeholders in the Environment and Health field. They all were in a position related to strategic policy-making, financing or decision making, including:
• Directors/participating organisations;
• Directors/professors/universities;
• Subsidy providers (e.g. strategic for continuation of network);
• Decision makers at local/regional/national/international authorities.
• Policy staff ministries.

1.5 HENVINET-Science-Policy Communications and Stakeholder Engagement

A HENVINET - Integrated Policy Perspective (HIPP) was developed before the annual meeting in Rome. The HIPP focus was defined around the development of a framework to support science policy communication as follows:

- Development of an integrated policy orientation on the health - environment relationship;
- Development of common understandings supporting the definition, preparation and assessment of project deliverables;
- Development of a framework for the definition of the policy making community and communication with the policymaking community;
- Provision of support for the development of the dissemination strategy and communication tools.

The HIPP Implementation plan was closely linked to other WP's particularly Work package 3 - Interaction with Policy and Dissemination and work package 4 - Decision Support Tools
As a consequence of discussions in Rome and subsequent discussions within the framework of WP3 the Communication Plan had refined its focus as follows:

- **External Communication – across science – policy interface**
- **Network building – long term sustainability**

This focus related particularly to the following objectives:

- Development of an understanding of the scope of the policymaking community and its strategic focus, institutions and structures;
- Framework for communication with stakeholders - basis for addressing - language and means and mode of communication – the policy making and the science community;
- Support for development of dissemination strategy and communication tools and development of an understanding of the most effective communication and dissemination strategies;
- Development of an understanding of the integrated monitoring information needs of policymakers as inputs to the DST specification.

Hence a proposal for Stakeholder Engagement was developed.

In this package we identified key stakeholder sectors at National and European levels, to form a core group for initial dedicated user workshops. These key stakeholders were likely to include:

- Data providers
- Research users
- Policy users
- Media users
- Public and private users
- Educational users

Internally there was background material produced to explain the aims and anticipated services of Henvinet and the stakeholder consultation process in the form of a 'Stakeholder Engagement Pack'. This resulted in a few leaflets on HENVINET and the portal.
To address the stakeholder requirements to ensure consistency in user engagement we conducted several activities to get input on this. Four approaches were deployed to assess stakeholder requirements: questionnaires, Conference, workshops and national case-studies.

The User Platform provided the principal means of communication between the user community and the other ad hoc working groups of HENVINET. It did build on existing user federations and user groups to promote collaboration and discussion. This activity had been renamed as HENVINET portal.
The filling of the portal with content became an very important issues. All partners had to work on this issue. Actually this is still an ongoing effort within the consortium.

1.6 Network portal

HENVINET has developed a web-based "virtual network". Its aim was content upkeep through member contributions. Besides the social networking principle, its functionalities include:
• Identification and networking of experts
• Identification and networking of projects and topics
• Questions and answers
• Access to information and tools
HENVINET has moved towards a "permanent network", becoming a complete portal offering sophisticated solutions. A permanent E&H network such as this could include:
• Research input (reviews, mind maps)
• Service to professionals (tools and tool info)
• Links between and within disciplines, professions
• Networking between individual professionals (focus upon policy-makers).

1.7 What next?

HENVINET ended in April 2010. After that, the consortium wants to continue to provide evaluations of knowledge for hot topics, to collect and evaluate information about decision support tools for practitioners and to network with professionals and decision-makers.

There are ongoing discussions on how to provide for these activities.

1.8 Annex1-International Innovation-Connecting environmental concerns and human health

The lack of a knowledge-sharing portal for environmental health professionals led to the creation of the HENVINET project, an EU-funded scheme that has brought together a wide variety of stakeholders.

Connecting environmental concerns and human health

HENVINET is a coordinated action funded under the EU Sixth Framework Programme with a budget of €3,209,528. The network is coordinated from the Norwegian Institute for Air Research (NILU) in Norway, and comprises 32 partners from 17 countries, including five countries outside of Europe. HENVINET focuses on four priority health challenges: asthma and allergies, cancer, neurodevelopmental disorders and endocrine disruptors. HENVINET supports the development of integrated health and environment policies, including environment and health action plans and related information systems. Its main objective is to establish long-term cooperation between researchers, policy makers and other stakeholders in the area of environment and health research and assessment with the help of a common platform, www.henvinet.eu

Human and planetary health are closely interconnected. However, the fields of health science and environmental science have grown apart over the past half-century. An example of this slow parting of the ways can be seen by simply examining differences in language. For example, environmental scientists and health scientists use similar terms such as "environmental health" or "environmental health science" differently. Newer terms such as "ecosystem health", "planetary health" and "eco-health" or "ecohealth" attempt to find common ground by extending the human health metaphor to the whole planet and its inhabitants.

Ways in which environment and human health might work together have become increasingly recognised by environmental and health scientists, educators, practitioners, decision makers, activists, and other interested professionals and citizens. However, interactions between the environment and human health are highly complex and are not yet fully comprehended.

THE HENVINET CONSORTIUM MEMBERS, AUTUMN 2008

To protect the health of populations and individuals, policies need to make sure that both environment and health issues are closely aligned. Such informed policy making must be based upon multidisciplinary research and practices on environmental health issues. Up to now, however, there has not been sufficient academic study able to review, exploit and disseminate knowledge on environmental health issues based upon previous research and practices and which also target a wider use by relevant stakeholders. It is primarily for this reason that the HENVINET project (www.henvinet.eu) was launched by the European Commission in 2006.

HENVINET includes five Work Packages (WP), four topics, one Project Steering Group (PSG) and one external advisory group. The scientific work is particularly highlighted in WP1, WP3 and WP4. This is accomplished through the following actions:

- Evaluation of knowledge on environmental factors related to asthma/allergies, cancer, neurodevelopmental disorders, endocrine disruptors, as identified in the SCALE (Science, Children, Awareness, EU Legislation and Continuous Evaluation) consultation process by EU scientific experts
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AT A GLANCE

THE NETWORK IS COORDINATED BY THE FOLLOWING PROJECT MANAGEMENT TEAM:

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PARTICIPATING ORGANISATIONS:

Norwegian Institute for Air Research (NILU), NO
National Veterinary Institute (FVI), NO
The Ecology Foundation, NL
University Hospitals Bristol NHS Foundation Trust, UK
Public Health Services Gelderland Midden, NL
Food and Environment Research Agency, UK
Slovak Medical University, SK
Institute of Food Bioresources (IBA), RO
Italian National Agency for New Technologies, Energy and the Environment (ENEA), IT
World Health Organization (WHO) – European Centre for Environment and Health, INO
University of Hertfordshire, UK
Netherlands Organisation for Applied Scientific Research (TNO), NL
Finnish Meteorological Institute (FMI), FI
Directorate General Joint Research Centre (JRC), INO
Piemonte Region, IT
Institute for Medical Research and Occupational Health, CR
Umeå University, SE
Slovak Technical University, SK
Norwegian School of Veterinary Science (NVH), NO
Stockholm University, SE
University of Southern Denmark, DK
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Argentinean Association of Doctors for the Environment (AAMMA), AR
Peking University School of Public Health, CN
Integral University, IN
National Cancer Research Institute, Genoa, IT
eThekwini Municipality, ZA
National Institute for Public Health of Mexico (INSP), MX
National Institute of Health (ISS), IT
University of Antwerp, BE

PROJECT WEBSITE:

www.henvinet.eu

ACTION FUNDED BY:

HENVINET is a coordinated action funded under the EU 6th framework programme, activity SUSTDEV-2005-3.VII.2.1.

HENVINET

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- Links between and within disciplines, professions
- Networking between individual professionals (focus upon policy-makers)

HENVINET is scheduled to end in April 2010. Until then, the consortium will continue to provide evaluations of knowledge for hot topics, to collect and evaluate information about decision support tools for practitioners, and to network with professionals and decision-makers.

1.9 Annex 2-International Innovation-Joined-up thinking on health

Interview

Joined-up thinking on health

Dr Brooke Magnanti, one of the stakeholders in the HENVINET project, discusses the ways in which virtual networking between environmental health professionals is bringing about wider awareness of various issues

Can you explain a little about the background of the project, its aim and where the concept came from?

The project has originated from the need to improve communication between experts working in environment and health, and to improve communication between experts and decision makers. It has been built on two previous networking projects in the field, AIRNET and PINCHE, and has strived to include experts in clinical disciplines, risk assessment, environmental disciplines, and science-policy communication.

The HENVINET project (which stands for Health and Environment Network) has two main aims. The first, which we personally work on, is to examine the state of the art in scientific research about particular environmental health risks, and formulate recommendations to guide policy-making decisions. The second part is a portal for environmental health scientists and other concerned group to discuss these issues. The health areas we focus on are determined by the European Environment and Health Action Plan and include asthma and allergies, cancer, neurodevelopmental disorders, and endocrine disrupting effects.

Here in the Bristol group we're focusing on how exposure to certain pesticides such as Chlorpyrifos (CPF) affects neurodevelopment in children.

How did you first become involved with your part of the programme and what has your input been thus far?

I was hired to work on this project in January. At that time the group had made a comprehensive literature review of the scientific material. Since then we've consulted experts upon the quality of research, and whether they might potentially support a ban on indoor CPF use in Europe. At the moment we're working on arranging expert discussions, and analysing the results from these to write reports.

And what are the expectations and objectives of the project?

If we find that scientists do support a CPF ban, we'll approach other stakeholders such as patient group to see if we can form a coalition to make recommendations to politicians in Brussels. The issue of whether to ban CPF last came up in 2008, and was rejected. But it's already been taken out of indoor pesticides in the US, and has been for the last ten years. We'd like to see if Europe can follow suit.

What is the wider impact of your research within HENVINET?

In the very large picture, the bit we work on might affect the rapidly rising rates of neurodevelopmental disorders in Europe. As part of the larger Henvinet project, we're hoping to at least bring awareness of some of the dangers of these exposures to the table. There is a large gap between scientific research and public understanding, much less policy action. We're hoping to narrow that gap.

How it has progressed thus far?

It has varied – because our group are so focused on one substance, we've made good headway on the science end. But other groups, such as the cancer group, have far more issues and concerns to deal with. As for the communications portal, it's up and running, and we hope to see a wider public launch this autumn.

Are there any 'partners' involved in your research? If so, can you explain their expertise, what they contribute and what they will gain from their involvement?

We work with partners all over the EU, everyone from toxicologists to social scientists and paediatric neurologists. There has been a lot of shared input about the content of our reviews and the ways in which we are approaching experts, as well as interpretation of our results. It makes the working process slower, but more realistic because any projected policy change must incorporate many different opinions. We're hoping to shake science out of the rigid attitude that puts a wall between research findings and politicians.

Can you tell us if you faced any major challenges?

Yes, mostly to do with working with so many people in countries as diverse as Italy, Norway and Croatia. We all have different areas of expertise and different approaches. But it enriches the final product, definitely. It's a new way of working for me.

What is the expected output of the project?

At this point, I would love to see the issue of CPF's indoor use considered again by the EU. If that happens in the next five years, I would like to think that the work we're doing now will have helped that come about.

1.10 Annex 3-HENVINET expert workshop-Euro cities-Integrated urban management-climate change and health impacts

HENVINET Expert Workshop: EUROCITIES, Brussels, Friday February 19th 2010

Integrated Urban Management - Climate Change and Health Impacts

The European Commission (EC) White Paper "Adapting to climate change: Towards a European framework for action" (EC, 2009) considers the necessary adaptation responses of the EU and the member states in defining a framework for action in response to climate change, including human health.

The HENVINET workshop on integrated urban management -- climate change and health impacts will address a prime goal identified by the White Paper concerning:

- integration of climate change adaptation and health within policy frameworks at both local and EU levels;

The workshop will also support other goals of the White Paper including:

- development of the knowledge base;
- fostering collaboration between relevant cities at the local level.

The fundamental building block for the workshop is the experience of cities in managing adaptation to climate change and related health impacts as an exemplar of the challenges posed by integrated urban management.

The workshop will use the backcasting approach as a means of structuring the complexity of these issues according to the following methodological steps:

- Presentations from cities - the current situation and key steps going forward;
- Identification of future goals and common targets for cities;
- Back casting to identify the main issues, obstacles and barriers to future progress

Back casting is an excellent approach for structuring complex issues especially when there's a need for a long-term vision and structural change. In looking at the future, back casting is the opposite of the more traditional forecasting approach. Back casting does not predict the future, but looks for a route towards a desirable future: how can the desired futures, be realized by actions starting today. What are the opportunities and what are the barriers?

The workshop will deploy the back casting approach as a form of expert analysis, building on the experience and expertise of a multidisciplinary group of experts in response to the complexity of many issues. This complexity is identified in the risks associated with climate change adaptation and mitigation measures proposed at the urban level, and the associated uncertainties regarding outcomes in respect of human health, quality-of-life, and economic vitality.

Multidisciplinary cooperation and the involvement of stakeholders to address these issues is widely recognized as offering an effective means of addressing complex societal problems. An analytical deliberative approach is proposed to tackle problems, entailing a combination of scientific methods of assessment, and deliberation and the exchange of viewpoints between different relevant actors.

Backcasting approach and dialogue between multi-disciplinary experts:

- Cities with experience of integrated urban management;
- City networking community including EUROCITIES, ICLEI and the Council of European municipalities and regions (CEMR);
- Policy-making community (European Commission, EEA and JRC);
- HENVINET network

Workshop Outcomes include:

- identification of the opportunities and barriers to the successful integration of urban management objectives in respect of climate change adaptation and health;
- identification of policy frameworks for integration of climate change adaptation and health at the local level;
- development of collaboration between cities at the local level, and the establishment of a network to provide continuing support.

Programme - Climate Change and Health Impacts

9-00 Registration and Coffee

9-15 Welcome and Overview

- **Purpose of the workshop and organization**
- **Experience of cities managing climate change and health impacts**

- Bologna
- Prague
- Tilburg
- Bristol
- Ancona
- Frankfurt

10-30 Coffee and Refreshments

10-45 Back casting - Identification of future goals and common targets for cities

11-30 Back casting - Main issues, obstacles and barriers to future progress

13-00 Buffet Lunch and Networking

14-00 Obstacles and Barriers -- the priorities

- Exploration of issues arising from city presentations
- Discussion of specific city issues to identify solutions
- Consideration of policy options

15-00 Conclusions Feedback and Next Steps

- Expert Group establishment
- HENVINET social networking portal

16-00 Closure

1.11 Annex 4-HENVINET active at the Ministerial Conference on Environment and Health

HENVINET

HENVINET active at the Ministerial Conference on Environment and Health

WHO 5th Ministerial Conference on Environment and Health
March 10-12, 2010 Parma, Italy
Scott Randall and Aileen Yang (NILU)

HENVINET participated at the *5th Ministerial Conference on Environment and Health* earlier this month with an illustrative stand presenting the project with a special focus on the Networking Portal. The conference gathered the top leaders in Europe working with H&E, making it a great opportunity for HENVINET to reach out to policy-makers and new potential partners. The stand captured the attention of many conference participants, where a majority had previously heard of HENVINET, and most went back to their representative countries with additional information regarding the HENVINET portal and specific HENVIENT policy-briefs which were recently published.

The conference was successful in adopting the *Parma Declaration of Environment and Health* which solidifies the commitment to act on key H&E challenges such as: climate change, children's health, social inequalities, burden of diseases, and persistent chemicals/nanoparticles. The conference also adopted the *Commitment to Act*.

The HENVINET portal can directly give guidance to the key challenges addressed, and is a valuable tool to assist with the specific actions presented. Furthermore, to provide policy-makers greater access to research which can assist with today's H&E challenges, and innovative ways to act upon them.

2 Report from final project meeting

HENVINET final workshop report
The Renaissance Brussels Hotel 14-15 April 2010

2.1 HENVINET final conference minutes 14-15 April 2010

2.1.1 Aims

The overall topic of the conference is 'approaching complexities in environment and health'. It provides an overview of the challenges people face when dealing with environment and health issues and offer different possible approaches. The conference focuses on four aspects:

- Complexity in environment and health
- Tools for practice
- Communication strategies
- Exchange of knowledge and results with related projects and research initiatives

2.1.2 Presentations on Day 1 14th April 2010

Session I, Complexity in environment and health – approaches and experiences

Dr Sylvia Medina, InVS, France: the complexity of risk assessment and risk management in environmental health-for whom? And what should we do about it?

Dr George Morris, NHS Scotland, UK: good places, better health, a Scottish approach on environment and health policy for an ecological Era.

Dr Adrienne Pittman, AFSSET, France, ERA-ENVHEALTH: coordination of national environment and health research programmes-environmental and health ERA-NET.

Dr Peter Pärt, IES JRC: European environment and health action plan 2004-2010-achivements.

Session II, HENVINET overview

Dr Alena Bartonova, NILU, Norway: overview of HENVINET-health and environmental network.

Karin Zimmer, NVH, Norway: HENVINET expert consultation on health and policy implications of phthalates.

Dr Hans Keune, University of Antwerp, Belgium: the HENVINET approach to knowledge quality evaluation.

Dr Peter van den Hazel, HVDGM, The Netherlands: stakeholder communication.

Session III, Tools for practice

Prof. Rainer Friedrich, Univ. Stuttgart, Germany: the INTARESE and HEIMTSA toolbox-a guidance system and resource centre for integrated environmental health assessment.

Dr Dimosthenis Sarigiannis, IHCP JRC: HEIMTSA and 2-FUN toolboxes.

Dr Emanuele Negrenti, ENEA, Italy: HENVINET decision support tool repository.

Session IV, Communication strategies for environment and health

Dr Peter van den Hazel, HVDGM, Netherlands: Communicating E&H Issues

Alison Cohen, Fulbright-Schuman grantee/Brown University: Discussing modes of communicating environment and health issues to different stakeholders.

2.1.3 Presentations on day 2 15th April 2010

Workshop I, Environment & health complexities: challenges for the near future

Dr Bertil Forsberg, University of Umeå, Sweden: environment and health complexities-challenges for the near future.

Dr Aleksandra Fucic, Institute for Medical Research & Occupational Health, Croatia:

Prof. Qamar Rahman, Integral University, Lucknow, India: nanoparticles-environmental and health aspects.

Dr Milena Horvat, Jožef Stefan Institute, Slovenia: European Human Biomonitoring programme - COPHES

Dr Eva Csobod, REC, Hungary: school environment and respiratory health of children (SEARCH) short summary of the SEARCH project.

Dr Marco Martuzzi, WHO Rome, Italy: Environment and Health in Europe: WHO's view after the Fifth Ministerial Conference

Workshop II, Interaction with the policy field

Dr Hans Keune, University of Antwerp, Belgium:

Dr Karen van Campenhout, Flemish Government, Belgium: from science to policy-translation of human biomonitoring results into policy measures in Flanders (Belgium).

Dr Ingvar Thorn, Sweden: Policy integration

2.1.4 Posters

There are a total of 28 posters. The topics for posters are: 1) E&H projects; 2) Decision support tools; and 3) Communication – policy-science interface.

The presentations, the book of abstracts including posters and presentations can be found on the HENVINET portal http://www.henvinet.eu or HENVINET internal website http://henvinet.nilu.no.

2.2 Project consortium meeting minutes 15th April 2010

Aim: Final reporting and input from WPs leaders, WP1 topic leaders and all partners. Final management issues including budget redistributions.

2.2.1 Actions

2.2.2 Action 1 (WPs leaders)

- WP leaders fill out section 2- work package progress of the period
  - Work package objectives and starting point of work at beginning of reporting period
  - Progress towards objectives
  - Deviations from the project work programme, and corrective actions taken/suggested
  - List of deliverables
  - List of milestones
- WP leaders finalize the deliverables
  - WP1-D1.4-Final review of research, best practices and recommendations
  - WP2-D2.6-Portal extensions, additional portal development based on requirements of the various WPs in year 3
  - WP3-D3.9-Report on raising public participation and awareness and report from final project meeting
  - WP4-D4.4-Final review of decision support tools and recommendations
  - WP5-D5.5-Final reports to the Commission
  - WP5-D5.6-Minutes from six PSG meeting, third midterm workshop, and 3rd year annual meeting

2.2.3 Action 2 (WP 1 topic leaders)

- Topic leaders send summary of activities and status to WP1 leader

2.2.4 Action 3 (all partners)

- All partners fill out Appendix 1-Section 2-Dissemination of knowledge (report any activity where you have promoted results or presented the project in any way)
    - Overview table
        - ✓ Dates, type, type of audience, countries addressed, size of audience, partner responsible/involved, etc.
    - Dissemination ways
        - ✓ Via internet
        - ✓ Via presentations/posters at conferences/meetings
        - ✓ Via print media
        - ✓ Via publications
        - ✓ Via TV
        - ✓ Via other modes
- Table detailing the financial situation at the end of year 3 was reviewed. Several partners seem to underuse, others overuse. This has already been pointed out in the 3rd year management report, and is caused by the development in project work, staff situation and redistribution and necessary strengthening of certain tasks. Needed transfers: increased amounts for University of Antwerp (partner 34), HGM (partner 5), Prodmed-NVH (partner 21), NILU (partner 1)). This needs again to be properly justified in the Justification of Costs and in the Management report. Partners who need to check the available budget are UBHT (p. 4), CSL (p. 7), IMROH (P. 17). Please inform the coordinator as soon as possible.
- All partners fill out Justification of cost according to their used resources, need to provide a justification
    - Write personnel cost for each work package
        - ✓ specified how many person months per person per work package (with names)
        - ✓ Travel costs for who
- All partners fill out Financial Form C

- ALL PARTNERS fill out 2 online questionnaires
  - Final reporting questionnaire on workforce statistics
  - Final socio-economic reporting questionnaire

2.2.5 Action 4 (WP 5-NILU group)

- Co-ordinator will discuss with the project officer the mechanism of transfer of budget between partners related to work transfer, and will inform the partners in question about a suggested procedure.
- Send template of final report to all partners (Hai-Ying Liu)
- Send guideline on how to complete the questionnaires to all partners (Hai-Ying Liu)
- Send justification of cost, Financial form C to all partners (Heidi Fjeldstad)
- Send guideline of Audit Certificate to all partners (Heidi Fjeldstad)

2.2.6 Decisions

- Input from all partners within May 15th
- NILU finalises report within June 15th

Ravindra Khaiwal continue to upload the relevant E & H projects into the HENVINET meta data base.

2.3 Final conference 14-15 April 2010

2.3.1 Meeting agenda

Day 1		
08:30-09:00	***Registration and welcome coffee***	
09:00-10:45	**Session I, Conference room Essen** ***Chair: Dr Alena Bartonova & Dr Peter van den Hazel*** **Complexity in environment and health – approaches and experiences** Key note address: Dr Sylvia Medina, InVS, France Addresses: Dr George Morris, NHS Scotland, UK Dr Adrienne Pittman, AFSSET, France, ERA-ENVHEALTH	**Poster exhibition, Conference room MADRID** Topics for posters: 1. E&H projects 2. Decision support tools 3. Communication – policy-science interface
10:45-11:15	***Break***	
11:15-12:30	**Session II, Conference room Essen** ***Chair: Dr Aleksandra Fucic*** **Continuation: Complexity in environment and health** Dr Peter Pärt, IES JRC **HENVINET overview** - Overview: Dr Alena Bartonova, NILU, Norway - Causal diagram examples: Karin Zimmer, NVH, Norway - Complexity issues: Dr Hans Keune, University of Antwerp, Belgium	
12:30-14:00	***Lunch, Foyer 2***	**Poster exhibition, Conference room MADRID**
14:00-15:30	**Session III, Brussels Ballroom** ***Chair: Dr Marco Martuzzi*** **Continuation: HENVINET overview** Stakeholder communication: Dr Peter van den Hazel, HVDGM, The Netherlands **Tools for practice** INTARESE toolbox: Prof. Rainer Friedrich, Univ. Stuttgart, Germany HEIMTSA and 2-FUN toolboxes: Dr Dimosthenis Sarigiannis, IHCP JRC HENVINET Decision Support Tool repository: Dr Emanuele Negrenti, ENEA, Italy	
15:30-16:00	***Break***	
16:00-17:00	**Session IV, Brussels Ballroom** ***Chair: Dr Peter van den Hazel*** **Communication strategies for environment and health** Introduction: Dr Peter van den Hazel, HVDGM, Netherlands and Alison Cohen, Fulbright-Schuman grantee/Brown University Discussing modes of communicating environment and health issues to different stakeholders	
19:00	***Dinner, Restaurant "l'Atelier"***	

Day 2		
09:00-10:30	**Workshop I, Brussels Ballroom** ***Chair: Dr Aleksandra Fucic & Dr Bertil Forsberg*** **"Environment & health complexities: challenges for the near future"** Dr Bertil Forsberg, University of Umeå, Sweden Dr Aleksandra Fucic, Institute for Medical Research & Occupational Health, Croatia Prof. Qamar Rahman, Integral University, Lucknow, India Dr Milena Horvat, Jožef Stefan Institute, Slovenia Dr Eva Csobod, REC, Hungary Dr Marco Martuzzi, WHO Rome, Italy	**Poster exhibition, Conference room LUXEMBOURG**
10:30-11:00	***Break***	
11:00-12:30	**Workshop II, Brussels Ballroom** ***Chair: Dorota Jarosinska & Dr Hans Keune*** **"Interaction with the policy field"** Dr Hans Keune, University of Antwerp, Belgium Dr Karen van Campenhout, Flemish Government, Belgium Dr Ingvar Thorn, Sweden	**Poster exhibition, Conference room LUXEMBOURG**
12:30-13:30	***Lunch, Café Parnasse***	

2.3.2 Participants List

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2.4 Project consortium meeting 15th April 2010

2.4.1 Present

Alena Bartonova, Bertil Forsberg, Peter van den Hazel, Janna Gezina Koppe, Ravindra Khaiwal, Hans Keune, Katarina Volkovova, Claudia Mosoiu, Karin Zimmer, Xiao-Chuan Pan, Qamar Rahman, Trond Sundby Halstensen, Eliann Egaas, Ute Hansen, Denis Sarigiannis, Claudia Secco, Emanuele Negrenti, Ari Karppinen, Aleksandra Fucic, Panos Neofytou, Aileen Yang, Sonja Grossberndt and Hai-Ying Liu.

Appendix A

HENVINET Final Conference Presentations

Sylvia Medina: Complexity in Health and the Environment: For whom? And how should we manage it?

HENVINET FINAL CONFERENCE
Brussels, 14-15 April 2010

Complexity in Health and the Environment: For whom? And how should we manage it?

Sylvia Medina, MD, PhD
Coordinator of European and International Activities
Department of Environmental Health
French Institute for Public Health Surveillance, InVS, France
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1

Road map

- What does complexity in environmental health mean for scientists?
- What does complexity in environmental health mean for policy and other decision makers?
- What can we as scientists do to manage complexity in our work?
- How do we as scientists manage complexity for our audiences?

2

What does complexity in environmental health mean for scientists?

"Complexity of risk assessment in environmental health arises from the interaction of human activities and natural processes characterized by a wide range of biological, environmental, psychosocial and economic factors" – *John Quiggin, University of Queensland, Australia*

According to the National Academies of Science in the United States, floods of scientific data and advancements in genomics, biomarkers and other fields are increasing the complexity of both risk assessment and of the decisions that these assessments support.

3

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What does complexity in environmental health mean for scientists?

Factors that contribute to the complexity of risk assessment:

- Non-linear concentration-response functions with chaotic behaviors, instability and threshold effects
- The long latency between exposures and effects
- Low but environmentally relevant concentrations
- Direct and indirect exposures
- Spatio-temporal heterogeneity of environmental risk factors
- Emergent effects – the system as a whole has properties that cannot be deduced from the behavior of its components

4

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What does complexity in environmental health mean for scientists?

Factors that contribute to the complexity of risk assessment:

- Multiplicity of scales, mixtures and cumulative impacts on health
- Multitude of possible health impacts but no specific ones
- Differences in metabolism, disease and other factors that contribute to human variability in response to exposures
- Multicausality in multi-stage disease processes
- Timing of exposures and doses in the disease process
- Environmental risk factors that have not been examined sufficiently in epidemiologic studies and are often insufficiently considered or even excluded from risk assessment

5

What does complexity in environmental health mean for scientists?

Sources of uncertainty in risk assessment:

- Exposure assessments: definition of the study area, measurement methods, data availability, quality and representativeness, models, parameters and projections
- Health outcomes: incidence and prevalence rates, data availability, quality and representativeness
- Concentration response functions: the calculation of estimates and their transferability, among others
- Statistical tools: assumptions, choices among multiple competing models, use of appropriate parameters, multiple testing, lack of power
- And the consequences of the above when calculating attributable fractions and environmental burden of disease

6

What does complexity in environmental health mean for policy and other decision makers?

For whom?

- Policy makers and influencers
- Doctors and patient organizations
- NGOs
- The media
- Citizens and other interested groups who use the information we provide to make or influence decisions about our health

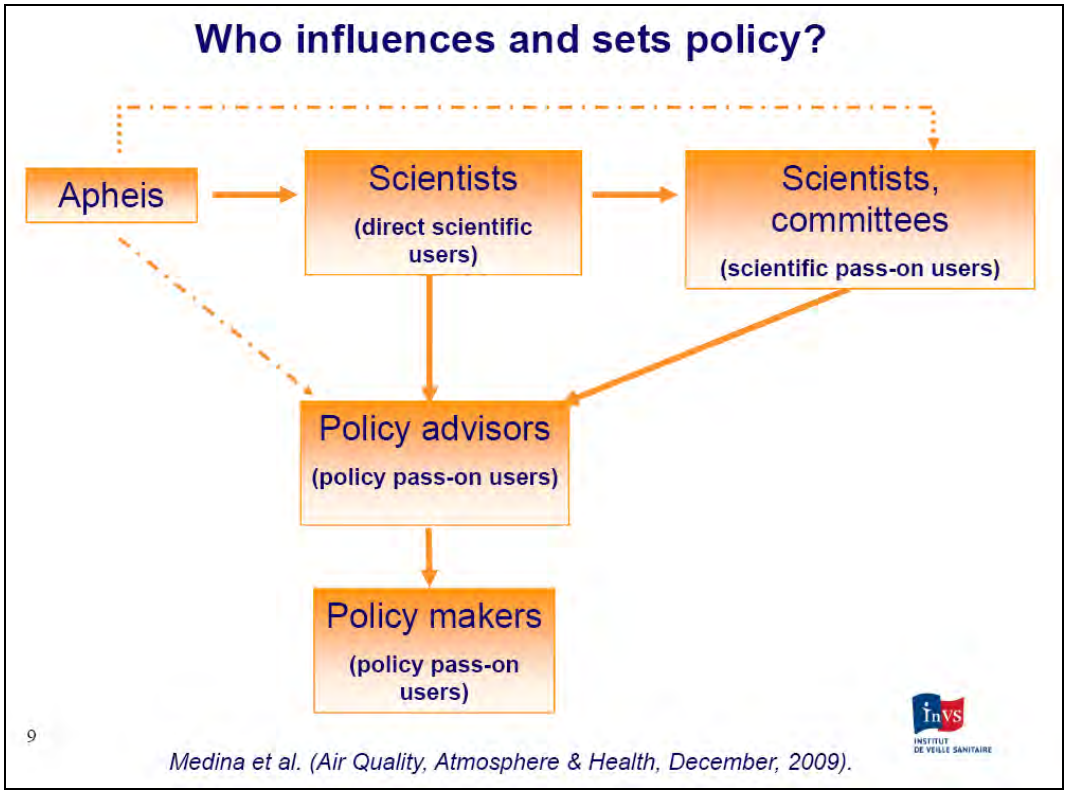
7

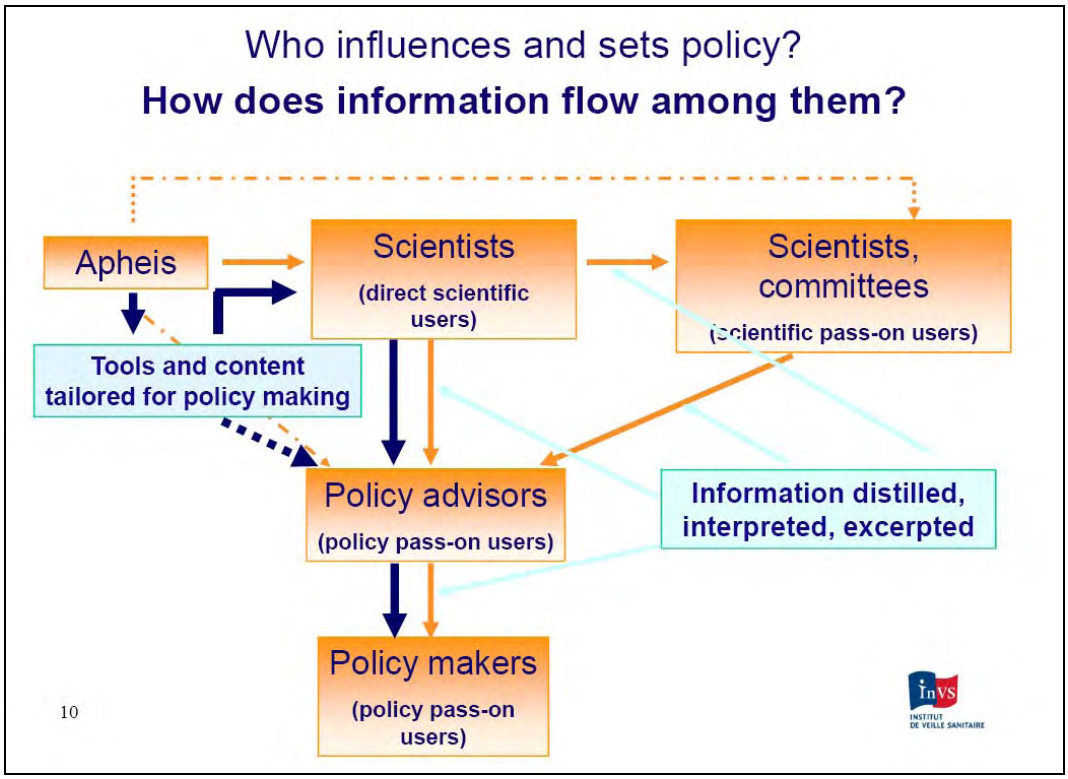
What does complexity in environmental health mean for policy and other decision makers?

Factors that contribute to the complexity of risk management:

- Cultural barriers to trust in public agencies
- Terminology misunderstandings between stakeholders
- Multiplicity of agencies that collect multitudes of data
- Controversies over how to deal with rational vs. irrational voices
- Psychosocial issues related to environmental problems
- Ethical concerns about new technologies
- Problems understanding the often opaque language of science and the sometimes contradictory information provided

8


Who influences and sets policy?
Apheis
Scientists
(direct scientific users)
Scientists, committees
(scientific pass-on users)
Policy advisors
(policy pass-on users)
Policy makers
(policy pass-on users)
9
Medina et al. (Air Quality, Atmosphere & Health, December, 2009).

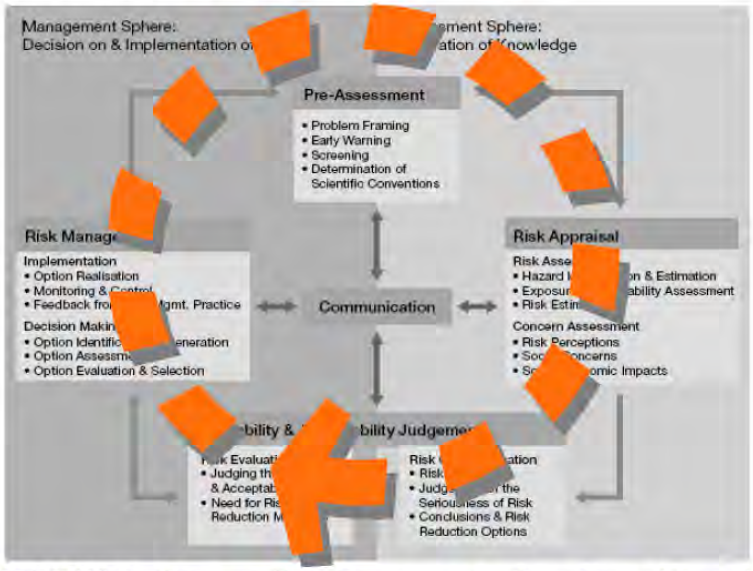

Who influences and sets policy?
How does information flow among them?
Apheis
Scientists
(direct scientific users)
Scientists, committees
(scientific pass-on users)
Tools and content tailored for policy making
Policy advisors
(policy pass-on users)
Information distilled, interpreted, excerpted
Policy makers
(policy pass-on users)
10

What can we as scientists do to manage complexity in our work?
How should we manage complexity for our audiences?

11

Risk governance

Figure I: IRGC Risk Governance Framework



Source: IRGC White Paper on Risk Governance – Towards an Integrative Approach

12

Suggestions for improving risk governance

On framing the problem for decision making and the general public

- Identify which sectors – such as health, manufacturing, infrastructure and energy – and which community leaders are willing or reluctant to participate in risk governance
- Identify methods and participatory approaches that are most effective for engaging decision makers and the general public
- Use the best available evidence from research, monitoring and early-warning systems (Eye on Earth -- EEA)
- Establish time limits and communications rules for the process

13

Suggestions for improving risk governance

On risk assessment

- Epidemiology needs to evolve
- Chart who does what in environmental health in Europe
- Establish effective forums for exchanging information among experts (HENVINET)
- Build an integrated network for environmental and epidemiological data (E3 Network -- ECDC)
- Expand capacity for modelling on a regional and urban scale (Neural networks -- GIS)
- Identify locations and populations at higher risks
- Use the cohort approach to follow up the long-term impact of EH risks (Biologically D-R estimates)
- Collaborate on an interdisciplinary basis (Risk-specific dose -- NRC)
- Improve dose-response calculations

14

Suggestions for improving risk governance

On risk assessment

- Perform cumulative risk assessments
- Break problems down
- Use lessons from past events
- Identify key drivers and risk multipliers in EH
- Standardise methods on how best to represent uncertainty, the relative value of future benefits and the achievement of equity
- Standardise relevant EH data collection from different agencies
- Evaluate cost-effectiveness of interventions aimed at protecting health
- Assess the health costs of inaction at global, regional and local levels
- Show co-benefits

15

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Suggestions for improving risk governance

On tolerability and acceptability of a given risk by the general public

- Provide stakeholders with different clear scenarios that each present their pros and cons to help them understand and evaluate the risks and benefits to them of the different options
- Use or improve existing tools for sharing knowledge and uncertainties with stakeholders

16

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Suggestions for improving risk governance

On risk communication

- Change from informing the general public to involving the general public
- Use scientific tools like KABP surveys to assess beliefs of the general public concerning EH risks and their expectations
- Ask ourselves: Does the general public have the information it needs to make decisions? (Help of psychosocial and communications experts!)
- Willing and prepared to deal satisfactorily with perceptions of general public
- Correct misunderstandings, misperceptions, unrealistic expectations and barriers to understanding and action

17

Suggestions for improving risk governance

On risk management by policy makers

"The precautionary principle provides justification for public policy actions in situations of scientific complexity, uncertainty and ignorance, where there may be a need to act in order to avoid, or reduce, potentially serious or irreversible threats to health or the environment, using an *appropriate level of scientific evidence*, and taking into account the likely pros and cons of action and inaction."

European Environment Agency working definition of the precautionary principle (EEA,2001)

18

Suggestions for improving risk governance

On scientific evidence

Different levels of proof for different purposes: some examples and illustrations

Probability	Quantitative descriptor (Probability bands based on IPCC 2001)	Qualitative descriptor	Illustrations
100% probability	Very likely 90–99%	• "Statistical significance"	• Part of strong scientific evidence for "causation"
		• "Beyond all reasonable doubt"	• Most criminal law. And the Swedish Chemical law, 1973, for evidence of "safety" of substances under suspicion-burden of p roof on manufacturers
	Likely (66–90%)	• "Reasonable certainty" • "Sufficient scientific evidence"	• Food Quality Protection Act, 1996 (US) • To justify a trade restriction designed to protect human, animal or plant health under World Trade Organisation Sanitary and Phytosanitary (SPS) Agreement, Art. 2.2. 1995
	Medium Likelihood (33–66%)	• "Balance of evidence"	• Intergovernmental Panel on Climate Change 1995 & 2001
		• "Balance of probabilities"	• Much Civil and some administrative law
		• "Reasonable grounds for concern"	• European Commission Communication on the Precautionary Principle 2000
		• "Strong possibility"	• British Nuclear Fuels occupational radiation compensation scheme, 1984 (20–50% probabilities triggering different awards up to 50% + , which then triggers full compensation)
	Low Likelihood (10–33%)	• "Scientific suspicion of risk"	• Swedish Chemical law, 1973, for sufficient evidence to take precautionary action on potential harm from substances-burden of proof on regulators
		• "Available pertinent in formation"	• To justify a provisional trade restriction under WTO SPS Agreement, Art. 5.7 where "scientific information is insufficient"
	Very Unlikely (1–10%)	• Low risk • "Negligible and in significant"	• Household fire insurance • Food Quality Protection Act, 1996 (US)

Source: EEA (2002).

1

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Suggestions for improving risk governance

On causality

- Causality in biology and medicine (Bradford Hill's criteria)
- Probabilistic causation
- Counterfactual theories
- Manipulation theories
- Causality in physics
- Causality in psychology
- Causality in history
- Causality in religious beliefs

Jouni J.K. Jaakkola, *Finland*

In Bradford Hill's criteria for causality, "we should put more weight on the 'analogy' criterion." – *David Gee*

20

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Suggestions for improving risk governance

Policy makers need:

- Decision-support tools for identifying and prioritizing risks:
  - EBoDs and HIAs
  - Cost-benefit analyses
  - Deliberation tools
  - Communications tools
  - Evaluation tools
- Learning from local initiatives
  (Modified DPSEEA model-George Morris)
- Development of international EH strategies for cross-cultural and sector coordination, and exchanging best practices

21

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Suggestions for improving risk governance

On capacity building

We need to develop the expertise required to move this process forward and protect public health:

- Strong leadership, cross-program coordination, communication and training to expand environmental and health capacities

- Development of partnerships and strengthening of interdisciplinary research

All these actions require a budgeted capacity-building plan that will deliver benefits far beyond its costs

22

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European projects that address complexity in EH
PRON
RISKBRIDGE
Miracle
HENVINET
Health & Environment Networking Portal
INTA
PROJECT
APHEIS
Monitoring the Effects of Air Pollution on Health in Europe
Aphekom
Improving Knowledge and Communication for Decision Making on Air Pollution and Health in Europe
HEIMTSA
THE PEP
Transport, Health and Environment Pan-European Programme
InVS
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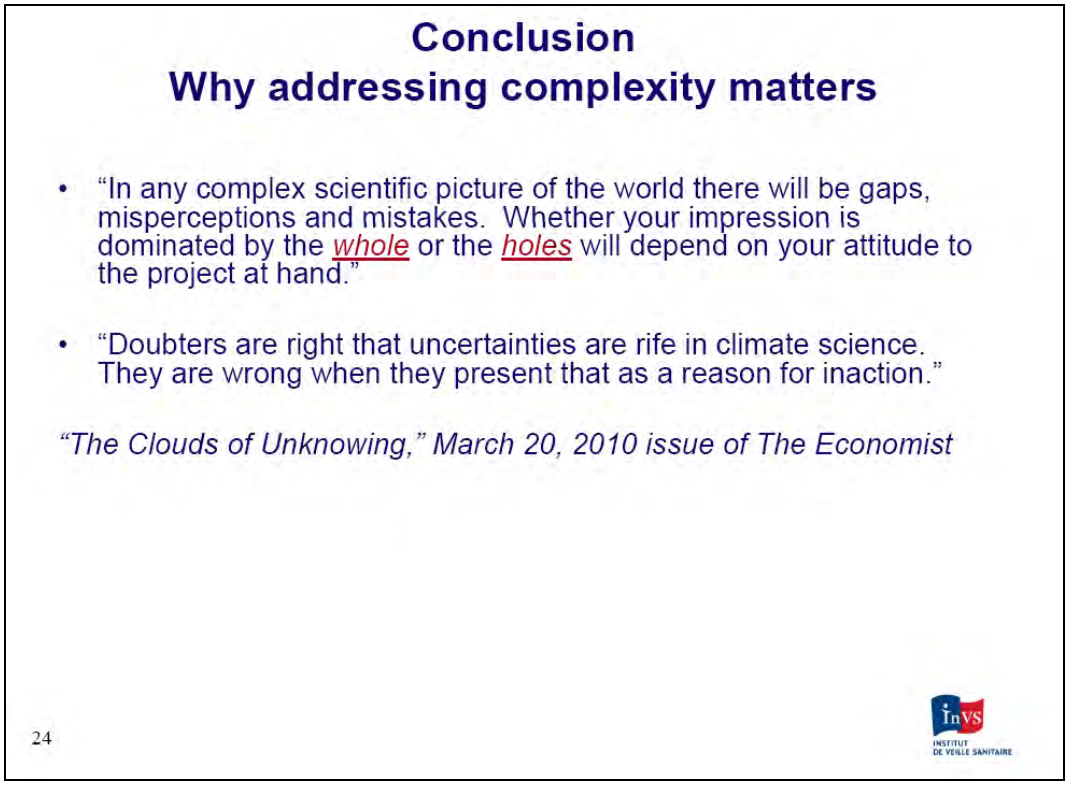
23


Conclusion
Why addressing complexity matters
• "In any complex scientific picture of the world there will be gaps, misperceptions and mistakes. Whether your impression is dominated by the whole or the holes will depend on your attitude to the project at hand."
• "Doubters are right that uncertainties are rife in climate science. They are wrong when they present that as a reason for inaction."
"The Clouds of Unknowing," March 20, 2010 issue of The Economist
InVS
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24

Complexity in health and the environment

George Morris: Good Places, Better Health

What I will cover today

The things that drove us to seek a new approach to environment and health

Why the whole thing is ultimately about confronting the Challenge of Complexity

The ways in which we are trying to do this in Scotland

The Drivers for Change

1. A Policy Disconnect

2. Stubborn Health Challenges

Scotland's health is improving. But there are big differences between rich and poor. In 2006, men could, on average, expect **67.9 years** of healthy life and women **69 years**.

In the most deprived 15% of areas in Scotland, though, men could only expect **57.3 years** of healthy life and women **59 years**

Scottish Government (2008)

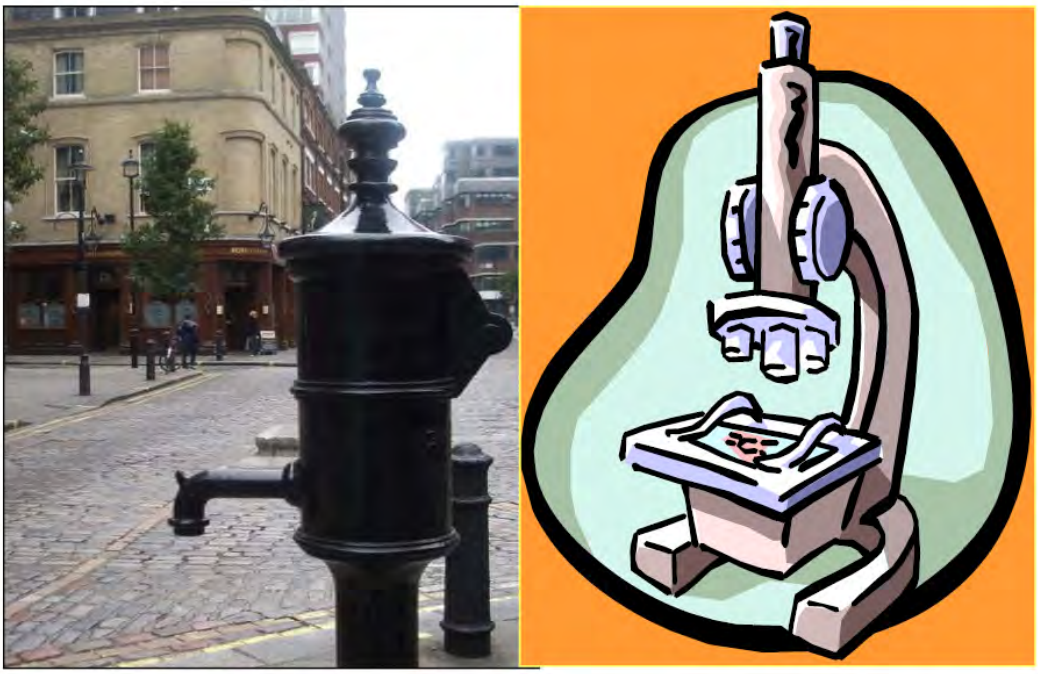
Glasgow's least affluent people live on average **8 years less** than the Indian average life expectancy. Yet people in Glasgow are fantastically rich compared to the Indian population.

World Health Organisation (2008)

A boy born in the deprived inner city area of Calton, Glasgow, can expect to live to **54 years** compared with a boy born in the nearby suburb of Lenzie, who can expect to live to **82 years**

World Health Organisation (2008)

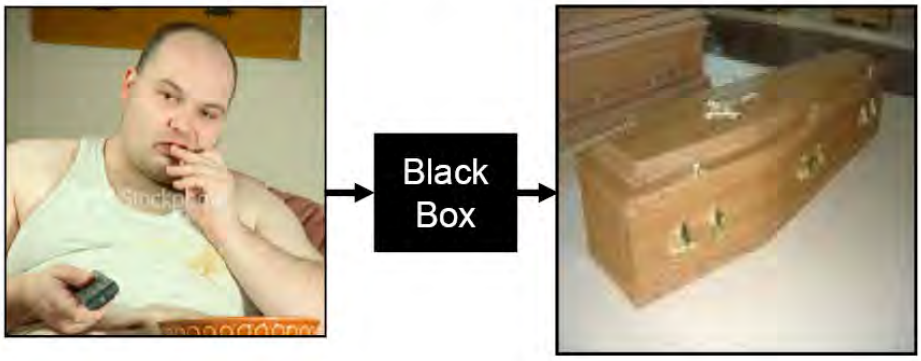
3. A Belief in the 'Importance of Place' for Public Health




15
KEW GREEN

But what happened next?

- the “Era of the Black Box”



A simplistic, and ultimately ineffective, approach to securing better more equal health

At the same time Environmental Health activity became increasingly:

- Narrow
- Compartmentalised
- Hazard focussed

In a sense it became marginalised because **it failed to extend its reach and relevance** to the big public health challenges of the day

The biggest Public Health Challenge in Scotland lies in understanding and tackling what creates and destroys health for this man and his family

We are in an **"Era of Ecological Public Health"** underpinned by the paradigm which says that, when it comes to health and wellbeing, **"Everything Matters"**

It's about 'complexity'
and we're all struggling!

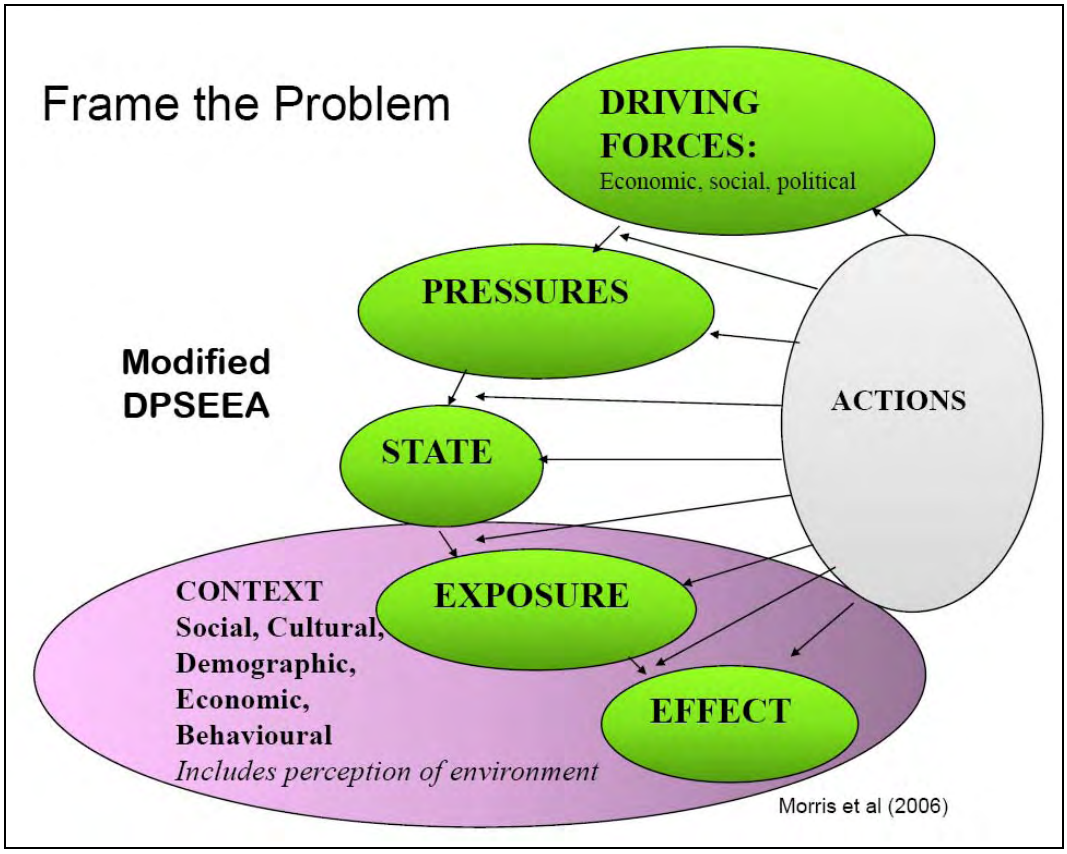
The right approaches for the Ecological Era must extend the reach and relevance of environment and health policy to modern public health challenges but especially health inequity

They will fail if they cannot:

- Embrace a complex reality
- Represent a psychosocial dimension in the relationship between people and place
- Exploit the “salutogenic” potential of the environment

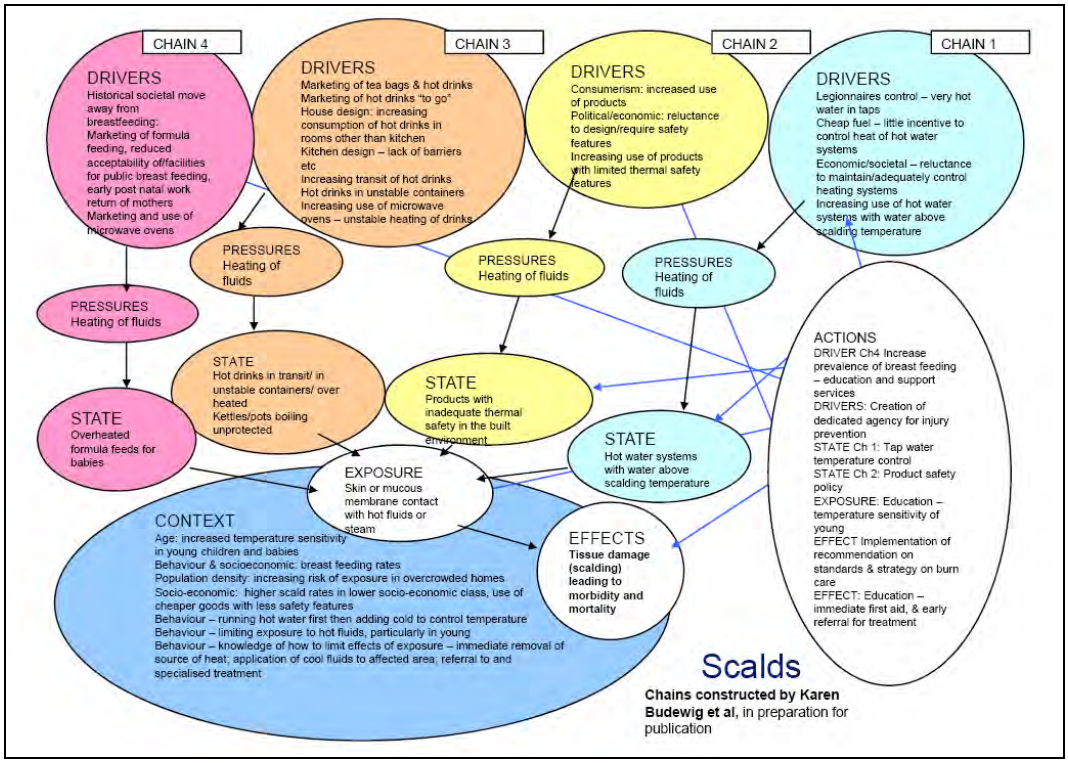
Good Places, Better Health
is Scotland's attempt to do exactly that

It is a **systems-based** approach built around close attention to **problem framing**

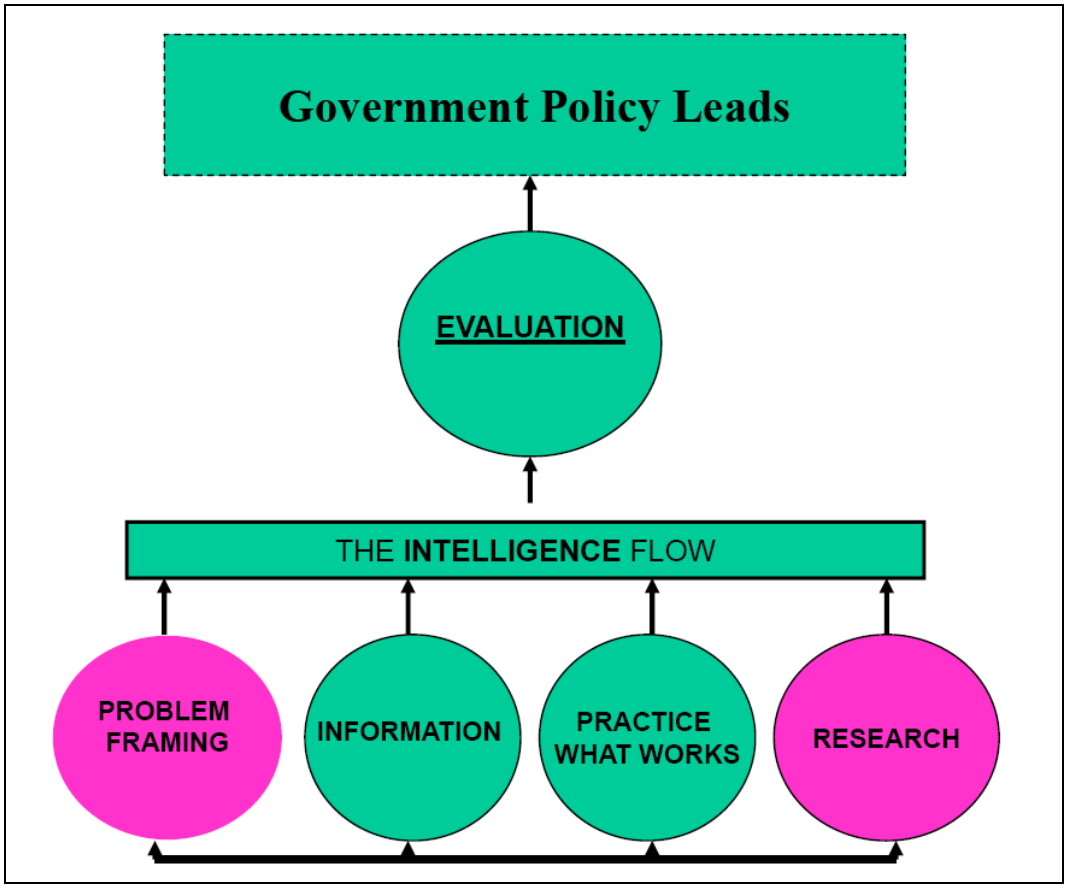


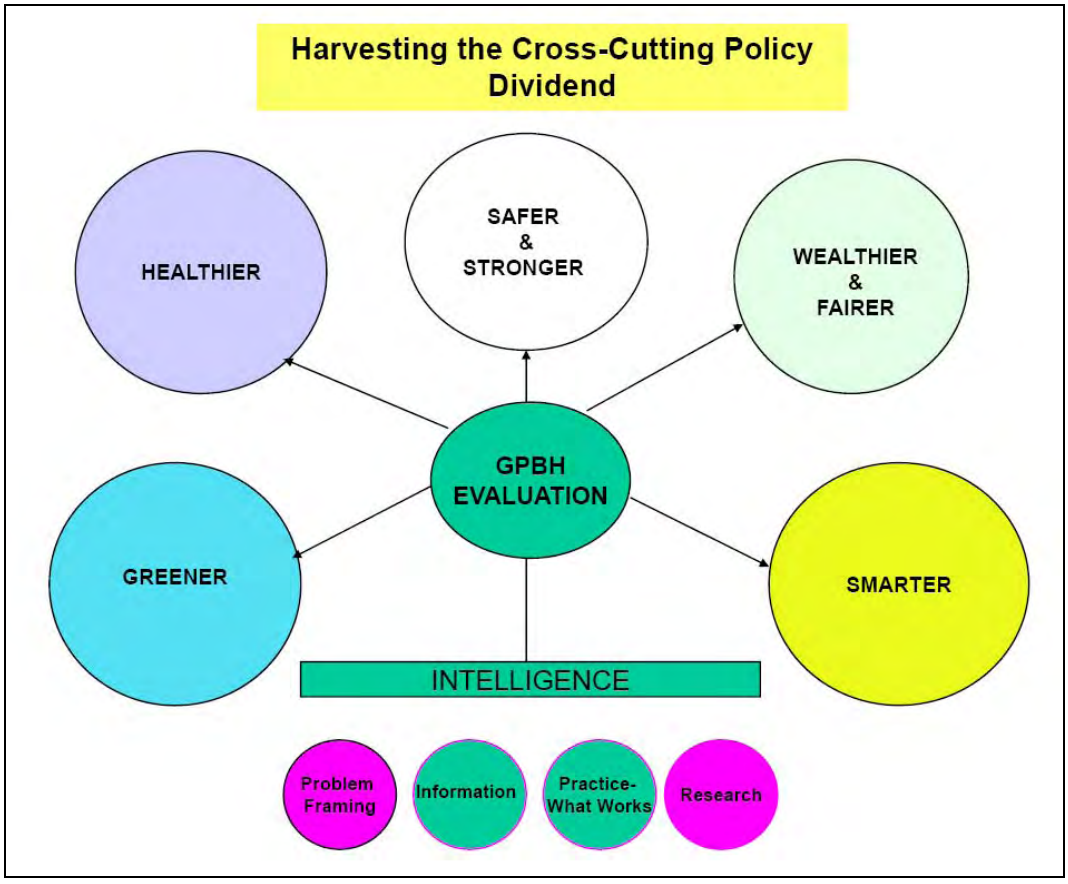
How do we use all this to support the policy?

- **To map the 'ecological territory' with broad stakeholder involvement**
- **To conduct gap analysis**
- **To build our systems**

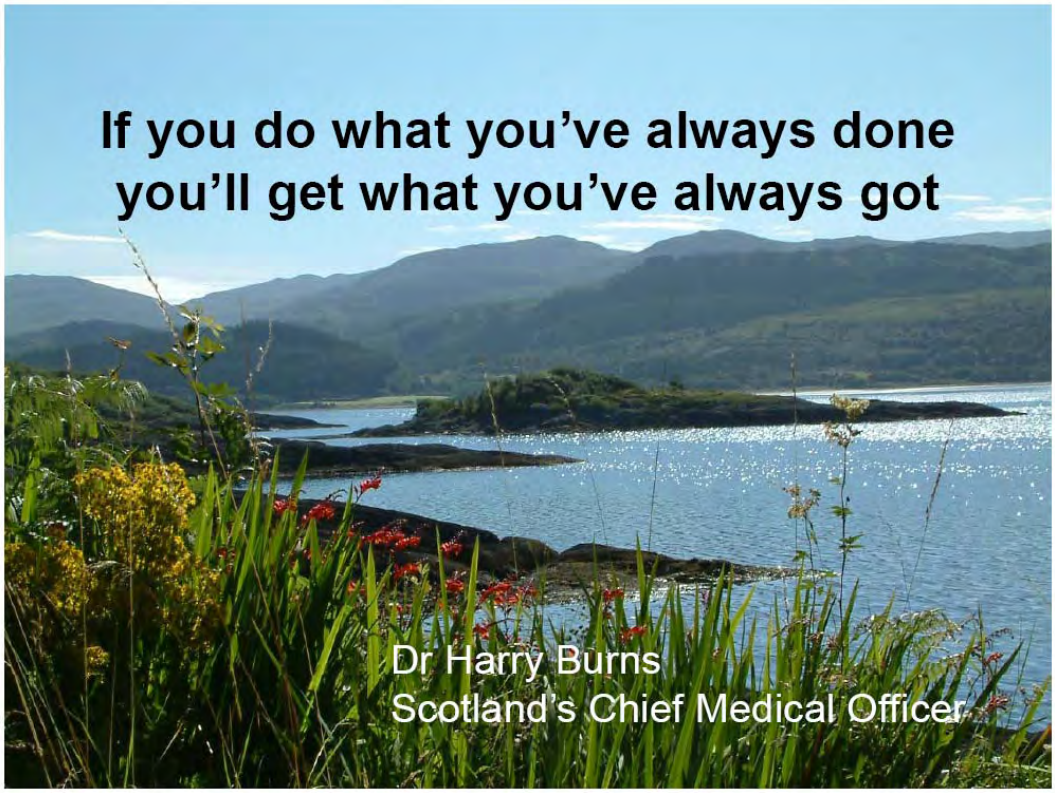


To assemble a 'wider E & H Intelligence' and 'hardwire' it to policy

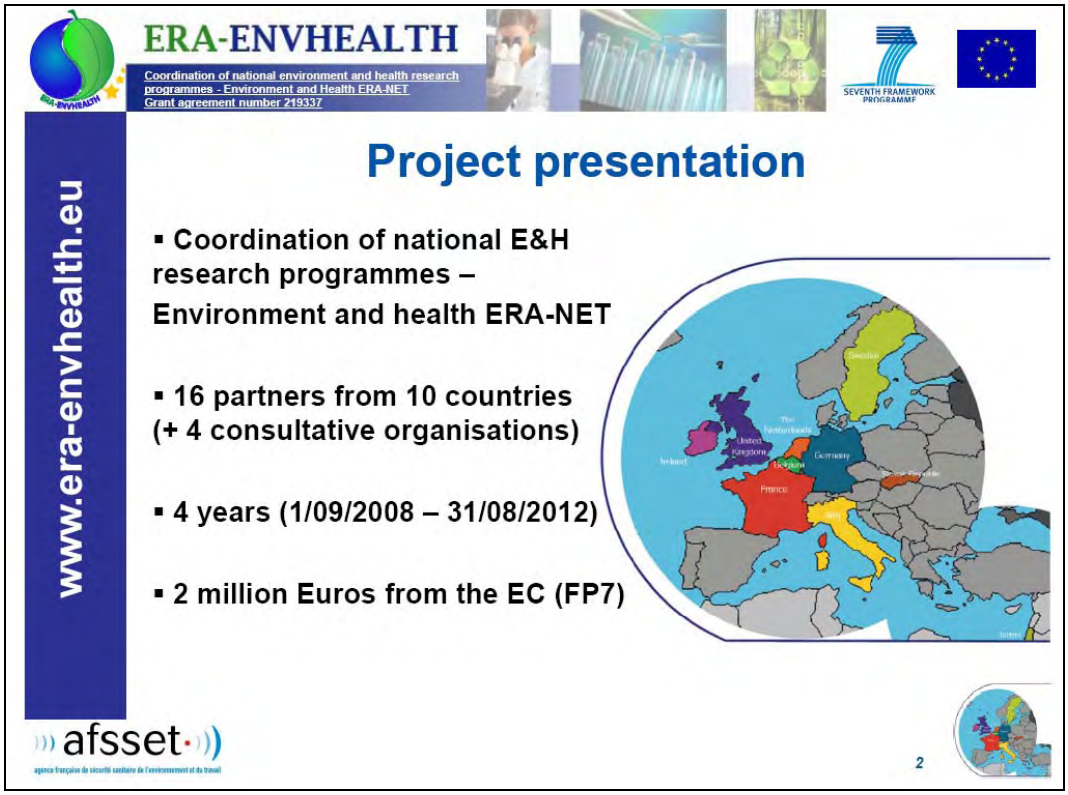

Government Policy Leads
EVALUATION
THE INTELLIGENCE FLOW
PROBLEM FRAMING
INFORMATION
PRACTICE WHAT WORKS
RESEARCH

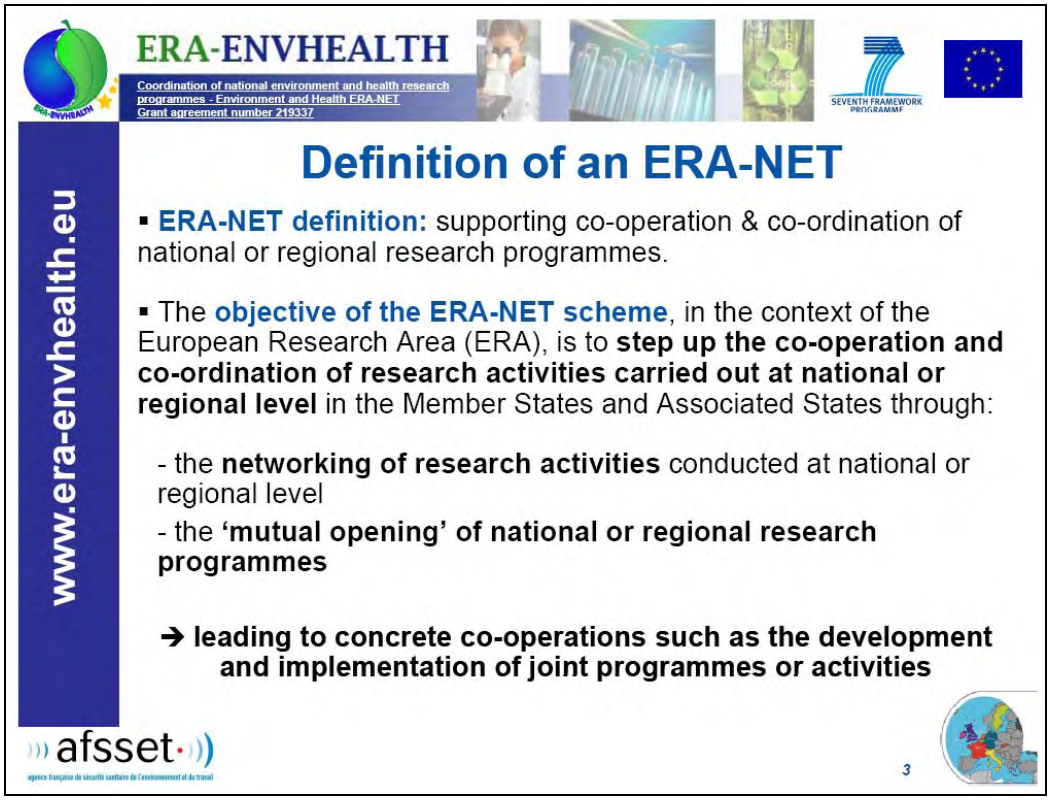

Harvesting the Cross-Cutting Policy Dividend
HEALTHIER
SAFER & STRONGER
WEALTHIER & FAIRER
GPBH EVALUATION
GREENER
SMARTER
INTELLIGENCE
Problem Framing
Information
Practice-What Works
Research

(Through framing problems with reference to the axis of people and place) Explicitly link public health to other complex policy agendas e.g. climate change, sustainability, the urban environment, environmental justice



Adrienne Pittman: HENVINET Approaching complexities in Environment and Health




ERA-ENVHEALTH
Coordination of national environment and health research programmes - Environment and Health ERA-NET
Grant agreement number 219337
SEVENTH FRAMEWORK PROGRAMME
www.era-envhealth.eu
Definition of an ERA-NET
▪ ERA-NET definition: supporting co-operation & co-ordination of national or regional research programmes.
▪ The objective of the ERA-NET scheme, in the context of the European Research Area (ERA), is to step up the co-operation and co-ordination of research activities carried out at national or regional level in the Member States and Associated States through:
- the networking of research activities conducted at national or regional level
- the 'mutual opening' of national or regional research programmes
➔ leading to concrete co-operations such as the development and implementation of joint programmes or activities
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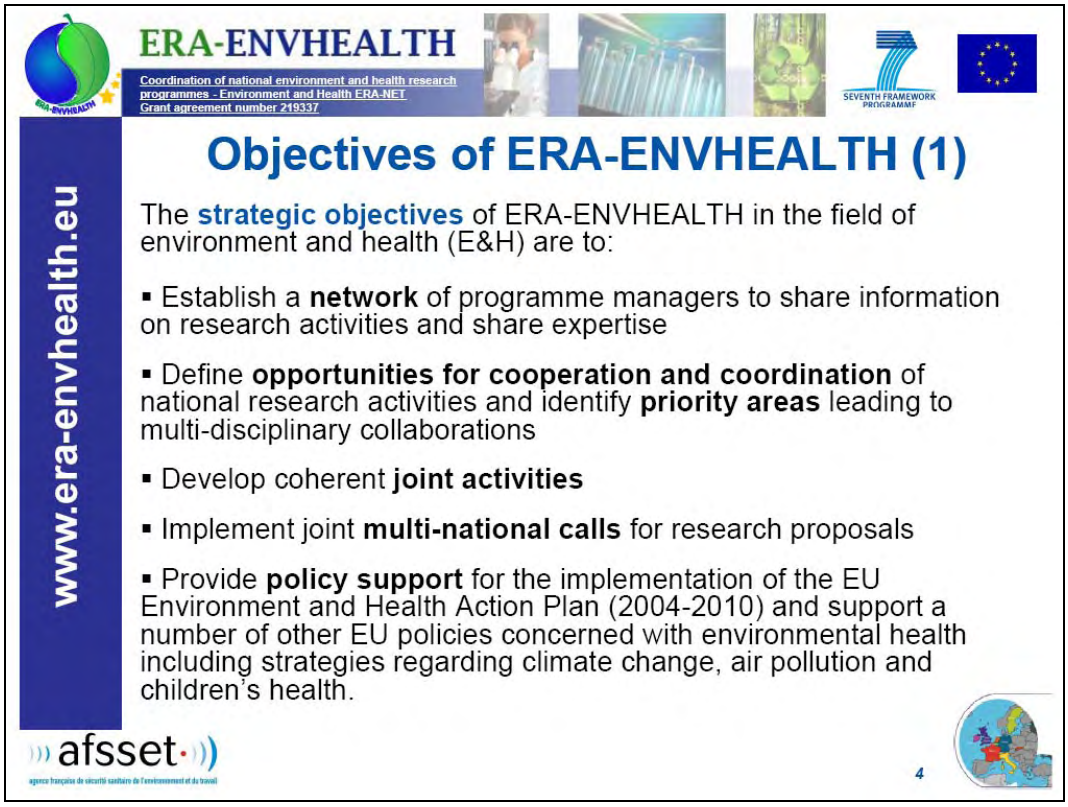
3


ERA-ENVHEALTH
Coordination of national environment and health research programmes - Environment and Health ERA-NET
Grant agreement number 219337
SEVENTH FRAMEWORK PROGRAMME
www.era-envhealth.eu
Objectives of ERA-ENVHEALTH (1)
The strategic objectives of ERA-ENVHEALTH in the field of environment and health (E&H) are to:
▪ Establish a network of programme managers to share information on research activities and share expertise
▪ Define opportunities for cooperation and coordination of national research activities and identify priority areas leading to multi-disciplinary collaborations
▪ Develop coherent joint activities
▪ Implement joint multi-national calls for research proposals
▪ Provide policy support for the implementation of the EU Environment and Health Action Plan (2004-2010) and support a number of other EU policies concerned with environmental health including strategies regarding climate change, air pollution and children's health.
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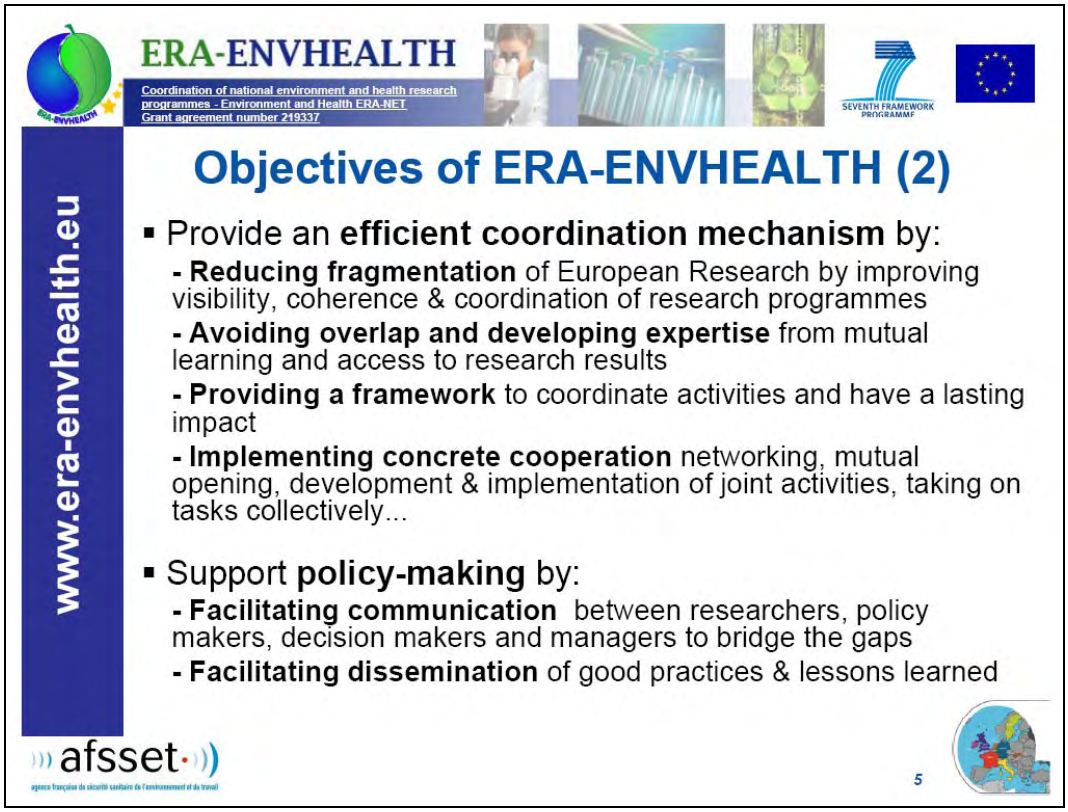
4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Grant agreement number 219337
www.era-envhealth.eu
Objectives of ERA-ENVHEALTH (2)
▪ Provide an efficient coordination mechanism by:
- Reducing fragmentation of European Research by improving visibility, coherence & coordination of research programmes
- Avoiding overlap and developing expertise from mutual learning and access to research results
- Providing a framework to coordinate activities and have a lasting impact
- Implementing concrete cooperation networking, mutual opening, development & implementation of joint activities, taking on tasks collectively...
▪ Support policy-making by:
- Facilitating communication between researchers, policy makers, decision makers and managers to bridge the gaps
- Facilitating dissemination of good practices & lessons learned
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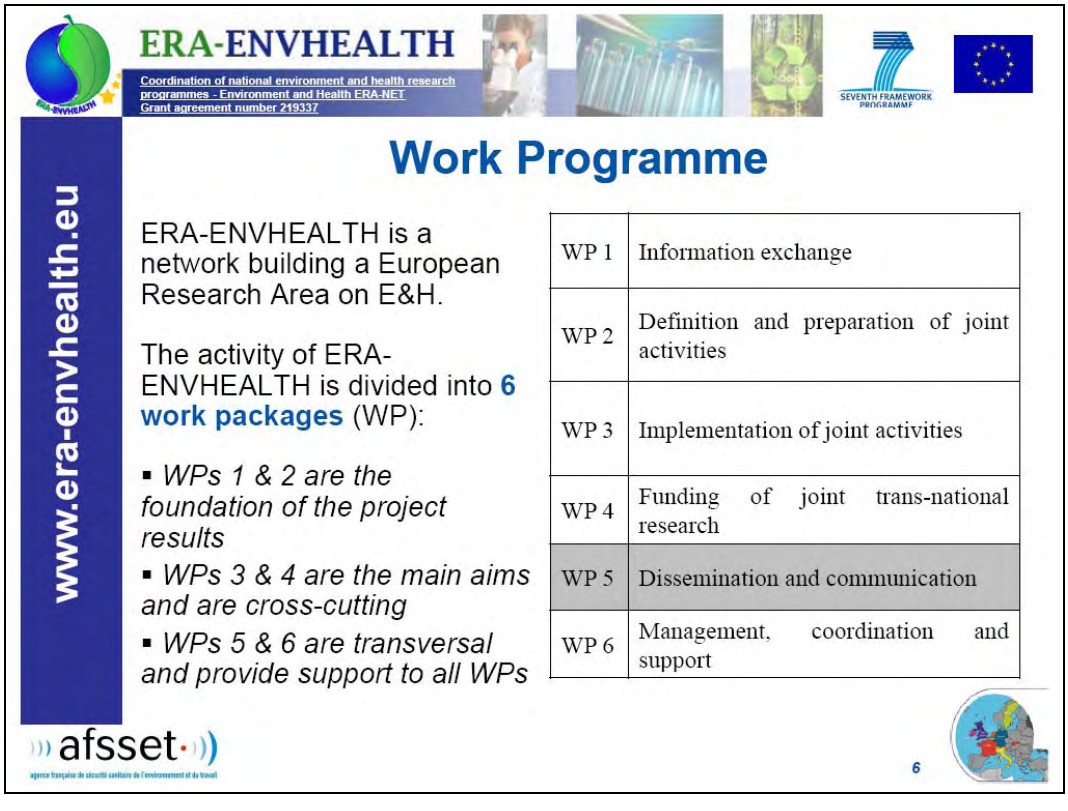
ERA-ENVHEALTH
Coordination of national environment and health research programmes - Environment and Health ERA-NET
Grant agreement number 219337
www.era-envhealth.eu
Work Programme
ERA-ENVHEALTH is a network building a European Research Area on E&H.
The activity of ERA-ENVHEALTH is divided into 6 work packages (WP):
▪ WPs 1 & 2 are the foundation of the project results
▪ WPs 3 & 4 are the main aims and are cross-cutting
▪ WPs 5 & 6 are transversal and provide support to all WPs
WP 1 Information exchange
WP 2 Definition and preparation of joint activities
WP 3 Implementation of joint activities
WP 4 Funding of joint trans-national research
WP 5 Dissemination and communication
WP 6 Management, coordination and support
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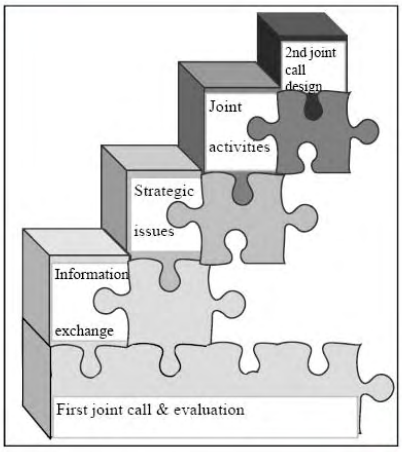
Duration

- Step-by-step integrated approach over **4 years**

From Sept. 2008 to August 2012

➔ The results of the information collected in WP1 will be used by WP2 to define common strategic issues which will be addressed in parallel by WPs 3 & 4 through the implementation of trans-national activities and the design of calls for research



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External Advisory Committee

- **Role:**
  - Evaluate the project impact & effectiveness
  - Give strategic advice
  - Improve contacts with relevant stakeholders
  - Participate in events organised by ERA-ENVHEALTH
  - Participate in the exchange of information
  - Give advice on the research themes and activities planned
  - Evaluate and advise on the progress of the project
  - Distribute results in their respective networks
  - Inform their own networks about progress of the project
  - Advise the General Assembly of opportunities to make ERA-ENVHEALTH's progress and achievements known

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www.era-envhealth.eu

Work progress

- Improved **exchange of knowledge and expertise** through access to data at the European level: **tools created**
  - **website: www.era-envhealth.eu**
  - **expert database**
  - **research database**
  - **dissemination and communication strategy**
- Start to identify common research priorities and define a set of prioritisation criteria
- **1st transnational joint call**, funded by 3 partners (AFSSET, NERC, VROM) launched in April 2008: "*Health vulnerability resulting from future climate change impacts on soil-water ecosystems, land use and water resources at regional scale*"
- Two projects selected for funding out of the 10 received:
  - **Risk assessment of the impact of climate change on infectious diseases (budget of: 1 162 351€)**
  - **Environmental change and rising dissolved organic carbon trends: implications to Public Health (budget of: 1 675 664€)**

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Grant agreement number 219337

www.era-envhealth.eu

Project website

www.era-envhealth.eu

Publicly available

Presents the project
Update on progress
Reports available
Links to the databases:
Expert and research databases

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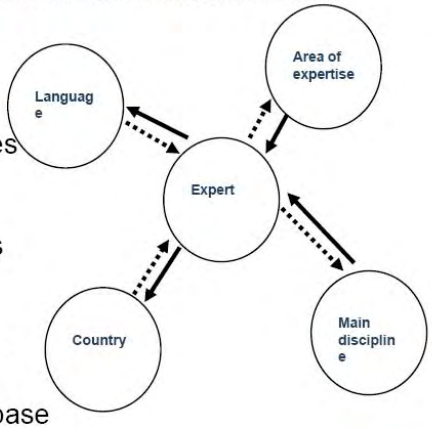
Expert database

Aim: to help identify scientists or experts in the Environment and Health domain. **50 experts entered**

Main users: ERA-ENVHEALTH partners for joint activities and their national research-funding programmes



Consulting data is free of charge, but users cannot claim property rights on the data in any shape or form

To consult data or for experts who want to be part of the database:
Contact the administrator of the database
Mohssine El Kahloun to get a login & password
mohssine.elkahloun@belspo.be

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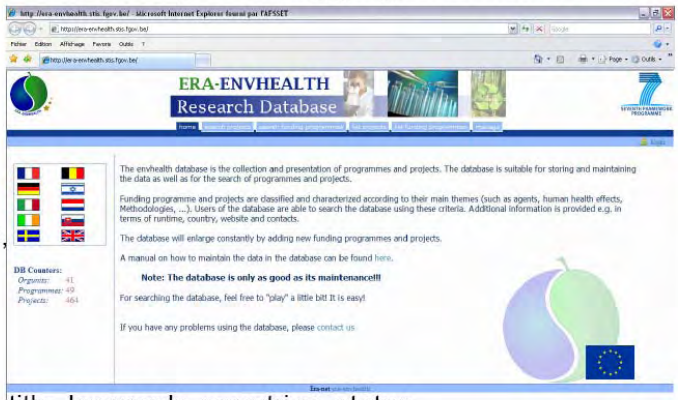
Research database

Contains details of current and past funding programmes in MS

49 programmes
464 projects



Unique source of material to access data on current E&H research projects, identify potential partners and modes of expertise

Search by topics, title, keywords, countries, status

Consulting data is free of charge, but users cannot claim property rights on the data in any shape or form and some records may remain confidential

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Analysis of the research database

Publication in March 2010 of WP1 Final Report "Overview of environment and health programmes and projects including synthesis and recommendations"

Main aim: give an overview of the European E&H landscape based on the description of programmes and their related projects owned or managed by the partners and in a wider scope within Member States

And: describe structures available for funding of transnational research among the partners in the project, identify the main authorities in the field, obtain information on programme managing practices and provide recommendations for effective funding of E&H research and effective arrangements for cooperation

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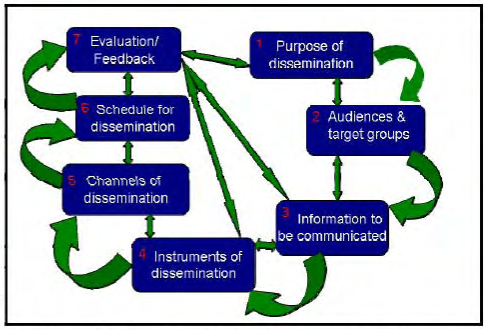
Dissemination & communication strategy

Aim: describe the **methods, instruments and channels** used to achieve, facilitate and stimulate effective information and research results exchange between the project partners, stakeholders and the wider community

Definition of project objectives and messages to communicate to different target groups



Objectives:

- ensure a continued & formalised flow of information to stakeholders
- ensure formalised information is provided to policy-makers to help decision-making and policy actions
- establish links with other networks
- ensure good dissemination of results from the first call and ensure a large response to the second call
- investigate, contact & encourage recruitment of new organisations

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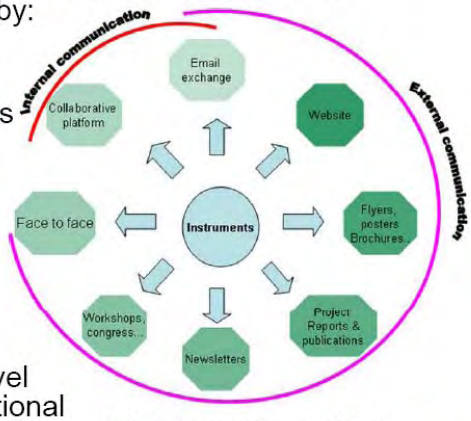
Tools for dissemination

Effective communication of the project outputs and general details of the work carried out, participants involved and important meetings held can be achieved by:

- Establishing a **website** & flyer
- Making the information systems available (**public databases**)
- Publishing **reports** on the website
- **Communicating** the results nationally and internationally (newsflash, conferences…)
- Establishing **links** with high-level policy-makers and other international groups, in particular through the External Advisory Committee



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Grant agreement number 219337

www.era-envhealth.eu

Thank you for your attention

Do not hesitate to visit the project's website:

www.era-envhealth.eu

For your information:

Workshop for potential new partners in Sept. 2010

Don't hesitate to contact us if you are interested:

adrienne.pittman@afsset.fr

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16

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The European Environment and Health Action Plan 2004-2010 – Achievements

Peter Pärt

European Commission
Joint research Centre
Ispra, Italy

SCALE

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Margot Wallström
Environment Commissioner

" What is good for children is good for the whole society! "

(Cabinet Brainstorming on Children's Health and the Environment 29 June 2001)

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Prudencio Perera
Director DG Environment

SCALE

An European Environment and Health Strategy
(COM (2003) 338 final)
(June 11, 2003)

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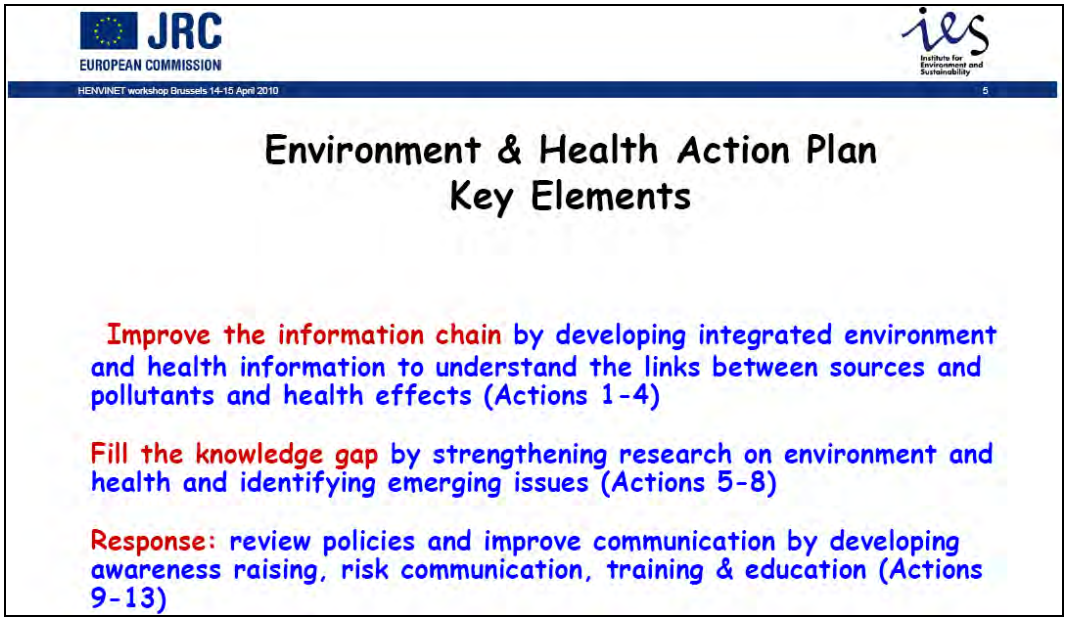
"SCALE"

S cience
C hildren
A wareness Raising
L egal instruments
E valuation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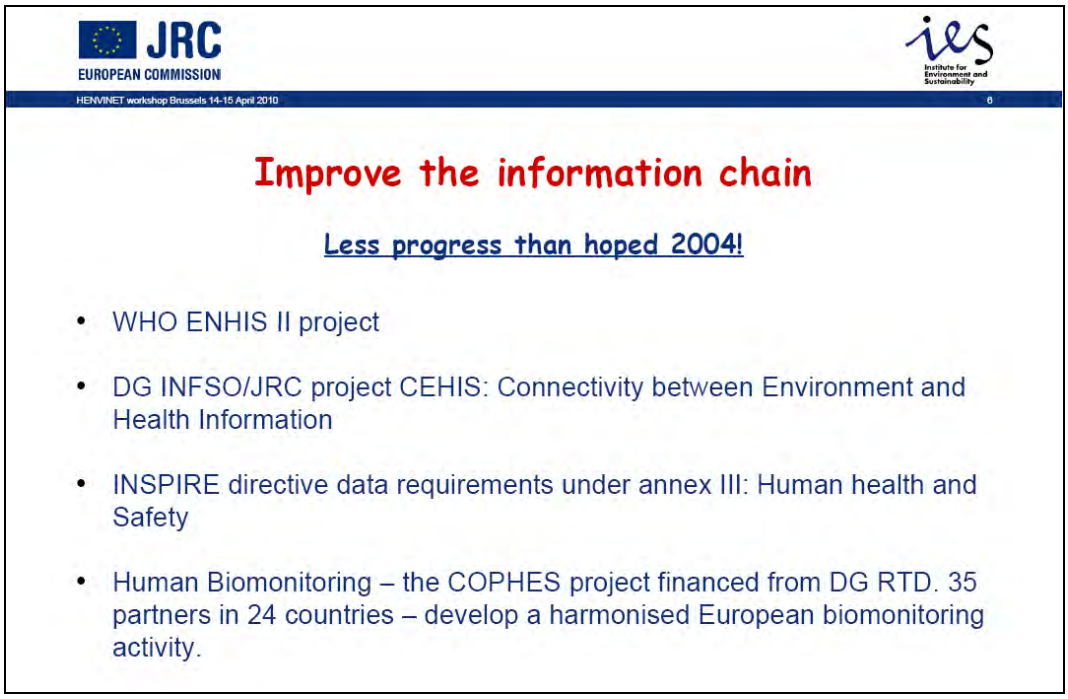
5
Environment & Health Action Plan
Key Elements
Improve the information chain by developing integrated environment and health information to understand the links between sources and pollutants and health effects (Actions 1-4)
Fill the knowledge gap by strengthening research on environment and health and identifying emerging issues (Actions 5-8)
Response: review policies and improve communication by developing awareness raising, risk communication, training & education (Actions 9-13)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Improve the information chain
Less progress than hoped 2004!
• WHO ENHIS II project
• DG INFSO/JRC project CEHIS: Connectivity between Environment and Health Information
• INSPIRE directive data requirements under annex III: Human health and Safety
• Human Biomonitoring – the COPHES project financed from DG RTD. 35 partners in 24 countries – develop a harmonised European biomonitoring activity.

Fill the knowledge gap – research FP6 and FP7

Lots of progress!

- Integration and strengthening of European E&H research
- Targeting disease, disorders and exposures.
- Methodolgies to study E&H interactions
- Emerging issues and hazards

HENVINET one of the projects

Response:

As expected!

- Indoor air quality
  - Environmental Tobacco smoke
  - Guidelines for indoor air quality
  - Indoor air in schools
  - Indoor air pollutants
- Electromagnetic fields
  - Scientific Committee on Emerging and Newly Identified Health Risks (SCENHIR) opinion 2007 and 2009

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Response:

Health Related Environment actions:

- New Directive on ambient air quality, June 2008
- The REACH regulation, June 2007
- Council Conclusions (22nd December 2009) on mixtures and combined exposures of chemicals
- Thematic Strategy on Pesticides
- Biocide Directive
- Mercury strategy
- The white paper on climate change adaptation

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Response:

Communication – EEA and JRC

Environment and Health
EEA Report 10/2005

EUGLOREH 2007
(published 2009)
DG SANCO

Europe's Environment
3rd assessment
EEA "Belgrade Report"
2007

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And the future…

- Climate change and Health
  - Parma Declaration of 5th WHO Ministerial Conference on Environment and Health
- Environment and Health Information Systems
- Broaden the scope of Environment and Health issues (climate change policy, energy policy, developing countries and foreign aid policy etc)

But at the moment it is very quiet…

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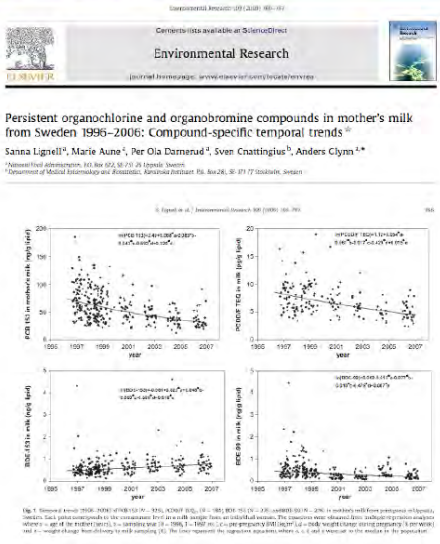

Contents lists available at ScienceDirect

Environmental Research

Persistent organochlorine and organobromine compounds in mother's milk from Sweden 1996–2006: Compound-specific temporal trends ☆

Sanna Lignell[a], Marie Aune[c], Per Ola Darnerud[d], Sven Cnattingius[b], Anders Glynn[a,*]

Swedish Food Safety Authority press release:

Good News!

"… encourgaing trend, POP exposure is reduced, POP's in food chain are decreasing says Anders Glynn. Confirms environmental monitoring data…

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The Press

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How Good News become Bad News!

AFTONBLADET NYHETER

Onsdag 14 augusti 1996

Sex veckor - och förgiftad

Zia får giftig bröstmjölk av mamma

HAVETS HÄMND *I Malins kropp finns PCB, DDT och en rad andra gifter. De är inte längre bokstavsförkortningar som bara existerar i forskarnas prover. Vi har dem under huden. Och när Malin ammar ärver dottern Zia gifterna.*

Malin Ljungner, 27, betraktar sin nyfödda dotter Zia som suger mjölken från hennes bröst.

Det är en finstämd bild av livet.
Men också en skrämmande påminnelse om miljöarvet.
För genom Malins bröstmjölk får Zia i sig Östersjöns miljögifter.
Det avslöjar en blodanalys - genomförd på uppdrag av Aftonbladet.

"six weeks and already poisoned"…

UNT.SE

Miljögifter minskar i bröstmjölk

…reduced level of contaminants in breast milk. Breast feeding children get a better start in life…"

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Communication success

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WWF DETOX CAMPAIGN

Bad Blood?

A Survey of Chemicals in the Blood of European Ministers

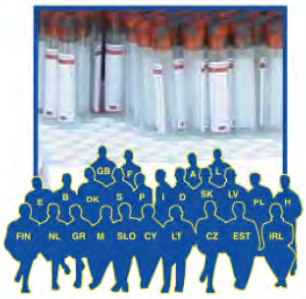


Table 1: Ministers tested

Constantina Akkelidou	Cyprus	Minister of Health
Libor Ambrozek	Czech Republic	Minister of Environment
Hans Christian Schmidt	Denmark	Minister of Environment
Olavi Tammemäe	Estonia	Vice minister Environment
Jan-Erik Enestam	Finland	Minister of Environment
Serge Lepeltier	France	Minister of Environment
Miklós Persányi	Hungary	Minister of Environment
Mihaly Kokeny	Hungary	Minister of Health
Roberto Tortoli	Italy	Vice Minister Environment
Juozas Olekas	Lithuania	Minister of Health
Laszlo Miklos	Slovakia	Minister of Environment
Cristina Narbona	Spain	Minister of Environment
Lena Sommestad	Sweden	Minister of Environment
Alun Michael	UK	Minister of Environment





HENVINET
HEALTH AND ENVIRONMENT NETWORK
Approaching complexity
in
health and environment
NILU
HENVINET: Approaching complexity in environment and health, Brussels 14.-15.4.2010


HENVINET
HEALTH AND ENVIRONMENT NETWORK
INTRODUCTION TO HENVINET
alena.bartonova@nilu.no
NILU
HENVINET: Approaching complexity in health and environment
Brussels 14.-15.4.2010

Why HENVINET?

HENVINET: FP6 funded co-ordination action,
activity SUSTDEV-2005-3.VII.2.1. (1.11. 2006-30.4.2010)
32 partner organisations

EHAP: Establishing long-term E&H Network
researchers-stakeholders-policymakers

Developing tools to
support the network

Shortening the
knowledge uptake cycle

NILU

HENVINET: Approaching complexity in health and environment
Brussels 14.-15.4.2010

Questions in HENVINET and their owners

What are respiratory health risks related to climate change?

The role of environmental determinants in cancer?

What are the risks related to endocrine disrupting substances?

Can we quantitatively assess H&E issues and how?

NILU

HENVINET: Approaching complexity in health and environment
Brussels 14.-15.4.2010

Delivering answers

Knowledge evaluation for decisionmaking

- Methodology
- Conceptualization
- Knowledge assessment
- Translation of knowledge assessment results to actions relevant to the owner of the question

Repository of decision support tools

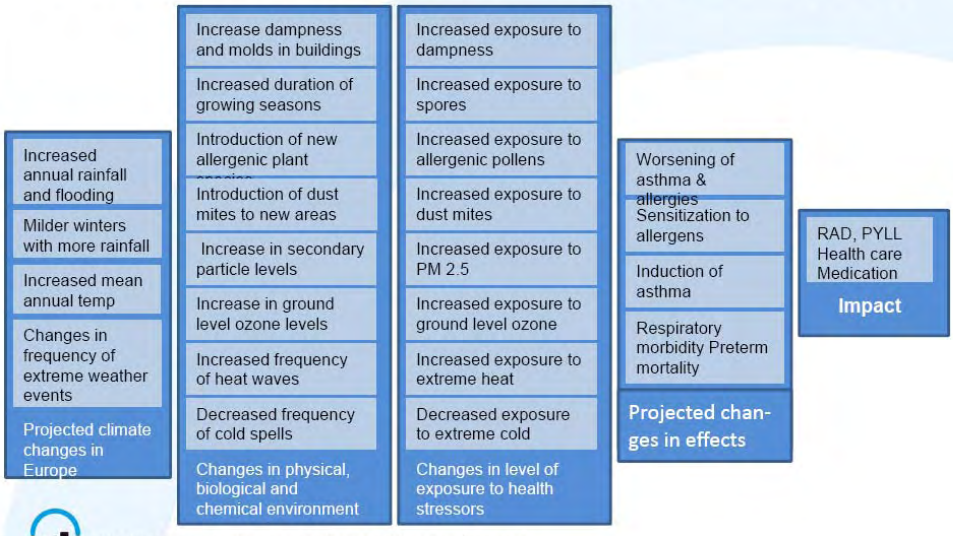
Support to networking: beyond facebook

NILU

HENVINET: Approaching complexity in health and environment
Brussels 14.-15.4.2010

Defining an operational framework

Climate change and respiratory disease: Bertil Forsberg and Lennart Bråback, UMU, SE



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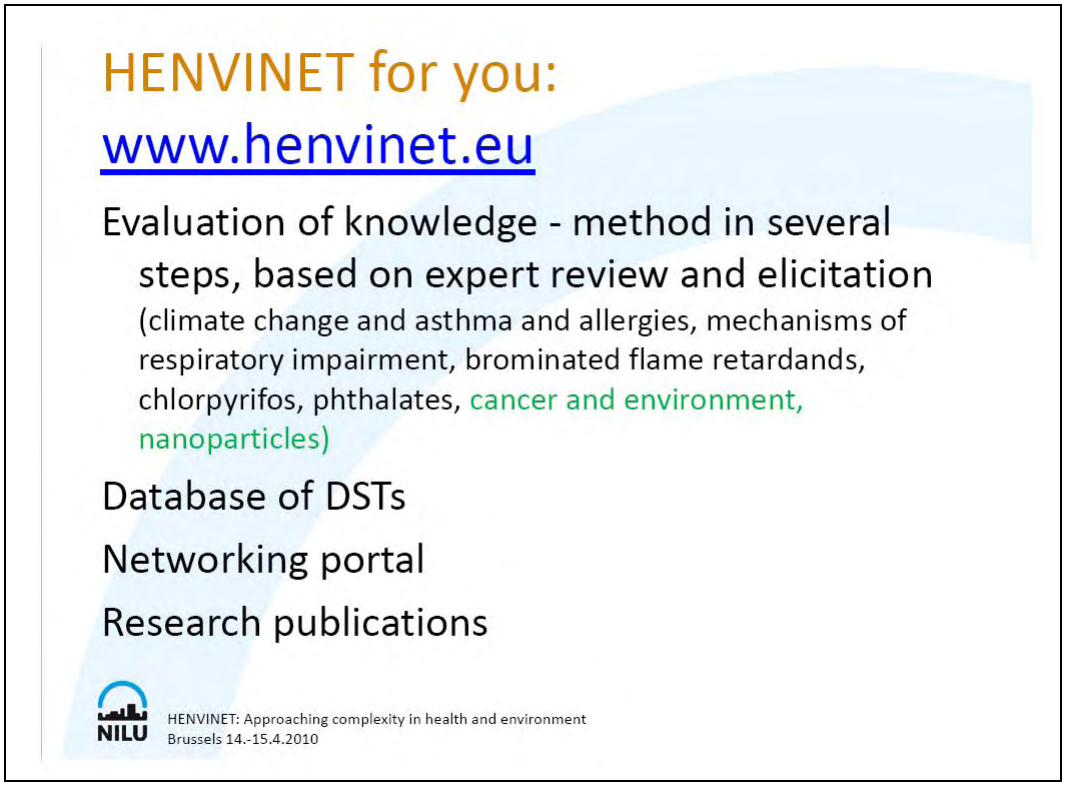
HENVINET for you:
www.henvinet.eu
Evaluation of knowledge - method in several steps, based on expert review and elicitation
(climate change and asthma and allergies, mechanisms of respiratory impairment, brominated flame retardands, chlorpyrifos, phthalates, cancer and environment, nanoparticles)
Database of DSTs
Networking portal
Research publications
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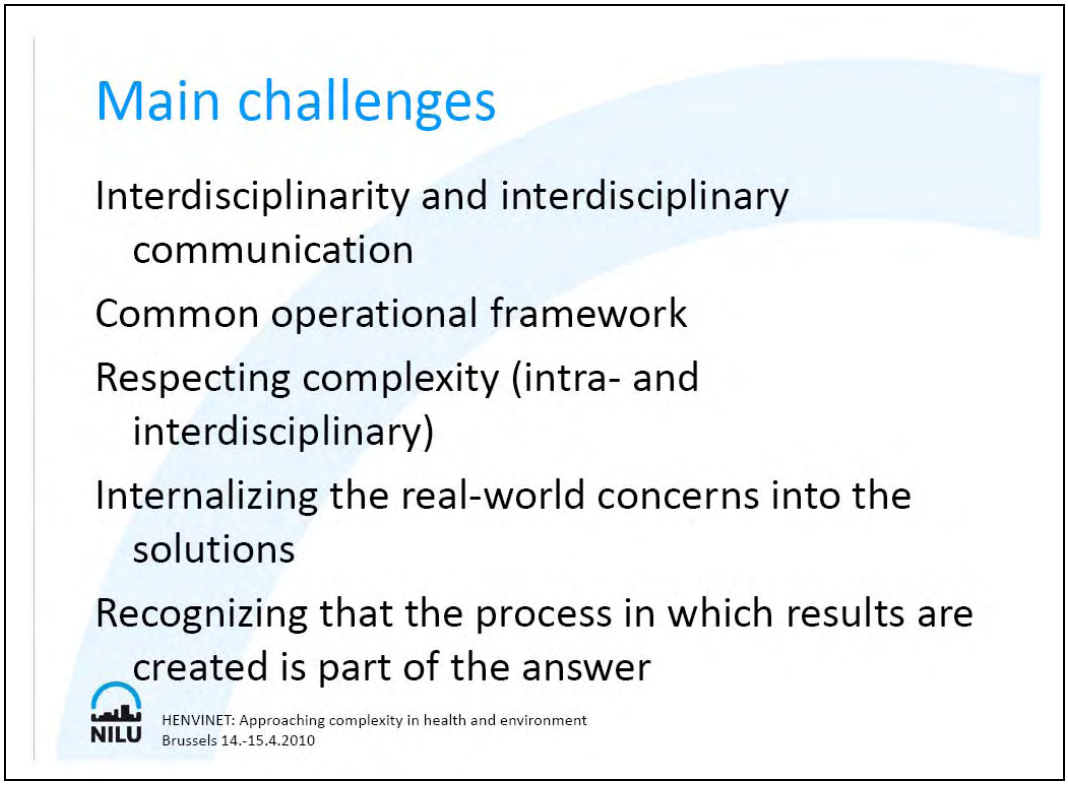
Main challenges
Interdisciplinarity and interdisciplinary communication
Common operational framework
Respecting complexity (intra- and interdisciplinary)
Internalizing the real-world concerns into the solutions
Recognizing that the process in which results are created is part of the answer
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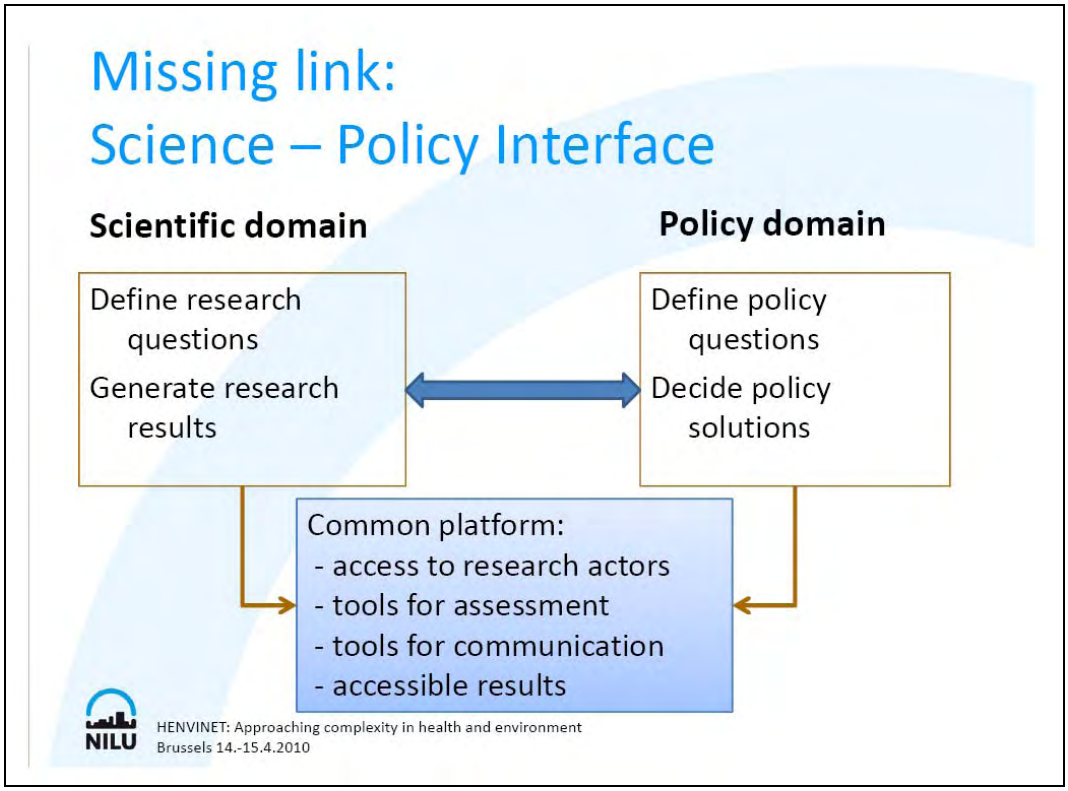
Missing link:
Science – Policy Interface
Scientific domain
Policy domain
Define research questions
Generate research results
Define policy questions
Decide policy solutions
Common platform:
- access to research actors
- tools for assessment
- tools for communication
- accessible results
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HENVINET Expert Consultation: Health and Policy Implications of Phthalates

Arno C Gutleb, Karin E Zimmer, Solveig Ravnum, Martin Krayer von Krauss, Erik Ropstad, Jan L Lyche, Janneche U Skaare, Gunnar S Eriksen, Albertinka J Murk, Janna G Koppe, Aileen Yang, Alena Bartonova, Hans Keune

Figure from: www.chemicalbodyburden.org

HENVINET HEALTH AND ENVIRONMENT NETWORK · SIXTH FRAMEWORK PROGRAMME · Centre de Recherche Public Gabriel Lippmann · Veterinærinstituttet National Veterinary Institute · WAGENINGEN UNIVERSITY · Universiteit Antwerpen · WORLD HEALTH ORGANIZATION EUROPE · NILU · VETERINARIA NORDICA

Outline

- Introduction and aim
- Methodology
  - Cause-effect diagram
  - Expert selection
  - Questionnaires
  - Expert Workshop
  - Policy brief
- Results and recommendations
- Method evaluation
  - Research scientists
  - Stakeholders/policy makers

Introduction

Henvinet aim: Review, interpret policy relevance of and disseminate knowledge on environmental health issues for a wider use by different stakeholders and to support informed policy making.

➔ Work package 1: Review and identify current scientific work in four priority topics:
- Asthma and allergy
- Cancer
- Neurodevelopmental disorders
- Endocrine disrupting effects

➔ Topic group 4: Endocrine disrupting compounds:
- Phthalates
- Brominated flame retardants:
  - Decabromodiphenyl ether (decaBDE)
  - Hexachlorocyclododecane (HBCD)

Phthalates

Review article generated: All different aspects of phthalates from production and use to potential health implications:

J Toxicol Environ Health B Crit Rev. 2009 Apr;12(4):225-49.
Reproductive and developmental toxicity of phthalates.
Lyche JL, Gutleb AC, Bergman A, Eriksen GS, Murk AJ, Ropstad E, Saunders M, Skaare JU.

To fulfil the aims of Henvinet; …disseminate knowledge for a wider use by stakeholders and policy makers…

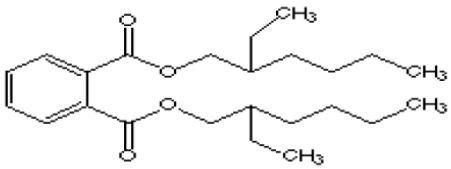
➔ Expert consultation

AIMS

-To identify knowledge gaps and the scientific confidence in the current knowledge on the different aspects of phthalates from production and use to potential impact on health.
- To pinpoint priorities for further action and to arrive at a final expert advice for policy makers

Phthalates

- Widely used as plasticizers in polyvinyl chlorides products; food packaging, medical devices. Solvents in cosmetics etc
- Not chemically bound, easily released - human exposure
- Not bioaccumulating but continuous exposure through ingestion of contaminated food, inhalation/indoor air, cosmetics etc.
- Endocrine disrupting properties
- Animal studies high exposure: reproductive toxicity, foetal death, malformations and more
- Special concern: foetal and infant exposure

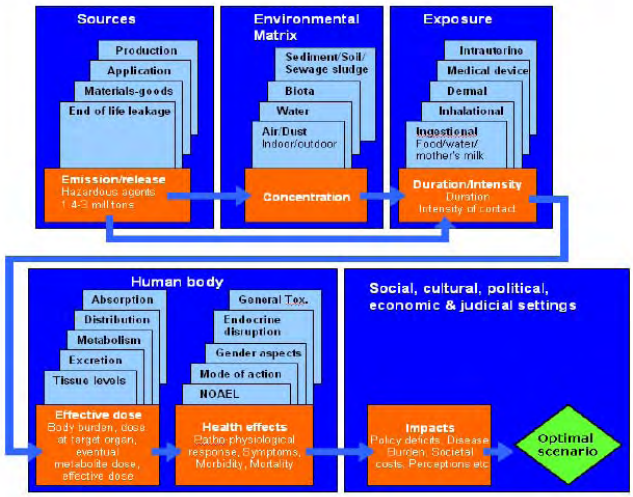


Di(2-ethylhexyl)phthalate (DEHP)

Methodology

Focus on di(2-ethylhexyl) phthalate (DEHP)

1. Cause-effect diagram



2. Expert selection:
- Recently published relevant literature
- Known names in the field
- Approach at Eurotox 2008

3. Questionnaire 1 (n=15)
- Based on cause-effect diagram and review paper
- Aimed to identify scientists' confidence in current knowledge and potential knowledge gaps
- Questions for all aspects of phthalates

2009 January February March

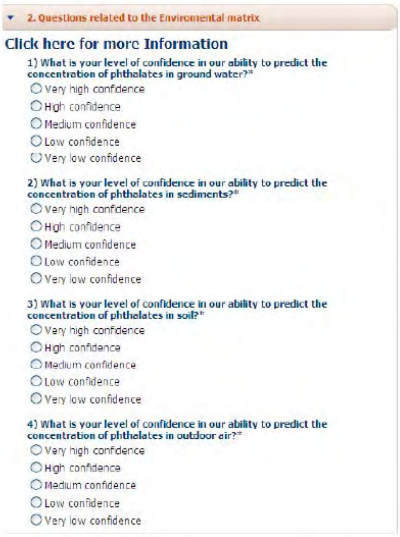
4. Questionnaire 2 (n=6)
- Define implications of results of Q1 for policy and health
- Priorities for further action identified

5. Workshop (n=6)
- Discussion of results of Q2
- Policy advice

6. Policy brief
-"Summary" of workshop
- Experts reviewed and commented

2009 April May June-November

Questionnaire 1


2. Questions related to the Environmental matrix

Click here for more Information

1) What is your level of confidence in our ability to predict the concentration of phthalates in ground water?*
- Very high confidence
- High confidence
- Medium confidence
- Low confidence
- Very low confidence

2) What is your level of confidence in our ability to predict the concentration of phthalates in sediments?*
- Very high confidence
- High confidence
- Medium confidence
- Low confidence
- Very low confidence

3) What is your level of confidence in our ability to predict the concentration of phthalates in soil?*
- Very high confidence
- High confidence
- Medium confidence
- Low confidence
- Very low confidence

4) What is your level of confidence in our ability to predict the concentration of phthalates in outdoor air?*
- Very high confidence
- High confidence
- Medium confidence
- Low confidence
- Very low confidence

Workshop-discussion of Q2 results

Timings	Topics
08.30 – 12.00	**Phthalates**
08:30 – 09.00	Registration for Phthalates WS at WHO reception
09.00 – 09.10	Welcome & introduction
09.10 – 09.30	Results of first evaluation
09:30 – 09.55	What are the 5 priority elements in the diagram?
09.55 – 10.20	What action is justified by the current level of evidence?
10.20 – 10.30	Break
10.30 – 10.55	Will research yield decisive knowledge within the next five years?
10.55 – 11.20	Are effective policy actions technically feasible?
11.20 – 11.45	Does current knowledge justify policy (in-)action?
11.45 – 11.55	**Reflections on the process**
11.55 – 12.00	**Conclusion**

7. Evaluation by stakeholders/policy makers (2010):
- Policy briefs on phthalate and BFRs sent to around 40 persons
- Short questionnaire to map the usefulness of the briefs for target audience


HENVINET Policy Brief:

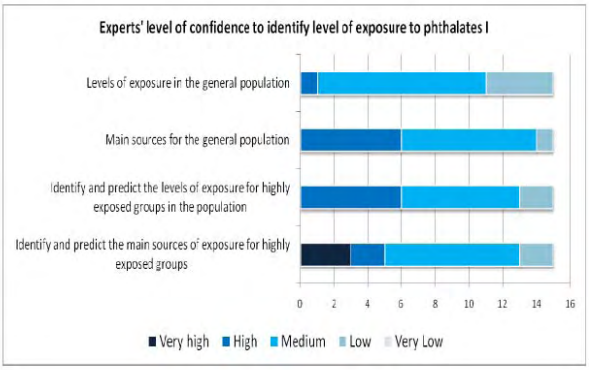
Expert Elicitation on Health Implications of Phthalates

Arno C Gutleb

Policy context

Results

Questionnaire 1 (n=15)



Consensus measure

Mean	STD	CNS	Rank (CNS)
2.80	0.56	0.83	3
3.33	0.62	0.79	7
3.27	0.70	0.76	8
3.40	0.99	0.66	18

Very low = 1
Low = 2
Medium = 3
High = 4
Very high = 5

Consensus Index Method (Tasle and Wlerman, 2007) built on Shannon entropy

Questionnaire 2 and workshop (n=6)

Top 3 priority cause-effect diagram elements (their influence on the extent of the health risk):

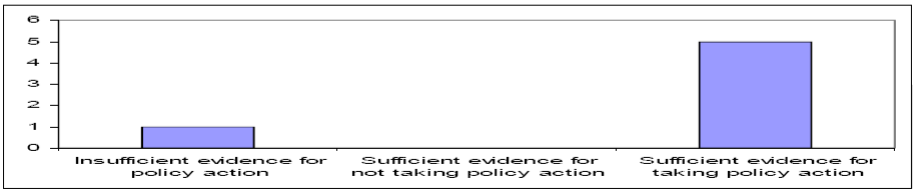
1. Intrauterine exposure: vulnerability of the foetus, sensitive window
2. Reproductive toxicity: observed increasing reproductive abnormalities
3. Exposure from medical devices: known signif exposure contribution

Type of action justified by available evidence:

1. More research
2. More research
3. Monitoring and restricting activities

Conducting more scientific research will yield decisive knowledge within five years
Medium-Very High Confidence

Political actions to manage the health risks feasible within the next five years
Low – Very High Confidence



Conclusion and recommendations

- More research warranted
  - especially on the priority elements 1 and 2
  - on mixture effects of phthalates
  - on alternative substances
- Better European research collaboration, more research should be required from industry
- Sufficient evidence and existing substitutes justify ban in medical devices
- Most experts in the panel: current knowledge legitimizes general restrictions on use

Method evaluation

Q1 and 2 respondents: Research scientists (experts)	"Q3"-respondents: Stakeholders/policy makers (n=3)
÷ • Lacked information on aim • Felt uncomfortable answering the questions of Q1 (tick a box and not possible to comment) • Did not feel like an "expert" in all different areas of the field • Felt uncomfortable giving policy advice, this is not a thorough risk assessment	÷ • Too general to be used directly for decision making • Policy brief not clear enough regarding certain aspects (exposure from food, breastfeeding, ban)
+ • Most important issues highlighted • Raised important questions-a good starting point for risk assessment • Useful to better understand how different experts perceive and understand different aspects of risk assessment process • Interesting to take part in the discussions	+ • A good basis for more in depth analyses that can be used for decision making • The policy briefs are concise and may be helpful for policy makers
	Preliminary conclusions • Useful as a a rapid assessment tool to identify priorities for research and policy recommendations • Can be refined and improved, and the aim made clearer for selected experts

Acknowledgments

All experts, stakeholders and policy makers involved in this project are acknowledged for their valuable and essential contributions (those who preferred to be acknowledged with name, are listed):

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Michael Kobernus

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The "HENVINET" approach
-to knowledge quality evaluation-

Hans Keune, University of Antwerp
Martin Krayer von Krauss, WHO

Brussels, April 2010

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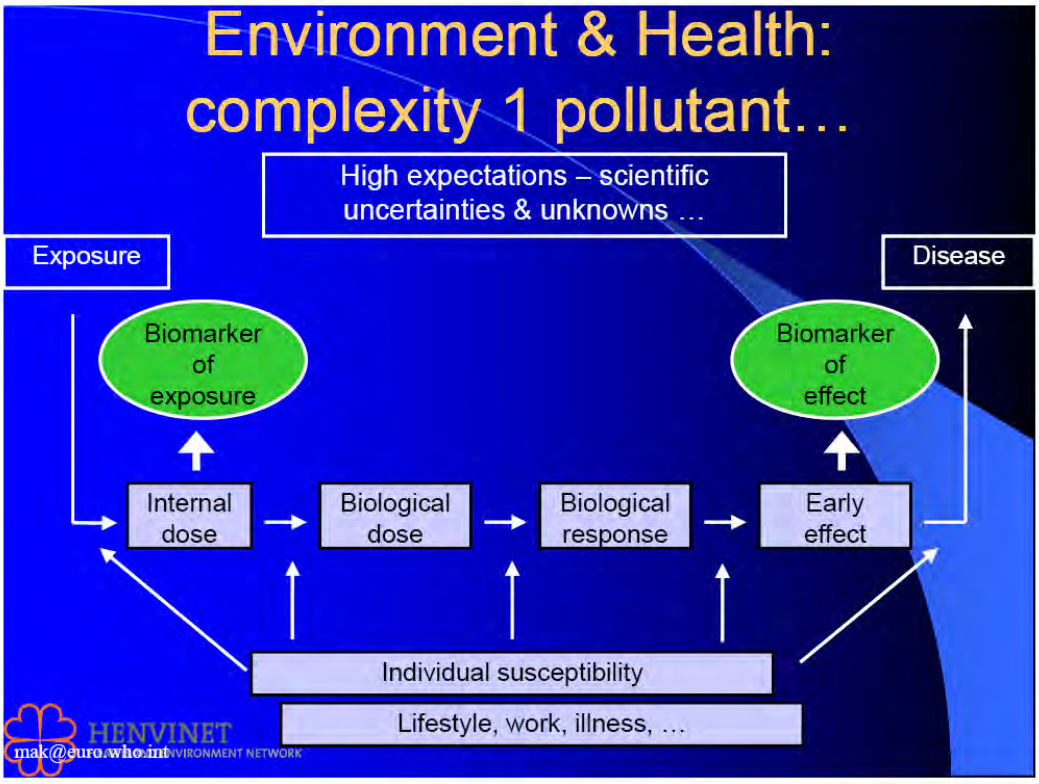
Environment & Health: complexity 1 pollutant…



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How can we deal with complexity – limited knowledge

Funtowicz et al. 1999

- "*A picture of reality which reduces complex phenomena to their simple, atomic elements can be very effective to controlled experimentation and abstract theory building. However it is not best suited for the tasks of environmental policy today. The scientific mind-set fosters expectations of regularity, simplicity and certainty in the phenomena and in our interventions. But these can inhibit the growth of our understanding of the problems and of appropriate methods to their solution*"

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Data ≠ knowledge

- "*Knowledge is interpreted data. This leads us to the next big question: what is involved in interpretation, and who (or what) can do it?*"

Cilliers (2005)

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Precautionary science

- Risk assessment must become less reductionist and less focused on obtaining complete information on all aspects of individual hazards. Statistical acceptance of the null hypothesis should never be interpreted as proof of safety.
- (…) and a dynamic interface must be nurtured between science and decisionmaking, with stakeholder participation.

Grandjean (2005)

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Waiting for Godot

The problem solving perspective is especially important, as we notice that both in science and in policy making there is a tendency to wait for Godot: perfect and undisputed knowledge/evidence creating a paralysis by analysis. We need more focus on problem solving while taking into account that knowledge of complex issues will by definition be hampered by imperfections, as otherwise nothing really changes or only slowly.

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Intergovernmental Panel on Climate Change IPCC

- Science + politics
  - Smoke screen science: *climate sceptics*
  - Political support process but also political pressure on conclusions
- Consensus science
- Estimation science (confidence levels) …

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International Agency for Research on Cancer

Monograph Volume 15-22 Year 1977-1980	Huff (2002)					
	Public Health	*Industry*	*?*	*Observers*		
				PH	*I*	*?*
Number (total)	93	11	17	13	18	6
Percentages	77%	9%	14%	35%	49%	16%
Chairs	8	0	0			
Vice-Chairs	6	2	0			
Monograph Volume 62-79 Year 1995-2001	***Alignment According to the Author***					
	Public Health	*Industry*	*?*	*Observers*		
				PH	*I*	*?*
Number (total)	76	83	99	6	35	10
Percentage	29%	32%	38%	12%	69%	20%
Chairs	5	6	1			
Vice-Chairs	7	2	0			

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WP 1 history

- Objective: Review methodologies, findings and conclusions of relevant ongoing and recently completed research projects in order to provide support and information for the implementation of the European Environment and Health Action Plan.
- 4 topic groups: Cancer, Endocrine disrupter mediated diseases, Respiratory disorders, Neurodevelopmental disorders

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Knowledge Quality Assessment -Main goals-

- Identify knowledge gaps
- Identify areas of (dis)agreement amongst experts
- Make the basis for this disagreement transparent
- Identify policy options to respond to the problem

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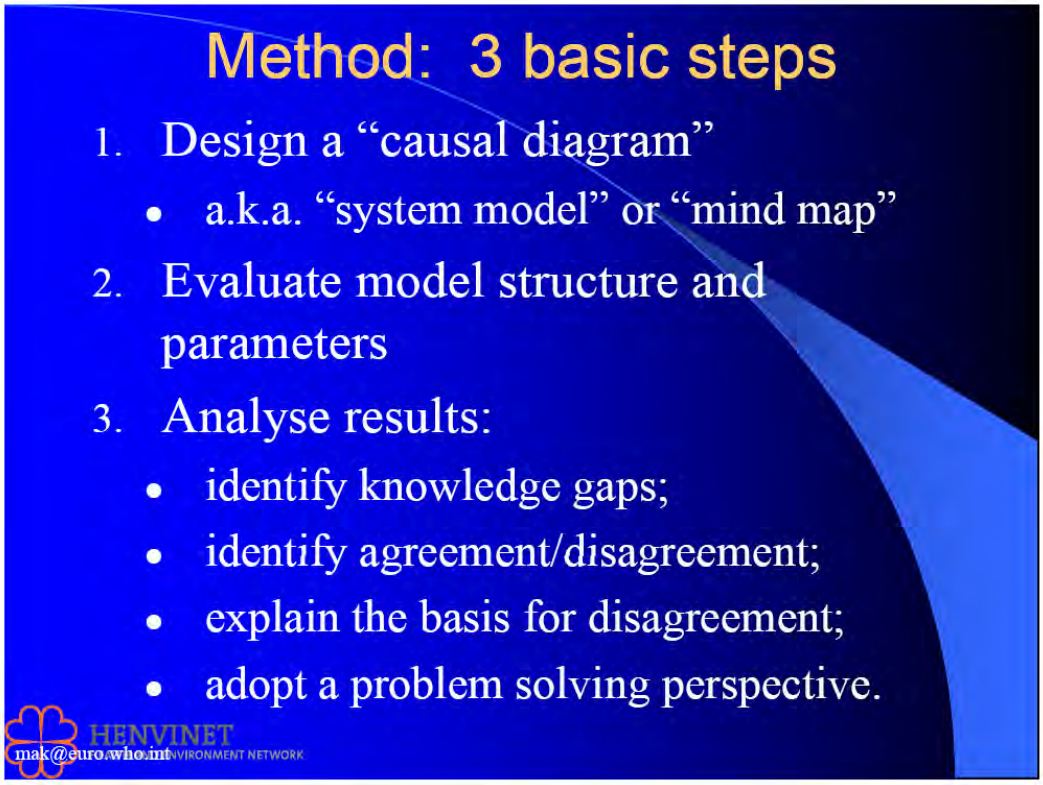
Method: 3 basic steps
1. Design a "causal diagram"
• a.k.a. "system model" or "mind map"
2. Evaluate model structure and parameters
3. Analyse results:
• identify knowledge gaps;
• identify agreement/disagreement;
• explain the basis for disagreement;
• adopt a problem solving perspective.
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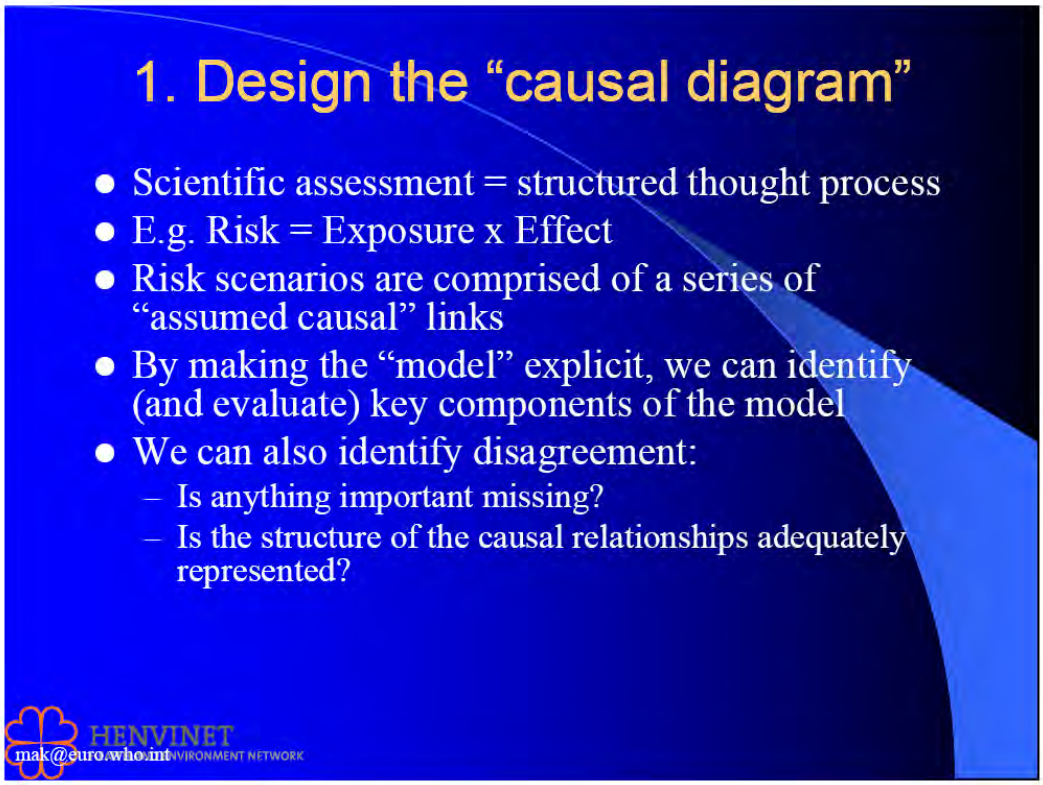
1. Design the "causal diagram"
• Scientific assessment = structured thought process
• E.g. Risk = Exposure x Effect
• Risk scenarios are comprised of a series of "assumed causal" links
• By making the "model" explicit, we can identify (and evaluate) key components of the model
• We can also identify disagreement:
– Is anything important missing?
– Is the structure of the causal relationships adequately represented?
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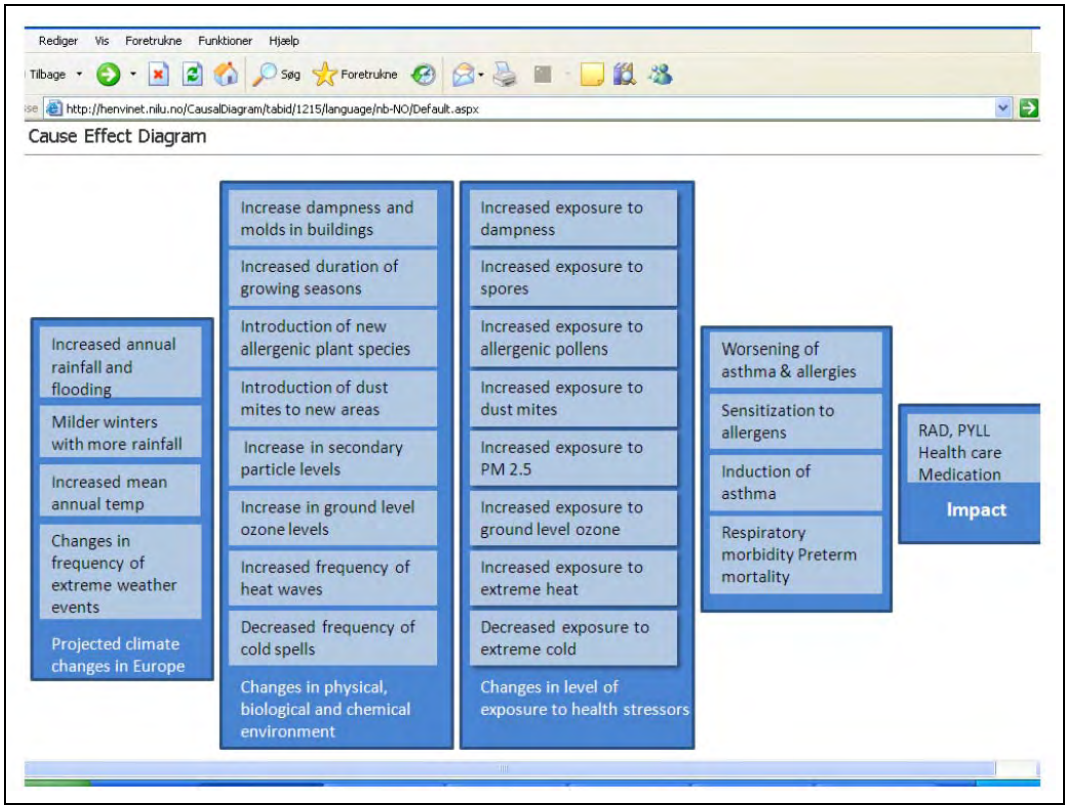
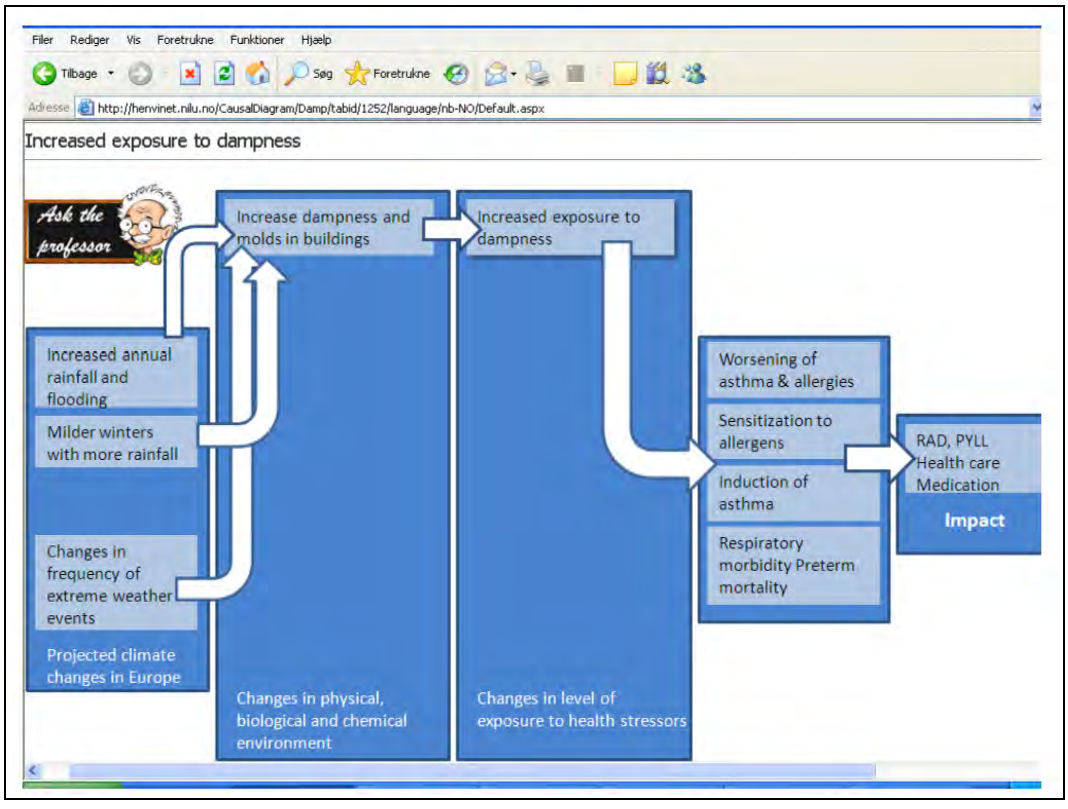

Rediger Vis Foretrukne Funktioner Hjælp
Tilbage Søg Foretrukne
http://henvinet.nilu.no/CausalDiagram/tabid/1215/language/nb-NO/Default.aspx
Cause Effect Diagram
Increased annual rainfall and flooding
Milder winters with more rainfall
Increased mean annual temp
Changes in frequency of extreme weather events
Projected climate changes in Europe
Increase dampness and molds in buildings
Increased duration of growing seasons
Introduction of new allergenic plant species
Introduction of dust mites to new areas
Increase in secondary particle levels
Increase in ground level ozone levels
Increased frequency of heat waves
Decreased frequency of cold spells
Changes in physical, biological and chemical environment
Increased exposure to dampness
Increased exposure to spores
Increased exposure to allergenic pollens
Increased exposure to dust mites
Increased exposure to PM 2.5
Increased exposure to ground level ozone
Increased exposure to extreme heat
Decreased exposure to extreme cold
Changes in level of exposure to health stressors
Worsening of asthma & allergies
Sensitization to allergens
Induction of asthma
Respiratory morbidity Preterm mortality
RAD, PYLL
Health care
Medication
Impact


Filer Rediger Vis Foretrukne Funktioner Hjælp
Tilbage Søg Foretrukne
Adresse http://henvinet.nilu.no/CausalDiagram/Damp/tabid/1252/language/nb-NO/Default.aspx
Increased exposure to dampness
Ask the professor
Increase dampness and molds in buildings
Increased exposure to dampness
Increased annual rainfall and flooding
Milder winters with more rainfall
Changes in frequency of extreme weather events
Projected climate changes in Europe
Changes in physical, biological and chemical environment
Changes in level of exposure to health stressors
Worsening of asthma & allergies
Sensitization to allergens
Induction of asthma
Respiratory morbidity Preterm mortality
RAD, PYLL
Health care
Medication
Impact

Knowledge Quality Assessment -3 basic steps-

1. Make the causal diagram explicit
2. Evaluate important model structure and parameters
3. Analyse results:
   - identify knowledge gaps;
   - identify agreement/disagreement;
   - explain the basis for disagreement;
   - adopt a problem solving perspective.

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"Evaluate"???

- Funtowicz and Ravetz 1990 proposed to evaluate quality using "pedigree criteria"
- IPCC, 2007

Table 1. Degree of confidence in projections (IPCC, 2007)

Qualifying terminology	Interpretive Guidance
Very high confidence	At least 9 out of 10 chance of being correct
High confidence	About 8 out of 10 chance
Medium confidence	About 5 out of 10 chance
Low confidence	About 2 out of 10 chance
Very low confidence	Less than a 1 out of 10 chance

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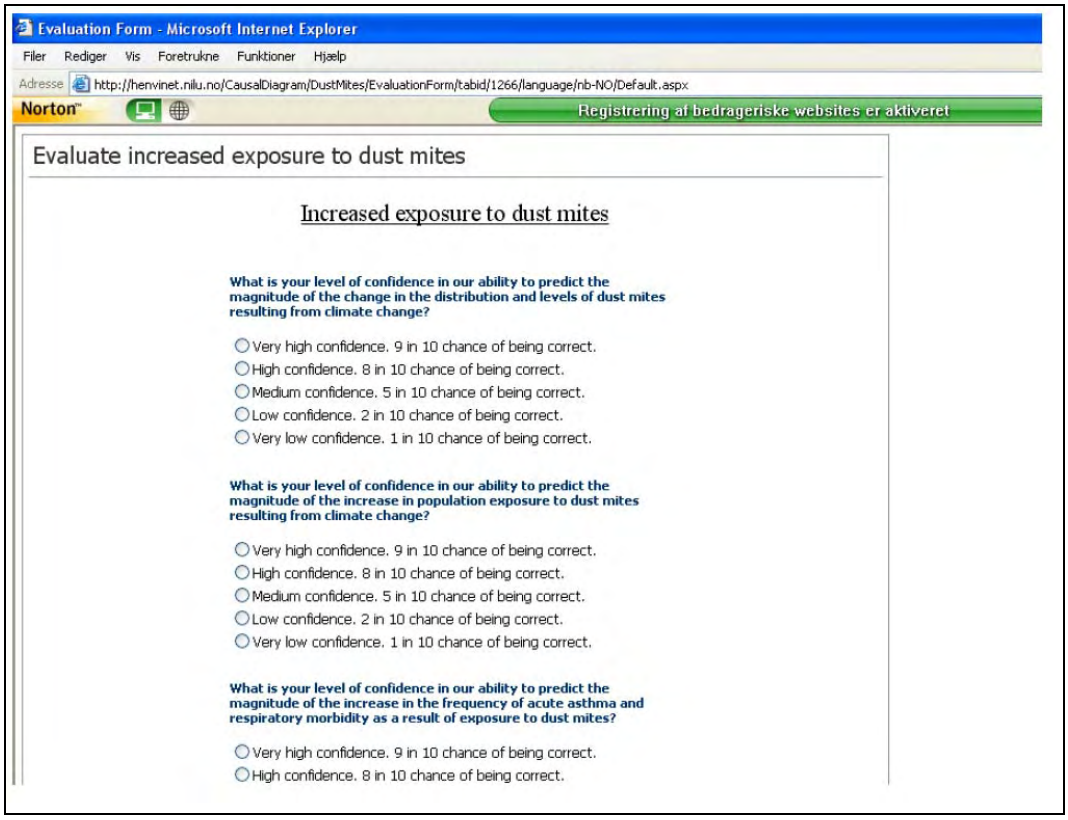
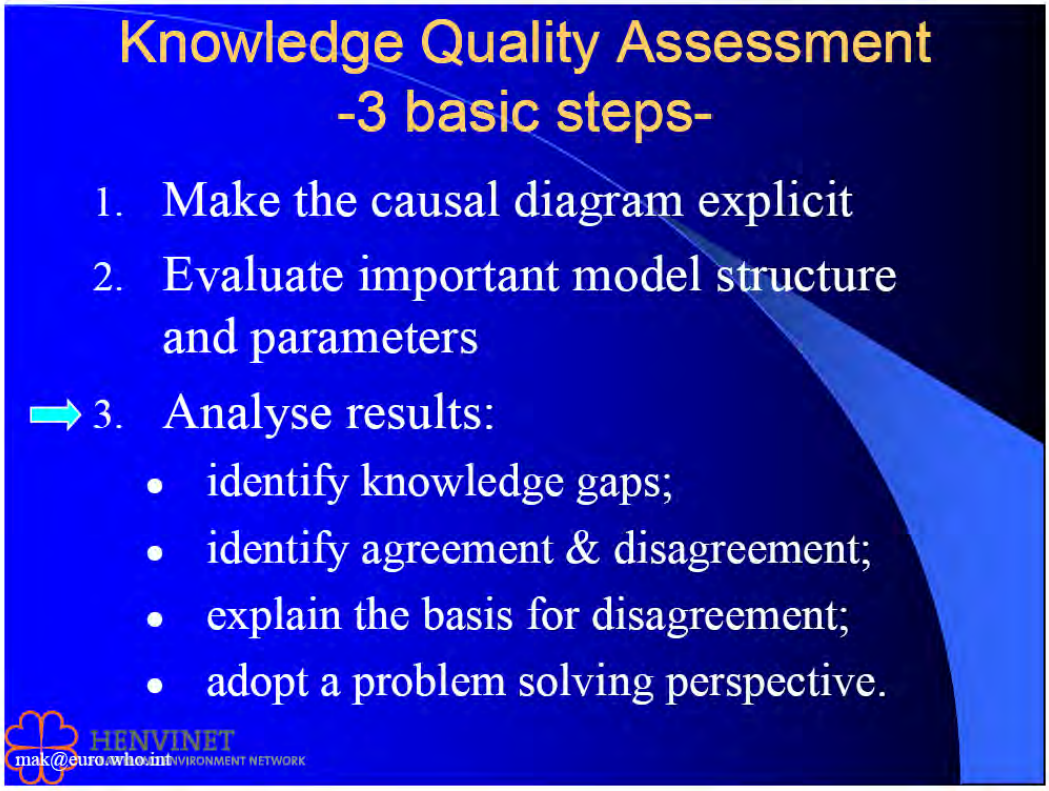

Evaluation Form - Microsoft Internet Explorer
Filer Rediger Vis Foretrukne Funktioner Hjælp
Adresse http://henvinet.nilu.no/CausalDiagram/DustMites/EvaluationForm/tabid/1266/language/nb-NO/Default.aspx
Norton
Registrering af bedrageriske websites er aktiveret
Evaluate increased exposure to dust mites
Increased exposure to dust mites
What is your level of confidence in our ability to predict the magnitude of the change in the distribution and levels of dust mites resulting from climate change?
Very high confidence. 9 in 10 chance of being correct.
High confidence. 8 in 10 chance of being correct.
Medium confidence. 5 in 10 chance of being correct.
Low confidence. 2 in 10 chance of being correct.
Very low confidence. 1 in 10 chance of being correct.
What is your level of confidence in our ability to predict the magnitude of the increase in population exposure to dust mites resulting from climate change?
Very high confidence. 9 in 10 chance of being correct.
High confidence. 8 in 10 chance of being correct.
Medium confidence. 5 in 10 chance of being correct.
Low confidence. 2 in 10 chance of being correct.
Very low confidence. 1 in 10 chance of being correct.
What is your level of confidence in our ability to predict the magnitude of the increase in the frequency of acute asthma and respiratory morbidity as a result of exposure to dust mites?
Very high confidence. 9 in 10 chance of being correct.
High confidence. 8 in 10 chance of being correct.


Knowledge Quality Assessment
-3 basic steps-
1. Make the causal diagram explicit
2. Evaluate important model structure and parameters
3. Analyse results:
• identify knowledge gaps;
• identify agreement & disagreement;
• explain the basis for disagreement;
• adopt a problem solving perspective.
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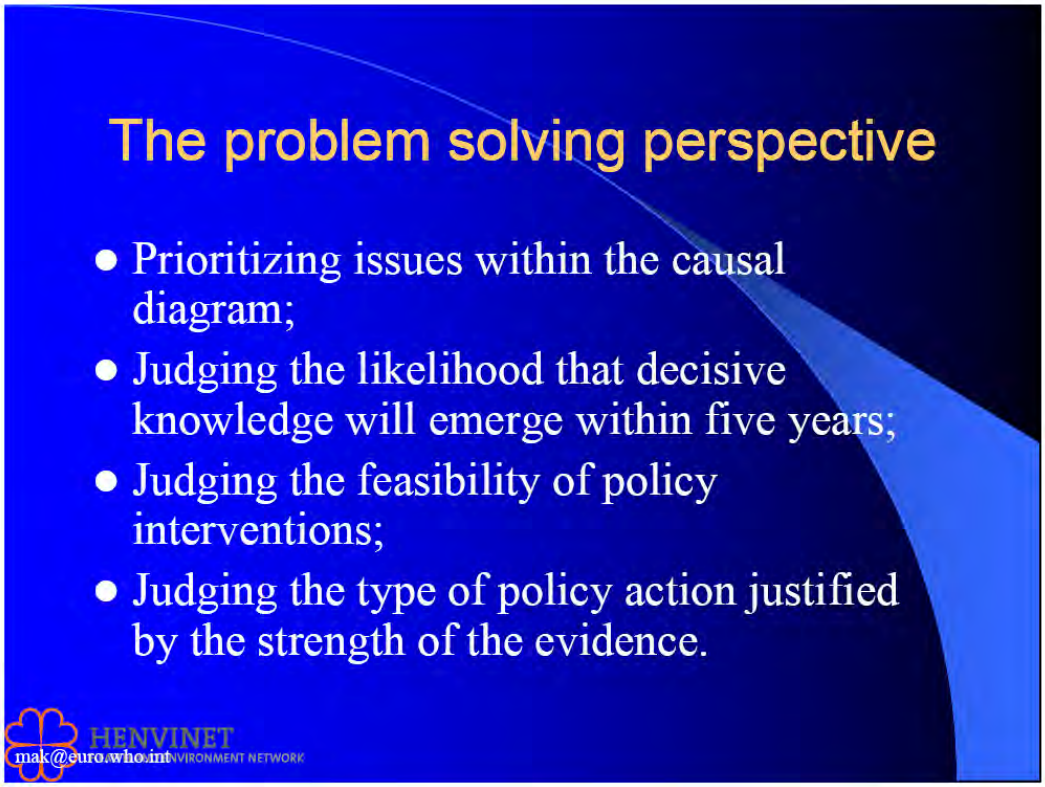
The problem solving perspective
Prioritizing issues within the causal diagram;
Judging the likelihood that decisive knowledge will emerge within five years;
Judging the feasibility of policy interventions;
Judging the type of policy action justified by the strength of the evidence.
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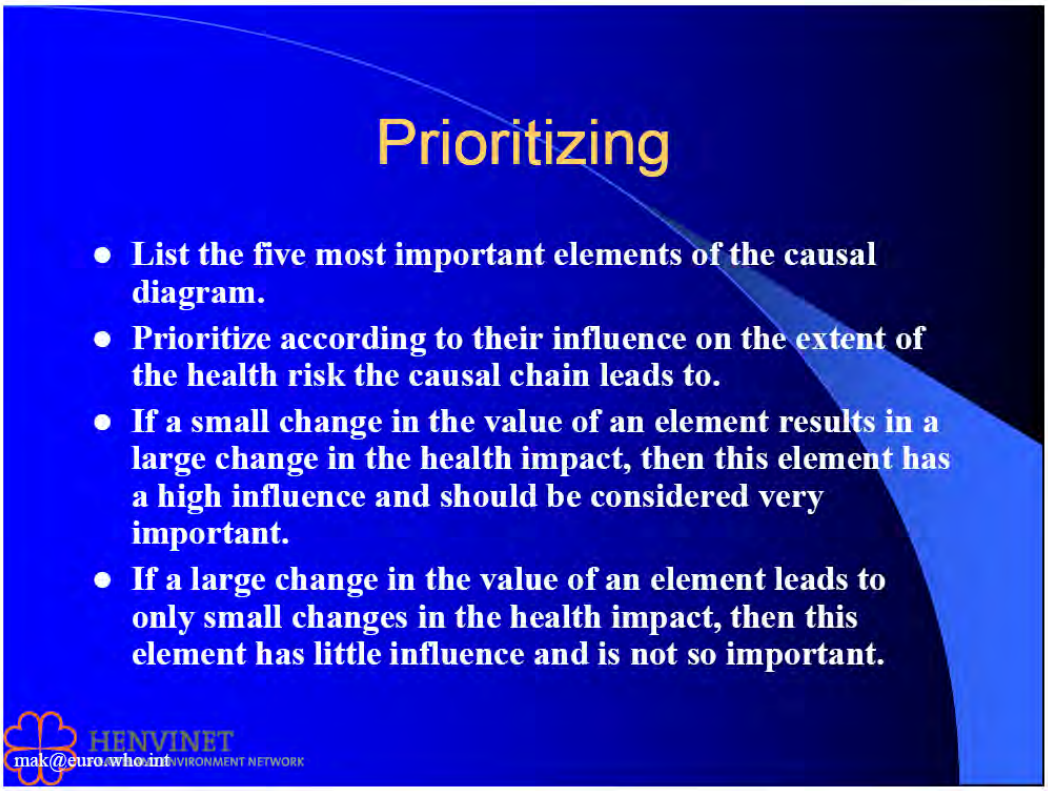
Prioritizing
List the five most important elements of the causal diagram.
Prioritize according to their influence on the extent of the health risk the causal chain leads to.
If a small change in the value of an element results in a large change in the health impact, then this element has a high influence and should be considered very important.
If a large change in the value of an element leads to only small changes in the health impact, then this element has little influence and is not so important.
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Likelihood of decisive knowledge emerging

- Decisive knowledge is understood as knowledge that would clearly dictate which type of policy action is to be undertaken (or not)

Insert checkmark in appropriate box					Please justify your answer. Also, if you expect decisive knowledge to become available, please specify which of the five causal element(s) you selected in question 1 this knowledge would most likely pertain to.
Very high	High	Medium	Low	Very low	

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Feasibility of policy interventions

- *Are effective policy actions technically feasible now, or to what extent would we expect them to become feasible within the next 5 years?*

Insert checkmark in appropriate box					Please justify your answer. Also, if you expect decisive knowledge to become available, please specify which of the five causal element(s) you selected in question 1 this knowledge would most likely pertain to.
Very high	High	Medium	Low	Very low	

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Policy action justified

- Different strengths of evidence justify different policy intervention.
- A high level of evidence is required to justify banning a substance, while a lower level of evidence might be sufficient to justify initiating a targeted monitoring program or a mandatory labelling scheme.

Causal elements*	*Conduct Scientific research*					*Policy action* Concrete action by policymakers				Please explain the basis for your choice. If you have any specific scientific studies or hypotheses, please specify them here. If there are any broad implications for science, please explain. If you have any specific policy actions in mind, please specify them here.
	Fundamental science to gain knowledge about the problem			*Applied science* to gain knowledge about solving the problem						
	More data	Better data	Better under-standing	Developing interventions	Experimenting with interventions in practice	Monitor-ing	Awareness raising	Restricting risk activities	Prohibiting risk activities	
1.										
2.										
3.										
4.										
5.										

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Internal reflections

- Design causal diagram
- Confidence levels
- Analysis results
- Q policy interpretation
- Expert workshop
- Analysis results
- Reporting
- Fundamental questions

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Design causal diagram

- Pro:
  - Stimulating to think about the whole picture; Linear layout is clear to most people
- Con:
  - More difficult in case of a broad topic; simplification of reality; not all expertise in the team wrt all relevant issues

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Confidence levels

- Evaluation of the approach:
  - Difficult to judge: no reference for this approach
  - Potential difference from IPCC type of expertise
- Pro:
  - Easy; not time consuming; triggers thinking; easy to visualize areas of disagreement
- Con:
  - Experts were reluctant to answer based on the info and gut feeling; absence of don't know button; questions and task understood differently by different experts; bias by the order of the questions

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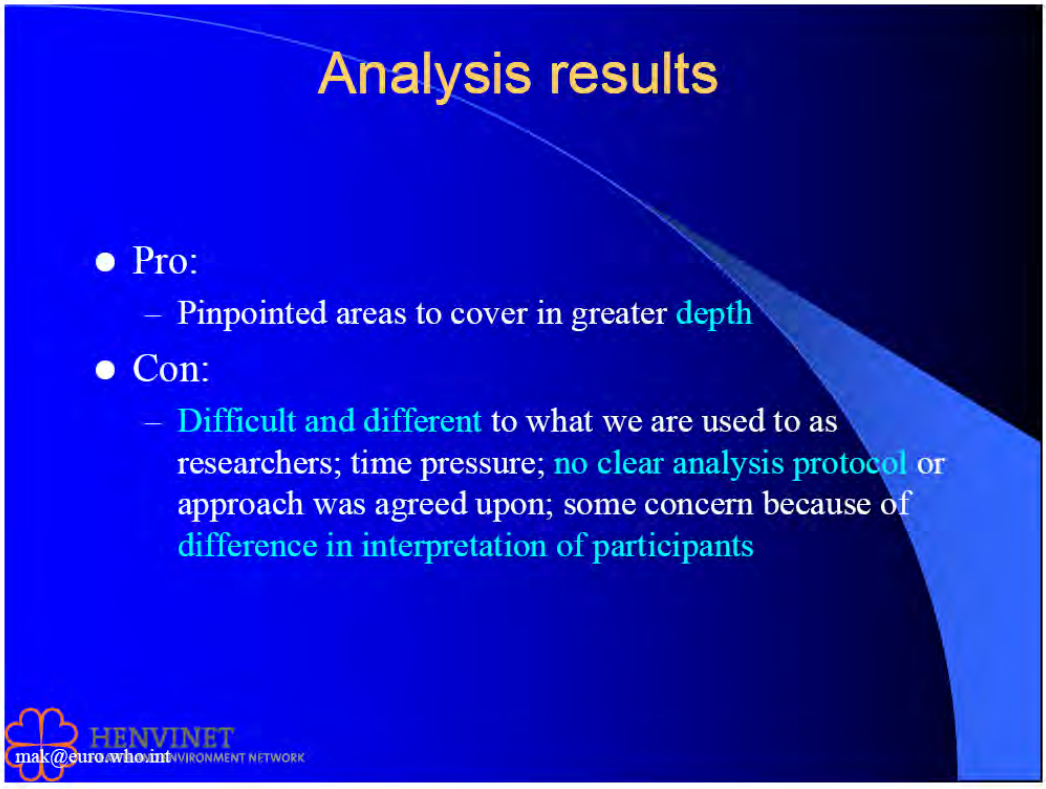
Analysis results
Pro:
Pinpointed areas to cover in greater depth
Con:
Difficult and different to what we are used to as researchers; time pressure; no clear analysis protocol or approach was agreed upon; some concern because of difference in interpretation of participants
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Q policy interpretation
Pro:
Quite clear; triggered thinking; intentions were clear to at least some experts
Con:
Questions could be better adapted to specific topic
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Expert workshop

- Pro:
  - Good in connection with conference; fruitful exercise; good questions; good composition expert group on age and experience; opportunity to go in-depth; exchange of opinions and knowledge;
- Con:
  - Bias because of connection with conference; more structure in discussion (e.g. voting); composition expert group biased on geographical background and scientific expertise; some dominated discussion; too much focus on methodology; too much focus on opinions of limited group and dominating experts; difficult to attract participants

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Analysis results

- Pro:
  - Interesting; experts could recognize their views;
- Con:
  - Difficult: not quantitative and different from our expertise; takes a lot of time to get all feedback on concept report from participants, slows down the process; sometimes difficulty for participants to understand the analysis

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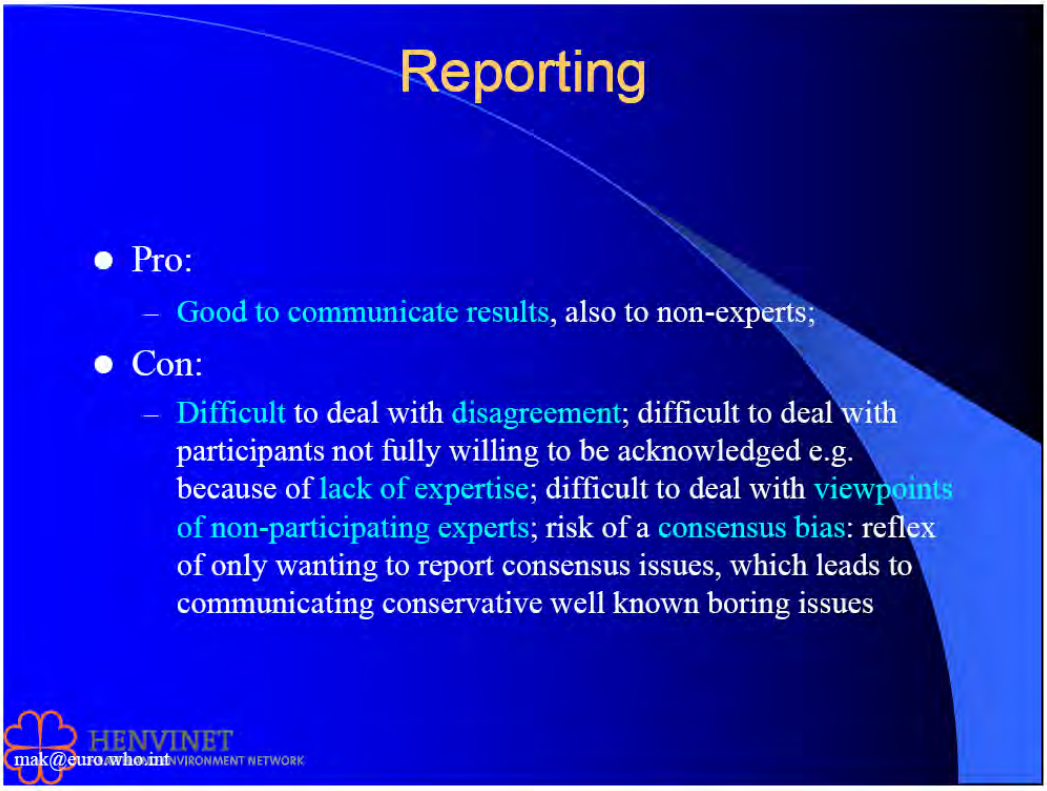
Reporting
Pro:
Good to communicate results, also to non-experts;
Con:
Difficult to deal with disagreement; difficult to deal with participants not fully willing to be acknowledged e.g. because of lack of expertise; difficult to deal with viewpoints of non-participating experts; risk of a consensus bias: reflex of only wanting to report consensus issues, which leads to communicating conservative well known boring issues
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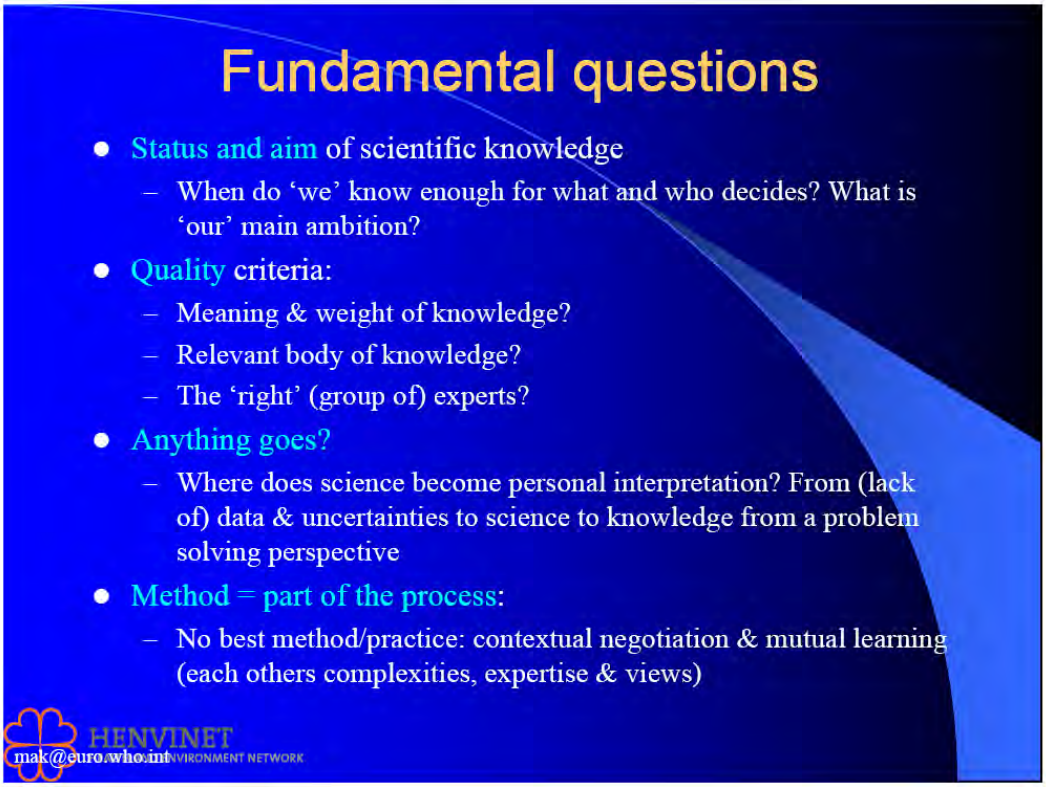
Fundamental questions
Status and aim of scientific knowledge
When do 'we' know enough for what and who decides? What is 'our' main ambition?
Quality criteria:
Meaning & weight of knowledge?
Relevant body of knowledge?
The 'right' (group of) experts?
Anything goes?
Where does science become personal interpretation? From (lack of) data & uncertainties to science to knowledge from a problem solving perspective
Method = part of the process:
No best method/practice: contextual negotiation & mutual learning (each others complexities, expertise & views)
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The strategy proposal for Stakeholder communication

Peter van den Hazel, M.D., M.P.H.

HENVINET
HEALTH AND ENVIRONMENT NETWORK

HENVINET

Purpose

- Achieving success in engaging with external stakeholders
- Capture a higher level of feedback on our service provision
- Looking at ways to better engage with those users
- Engaging of professionals in the website portal

Broad Objective

HENVINET seeks to ensure that it provides the services its users want, *when* they want them *in the way* in which they want to receive them.

Establishing a broad programme of knowledge exchange and consultation of individuals and groups on a regular basis.

The participation of the users is crucial for any activity within the network.

Portal will become self-supporting by the input from its users.

Situation analysis

HENVINET's principal users are:

Identification of key stakeholder sectors at Regional, National and European levels. They include:

- Data providers
- Research users
- Policy users
- Media users
- Public and private users
- Educational users

Market demographics and needs

Geographics

- The potential users based worldwide at research institutes or policymakers at different levels of authorities.
- Number of potential interested stakeholders. In Europe: around 27,000 potential interested stakeholders. Worldwide manyfold. Expected number of targeted participants to sustain the portal is 2,000.

Demographics

- The age range between 21 and 65. Most persons will have a higher education from college to university.

Potential Market demographics

- How to involve policy makers?
- How to involve scientists?
- How to involve young researchers?
- Include students

Potential communication tools

Classic approach

- Leaflets, brochures
- Workshops, conferences
- Articles

What did we do?

...build social media

...address a social network

...HOW?

We created….

….. a social network service

What is Social Media?

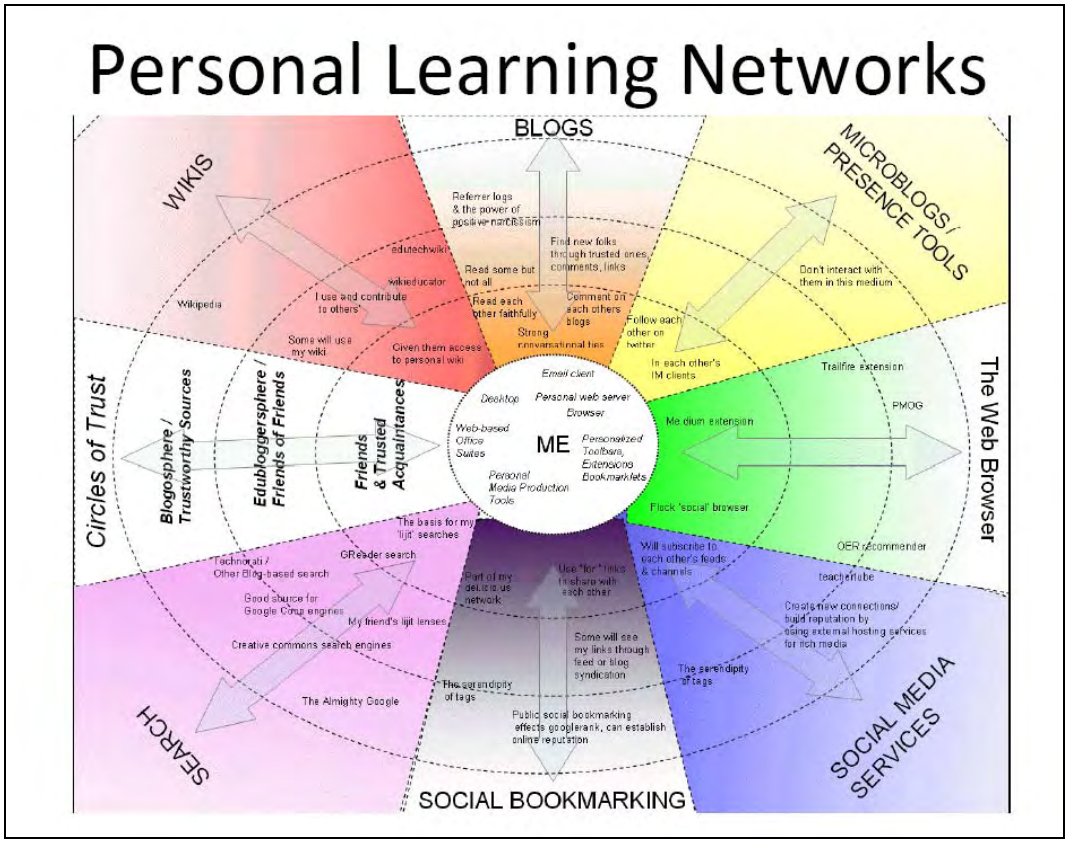
- a platform for interaction and relationships
- conversation empowered by technology

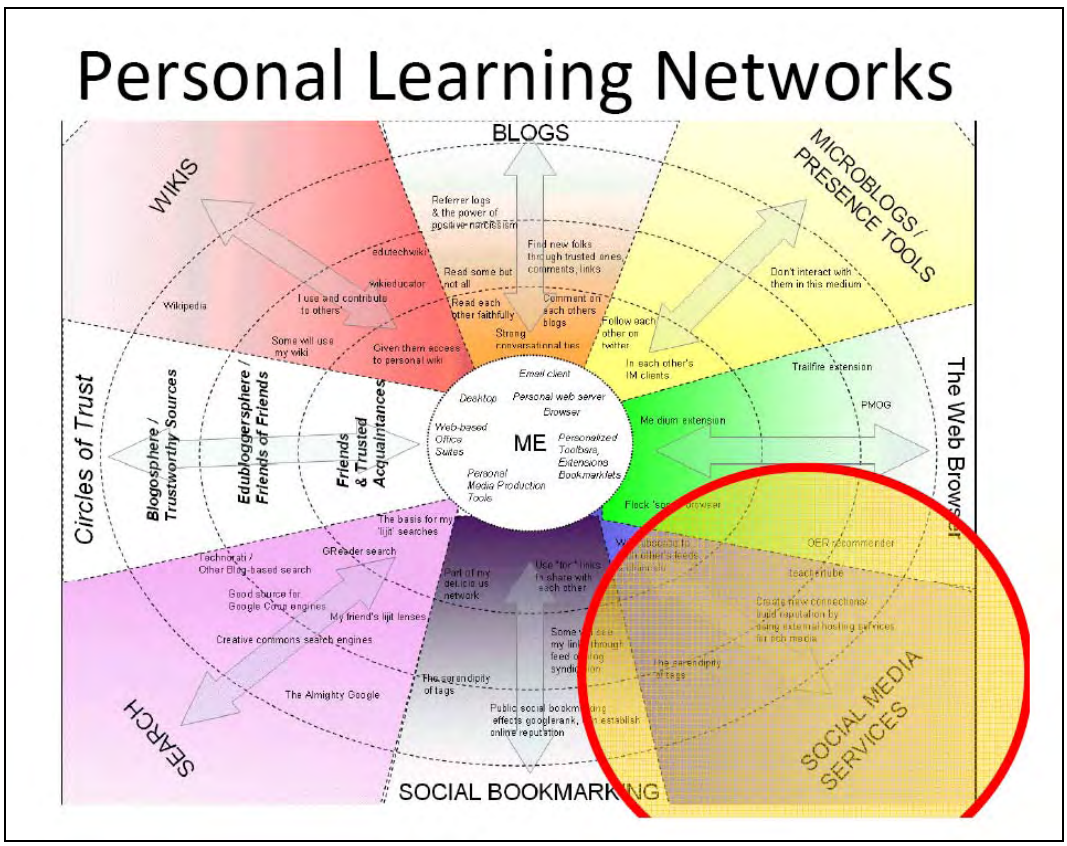
What is a social network?

- A group of interdependent people
- United by a common interest or cause

What is a social network service?

- an online space where a group convenes
- a conversation enabled by internet technologies


Personal Learning Networks
BLOGS
WIKIS
MICROBLOGS / PRESENCE TOOLS
The Web Browser
SEARCH
SOCIAL MEDIA SERVICES
SOCIAL BOOKMARKING
Circles of Trust
Blogosphere / Trustworthy Sources
Edublogger sphere / Friends of Friends
Friends & Trusted Acquaintances
ME
Email client
Desktop
Personal web server
Browser
Web-based Office Suites
Personalized Toolbars, Extensions Bookmarklets
Personal Media Production Tools
Referrer logs & the power of positive narcissism
Find new folks through trusted ones, comments, links
Read some but not all
Read each other faithfully
Comment on each others blogs
Strong conversational ties
Follow each other on twitter
Don't interact with them in this medium
In each other's IM clients
Trailfire extension
PMOG
Me dium extension
Flock 'social' browser
OER recommender
teachertube
Will subscribe to each other's feeds & channels
Creats new connections/ build reputation by using external hosting services for rich media
The serendipity of tags
Public social bookmarking effects googlerank, can establish online reputation
Some will see my links through feed or blog syndication
Use "for" links to share with each other
Part of my delicio us network
The basis for my 'lijit' searches
GReader search
Technorati / Other Blog-based search
Good source for Google Coop engines
My friend's lijit lenses
Creative commons search engines
The Almighty Google
eduwiki
wikieducator
Wikipedia
I use and contribute to others'
Some will use my wiki
Given them access to personal wiki


Personal Learning Networks
BLOGS
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SEARCH
SOCIAL MEDIA SERVICES
SOCIAL BOOKMARKING
Circles of Trust
Blogosphere / Trustworthy Sources
Edublogger sphere / Friends of Friends
Friends & Trusted Acquaintances
ME
Email client
Desktop
Personal web server
Browser
Web-based Office Suites
Personalized Toolbars, Extensions Bookmarklets
Personal Media Production Tools
Referrer logs & the power of positive narcissism
Find new folks through trusted ones, comments, links
Read some but not all
Read each other faithfully
Comment on each others blogs
Strong conversational ties
Follow each other on twitter
Don't interact with them in this medium
In each other's IM clients
Trailfire extension
PMOG
Me dium extension
OER recommender
teachertube
The serendipity of tags
Use "for" links to share with each other
Part of my delicio us network
The basis for my 'lijit' searches
GReader search
Technorati / Other Blog-based search
Good source for Google Coop engines
My friend's lijit lenses
Creative commons search engines
The Almighty Google
eduwiki
wikieducator
Wikipedia
I use and contribute to others'
Some will use my wiki
Given them access to personal wiki

From our analysis

Do you think that:

- The portal is the only one in his kind? There are no other specialised portals?
- Could it potentially carry the experience and knowledge of many top specialists in the field of health and environment?

From our analysis

Do you think that:

- Do you have a need for a portal which is flexible in its ability to convey information to a large group?
- Do you have a need for a portal which could connect persons who you would otherwise not be able to know?

From our analysis

Do you have:

- The willingness to participate to build the quick built-up of the content of the portal. This would mean that the image of the portal should be like a cool thing to join.

Do you think that:

- The language might be a barrier to some participants?

From our analysis

Who are the participating stakeholders who encounter similar problems? Stakeholders might inform each other about the potential and power of the portal.

But is this settled scientist, the senior policymaker or the young scientist, the student or junior policy maker.

Marketing activities strategy

The marketing objectives can be divided in:

- get stakeholders to enter the portal;
- get stakeholders to use the portal and its functionalities;
- get stakeholders to get more stakeholders;
- check the quality of the portal use;
- develop a brand image for the environment and health professionals;
- make the portal self supporting.

- The stakeholders should have the feeling that they are 'top'users of the portal if they have plenty of personal 'friends' on the website.
- It might be useful to visualize the other friends of this stakeholder. (see linkedin).

Content

Priority diseases as mentioned by EU Action Plan

And new emerging issues:

Climate change, nanotechnology, etc.

Content

Discussion themes

Raising policy problems

Conferences, workshops, agenda


Themes
Asthma and allergy
Endocrine disruptors
Cancer
Neurodevelopmental


Content
Causal chain approach
Decision Support Tools database
Self-regulated content: questions,policy problems, reviews,

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Joint Research Centre (JRC)

The Institute for Health and Consumer Protection (IHCP)
Science for a healthier life

The HEIMTSA computational toolbox

D. Sarigiannis, A. Gotti, V. Reina

HEIMTSA toolbox

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HEIMTSA Project: broad aims

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1. Quantify as fully as practicable the environmental health effects of policies in various sectors
   - Policies designed to improve health
   - Health effects of policies developed for other reasons
2. Give a fair = unbiased assessment of
   - Uncertainties in what is included
3. Identify priority information/knowledge gaps
   - Priority = having a major influence on answers
4. Enable assessment of environmental health effects of future policies

HEIMTSA toolbox

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Strategy: 'Full chain' approach

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'Full chain' = 'Impact pathway'; from:

i. (changes in) policy; to

ii. (changes in) emissions, to air, soil and water; to

iii. (changes in) pollutant concentrations in different environments; to

iv. (changes in) exposures of individuals and populations (by inhalation, dermal and/or ingestion routes); to

v. (changes in) internal dose at target organs in the body; to

vi. (changes in) health impacts (overall and in sub-populations); to

vii. (changes in) monetary value of health effects

HEIMTSA toolbox

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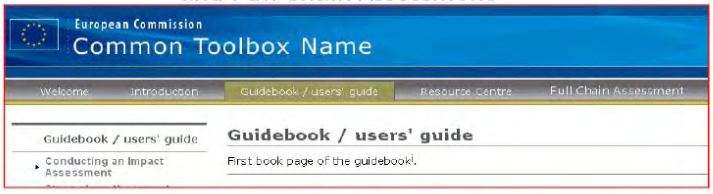
Integrated Toolbox

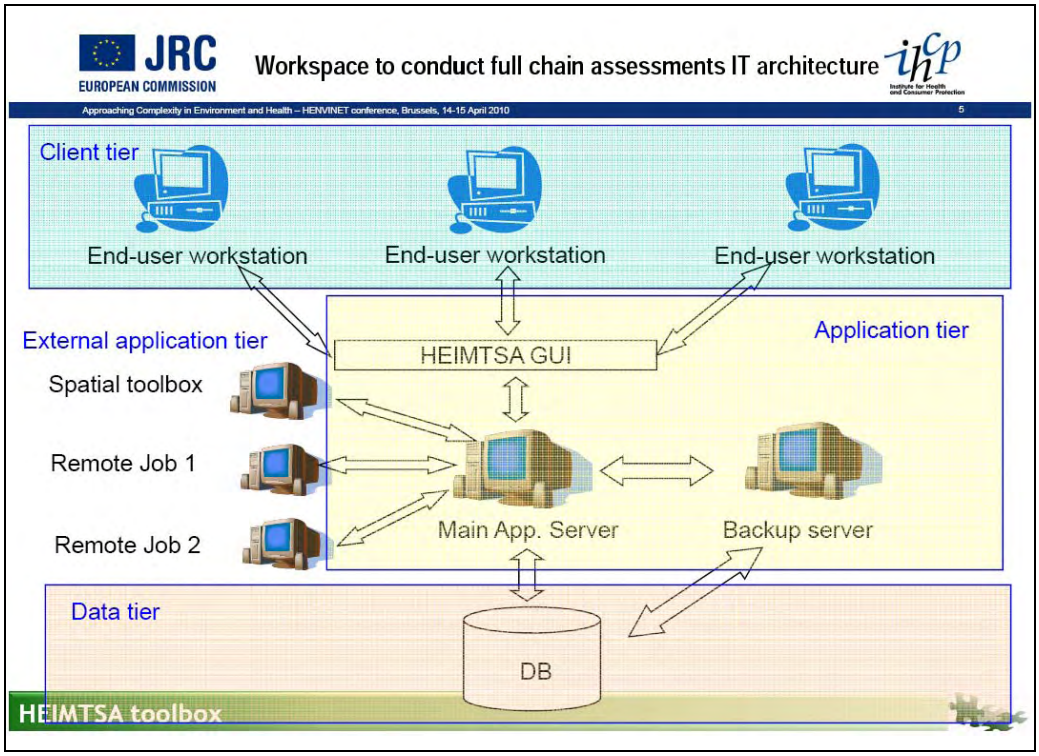
ihcp Institute for Health and Consumer Protection

- All these parts find their place in a coherent framework of a common INTARESE-HEIMTSA toolbox
- The aim is that the integrated toolbox contains:
  - a Guidebook
  - a Resource Centre
  - a Workspace to conduct full chain assessments by applying and linking ready to use models

View of an integrated toolbox with Guidebook, Resource Centre and Full Chain Assessment



HEIMTSA toolbox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Workspace to conduct full chain assessments IT architecture
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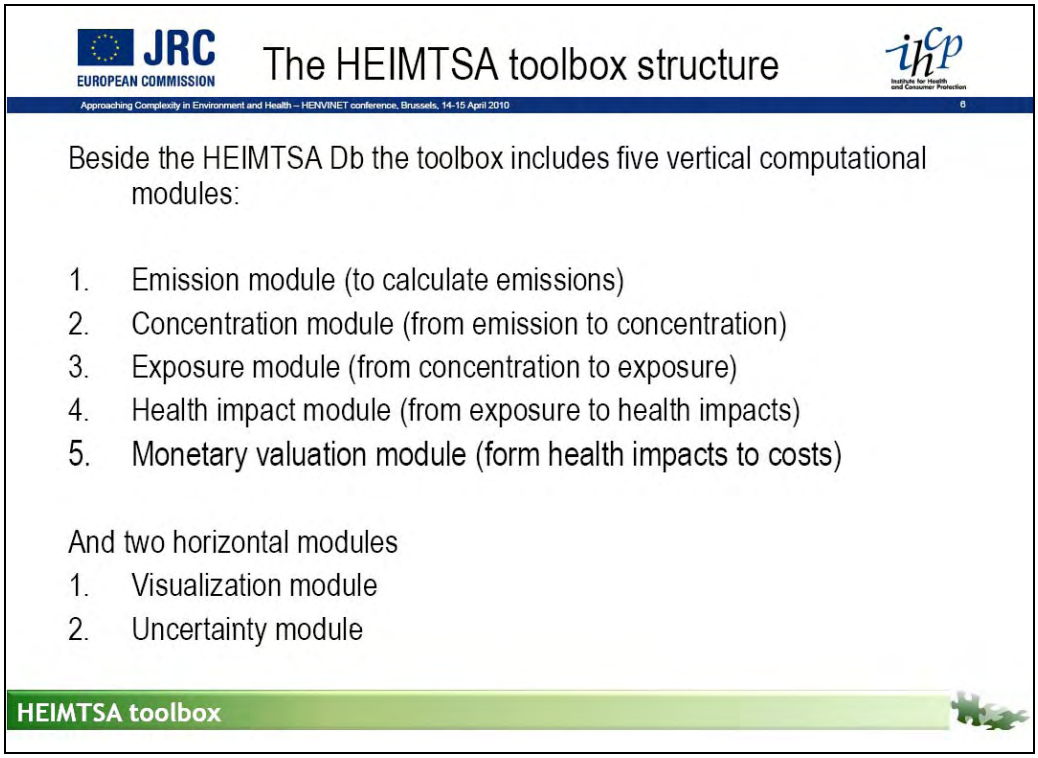
5
Client tier
End-user workstation
End-user workstation
End-user workstation
External application tier
Application tier
HEIMTSA GUI
Spatial toolbox
Remote Job 1
Remote Job 2
Main App. Server
Backup server
Data tier
DB
HEIMTSA toolbox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The HEIMTSA toolbox structure
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6
Beside the HEIMTSA Db the toolbox includes five vertical computational modules:
1. Emission module (to calculate emissions)
2. Concentration module (from emission to concentration)
3. Exposure module (from concentration to exposure)
4. Health impact module (from exposure to health impacts)
5. Monetary valuation module (form health impacts to costs)
And two horizontal modules
1. Visualization module
2. Uncertainty module
HEIMTSA toolbox

HEIMTSA Toolbox: main characteristics

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- The core is represented by a geodatabase handling input and output data (incl. intermediate results) of model runs
- The models „talk“ to each other through the geodatabase
- Well-defined interfaces between the models
- Simple models are as far as possible implemented into the platform. More complex models will be run on the local servers where they reside

HEIMTSA toolbox

The Data Tier (DBMS)

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The HEIMTSA centralized DBMS stores:

Dynamic data

- Input/output files of each model execution

Supporting data

- Population data
- Land use / land cover
- Time activity pattern
- Background rate of diseases
- Exposure-response function for the health end-points of interest
- Monetary valuation functions for the health end-points of interest
- …

HEIMTSA toolbox

The HEIMTSA Toolbox: current status

The login page of the toolbox requires user registration.

Users can click *Register* in the top-right in the login page

Alpha version

The HEIMTSA Toolbox: the home page

The home page of the toolbox is composed of four main sections:

- Home
- Chains
- Models
- Your archive

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The HEIMTSA toolbox: Executing a chain

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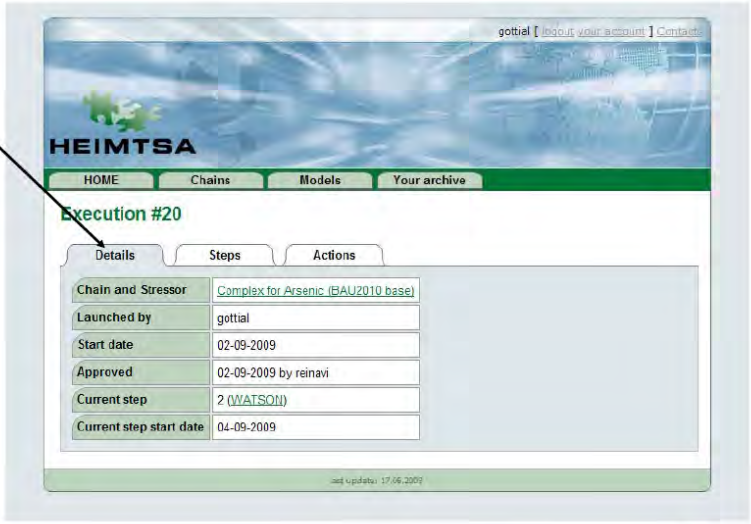
The details **tab** displays more detailed information of the execution of the chain



HEIMTSA toolbox

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The HEIMTSA toolbox: Executing a chain

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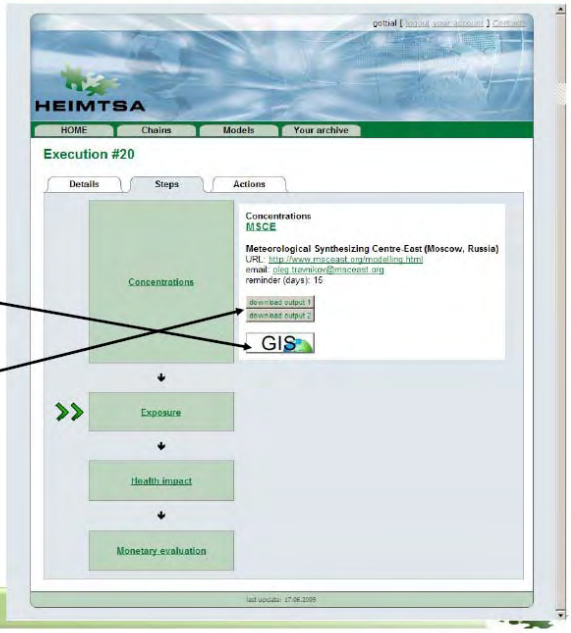
Steps tab: clicking here the steps of the execution are visible and users can access output data of each step

The user can invoke the visualization module by clicking the button "*GIS*" or he/she can download the model result selecting the "download output button"

The green arrows indicate which step is currently running



HEIMTSA toolbox

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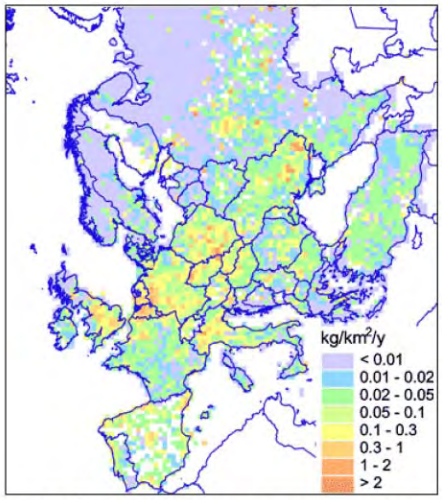

Spatial distribution of anthropogenic air emissions of arsenic in Europe for the year 2000 [kg/km^2/y].

HEIMTSA toolbox

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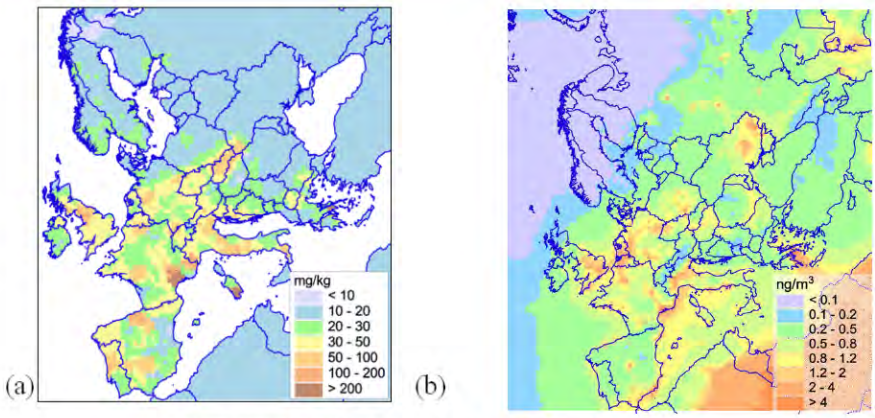

Spatial distribution of concentrations in European top-soils including adjacent territories [mg/kg] (a) and mean annual concentration in ambient air (b) for arsenic for the year 2000.

HEIMTSA toolbox

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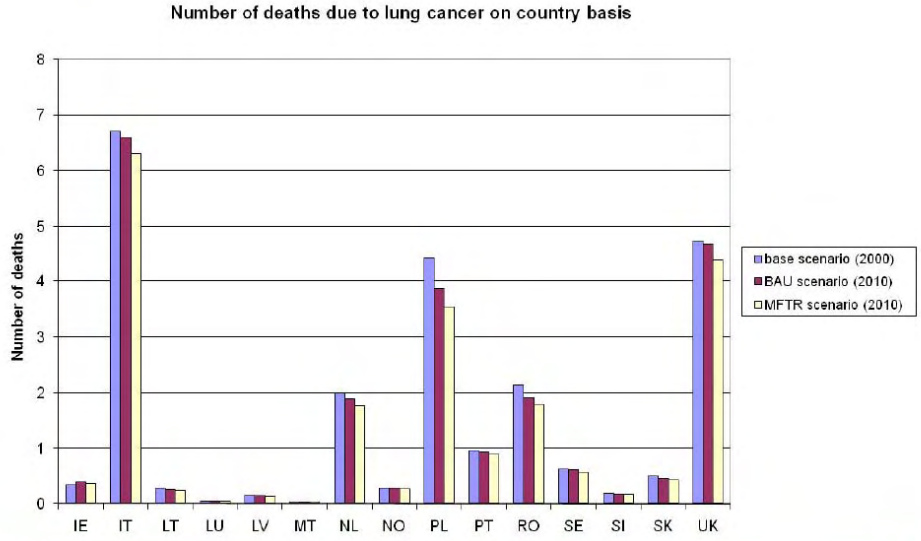

HEIMTSA toolbox

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Conclusions

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- The HEIMTSA toolbox is unique in providing a comprehensive solution to integrated health impact assessment
- Its software architecture is novel, focused on a decentralised computing paradigm, which allows the parallel use of simple and more sophisticated models in different parts of the chain
- The decentralised architecture requires continuous commitment of the HEIMTSA team to maintain the operabilityof the toolbox
- There is a need to ensure the continuous updating of the underlying databases and the integration of new model versions

HEIMTSA toolbox

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2fun PROJECT

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Full-chain and UNcertainty approaches for assessing health risks in FUture eNvironmental scenarios

Prof. Denis A. Sarigiannis, PhD
Prof. Federic Bois, PhD
Dr. Philippe Ciffroy, PhD

EDF INERIS JRC EUROPEAN COMMISSION UNIVERSITÀ CATTOLICA DEL SACRO CUORE DTU VTT Facilia HELMHOLTZ CENTRE FOR ENVIRONMENTAL RESEARCH – UFZ FACULDADE DE CIÊNCIAS UNIVERSITÀ CA' FOSCARI VENEZIA

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The context

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What is risk assessment?

- exposure assessment
- hazard assessment
- establishing dose-response relationships
- risk characterisation (probability/severity of adverse effect)

How does it fit in policy assessment?

- policy assessment are nowadays along the lines of cost/benefit assessment.
- scenarios are played out (no regulation, regulation option A, B, …)

2fun PROJECT

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The context

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Some research needs covered by 2-FUN

- Exposure: Direct exposures are now well-studied (although the EC does not directly fund occupational health research). **Indirect exposures** (*e.g.* via food) and **sensitive individuals** (e.g. children) exposures are less well studied.
- Dose-response: Conventional (standard toxicology) ways are expensive, slow, and limited. How can we use new approaches (**toxicological simulation, QSAR**, "omics" data). From knowledge of dose-response for individual chemicals, how can we predict response for **mixtures**?
- Risk characterisation: How do we assess **uncertainty** and reduce it (*e.g. via* **sensitivity** analyses)?
- Costs and benefits: How to best represent and value the multidimensional nature of costs and benefits?

Scenarios: How to **rank environmental** and socio-economic **scenarios** relevant for Detailed HRA?

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The 'partner' projects

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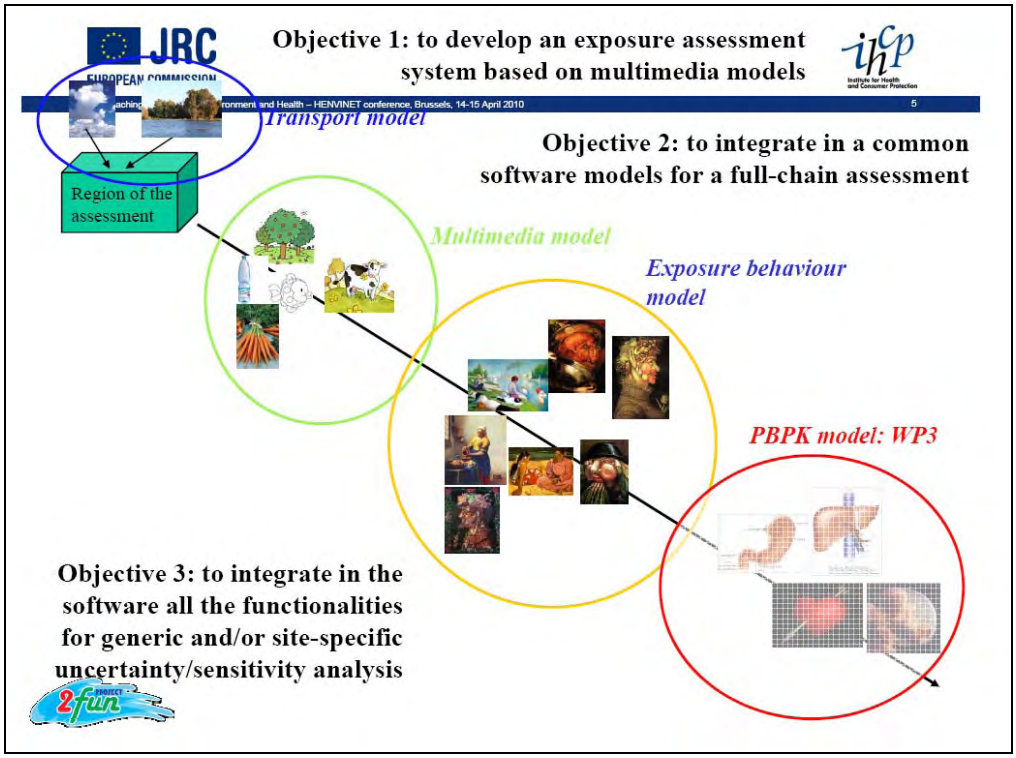
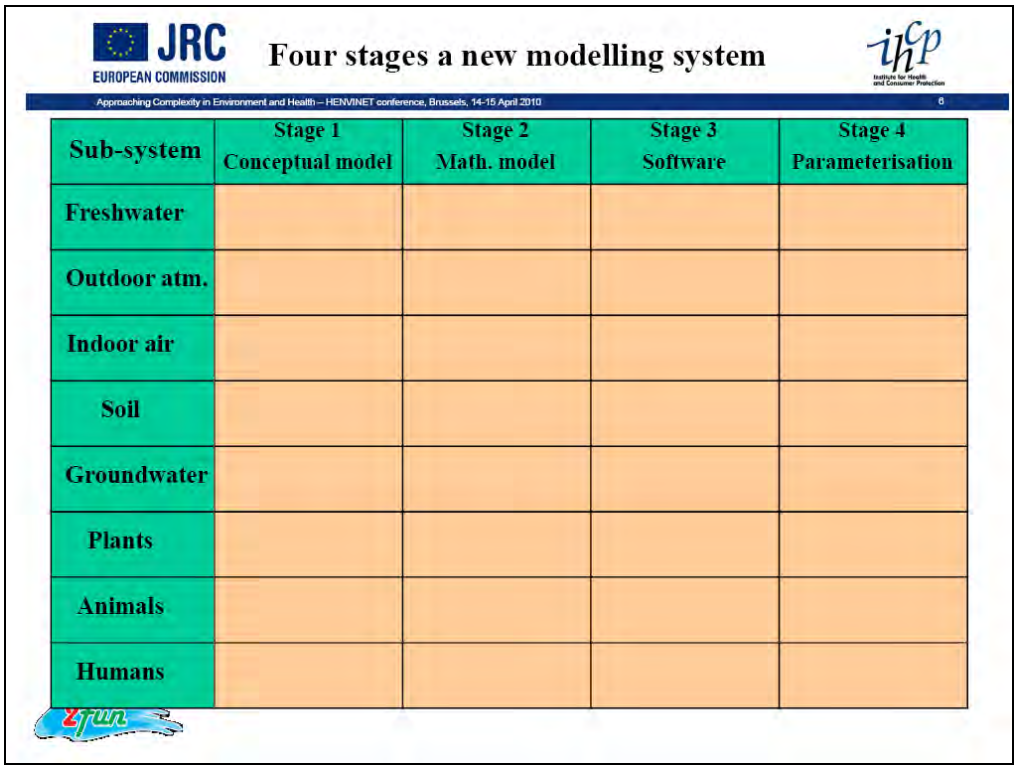
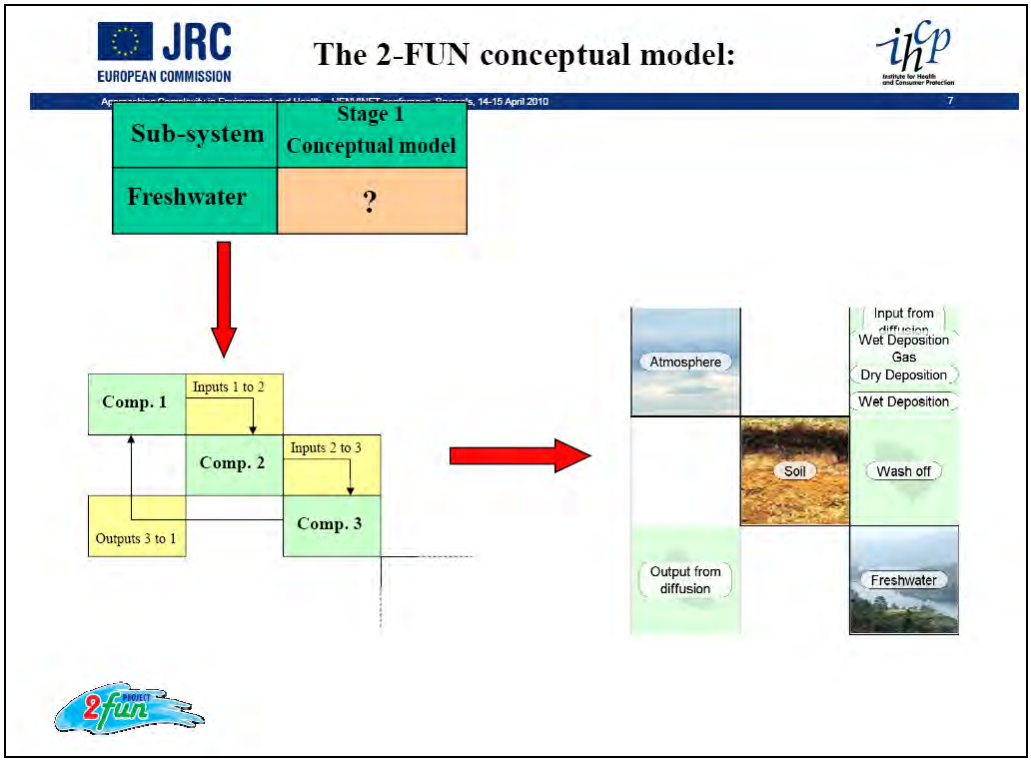
2-FUN (EDF) is involved in an informal **cluster of** current related **projects in environmental health** (2-FUN, INTARESE, HEIMTSA, NOMIRACLE, ENVIRISK, OSIRIS) bringing together some 70 teams of scientists and a total budget of 60M€

HEIMTSA	INTARESE / EnviRisk	NoMiracle	OSIRIS
will develop a software platform to which the other projects will contribute	framing and application oriented	HRA extended to ecotoxicology	QSAR, emerging pollutants





Sub-system	Stage 1 Conceptual model	Stage 2 Math. model	Stage 3 Software	Stage 4 Parameterisation
Freshwater				
Outdoor atm.				
Indoor air				
Soil				
Groundwater				
Plants				
Animals				
Humans				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The 2-FUN conceptual model:
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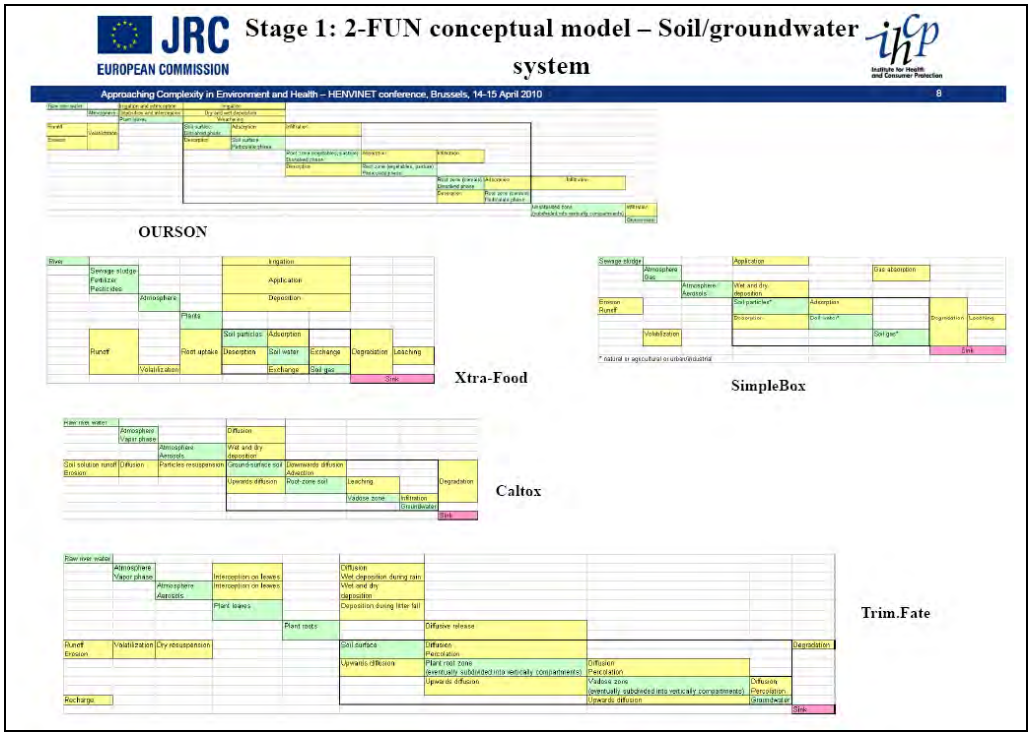
Sub-system
Stage 1 Conceptual model
Freshwater
?
Comp. 1
Inputs 1 to 2
Comp. 2
Inputs 2 to 3
Comp. 3
Outputs 3 to 1
Atmosphere
Input from diffusion
Wet Deposition
Gas
Dry Deposition
Wet Deposition
Soil
Wash off
Output from diffusion
Freshwater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Stage 1: 2-FUN conceptual model – Soil/groundwater system
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OURSON
Xtra-Food
SimpleBox
Caltox
Trim.Fate

Stage 2 : definition of the 2-FUN conceptual model

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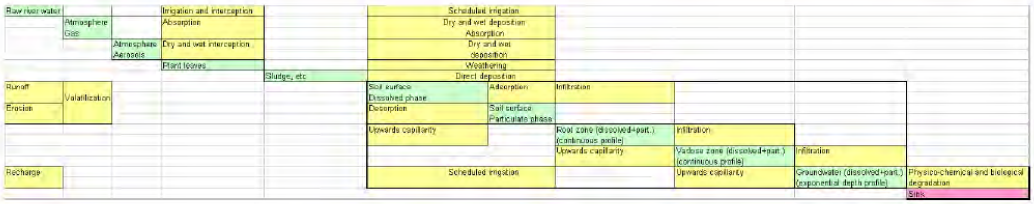

The 2-FUN Interaction Matrix for soil/groundwater sub-system

Stage 2 : definition of the 2-FUN mathematical model

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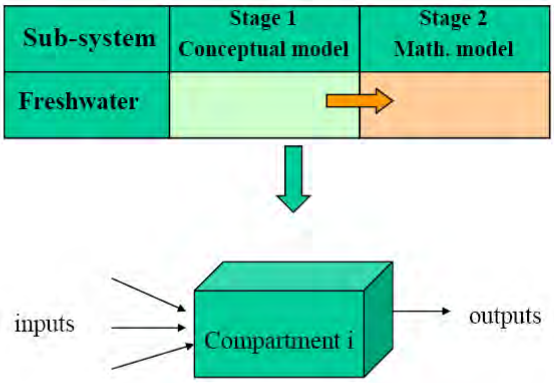
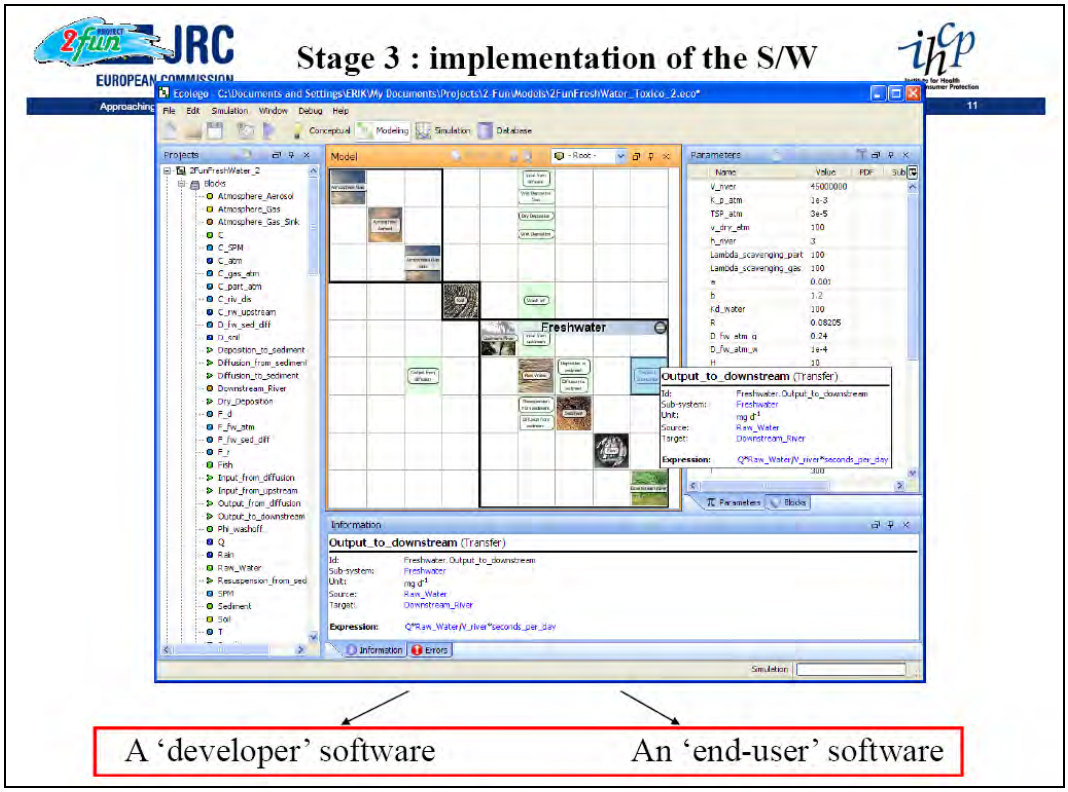


Mass balance model


JRC
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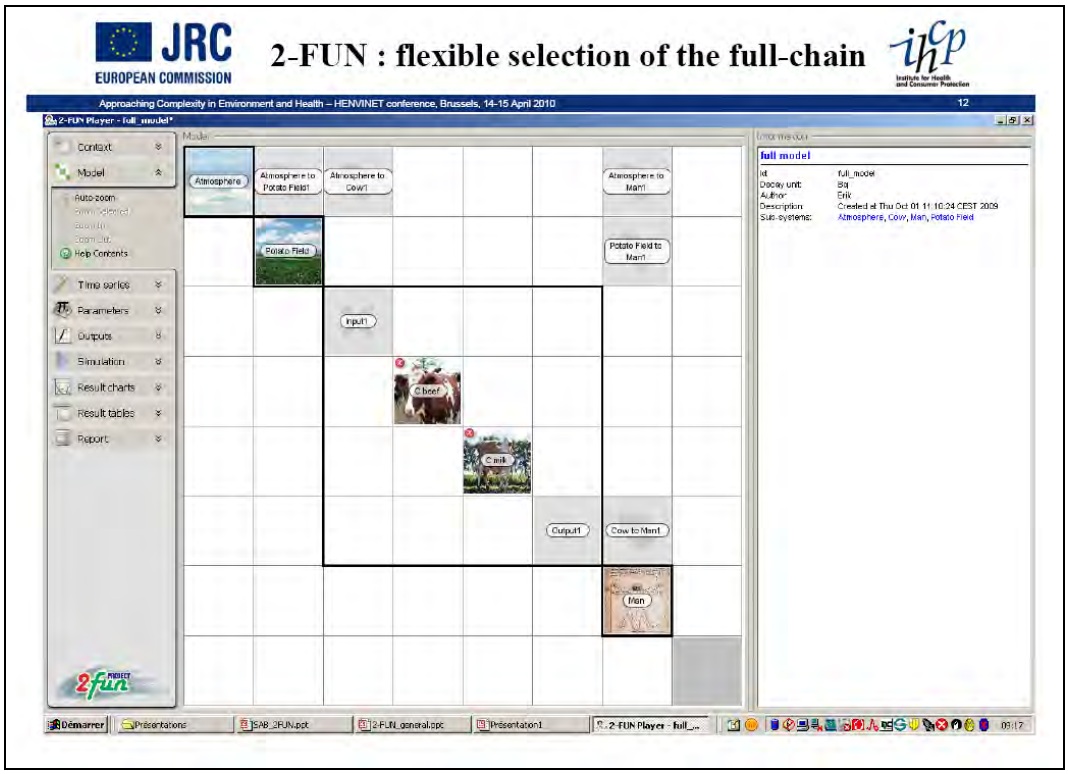
Stage 3 : implementation of the S/W
Approaching Complexity in Environment and Health – HENVINET conference, Brussels, 14-15 April 2010
11
Freshwater
Output_to_downstream (Transfer)
A 'developer' software
An 'end-user' software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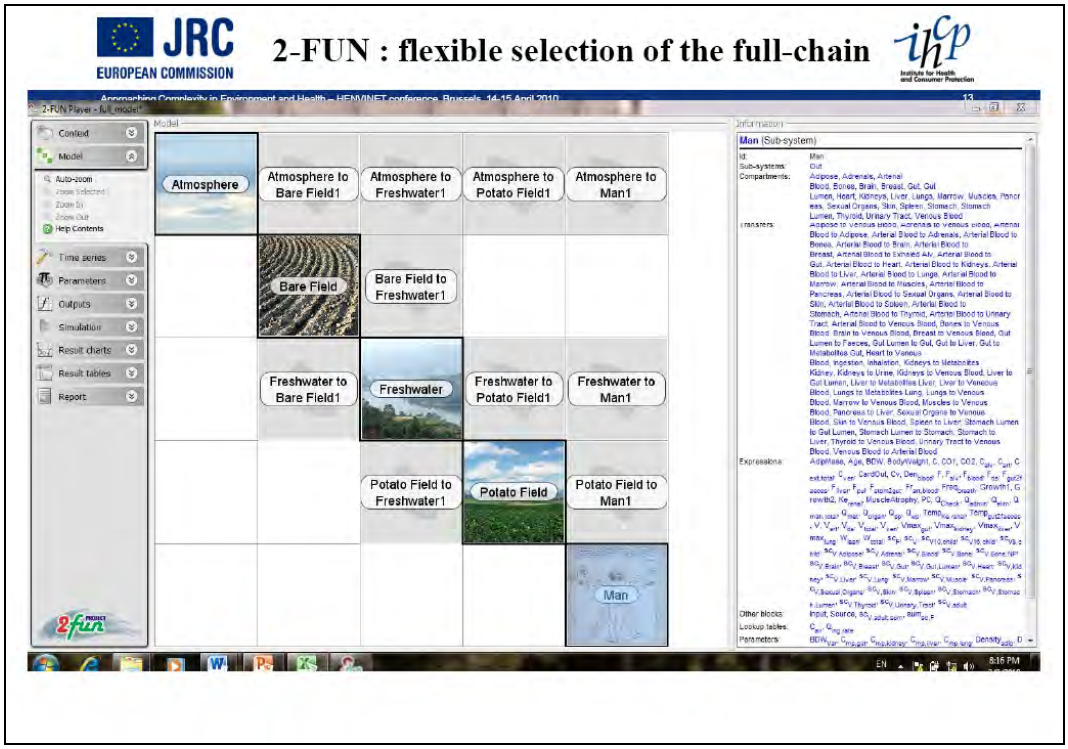
2-FUN : flexible selection of the full-chain
Approaching Complexity in Environment and Health – HENVINET conference, Brussels, 14-15 April 2010
12
full model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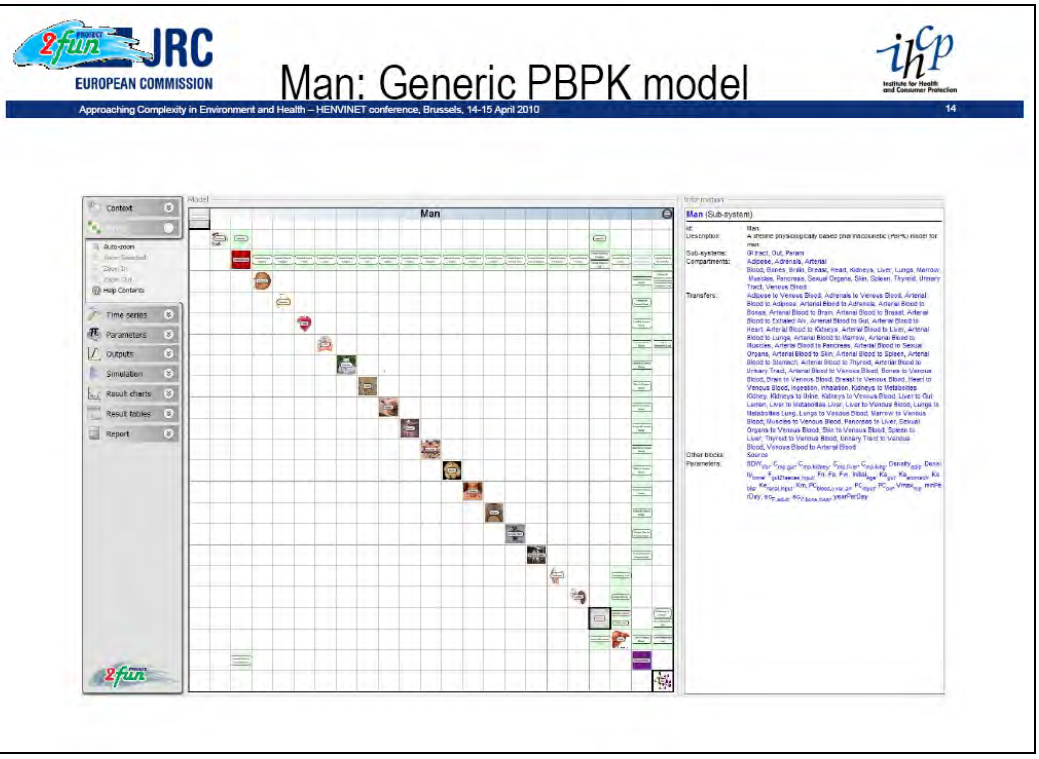
EUROPEAN COMMISSION
2-FUN : flexible selection of the full-chain
ihcp
Institute for Health and Consumer Protection
Approaching Complexity in Environment and Health – HENVINET conference, Brussels, 14-15 April 2010
13
2-FUN Player - full_model
Context
Model
Auto-zoom
Zoom Selected
Zoom In
Zoom Out
Help Contents
Time series
Parameters
Outputs
Simulation
Result charts
Result tables
Report
Model
Atmosphere
Atmosphere to Bare Field1
Atmosphere to Freshwater1
Atmosphere to Potato Field1
Atmosphere to Man1
Bare Field
Bare Field to Freshwater1
Freshwater to Bare Field1
Freshwater
Freshwater to Potato Field1
Freshwater to Man1
Potato Field to Freshwater1
Potato Field
Potato Field to Man1
Man
Information
Man (Sub-system)
Id:
Sub-systems:
Compartments:
Transfers:
Expressions:
Other blocks:
Lookup tables:
Parameters:
2fun
8:16 PM


2fun
JRC
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Man: Generic PBPK model
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Institute for Health and Consumer Protection
Approaching Complexity in Environment and Health – HENVINET conference, Brussels, 14-15 April 2010
14
Context
Model
Auto-zoom
Zoom Selected
Zoom In
Zoom Out
Help Contents
Time series
Parameters
Outputs
Simulation
Result charts
Result tables
Report
Man
Information
Man (Sub-system)
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Sub-systems:
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Transfers:
Other blocks:
Parameters:
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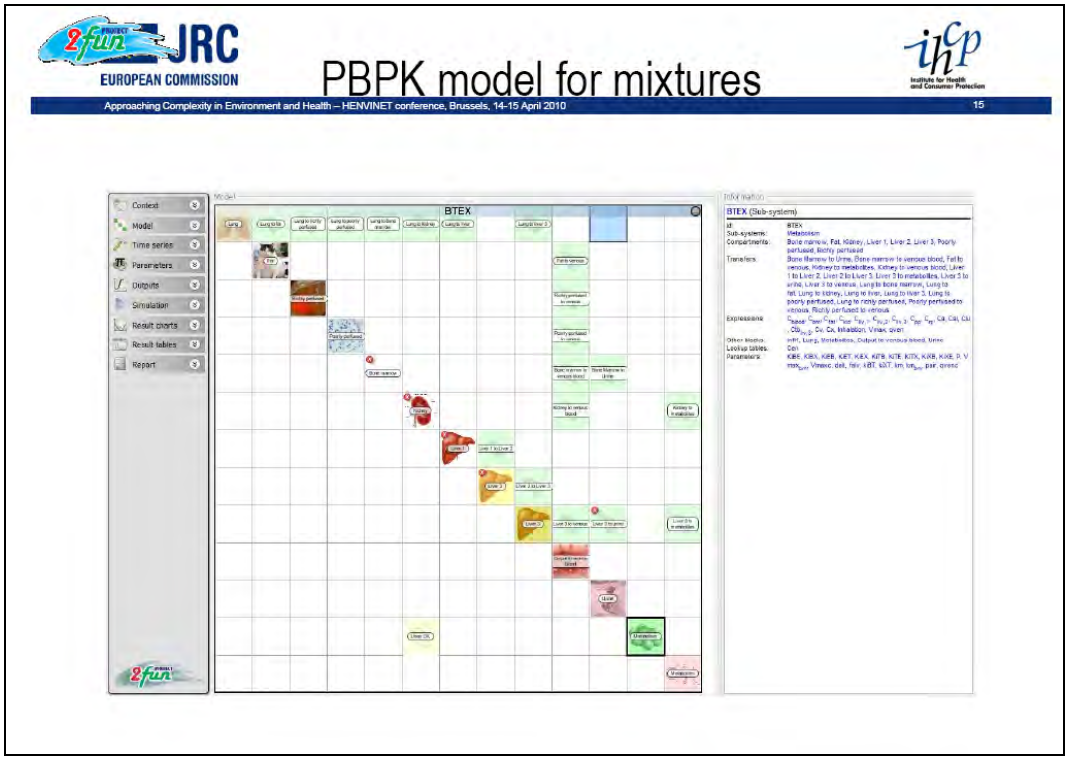
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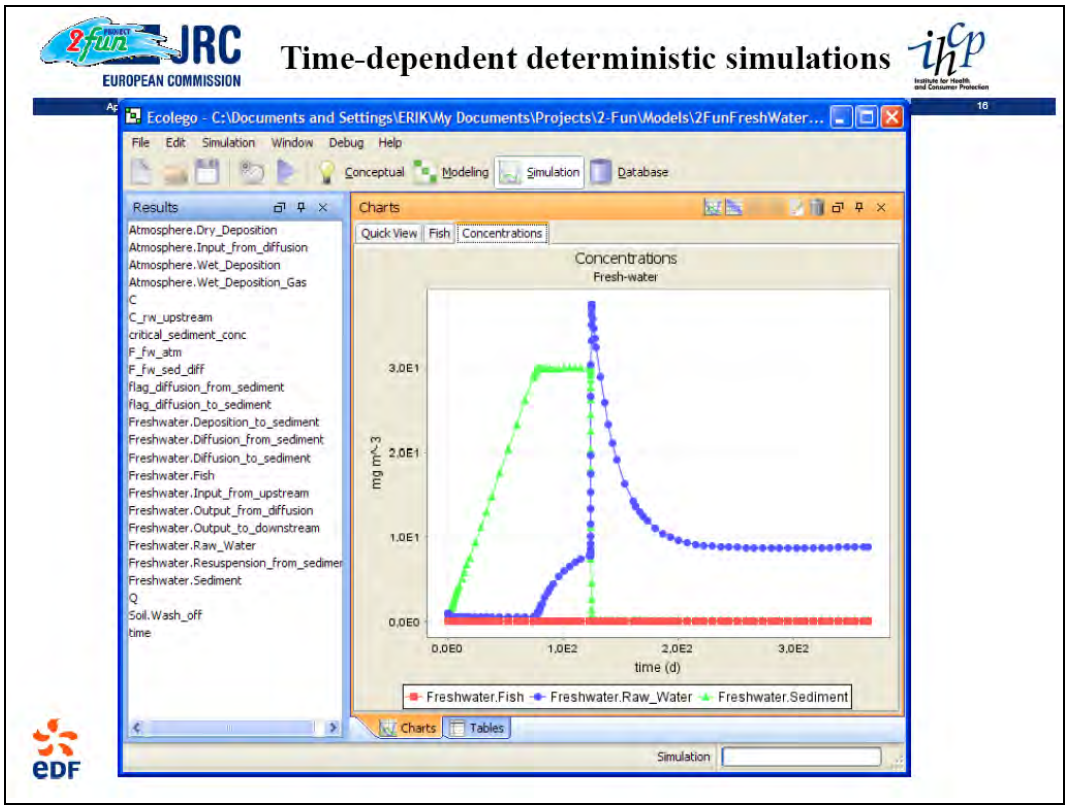
PBPK model for mixtures
Approaching Complexity in Environment and Health – HENVINET conference, Brussels, 14-15 April 2010
15
Context
Model
Time series
Parameters
Outputs
Simulation
Result charts
Result tables
Report
BTEX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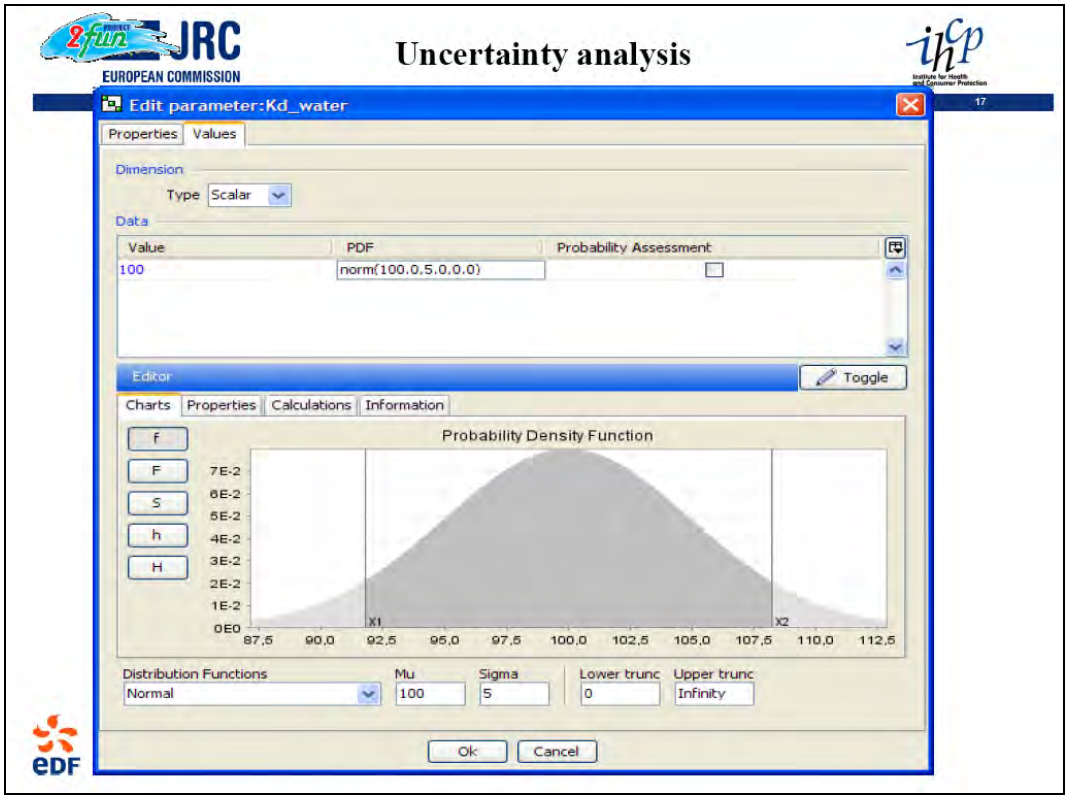
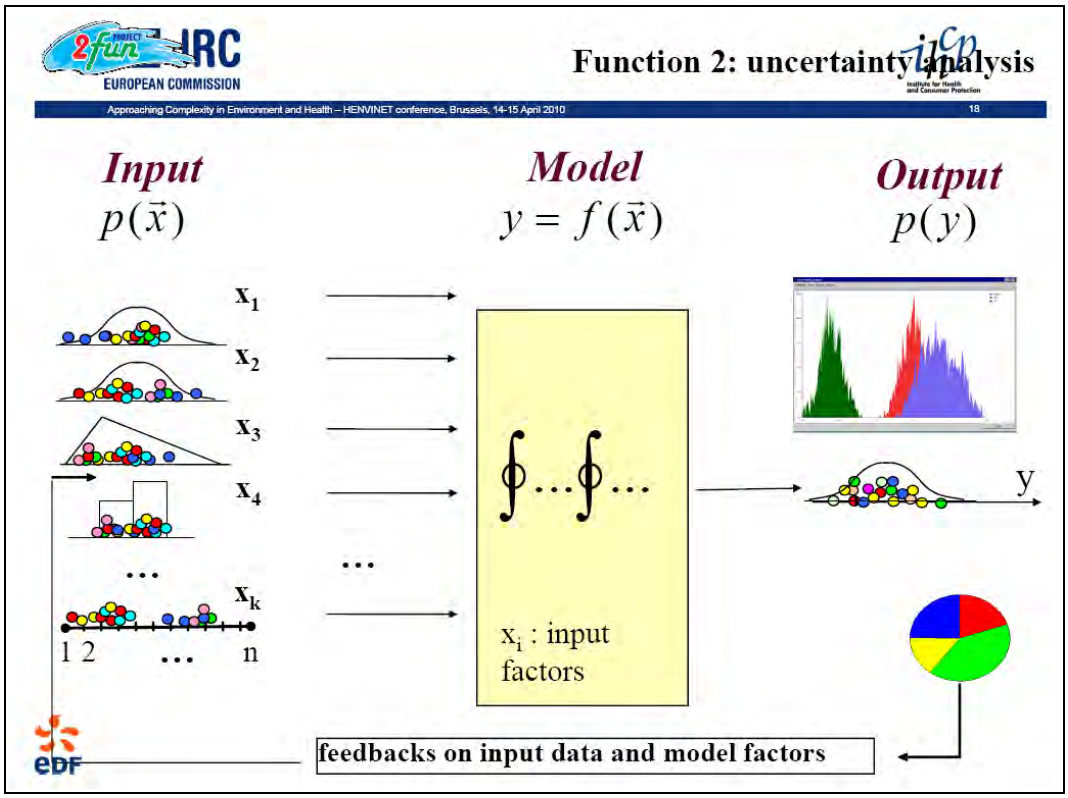
EUROPEAN COMMISSION
Time-dependent deterministic simulations
16
Ecolego - C:\Documents and Settings\ERIK\My Documents\Projects\2-Fun\Models\2FunFreshWater...
File Edit Simulation Window Debug Help
Conceptual Modeling Simulation Database
Results
Atmosphere.Dry_Deposition
Atmosphere.Input_from_diffusion
Atmosphere.Wet_Deposition
Atmosphere.Wet_Deposition_Gas
C
C_rw_upstream
critical_sediment_conc
F_fw_atm
F_fw_sed_diff
flag_diffusion_from_sediment
flag_diffusion_to_sediment
Freshwater.Deposition_to_sediment
Freshwater.Diffusion_from_sediment
Freshwater.Diffusion_to_sediment
Freshwater.Fish
Freshwater.Input_from_upstream
Freshwater.Output_from_diffusion
Freshwater.Output_to_downstream
Freshwater.Raw_Water
Freshwater.Resuspension_from_sedimer
Freshwater.Sediment
Q
Soil.Wash_off
time
Charts
Quick View Fish Concentrations
Concentrations
Fresh-water
mg m^-3
3.0E1
2.0E1
1.0E1
0.0E0
0.0E0
1.0E2
2.0E2
3.0E2
time (d)
Freshwater.Fish Freshwater.Raw_Water Freshwater.Sediment
Charts Tables
Simulation
EDF


Uncertainty analysis
EUROPEAN COMMISSION
Edit parameter:Kd_water
Properties
Values
Dimension
Type Scalar
Data
Value
PDF
Probability Assessment
100
norm(100.0,5.0,0.0)
Editor
Toggle
Charts
Properties
Calculations
Information
Probability Density Function
f
F
S
h
H
7E-2
6E-2
5E-2
4E-2
3E-2
2E-2
1E-2
0E0
87,5
90,0
92,5
95,0
97,5
100,0
102,5
105,0
107,5
110,0
112,5
X1
X2
Distribution Functions
Normal
Mu
100
Sigma
5
Lower trunc
0
Upper trunc
Infinity
Ok
Cancel
EDF


Function 2: uncertainty analysis
EUROPEAN COMMISSION
Approaching Complexity in Environment and Health – HENVINET conference, Brussels, 14-15 April 2010
18
Input
$p(\vec{x})$
Model
$y = f(\vec{x})$
Output
$p(y)$
x_1
x_2
x_3
x_4
x_k
1 2 ... n
x_i : input factors
y
feedbacks on input data and model factors
EDF

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Sensitivity analysis

ihcp Institute for Health and Consumer Protection

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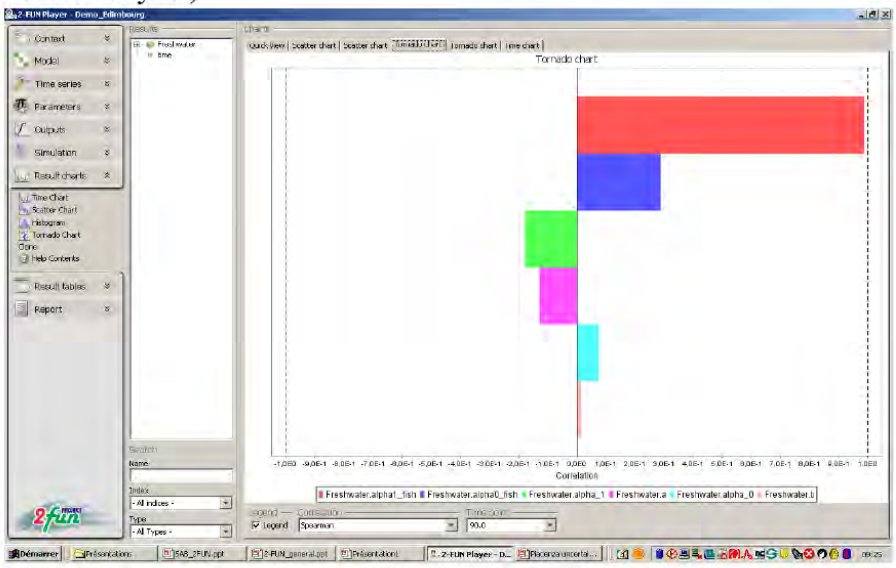
Identification of the most sensitive parameters (regression and Fourier analysis)



The role of Decision Support Tools in promoting Environmental Health

Presented by : Dr. Emanuele NEGRENTI
ENEA Rome

HENVINET FINAL CONFERENCE
BRUSSELS 14-15 APRIL 2010

E&H KNOWLEDGE

- Although our knowledge is limited and imperfect, we have learnt a lot on the health consequences of environmental stressors
- Such a knowledge ('K') is often accessible only to Scientists or usable by a small community of experts, while a number of decision makers making decisions with consequences on our health makes a limited use of it
- How can we make this Key Factor more usable in decision making processes at any level ? How can this 'K' have an impact in daily life and in the planning of short-medium and long term actions and policies ?

E&H 'Decision Support Tools'

- A key solution to the 'K usage dilemma' is given by DSTs.
- Within HENVINET we defined DSTs as 'whatever tool based on E&H Knowledge that can be used for making decisions for reducing the negative health effects of the environment, from the daily operational level to the long term policy making perspective'
- >>>> so…. How many types of DST do we have then ?????

26/04/2010 BRUSSELS 14 APRIL 2010 3

DSTs identified Types

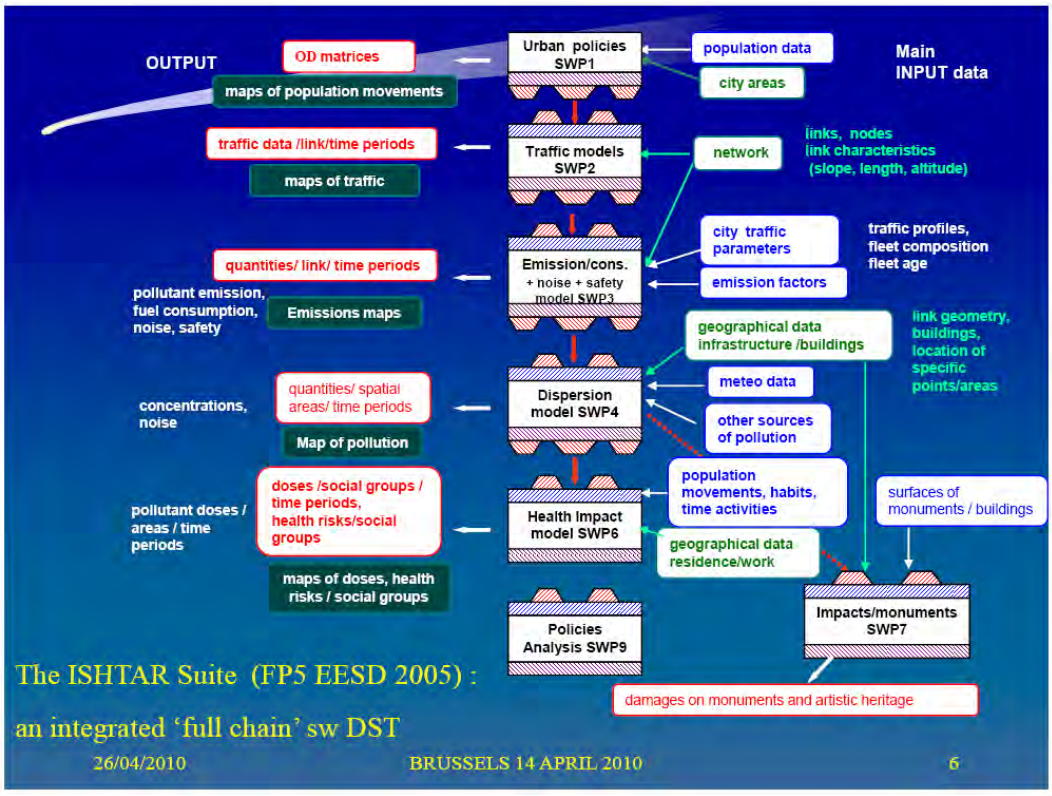
….We have so far identified:

- Integrated software tools (modelling significant sections of the causal chain from sources to health effects)
- Specific Software Tools (focussing on a few rings of the chain)
- Web data-bases (e.g. KTL)
- Methodologies (e.g. HIA)
- Handbooks (e.g. EUPHIDS)
- Frameworks for Decision Making
- Recommendations (e.g. for couples wishing a baby in polluted areas)
- Guidance (e.g. for estimating disease burden)
- Info and Knowledge System (e.g. ENHIS from WHO Bonn)
- Indicators

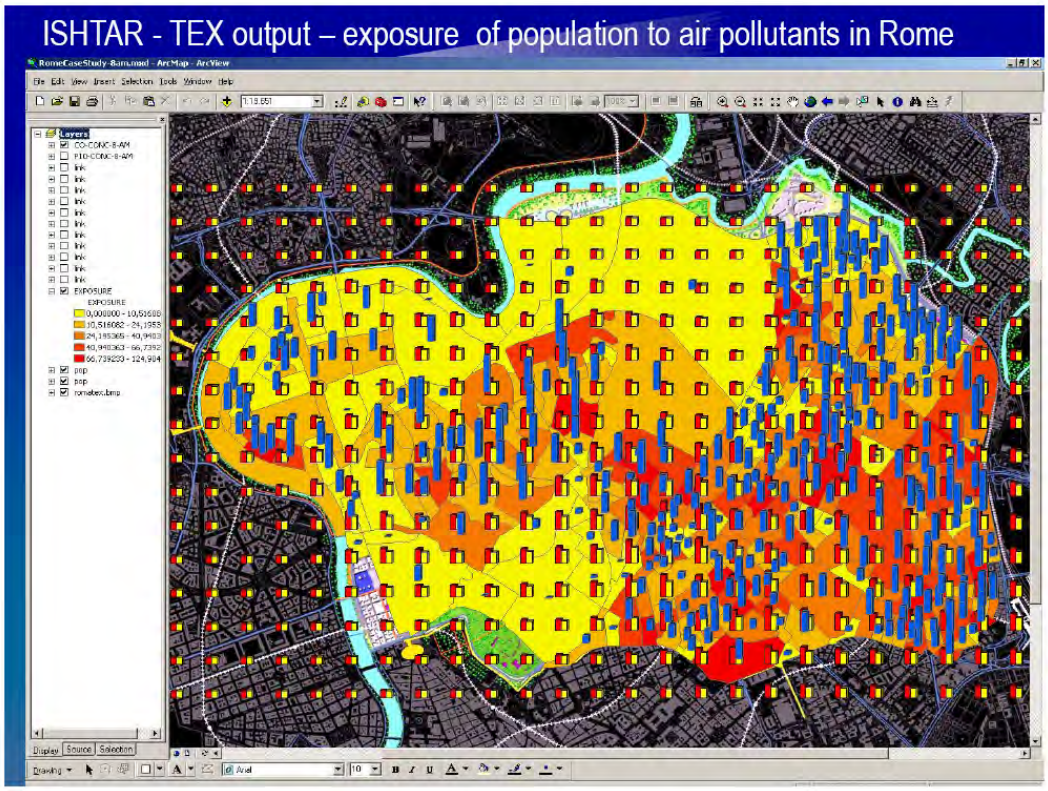
26/04/2010 BRUSSELS 14 APRIL 2010 4

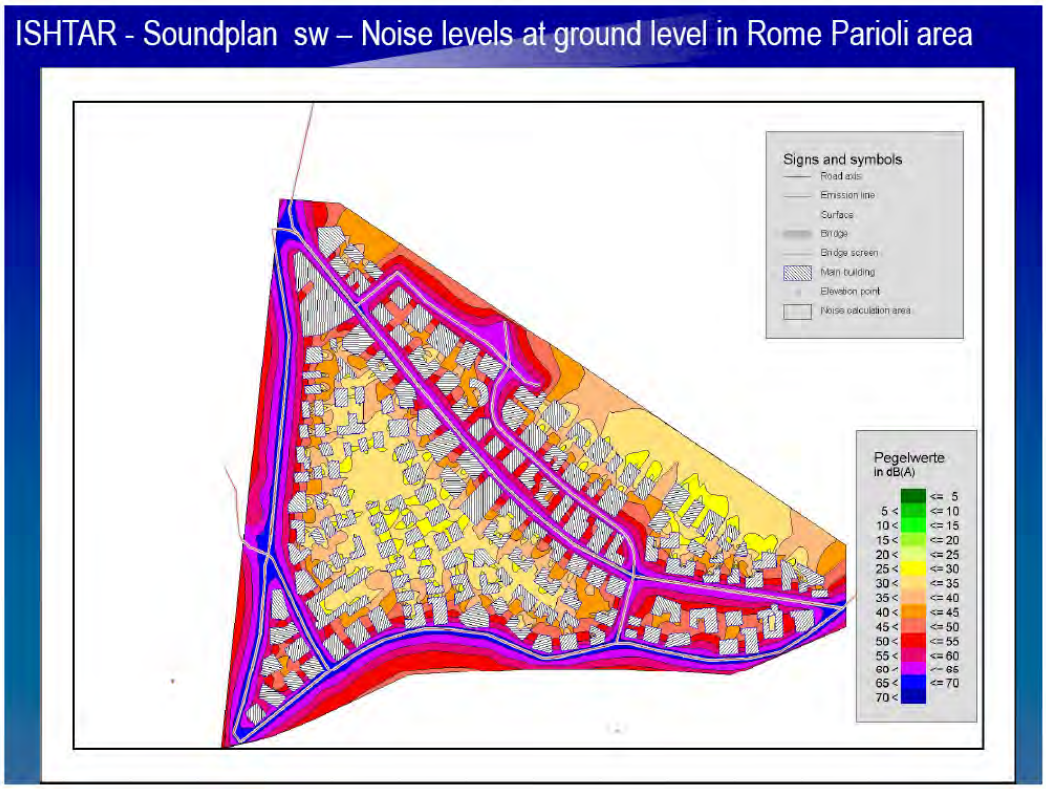
DST categories examples - 1

- 'Full Chain' software packages
- From Sources of stressors to final Health effects
- Not all sources… and not all diseases of course…but all the main rings of the causal chain from environmental stressors to the final health end points



The ISHTAR Suite (FP5 EESD 2005) : an integrated 'full chain' sw DST


ISHTAR - TEX output – exposure of population to air pollutants in Rome


ISHTAR - Soundplan sw – Noise levels at ground level in Rome Parioli area
Signs and symbols
Road axis
Emission line
Surface
Bridge
Bridge screen
Main building
Elevation point
Noise calculation area
Pegelwerte
in dB(A)
<= 5
5 < <= 10
10 < <= 15
15 < <= 20
20 < <= 25
25 < <= 30
30 < <= 35
35 < <= 40
40 < <= 45
45 < <= 50
50 < <= 55
55 < <= 60
60 < <= 65
65 < <= 70
70 <

DST categories examples - 2

- **Methodologies**
- Example : HIA (Health Impact Assessment) from WHO Geneve
- HIA is a practical approach used to judge the potential health effects of a policy, program or project on a population, particularly on vulnerable or disadvantaged groups. Recommendations are produced for decision makers and stakeholders, with the aim of maximising the proposals positive health effects and minimising the negative health effects. The approach is not limited to environmental aspect of health impact. The site contains several pages with tools: Short guides and a collection of toolkits, guides, reports, journal articles, background reports and presentations that review HIA. :
- **http://www.who.int/hia/en/**

26/04/2010 BRUSSELS 14 APRIL 2010 9

DST categories examples - 3

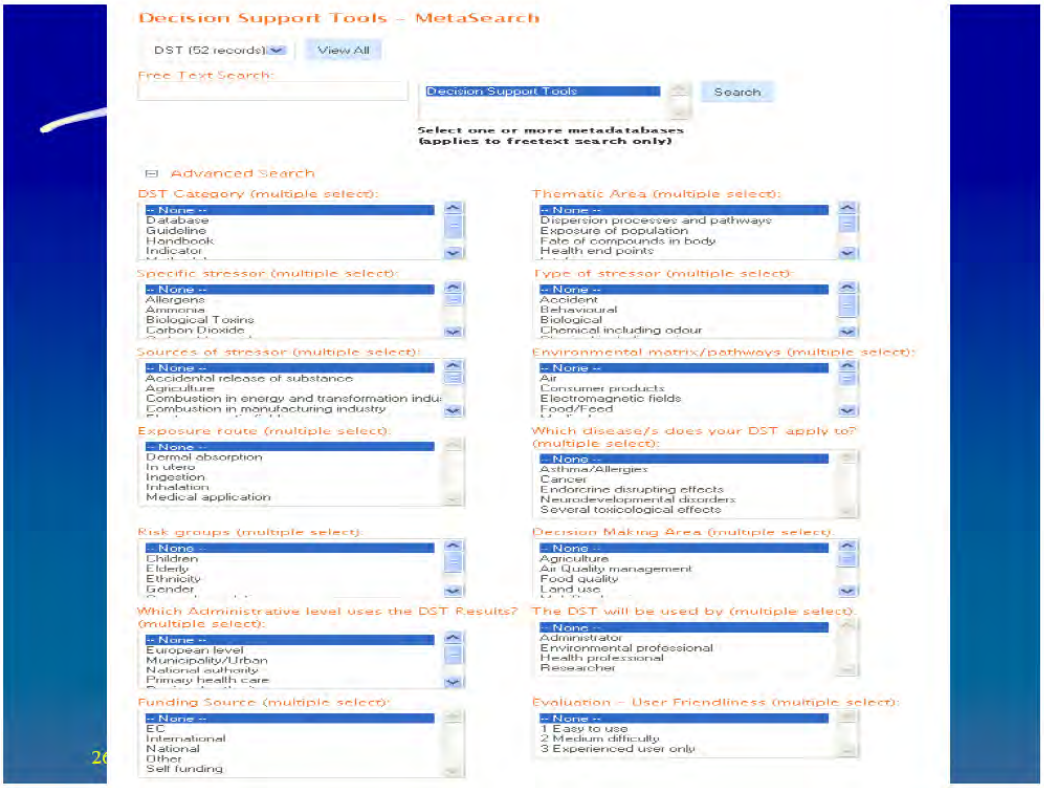
- **Knowledge systems**
- **ENHIS : the European ENvironment and Health Information System (WHO)**
- In the ENHIS-2 project a comprehensive information and knowledge system is developed that will help to identify and prioritize wide-spread environmental health problems in the Member States, enable monitoring the effects of actions taken, and contribute to building advocacy and communication strategies. Specifically, the information system is being designed to enable:
- - Monitoring of the environment and health situation and trends in the countries in the European region and evaluation of the effectiveness of policies;
- - Comparisons between countries on the basis of targets set in European-wide action programmes;
- - Regular reporting on environment and health to support decision makers and also to provide information to professionals and the general public;
- - Exchange of information, data and knowledge as well as good practice examples in the field of public health and the environment.
- **http://www.enhis.org**

26/04/2010 BRUSSELS 14 APRIL 2010 10

HENVINET DST MetaDataBase : functionalities and contents

- At henvinet.nilu.no or www.henvinet.eu you can enter the world of E&H DSTs
- A Meta DB of easy access and management allows you to browse data on identified DSTs, input data on a new DST, update the information, correct errors, search for DSTs with specific characteristics
- The MDB in particular allows to describe the purpose of the DST, its application areas, the expected users, the considered stressors and health outcomes, the validation-application work made so far

26/04/2010 BRUSSELS 14 APRIL 2010 11



How to create a DST file in the MDB

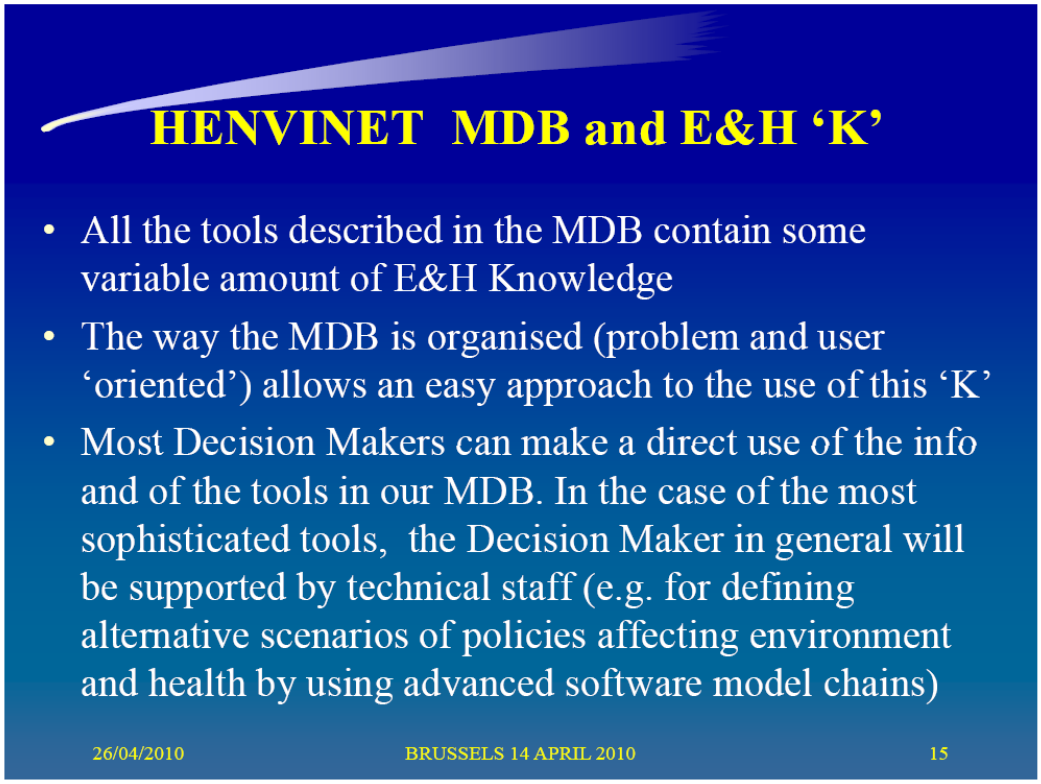
- **Step 1:**
- Go to: http://henvinet.nilu.no/
- Under "HENVINET TOOLS" on the left menu click "Metadatabase". Review the information on this page……then : Click "Go to the MDB login".
- **Step 2:**
- *either*
- a) Click "Sign-up" if you are a first-time user of the MDB. Enter you details and proceed to Step 3
- *or*
- b) login if you already are a registered user and proceed to Step 3
- **Step 3:**
- Click "Create Data"
- Select "decision support tools" from the "select Metadatabase" drop-down list >>>> Click "DST"
- **Step 4:**
- Start entering the data of your DST in the two page form .
- In this form you see several *fields* and their *attributes*. A *field* is for example "Specific stressor" (4th on page 2/2) and its *attributes* are "NOX", "Nanoparticles","Pesticides".
- Select one or more (by clicking the Ctrl key pressed on your keyboard) attributes from each field that describe your DST

26/04/2010 BRUSSELS 14 APRIL 2010 13

Users of the DSTs MDB

- **Decision Making Areas**: HENVINET DSTs recognise at least the following decision making contexts: Agriculture, Air Quality Management, Food Quality, Land Use, Mobility and Transport, Public Health, Urban Planning, Waste Management, Water Resources Management.
- **DSTs expected users :** Four major categories of potential users of HENVINET DSTs have been identified: Administrators, Environment Professionals, Health Professionals, Researchers.

26/04/2010 BRUSSELS 14 APRIL 2010 14


HENVINET MDB and E&H 'K'
• All the tools described in the MDB contain some variable amount of E&H Knowledge
• The way the MDB is organised (problem and user 'oriented') allows an easy approach to the use of this 'K'
• Most Decision Makers can make a direct use of the info and of the tools in our MDB. In the case of the most sophisticated tools, the Decision Maker in general will be supported by technical staff (e.g. for defining alternative scenarios of policies affecting environment and health by using advanced software model chains)
26/04/2010
BRUSSELS 14 APRIL 2010
15

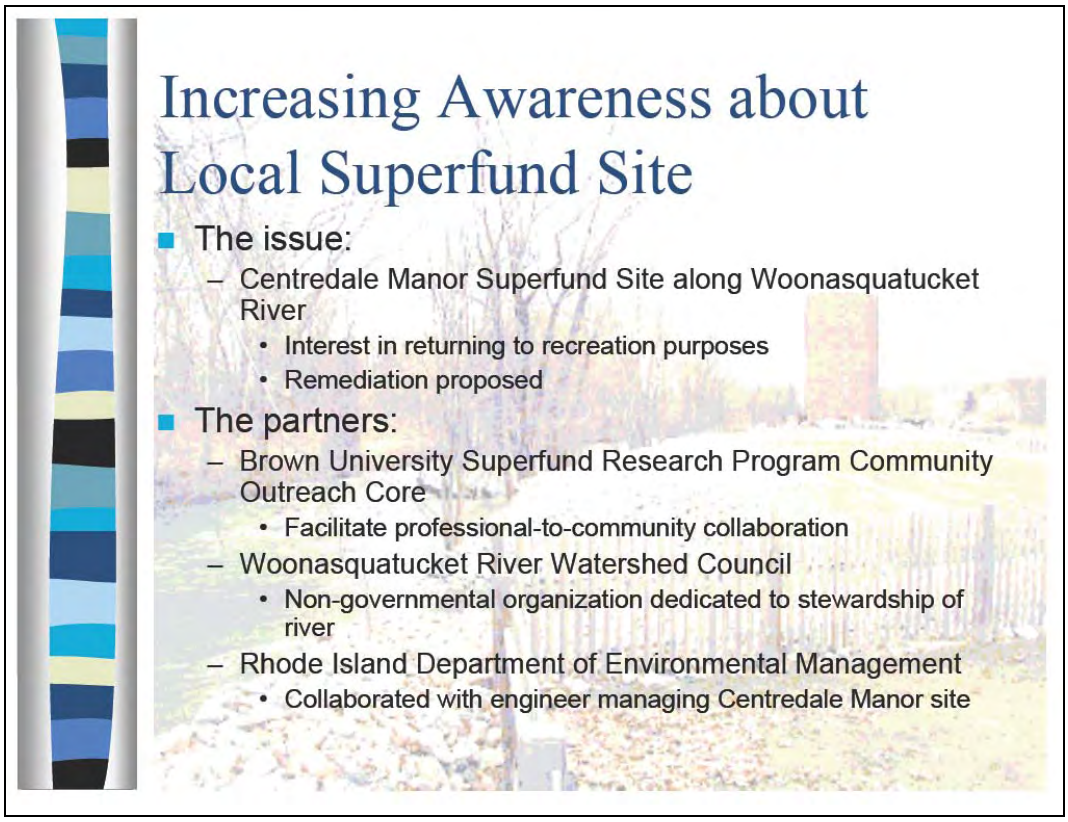
Communicating Environmental Health Justice Issues: Best Practices from the US

Alison Cohen
Alison.Cohen@fulbrightmail.org
HENVINET conference
April 2010

Overview: case studies

- Environmental justice-centered
- Community-based
- Policy-oriented
- Research-driven


CBPR: nexus between community health and environmental justice
Community Health
– Population and social justice perspective
– Disease prevention and health promotion
Environmental Justice
– Environmentalist and social justice perspective
– Preventing disproportionate pollution burdens and health disparities
Community-Based Participatory Research
– Social justice perspective
– Combines knowledge and social action to improve community health and eliminate disparities


Increasing Awareness about Local Superfund Site
The issue:
– Centredale Manor Superfund Site along Woonasquatucket River
• Interest in returning to recreation purposes
• Remediation proposed
The partners:
– Brown University Superfund Research Program Community Outreach Core
• Facilitate professional-to-community collaboration
– Woonasquatucket River Watershed Council
• Non-governmental organization dedicated to stewardship of river
– Rhode Island Department of Environmental Management
• Collaborated with engineer managing Centredale Manor site

Our Strategy: A Curriculum for Students age 12-14

- Place-based
  - Along the Woonasquatucket River
    - Long history of heavy industrial use in now densely populated area
  - Based in Rhode Island
    - Birthplace of American industrial revolution
- Student-centered
  - Engaging activities
    - Debates, plays, newspapers
- Standards-aligned
  - Aligned to RI grade-span expectations (which are used to guide in-class curricula)
    - Integrates science, social studies, engineering, and writing

Aerial photograph of **Richmond, CA**, study community and neighboring industry and transportation.

Disproportionate environmental health burden in Richmond, CA

- The partners
  - Communities for a Better Environment
    - CA-wide NGO combining grassroots organizing, science, and litigation to address environmental health justice
  - UC Berkeley
    - School of Public Health and Department of Environmental Science, Policy, and Management
  - Brown University
    - Department of Community Health
  - Silent Spring Institute
    - Non-profit research institute studying links between environment and women's health
  - West County Toxics Coalition
    - Richmond-based community organizing NGO

Our strategy: a health survey

- Goals:
  - Document health experiences
  - Understand environmental factors that may affect health outcomes
  - Connect to and support advocacy and organizing efforts
- Reach:
  - Surveyed 198 residents in four neighborhoods
  - Collected health information on 722 household residents
- Impact:
  - Facilitated community unity around common concerns
  - Increased scientific and health literacy and numeracy in community
  - Informed local policy critiques and revisions

Industrial contamination in Rhode Island

- The issue:
  - Legacy of industrial contamination in RI
    - Tiverton: residential land contaminated with manufactured gas plant waste
- The partners:
  - Brown University Superfund Research Program Community Outreach Core
    - Facilitate professional-to-community collaboration
  - Environmental Neighborhood Awareness Committee of Tiverton
    - NGO formed to keep community informed about neighborhood remediation
  - Environmental Justice League of Rhode Island
    - Statewide NGO formed to work towards environmental justice

Our strategy: legislation

- Environmentally Contaminated Home Ownership loan bill
  - Home equity loans of up to $50,000 available for homeowners living on or abutting a contaminated site
  - Reduce financial burden of discovering contaminated land
- Polluter penalties bill
  - Raise fines for non-compliance with state pollution regulations from $1,000/day to $25,000/day
  - This could prevent Tiverton's tragedy from being replicated elsewhere in Rhode Island

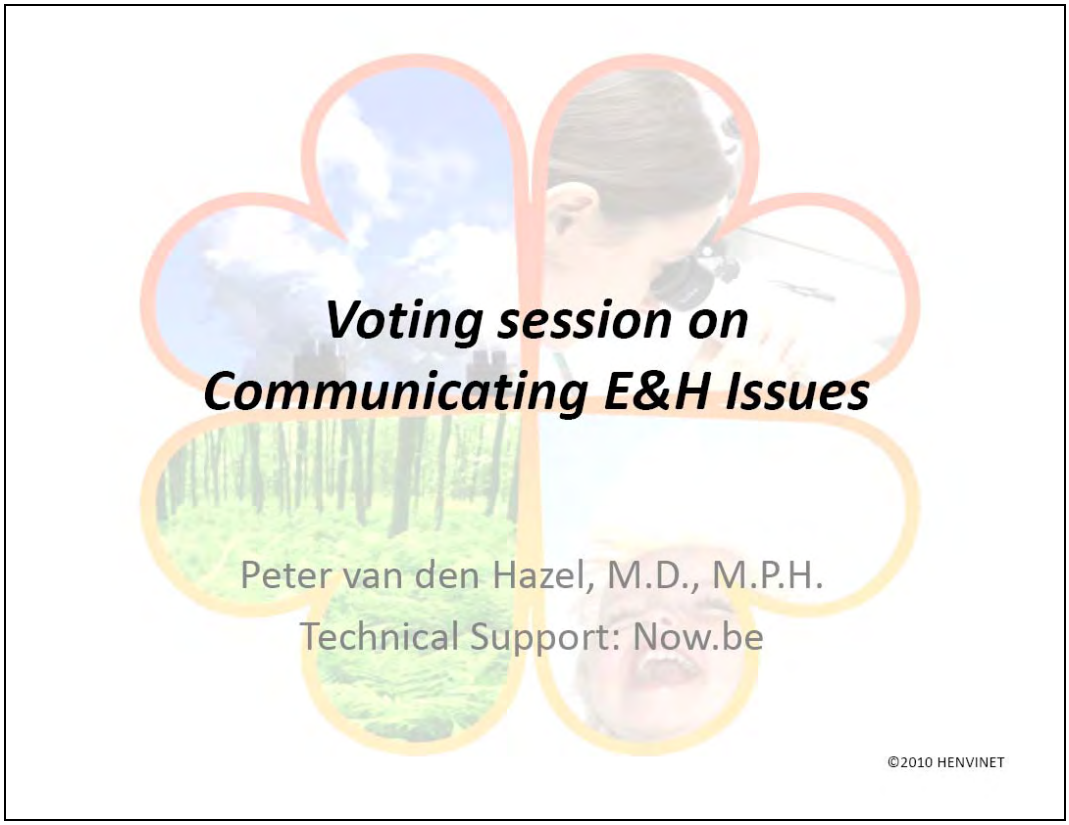
Lessons learned for effective communication

- Multidisciplinary teams
  - Public health
  - Environmental studies
  - Sociology
  - Education
- Multi-institutional teams
  - Universities
  - Community-based organizations
  - Government agencies
- Diverse strategies for increasing awareness and affecting change
  - Curriculum
  - Health survey
  - Legislation

Acknowledgements

- Key collaborators:
  - Phil Brown, Brown University
  - Gail Corvello, ENACT
  - Andrea Lopez, Communities for a Better Environment
  - Rachel Morello-Frosch, UC Berkeley
  - Allison Waters, Brown University
- The work described in this presentation has been funded by multiple funding sources over multiple years:
  - Grant number 5 P42 ES013660-02 from the Superfund Research Program of the National Institute of Environmental Health Sciences, NIH (2007-2009)
  - Brown University Royce Fellowship (2007)
  - Brown University UTRA award (2008)
  - Brown University Pembroke Center Barbara Anton award (2008)
  - Avon Foundation (2008)
  - Fulbright scholarship (2009-2010)

- Contact: Alison.Cohen@fulbrightmail.org


Voting session on
Communicating E&H Issues
Peter van den Hazel, M.D., M.P.H.
Technical Support: Now.be
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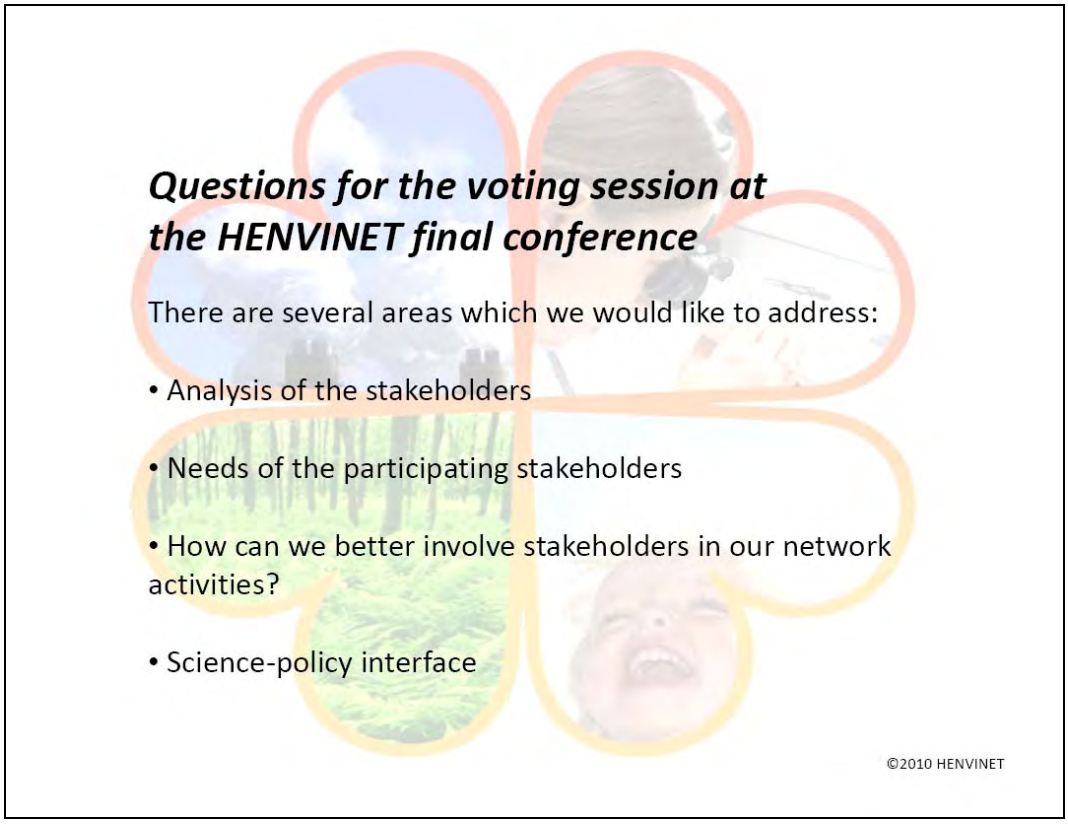
Questions for the voting session at the HENVINET final conference
There are several areas which we would like to address:
• Analysis of the stakeholders
• Needs of the participating stakeholders
• How can we better involve stakeholders in our network activities?
• Science-policy interface
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HENVINET Communication Portal

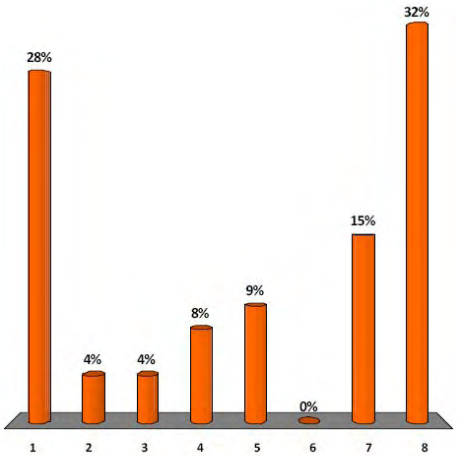
Policy makers are faced with daily questions about issues in society related to environment and health problems.

These problems can range from Electro magnetic Fields to soil contamination or from enforcing air pollution guidelines in cities to health hazards of swimming in surface water in a hot summer.

HENVINET has built a virtual portal for communication between scientists and policy makers.

What do you consider the most important feature of the virtual portal to best assist policy makers in doing their policy work?

1. The portal has valuable and scientifically sound information.
2. The provided information is a confirmation of the information they get from other sources before.
3. The portal is user friendly.
4. Make sure that the level of detail is sufficient for their purposes.
5. The content is only evidence based.
6. An automatic system for notifying new messages or items on the portal.
7. Users can identify on the portal what the current issues are to be considered.
8. Policy makers can find experts within their network/field of interest.



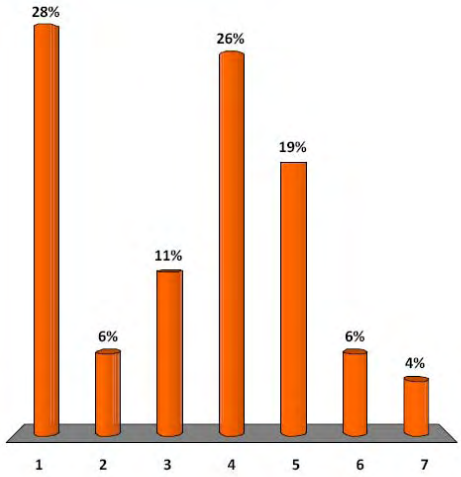
Policy makers operate in a sensitive arena of problems in the field of environment and health.

Politicians sometimes have to make difficult decisions based on the advice of the policy makers.

It is commonly understood that policy makers will only use reliable and well known.

Which following statement is most valid for making a policy maker becoming a successful user of the HENVINET portal:

1. The policy maker can interact with a well-known scientist .
2. The policy maker can ask a question anonymously to protect his/her own identity.
3. The policy maker sees that there is a lot of content on the portal.
4. The portal provides prepared answers to a range of specific policy issues.
5. The portal responds within a day to a posed question by a policy maker.
6. The portal provides automated lists of topics which are placed on the website.
7. Other reasons are more valid.

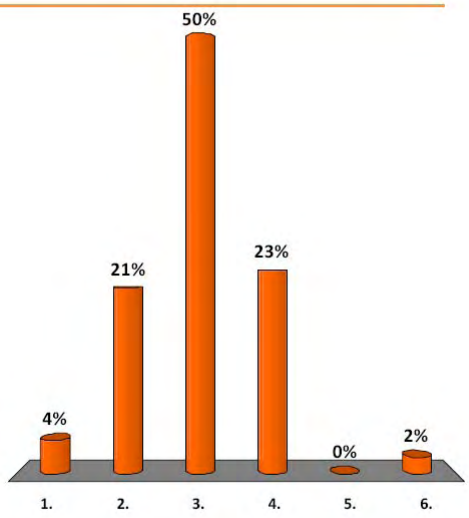


Nowadays time has become a scarce entity in the field of environment and health research.

If you would be convinced about the positive use of the HENVINET portal you might want to spend some time on the portal.

Are you willing to invest time in using a virtual network portal such as HENVINET in order to provide or gain information from other disciplines in the field of health and environment?

1. Yes, to provide content on my own field of interest
2. Yes, to learn from others and to take information from the portal
3. Yes, both to provide content and to take information from the portal
4. Only limited as I get my information mainly from other sources
5. No, not interested
6. Only to read the discussions in the discussion groups or forum



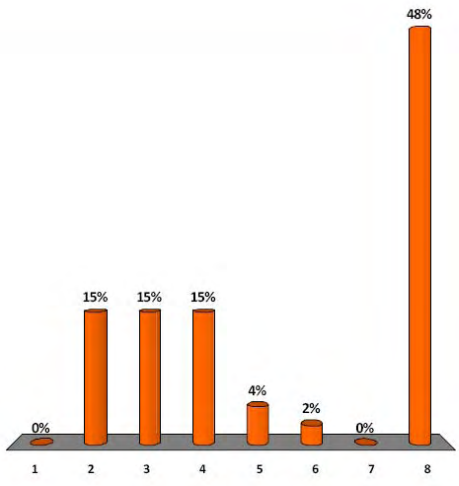
The HENVINET portal gives the opportunity for stakeholders to communicate with each other.

So far, most of the participants of the portal are scientists. A minority are policy makers.

We would like to know if this is a problem or not.

Which of the following stakeholders do you think that the HENVINET portal is most valuable for?

1. Scientist at university
2. Scientist at research institute
3. Policy maker at (inter)national level
4. Policy maker at regional or local level
5. Environment and health consultant in private sector
6. Other relevant social groups such as: Employer organisations - Labour unions - Environmental organisations - Patient groups - Consumer organisations
7. Citizens
8. All of the above



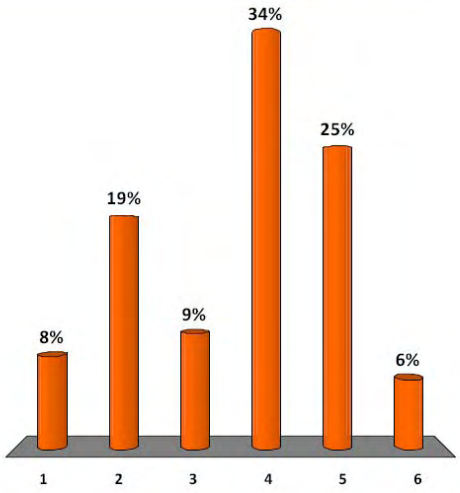
HENVINET is aiming at increasing the use of the portal by different stakeholders.

There are several options mentioned in a strategy paper to increase the use of the portal.

We would like to ask which strategy you think is best to reach this goal.

Which of the following actions would best serve the purpose of increasing the number of active portal members?

1. All HENVINET partners have to contribute with content to the portal.
2. A paid scientist (task force) should work on building the content of the portal website.
3. HENVINET should promote the portal with leaflets, email announcements and conference presentations.
4. The quality of the content of the portal is more important than the amount of information.
5. The portal should have a lot of additional features such as links to other websites, conference announcements, research calls.
6. Other actions are better to apply.



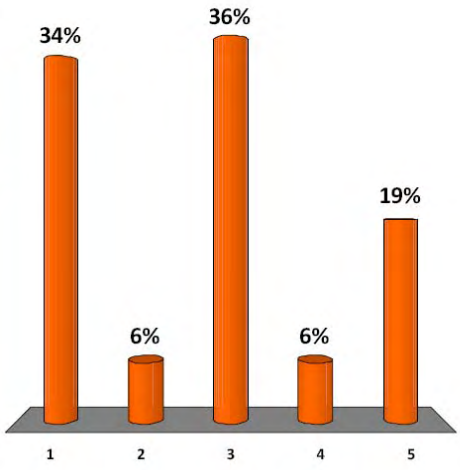
Decision support tools

HENVINET produced an overview of decision support tools in the field of environment and health.

These tools can support policy makers in making better decisions in making policies, and range from specific topics to general risk assessment tools.

Which of the following statements do you consider the most important factor in the use of decision support tools?

1. HENVINET should play a role in distribution on the possible use of decision support tools.
2. Policy makers have enough insight in the use of decision support tools.
3. Decision support tools can only be used when they have been sufficiently validated.
4. Decision support tools are overrated instruments.
5. Researchers have to use decision support tools and give the results to policy makers.



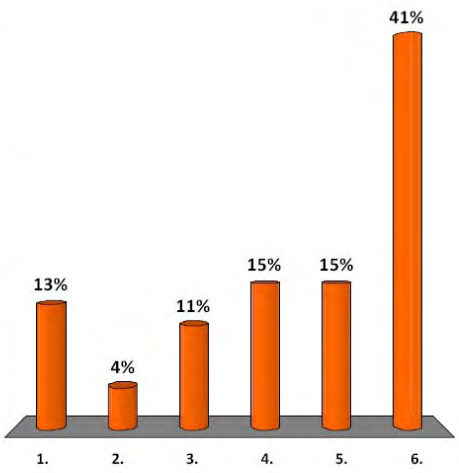
Drivers of the policy makers

It is a complex matter how policy makers derive their policy advices from facts. There are several factors which together take part in the composition of a policy advice.

We would like to know which drivers are the most likely influencing factors in developing a policy advice.

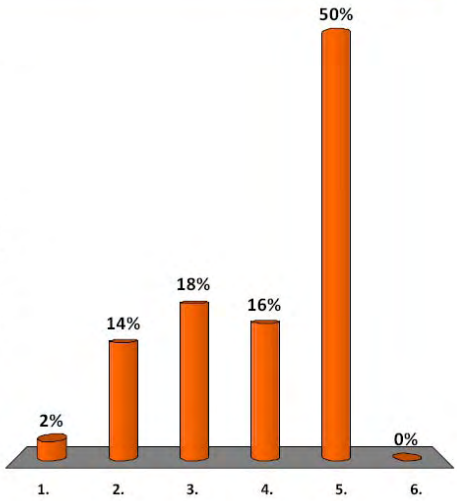
Which of the following statements do you consider the most important factor in the development of a policy advice? (situation today)

1. The policy maker uses a limited amount of scientists to provide information for a policy advice.
2. The policy maker uses a changing group of advisers.
3. The policy maker only uses scientific information to support the political opinion of his employer.
4. The policy maker wants only evidence based information to support his/her policies.
5. Traditional evidence based culture is in need of critical discussion and innovation because of the limits of current scientific practice with respect to complex important issues in environment and health.
6. The policy maker is highly influenced by the media in developing policy statements.



Which of the following statements do you consider the most important factor in the development of a policy advice? (desirable situation)

1. The policy maker uses a limited amount of scientists to provide information for a policy advice.
2. The policy maker uses a changing group of advisers.
3. The policy maker only uses scientific information to support the political opinion of his employer.
4. The policy maker wants only evidence based information to support his/her policies.
5. Traditional evidence based culture is in need of critical discussion and innovation because of the limits of current scientific practice with respect to complex important issues in environment and health.
6. The policy maker is highly influenced by the media in developing policy statements.



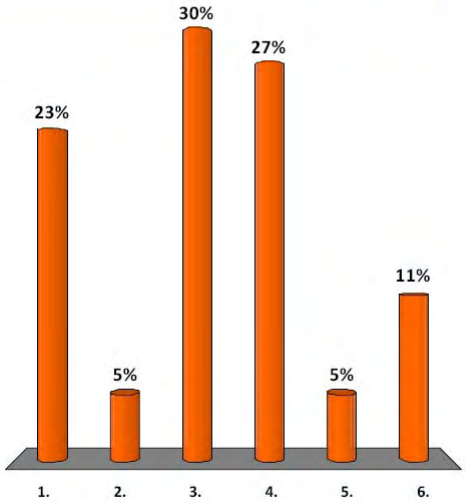
Different stakeholders communicate in their own fashion to other disciplines or to other stakeholders.

The amount of communication can also be very different among different stakeholders.

We would like to know how you communicate the results of your work.

What is your most frequent way of communication?

1. I write reports which are sent to the person or organisation who gave me the job.
2. I call regularly with journalists to provide them with information or produce press releases.
3. I present my work results in workshops or conferences.
4. I write mainly articles about my results.
5. I do not communicate myself.
6. Other ways of communication.

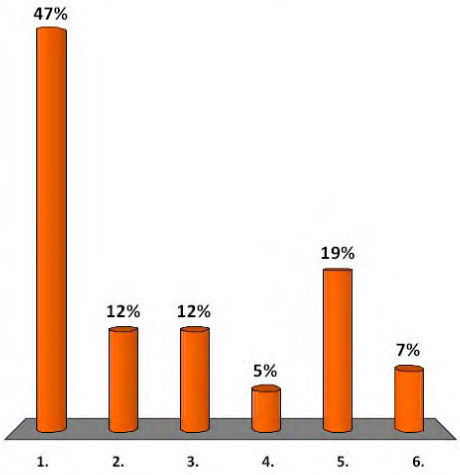


Within the field of environment and health there are different active disciplines; risk assessors, epidemiologists, toxicologists, physicians and other experts.

Sometimes it is difficult to have the different disciplines communicate with each other. In HENVINET has been looking for a methodology to bring these disciplines together. The virtual portal is one option.
We would like to know what you consider as the best method of communicating across diciplines.

What do you consider the best option to make different disciplines work together in tackling environmental health problems?

1. The EU has to set up interdisciplinary workgroups on different topics.
2. The EU has to oblige participants in EU-projects to join the HENVINET portal and add results of their project to the portal.
3. We have to organise international soccer matches between toxicologists and epidemiologists.
4. The creation of glossaries (perhaps through a wiki function) for scientific terms and policy terms.
5. Continuous professional education needs to include obligatory courses of other disciplines.
6. I have a great idea myself.

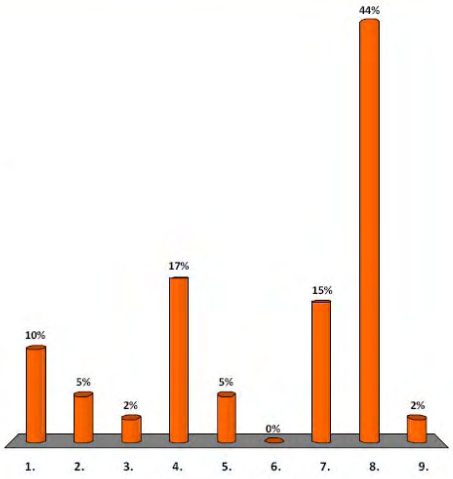


This meeting has brought persons with different backgrounds together.

We would like to know what kind of role the different participants play.

Can you indicate which kind of stakeholder best fits you?

1. Developing policy/legislation related to Environment and Health
2. Applying policy/legislation related to Environment and Health
3. Addressing stakeholder interests (Industry, NGO, ...)
4. Providing public information on Environment and Health
5. Medical practice
6. Consulting
7. Developing risk assessment / decision support activities
8. Research
9. Other




HENVINET
HEALTH AND ENVIRONMENT NETWORK
HOME ASTHMA & ALLERGY CANCER NEURODEVELOPMENTAL DISORDERS ENDOCRINE DISRUPTING EFFECTS
HENVINET
Environment & health complexities - challenges for the near future
- air pollution and health
Bertil Forsberg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HENVINET
Environment & health complexities - challenges for the near future
The knowledge on air pollution effects on humans has grown rapidly
Experts meant
The air pollution effects were found in the airways and lungs
The effects were caused by what we measured (TSP, CO, NO2)
The effects existed over certain threshold levels
Limit values could be set so that no effects would occur
Now we know better
Effects arise in many body organs

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Environment & health complexities - challenges for the near future

- Acute and chronic effects on the heart and circulation – important effects!

Particle and Fibre Toxicology

BioMed Central

Research

Open Access

Experimental exposure to diesel exhaust increases arterial stiffness in man

Magnus Lundbäck*[1], Nicholas L Mills[2], Andrew Lucking[2], Stefan Barath[1], Ken Donaldson[3], David E Newby[2], Thomas Sandström[1] and Anders Blomberg[1]

Ambient Air Pollution and the Progression of Atherosclerosis in Adults

Nino Künzli[1,2*], Michael Jerrett[3], Raquel Garcia-Esteban[2], Xavier Basagaña[2], Bernardo Beckermann[3], Frank Gilliland[4], Merce Medina[2], John Peters[4], Howard N. Hodis[5], Wendy J. Mack[4]

1 Swiss Tropical and Public Health Institute (Swiss TPH), Basel, Switzerland, 2 Centre for Research in Environmental Epidemiology CREAL, Barcelona, Spain, 3 Division of Environmental Health Sciences, School of Public Health, University of California, Berkeley, California, United States of America, 4 Department of Preventive Medicine, University of Southern California, Los Angeles, California, United States of America, 5 Atherosclerosis Research Unit, Department of Medicine, University of Southern California, Los Angeles, California, United States of America

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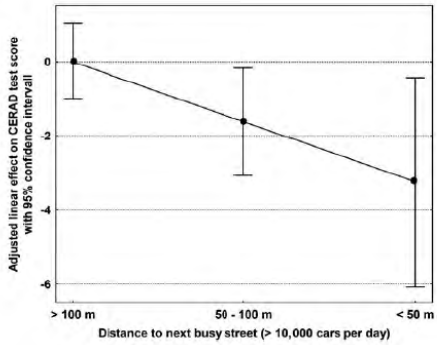
Environment & health complexities - challenges for the near future

- Impaired cognitive functions with decreasing distance to the next busy road (Ranft et al, 2009) – could be an important association



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Environment & health complexities - challenges for the near future

- Low birth weight and preterm birth increase with traffic pollution exposure – could be an important association

Research | Children's Health

A Cohort Study of Traffic-Related Air Pollution Impacts on Birth Outcomes

Michael Brauer,[1] Cornel Lencar,[1] Lillian Tamburic,[2] Mieke Koehoorn,[1,3] Paul Demers,[1,3] and Catherine Karr[4]

[1]School of Environmental Health, [2]Centre for Health Services and Policy Research, and [3]Department of Health Care and Epidemiology, The University of British Columbia, Vancouver, British Columbia, Canada; [4]Department of Pediatrics, University of Washington, Seattle, Washington, USA

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Environment & health complexities - challenges for the near future

Now we know better

- Some components are essentially indicators, sometimes poor (NO2)
- Interactions contribute to high relative risks


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Environment & health complexities - challenges for the near future
• Interaction reported between air pollution and very different factors – with a better understanding we will be able to better explain the burden
Environmental Health
BioMed Central
Review
Open Access
Does traffic exhaust contribute to the development of asthma and allergic sensitization in children: findings from recent cohort studies
Lennart Bråbäck*†1,2 and Bertil Forsberg†1
Address: 1Occupational & Environmental Medicine, Department of Public Health and Clinical Medicine, Umeå University, Umeå, Sweden and 2Department of Public Health and Research, Sundsvall Hospital, Sundsvall, Sweden
Email: Lennart Bråbäck* - lennart.braback@telia.com; Bertil Forsberg - bertil.forsberg@envmed.umu.se
* Corresponding author †Equal contributors
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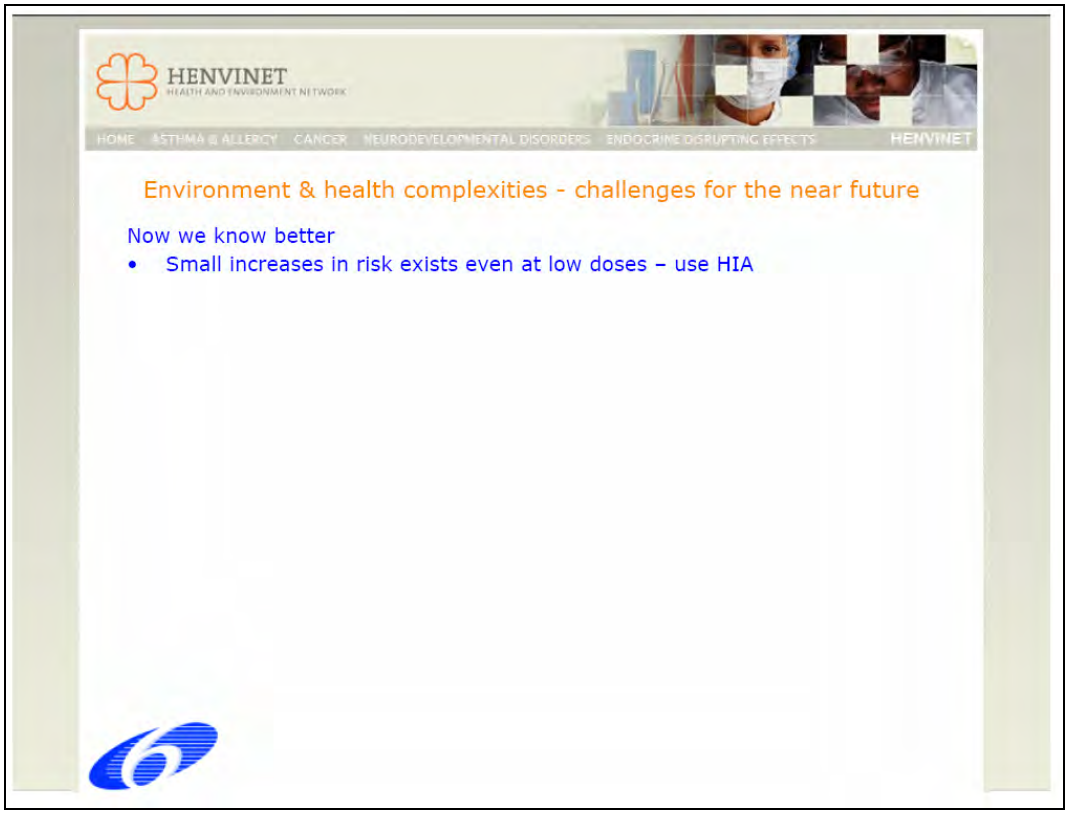
Accepted: 16 April 2009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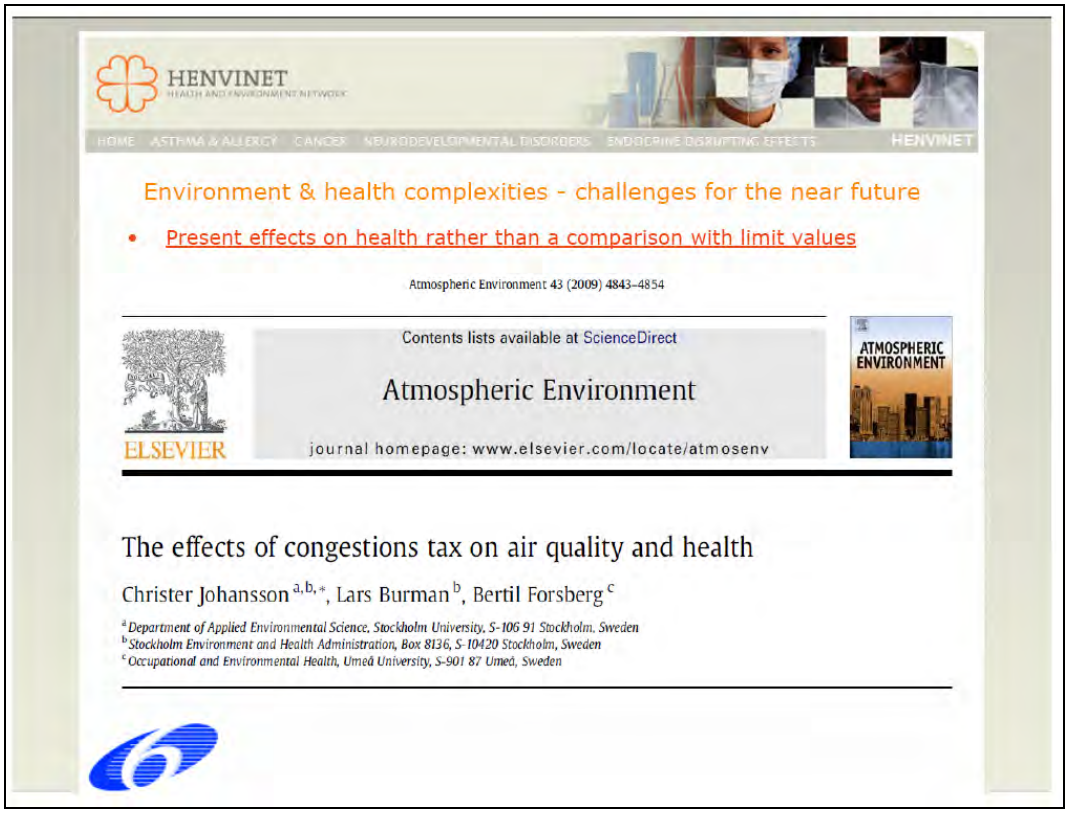
Environment & health complexities - challenges for the near future
Now we know better
• Small increases in risk exists even at low doses – use HIA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Environment & health complexities - challenges for the near future
Present effects on health rather than a comparison with limit values
Atmospheric Environment 43 (2009) 4843–4854
Contents lists available at ScienceDirect
Atmospheric Environment
journal homepage: www.elsevier.com/locate/atmosenv
ELSEVIER
ATMOSPHERIC ENVIRONMENT
The effects of congestions tax on air quality and health
Christer Johansson [a,b,*], Lars Burman [b], Bertil Forsberg [c]
[a] Department of Applied Environmental Science, Stockholm University, S-106 91 Stockholm, Sweden
[b] Stockholm Environment and Health Administration, Box 8136, S-10420 Stockholm, Sweden
[c] Occupational and Environmental Health, Umeå University, S-901 87 Umeå, Sweden


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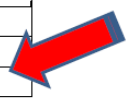
Some conclusions
Studies must have enough power to detect small relative risks and to investigate the ER-function
The interplay between mechanistic and epidemiological research is important to focus on relevant effects and to identify critical components
Diet, psychosocial factors, genetics, etc. may modify effects and determine suceptible groups
A life course perspective and long cohort studies are important to study cumulative exposures and late effects

Is breast cancer risk in young women increasing and why?

D.F. Merlo, A. Fucic

Breast cancer incident cases, 1995-2006, age groups 20-44

EU Cancer Registries	Cases 1995-2006
Belgium	9,589
Bremen	436
Croazia	4,574
Czech	3,903
Denmark	4,369
Finland	4,056
Geneve	468
Iceland	240
Ireland	3,371
Italy	2032
Netherlands	17,934
Norway	3,209
Saarland	1,018
Schleswig-Holstein	2,092
Scotland	4,915
Slovenia	748
Sweden	6,384
Total	**69,338**



Breast cancer incidence, 1995-2006, age groups 20-44

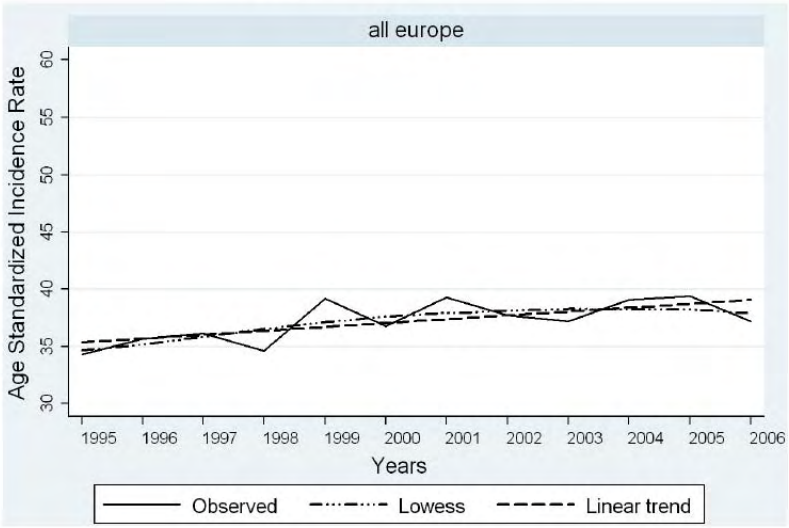
- Annual incidence changes (IRR=incidence rate tatio) across the time period 1995-2006 adjusted for age and heterogeneity in European women aged 20-44 at diagnosis by EU cancer registries.
- Linear trend evaluated using the random effect **change-point** Poisson model.

Breast cancer incidence rates, 1995-2006, age groups 20-44

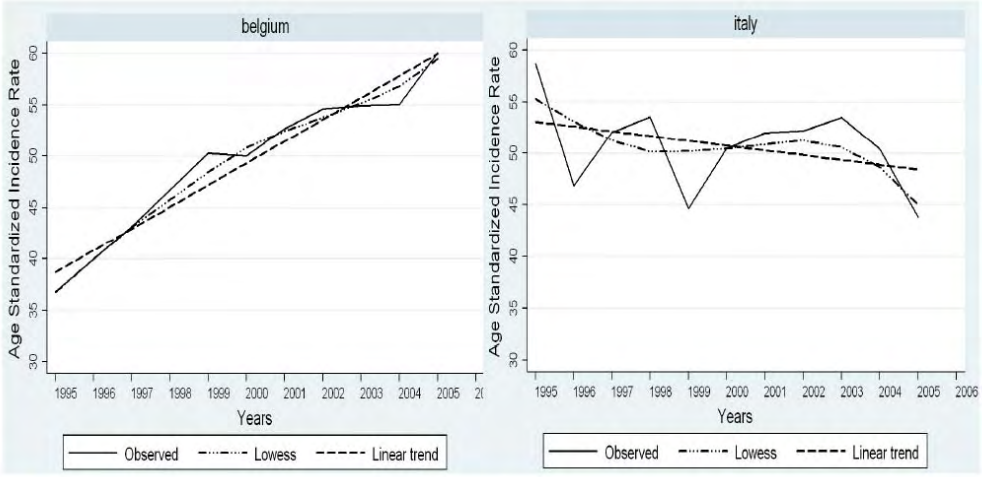
EU Cancer Registries	Cases	IRR	95%CI	Ptrend
Belgium	9589	1.0448	1.0372-1.0524	<0.001
Bremen	436	1.0048	0.9688-1.0420	0.799
Croazia	4574	1.0224	1.0044-1.0407	0.014
Czech	3903	1.0139	1.0018-1.0262	0.024
Denmark	4369	1.0059	0.9971-1.0148	0.186
Finland	4056	0.9942	0.9851-1.0034	0.218
Geneve	468	1.0244	0.9978-1.0518	0.073
Iceland	240	1.0166	0.9798-1.0549	0.381
Ireland	3371	1.0122	1.0020-1.0225	0.019
Italy	2032	0.9935	0.9794-1.0078	0.372
Netherlands	17934	1.0163	1.0095-1.0231	<0.001
Norway	3209	1.0057	0.9956-1.0158	0.270
Saarland	1018	0.9953	0.9763-1.0146	0.630
Schleswig-Holstein	2092	0.9795	0.9612-0.9982	0.032
Scotland	4915	1.0037	0.9956-1.0119	0.373
Slovenia	748	1.0026	0.9614-1.0455	0.904
Sweden	6384	1.0095	1.0021-1.0169	0.011
Total	**69338**	**1.0123**	**1.0079-1.0168**	**<0.001**

IRR= incidence rate ratios annual change relative to incidence rate in 1995

Breast cancer incidence rates EU, 1995-2006, age groups 20-44



Breast cancer incidence rates, Belgium, Italy , 1995-2006, age groups 20-44



Heterogeneity between registries: accounted in statistical modellling

Breast cancer incidence rates EU, 1995-2006, age specific

Age Group (years)	IRR[1] (annual change)	95% CI	P_{trend}
20-24	1.0231	0.9865-1.0610	0.220
25-29	1.0351	1.0220-1.0483	<0.001
30-34	1.0194	1.0120-1.0269	<0.001
35-39	1.0116	1.0067-1.0166	<0.001
40-44	1.0098	1.0057-1.0140	<0.001

Breast cancer incidence changes: screening saturation

Recent Changes in Breast Cancer Incidence in Spain, 1980–2004

Marina Pollán, Roberto Pastor-Barriuso, Eva Ardanaz, Marcial Argüelles, Carmen Martos, Jaume Galcerán,

Since the 1980s, Spain experienced two decades of sharply increasing breast cancer incidence. Declines in breast cancer incidence have recently been reported in many developed countries. We examined whether a similar downturn might have taken place in Spain in recent years.

The recent downturn in breast cancer incidence among Spanish women older than 45 years is best explained by a period effect linked to screening saturation.

J Natl Cancer Inst 2009;101:1584–1591

Breast cancer incidence changes sreeening overdiagnosis

BMJ

RESEARCH

Overdiagnosis in publicly organised mammography screening programmes: systematic review of incidence trends

Karsten Juhl Jørgensen, researcher Peter C Gøtzsche, director

Conclusions The increase in incidence of breast cancer was closely related to the introduction of screening and little of this increase was compensated for by a drop in incidence of breast cancer in previously screened women. One in three breast cancers detected in a population offered organised screening is overdiagnosed.

Breast cancer incidence changes: pros &cons

Overdiagnosis and mammography screening

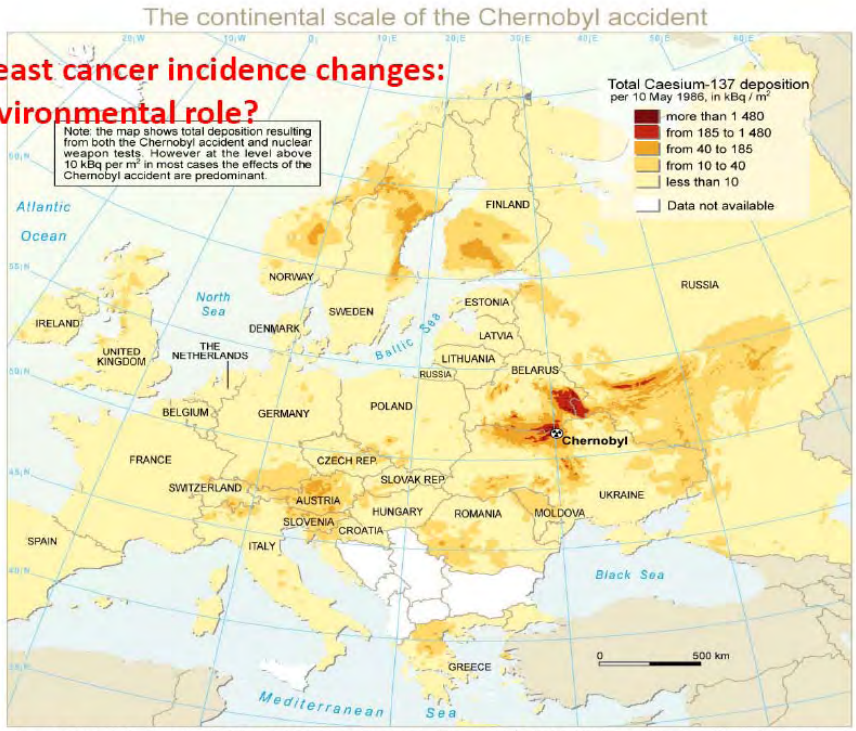
The question is no longer whether, but how often, it occurs

Draft balance sheet for screening mammography in 50 year old women*

Credits	Debits
woman will avoid dying from breast cancer[10]	2-10 women will be overdiagnosed and treated needlessly
	10-15 women will be told they have breast cancer earlier than they would otherwise have been told, but this will not affect their prognosis
	100-500 women will have at least one "false alarm" (about half of these women will undergo a biopsy)

*For every 1000 women undergoing annual mammography for 10 years

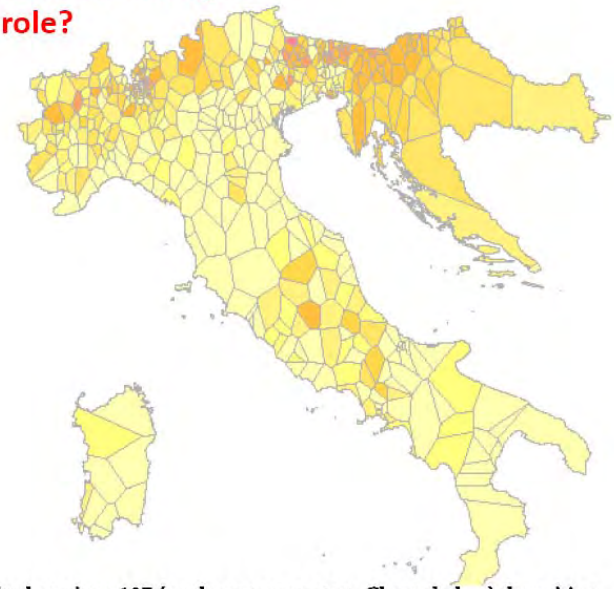
Breast cancer incidence changes: environmental role?



Source: European Commission, Joint Research Center, Environment Institute; Institute of Global Climate and Ecology (Moscow); Roshydromet (Russia); Minchernobyl (Ukraine); Belhydromet (Belarus). *Atlas of Caesium Deposition on Europe after the Chernobyl Accident*.1998.

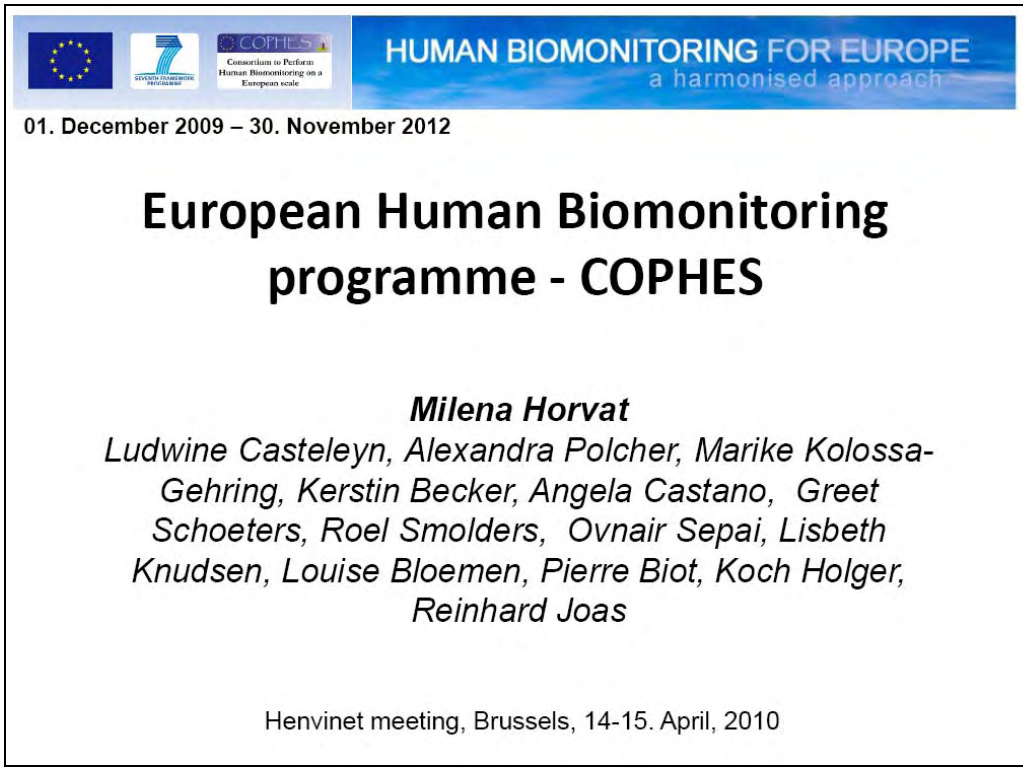
Map by UNEP/GRID-Arendal, May 2007

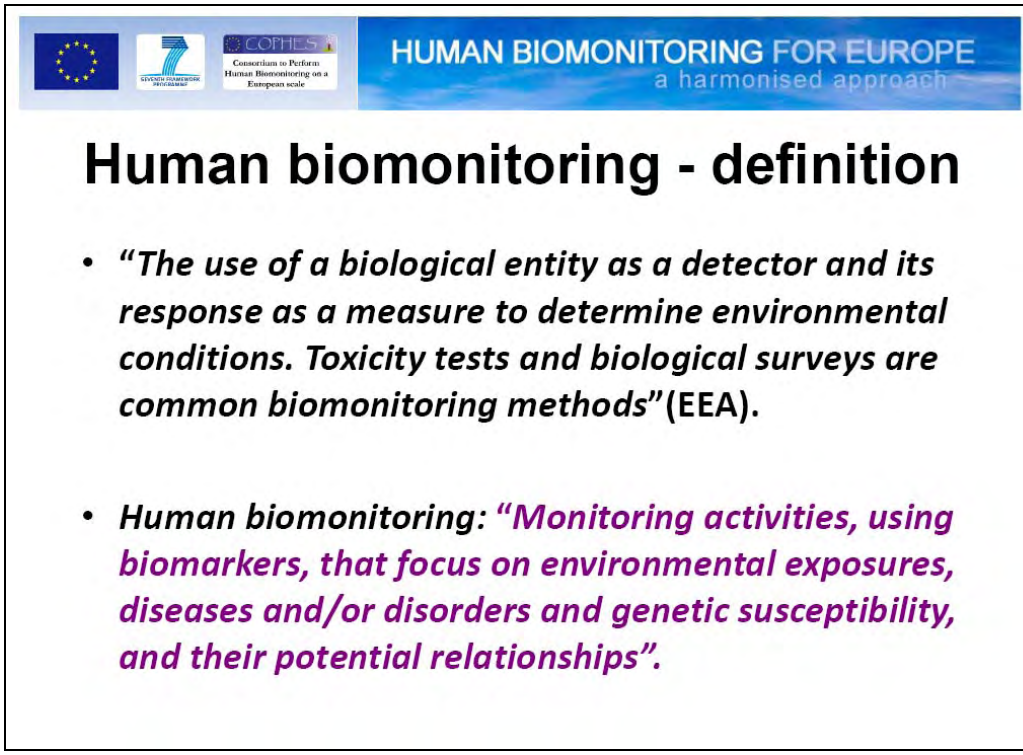
Breast cancer incidence changes: environmental role?



Total caesium-137 (nuclear weapons test, Chernobyl, ...) deposition
суммарное загрязнение местности цезием-137 (глобальное+чернобыльское)

Data not available	kBq/m²	1	2	4	10	20	40	100	185	кБк/м²
Нет данных	Ci/km²	0.027	0.054	0.1	0.27	0.54	1.08	2.7	5	Ки/км²


HUMAN BIOMONITORING FOR EUROPE
a harmonised approach
01. December 2009 – 30. November 2012
European Human Biomonitoring programme - COPHES
Milena Horvat
Ludwine Casteleyn, Alexandra Polcher, Marike Kolossa-Gehring, Kerstin Becker, Angela Castano, Greet Schoeters, Roel Smolders, Ovnair Sepai, Lisbeth Knudsen, Louise Bloemen, Pierre Biot, Koch Holger, Reinhard Joas
Henvinet meeting, Brussels, 14-15. April, 2010


HUMAN BIOMONITORING FOR EUROPE
a harmonised approach
Human biomonitoring - definition
• "The use of a biological entity as a detector and its response as a measure to determine environmental conditions. Toxicity tests and biological surveys are common biomonitoring methods"(EEA).
• Human biomonitoring: "Monitoring activities, using biomarkers, that focus on environmental exposures, diseases and/or disorders and genetic susceptibility, and their potential relationships".

HUMAN BIOMONITORING FOR EUROPE
a harmonised approach

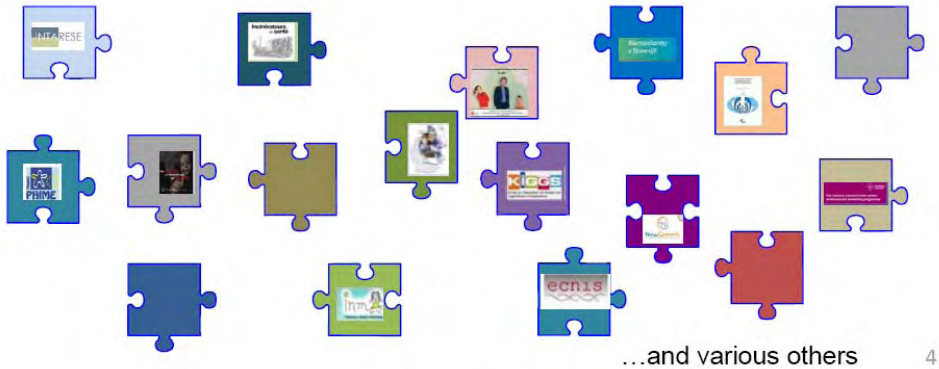
Why HBM?

- *to derive statistically based reference values,*
- *to assess the implementation of the chemical regulations (REACH),*
- *to support policy actions for reduction of exposure,*
- *to improve environment and health.*

HUMAN BIOMONITORING FOR EUROPE
a harmonised approach

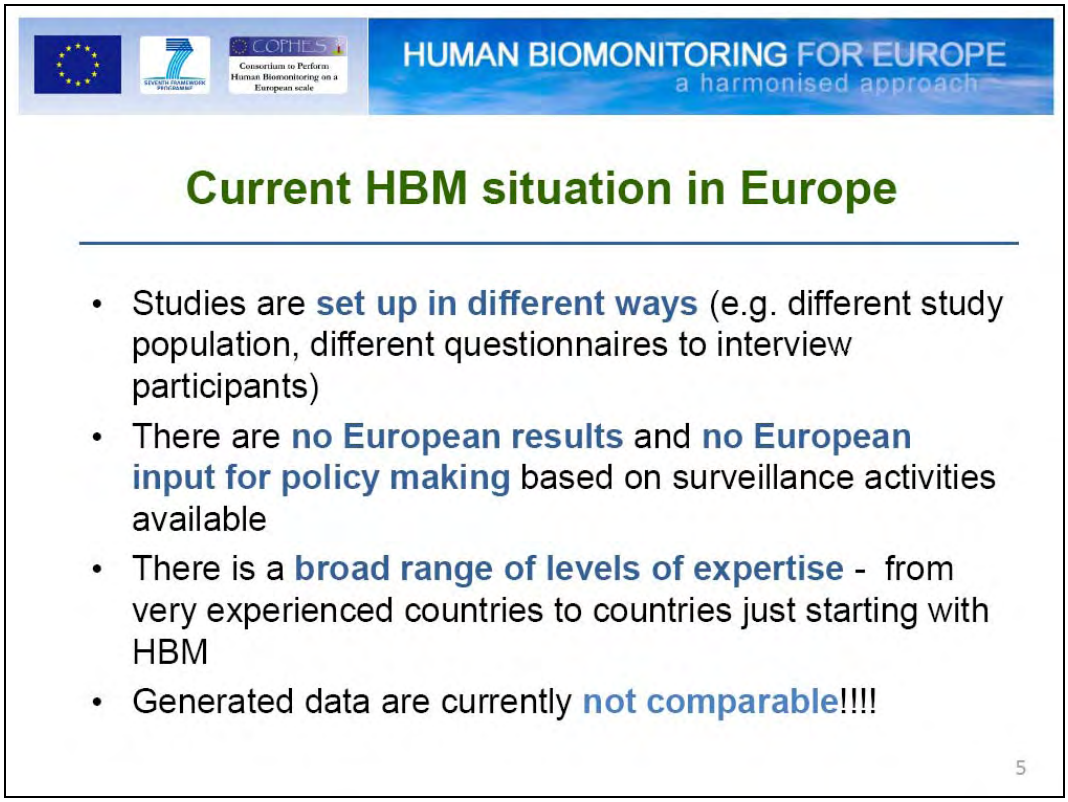
Current HBM situation in Europe

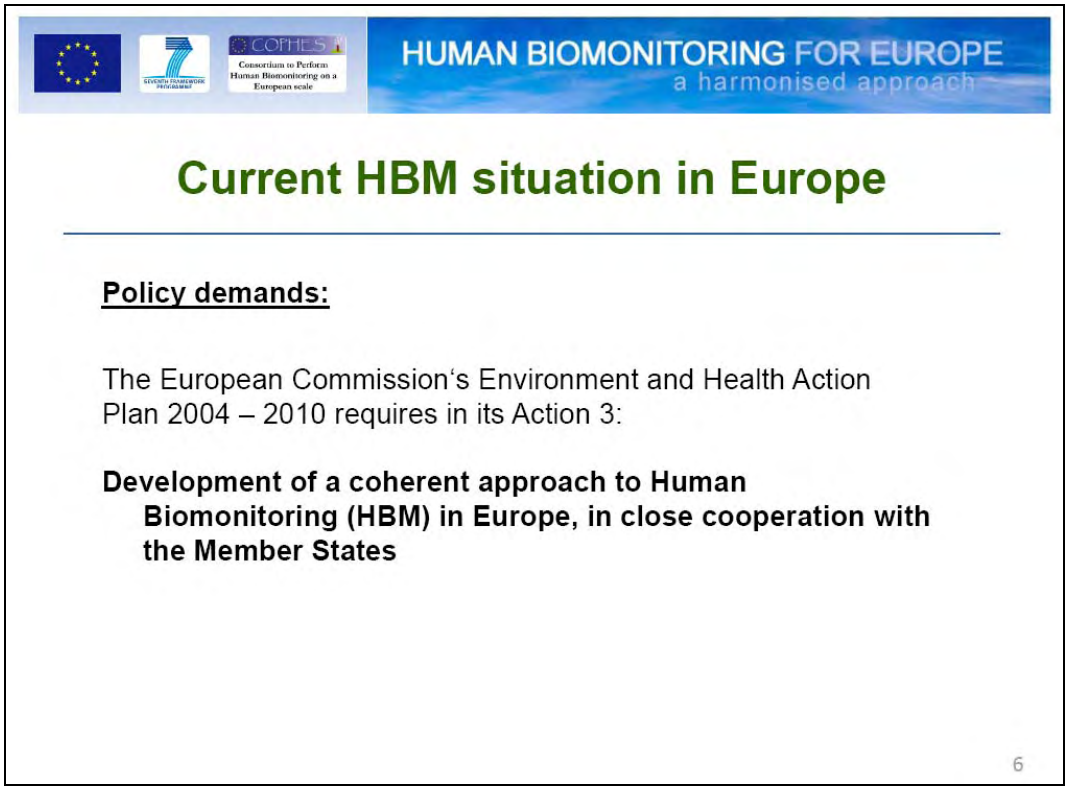
There are **numerous ongoing HBM project** (surveillance as well as research) in Europe but they are **not coordinated and harmonised**



…and various others

4


HUMAN BIOMONITORING FOR EUROPE
a harmonised approach
Current HBM situation in Europe
• Studies are set up in different ways (e.g. different study population, different questionnaires to interview participants)
• There are no European results and no European input for policy making based on surveillance activities available
• There is a broad range of levels of expertise - from very experienced countries to countries just starting with HBM
• Generated data are currently not comparable!!!!
5


HUMAN BIOMONITORING FOR EUROPE
a harmonised approach
Current HBM situation in Europe
Policy demands:
The European Commission's Environment and Health Action Plan 2004 – 2010 requires in its Action 3:
Development of a coherent approach to Human Biomonitoring (HBM) in Europe, in close cooperation with the Member States
6

HUMAN BIOMONITORING FOR EUROPE
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Current HBM situation in Europe

Reaction on policy demand:

A group of 35 partners coming from 27 European countries started recently as COPHES – Consortium to perform Human biomonitoring on a European Scale – work to set up a harmonised approach

7

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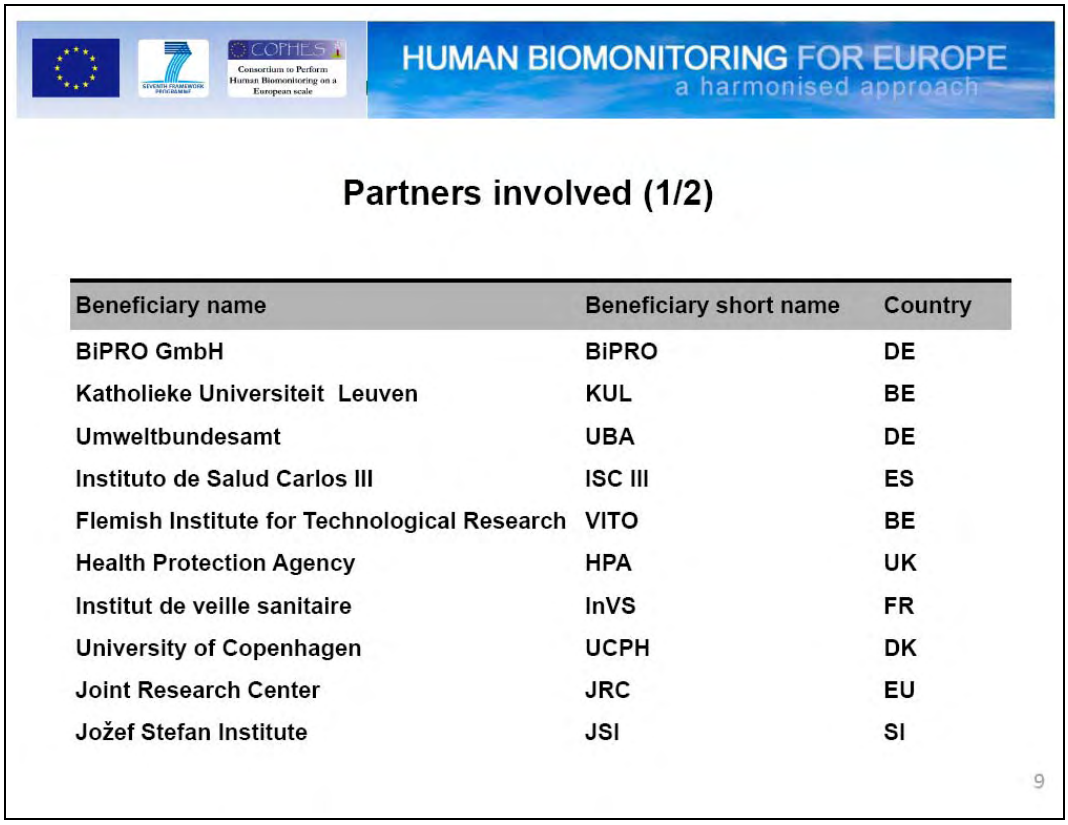
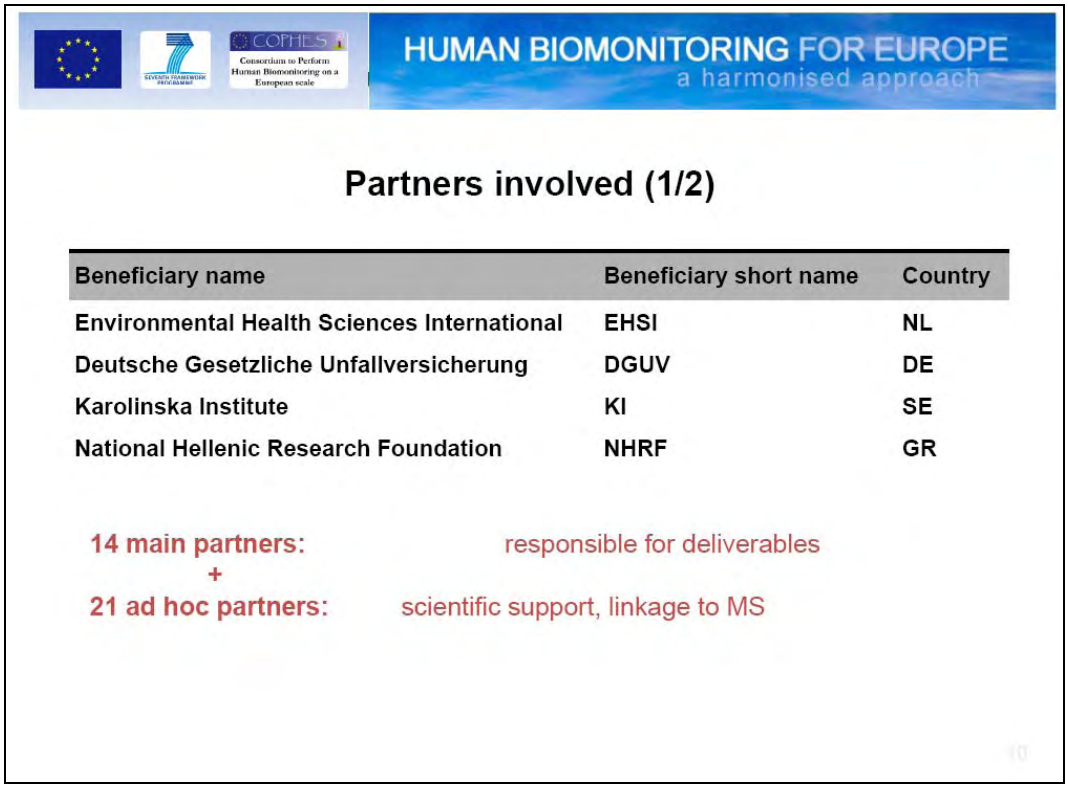
Ultimate objective of COPHES

Harmonisation of national activities on human biomonitoring to contribute to better data comparability across the EU.

It is a direct provision of policy support for the implementation of the Environment and Health Action Plan, especially the Action 3 (Develop a coherent approach to biomonitoring in Europe).

8


HUMAN BIOMONITORING FOR EUROPE
a harmonised approach
COPHES
Consortium to Perform Human Biomonitoring on a European scale
Partners involved (1/2)
Beneficiary name | Beneficiary short name | Country
BiPRO GmbH | BiPRO | DE
Katholieke Universiteit Leuven | KUL | BE
Umweltbundesamt | UBA | DE
Instituto de Salud Carlos III | ISC III | ES
Flemish Institute for Technological Research | VITO | BE
Health Protection Agency | HPA | UK
Institut de veille sanitaire | InVS | FR
University of Copenhagen | UCPH | DK
Joint Research Center | JRC | EU
Jožef Stefan Institute | JSI | SI
9


HUMAN BIOMONITORING FOR EUROPE
a harmonised approach
COPHES
Consortium to Perform Human Biomonitoring on a European scale
Partners involved (1/2)
Beneficiary name | Beneficiary short name | Country
Environmental Health Sciences International | EHSI | NL
Deutsche Gesetzliche Unfallversicherung | DGUV | DE
Karolinska Institute | KI | SE
National Hellenic Research Foundation | NHRF | GR
14 main partners: responsible for deliverables
+
21 ad hoc partners: scientific support, linkage to MS

HUMAN BIOMONITORING FOR EUROPE
a harmonised approach

Work packages

WP 1 – Operational EU HBM framework; Ludwine Casteleyn, KU Leuven

WP 2 – Sampling, recruitment and sample collection; Marika Kolossa-Gehring, Kerstin Becker, UBA

WP 3 – Sample handling, analysis and biobanking; Argelia Castano, ISCIII

WP 4 – Data analysis and integrated interpretation; Greet Schoeters, Roel Smolders, VITO

WP 5 – Communication and dissemination; Ovnair Sepai, HPA

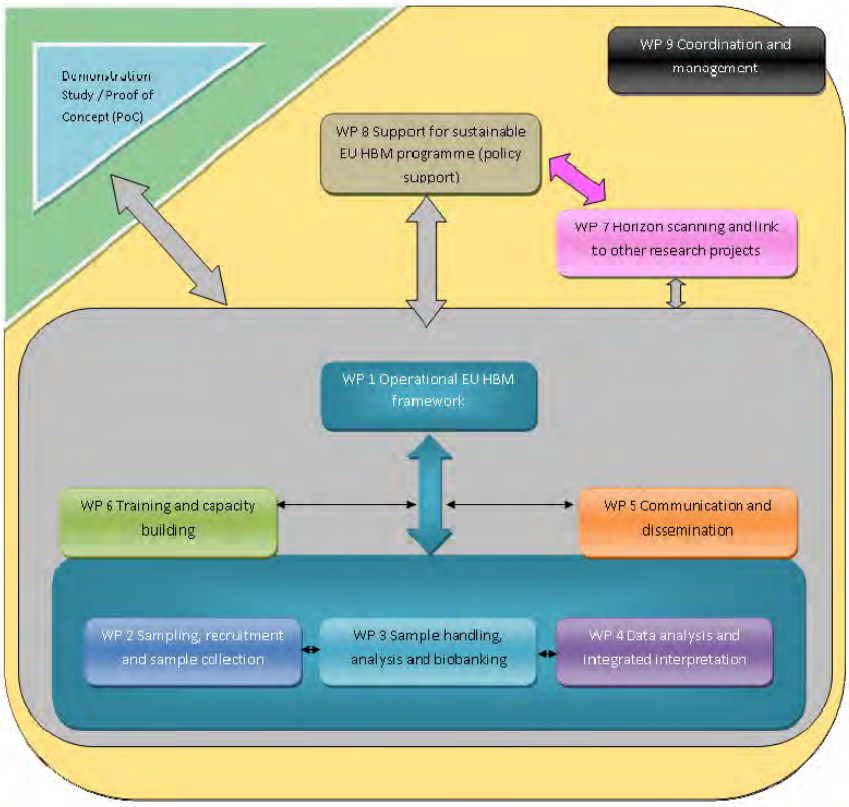
WP 6 – Training and capacity building; Milena Horvat, Louis Bloemen

WP 7 – Horizon scanning and link to other research projects; Lisbeth Knudsen, UCPH

WP 8 – Support for sustainable EU HBM programme (policy support); Reinhard Joas, BiPRO GmbH

WP 9 – Coordination and management; Reinhard Joas, BiPRO GmbH

11



12

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Operational aspects of feasibility study

Two projects working together

COPHES — already accepted

DEMOCOPHES — still under evaluation

- provides framework
- provides guidance
- analyses results on a EU level
- recommendations & conclusions

- focus will be given to **urinary cadmium**, **phthalates** and **cotinine** as well as to **mercury** in hair
- **120 mother /child** couples should be monitored per country

13

The European feasibility study on mothers and children

WP2: 1. Study Population	
Topic	**Alternatives**
Choice of vulnerable population segment	► Newborns
	► Babies
	► Toddlers
	► Preschool children
	► Schoolchildren
	► Mothers, pregnant women
	► Women in childbearing age
	► Seniors

14

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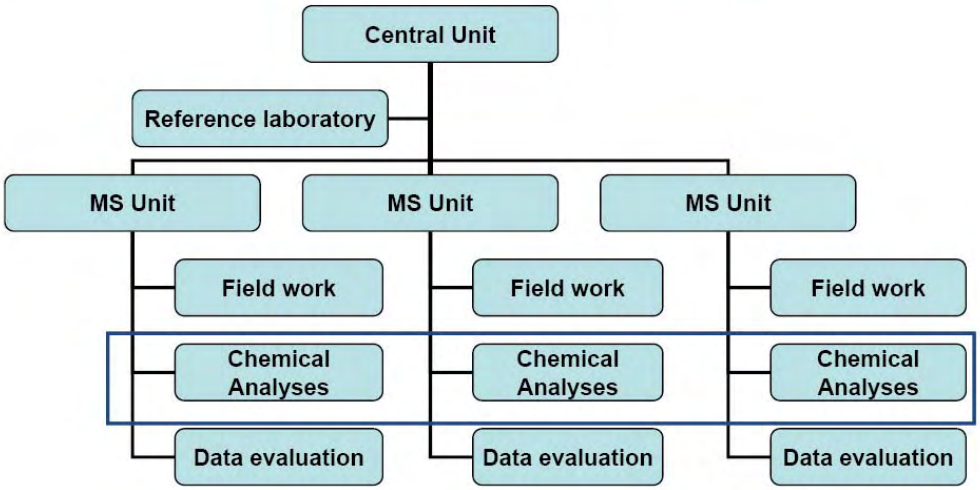
Organisation of the Pilot-Study



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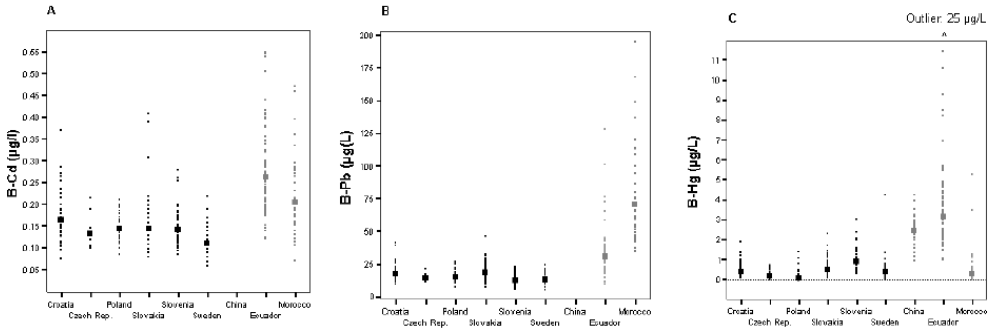
Issues/challenges

- Low concentration levels
- Planning:
  - Population variability vs. comparability of measurement data – *analytical quality objectives: production of traceable data with stated uncertainties….;*
  - Ethical issues (invasive/non-invasive sampling; number of subjects needed in the study)
- Cost-effectiveness
- Comparability of measurement results in space and time

Population variability – city children, PHIME project

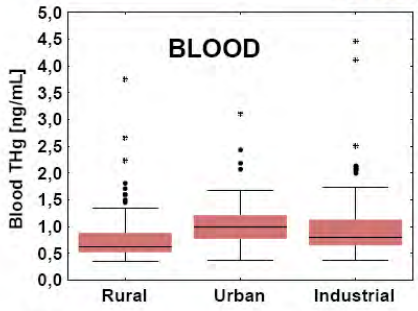
(Pb, Hg, Cd in blood, 6-11 years old)

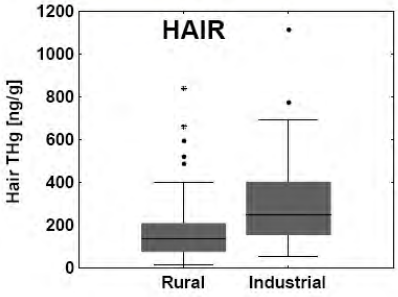


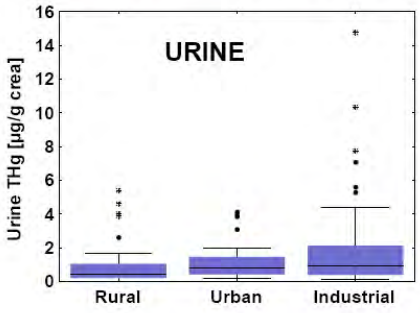
Source: Houba et al. 2010

Human biomonitoring, Slovenia

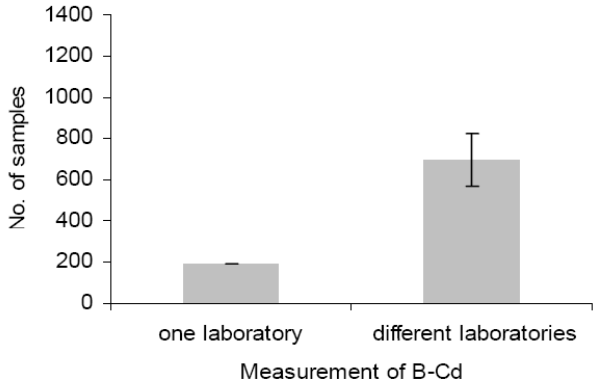
2008, children 8-10 years old







Required sample size – Cd in blood
Significance of analytical method performance?

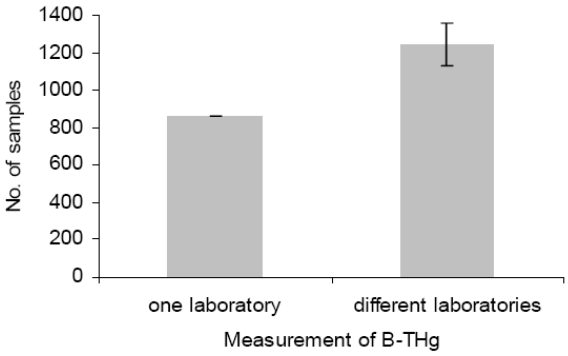


$SD_{popul} + SD_{interlqb}$

→ ***sample size increases for 2.5 – 4.5 x***

Sample size calculation based on t-test: two mean B-Cd values of 10 % difference, statistical power = 0.90; α = 0.05.

Required sample size – Hg in blood
Significance of analytical method performance?

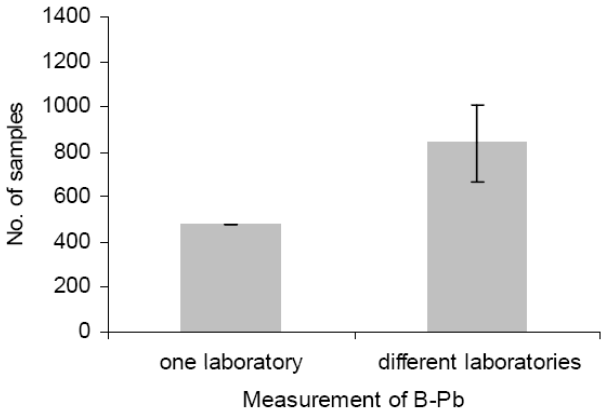


$SD_{popul} + SD_{interlab}$

→ *sample size increases for* ***30 - 60 %***

Sample size calculation based on t-test: two mean B-THg values of 10 % difference, statistical power = 0.90; α = 0.05.

Required sample size – Pb in blood
Significance of analytical method performance?



$SD_{popul} + SD_{interlab}$

→ *sample size increases for* ***20 – 100 %***

Sample size calculation based on t-test: two mean B-Pb values of 10 % difference, statistical power = 0.90; α = 0.05.

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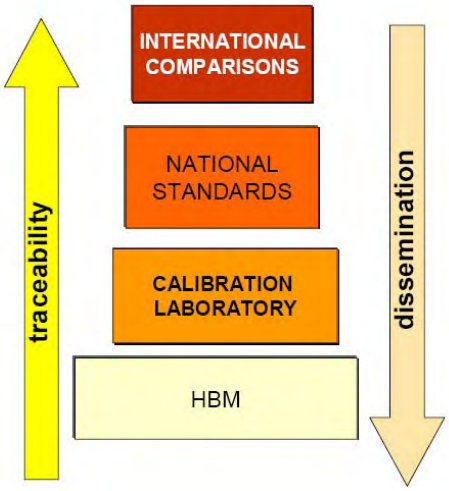
- **HBM requires production of accurate data in time and space**
- **Current reference materials are not sufficient to cover the needs (matrix, concentration range, uncertainty, etc…)**
- **Hierarchical metrology structure of technical infrastructure needs to be developed in practise for the succesfull HBM (national, regional, global)**



HUMAN BIOMONITORING FOR EUROPE
a harmonised approach

Thank you for your attention!

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23

HENVINET workshop, Brussels, 14-15 April 2010
Approaching complexities in Environment and Health

Supporting the European Environment and Healthy Policy with special focus on children
SEARCH project

Eva Csobod
Regional Environmental Center, Hungary

REGIONAL ENVIRONMENTAL CENTER

SEARCH
School **E**nvironment **A**nd **R**espiratory health of **CH**ildren
an international research project

within the

"Indoor Air Quality in European Schools. Preventing and reducing respiratory diseases"
programme

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European cooperation on in-door air quality in schools

.EU E&H Action Plan and the WHO Children's E&H Action Plan, PRG3 implementation

•In-door air quality project in 8 countries in 2006-2010

• Countries:

Italy, Hungary, Slovakia

Albania, Bosnia and Herzegovina, Serbia

Austria, Norway

• Goal: reporting to the E&H Ministerial conference in 2010

•Supported by the IMELS

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Why we need to improve the indoor air quality in schools?

- increasing respiratory diseases: 15-20% in age 11-13
- the changing school environment – effect of the outdoor air quality
- time spent in the school and its effect on the health condition of the children
  - 6-8 hours, O2 <>CO2 concentration, NO2 from heating, dust, organic chemicals, PM x, pollens

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Improvement of indoor air quality in schools- NEEDS

- investigation of the „legal frame" of in-door air quality in schools
- complex research: in-door air quality in schools, out door air quality, living conditions in homes >> influense respiratory health of children
- capacity building/training of the selected school staff >> local actions

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OBJECTIVES of the SEARCH project

- to assess the associations between the school environment and the children's (respiratory) health
- to make recommendations for improving the quality of school environment
- to develop E&H training program for the schools

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SEARCH STUDY DESIGN: cross-sectional

Exposure assessment

- measurement of the IAQ in the school (NO2, BTX HCHO, CO/CO2, PM10)
- questionnaire on the class-room and time spent
- questionnaire on the school building and its maintenance
- questionnaire on the home environment

Health assessment

- symptom questionnaire (cough, wheeze, asthma dg, allergy)with questions on factors
- lung function measurement

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SEARCH: SCHOOL SELECTION

- Number of schools per country: 10
- Number of children per school: 100
- Age of the children: 8-11 years
- **Selection criteria** (symptom prevalence)
  - polluted /clean school environment
  - building characteristics: new/old or light/traditional construction

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SEARCH: Timeline

- Preparation 2007
- Exposure asessment 2007-2008
- Data collection Nov 2007- April 2008
- Data analysis 2009
- Reporting-international workshop 2009
- Final evaluation December 2009
- Presentation in the E&H Ministerial meeting, March 2010

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CONCLUSIONS

- **Facing the street: HCHO ↑ CO2 ↑ PM10↑**
  outdoor sources or not enough ventillaton

- **Outdoor → PM10 ↑**

- **Fresh painting → HCHO ↑**

- **Floor: wood or carpet → HCHO ↑ PM10↑**

- **Floor: plastic → toluene ↑**

- **Classroom crowdness → PM10↑ CO2 ↑**

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RECOMMENDATIONS

- Ventilation after finishing the schooltime especially in winter
- Ventilation of the classroom in every break at least
- Children leave the classroom during the break
- Regulation of heating is practical because of adjustment the appropriate RH and energy-saving.
- Cleaning has to be efficient
- Children change their shoes in the classroom

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RECOMMENDATIONS

- Schools should be built in places not directly affected by heavy traffic/industry/any other polluting establishments in the neighbourhood.
- Crowdedness should be avoided in the classrooms.
- Appropriate ventilation regime of the classrooms should be introduced in order to provide good indoor air quality during the whole period of teaching hours.
- Floor coverings of the classrooms should be chosen with particular cautiousness to avoid any adverse effects on the respiratory health of children.
- Use of water-resistant paints in the classrooms should be avoided.

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Recommendations

>> New preventive and legal measures, and criteria for controlling indoor air should be introduced in the European schools

>> Capacity building and awareness raising programmes should be organised in the European schools to promote healthy school environment

>>Raising awareness of all responsible stakeholders

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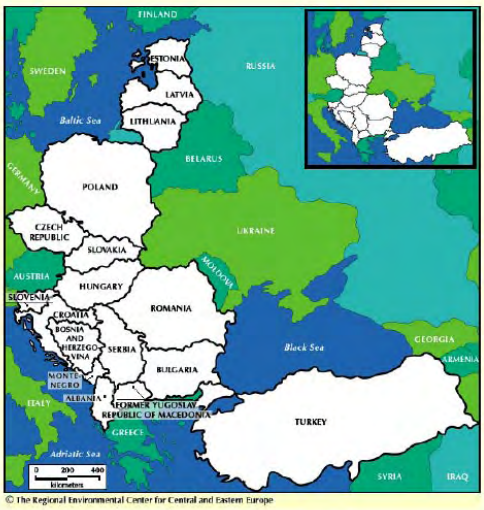
Perspectives

- E&H research outcomes for policy recommendation
- Facilitating E&H sector policy integration in the CEE region
- Experiences on E&H project implementation with partners in Europe >> new partnerships



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Thank you for your attention!

www.rec.org/SEARCH, ecsobod@rec.org

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Photo Carra

Photo G. Basilico

Environment and Health in Europe: WHO's view after the Fifth Ministerial Conference

Parma, Italy, 10-12 March 2010

WHO Regional Office for Europe

The Fifth Ministerial Conference on Environment and Health

EUROPE

Europe takes the lead in environment and health

- In the late 1980s, European countries launched a process to eliminate the most significant environmental threats to human health.
- Progress towards this goal is marked by a series of five-yearly Ministerial Conferences coordinated by WHO/Europe.
- The Conferences are unique, bringing together different sectors to shape European policies and actions on environment and health.

Photos left to right: © Belgian Cyclists Union, istockphoto, istockphoto, istockphoto, WHO, istockphoto, V. Taylor-Gee

EUROPE

The Fifth Ministerial Conference on Environment and Health
Parma, Italy 10-12 March 2010

2

The Ministerial Conferences are the pillars of the process

Action in Partnership

The future for our children

- The first Ministerial Conference was held in Frankfurt in 1989, followed by Helsinki in 1994 and London in 1999.
- The most recent conference in Budapest in 2004 launched the Children's Environment and Health Action Plan for Europe (CEHAPE) and for the first time involved the youth in the decision-making process.

Europe has identified action on major environmental risk factors to children's health

4 Regional Priority Goals constitute the CEHAPE

Photos left to right: © V. Taylor-Gee, istockphoto, N. Di Tanno, istockphoto

Regional Priority Goal I. to prevent and significantly reduce the morbidity and mortality arising from gastrointestinal disorders and other health effects, …. safe and affordable water and adequate sanitation for all children.

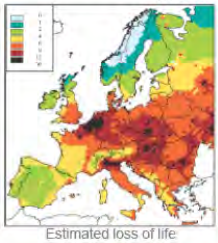
Regional Priority Goal II. to prevent and substantially reduce health consequences from accidents and injuries ….. by promoting safe, secure and supportive human settlements for all children.

Regional Priority Goal III. to prevent and reduce respiratory disease due to outdoor and indoor air pollution, ….an environment with clean air.

Regional Priority Goal IV. to reduce the risk of disease and disability arising from exposure to hazardous chemicals (such as heavy metals), physical agents (e.g. excessive noise) and biological agents and to hazardous working environments during pregnancy, childhood and adolescence.

The key environmental risk factors still affect the health of Europeans

1. Water is a basic human right but access is still poor. Almost 140 million (16%) do not have a household connection to a drinking-water supply.
2. 800 000 deaths from injuries occur each year in the European Region. 2/3 could be avoided if all countries equaled the performance of the safest.
3. The smallest particulate matter (PM2.5) causes an estimated loss of life expectancy of 8.6 months for every citizen of the European Union.
4. In some countries of central Europe lead levels in children's blood remain almost three times as high as in Western Europe in the 1990s.



Estimated loss of life expectancy in months

Climate change and inequities can hamper progress to reduce environmental health risks

Climate change can affect some of the most fundamental determinants of health: water, air and food.

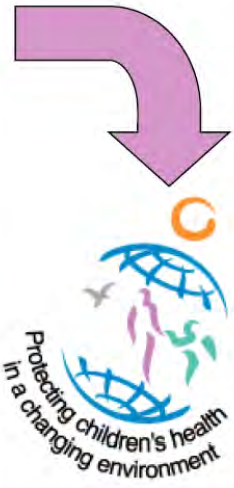
- Water stress is projected to increase over central and southern Europe and central Asia, affecting 16–44 million additional people by 2080.
- Higher temperatures may increase regional ozone pollution, which already causes 20 000 premature deaths in the European Union.
- Food production could decrease by up to 30% in central Asia by the middle of the 21st century and threaten food security.

Less affluent people living in a poor country suffer up to fourfold from a contaminated environment.

While poor people tend to live in worse environments, their health is influenced by the capacity and political determination of countries to reduce environmental health risks.

A 2-year series of events have shaped the Parma agenda

- Three high level meetings discussed the key themes in the Conference agenda (Milan, Madrid, Bonn)
- An international public health symposium shared the most recent evidence with policy-makers (Madrid)
- Policy dialogue meetings focused on the role of public health services in central and eastern countries (Bishkek, Dushanbe, Belgrade)
- A declaration drafting group wrote the main committal document for Parma (Brussels, Paris, Luxembourg, Andorra, Bonn)



Parma, Italy, 10-12 March 2010

Plenary sessions:

1. 20 years environment and health process in Europe
2. Socioeconomic and gender inequalities in environment and health risks
3. Implementation of CEHAPE in the countries
4. Working with partners and stakeholders
5. Addressing health aspects of climate change
6. Endorsement of the Ministerial Declaration

Special sessions:

- CEHAPE awards
- Media awards
- Side events (simposia, poster, standing coffees, exhibition)

Over 800 participants attended

- All 53 WHO European Member States represented
- High level attendance
  - 35 ministers and deputy ministers of health and environment
  - The European Commissioner for Health,
  - Heads of EU Agencies (EFSA, EEA),
  - Heads of UN Agencies in Europe (UNECE, UNEP),
  - Senior representatives of ECDC, UNDP, OECD, REC, EBRD
- NGOs (HEAL, ITU, WBCSD, EcoForum)
- 70 youth representatives
- 100 Journalists from 24 countries
- Scientific institutions and networks
- WHO country offices and collaborating centres

The Fifth Ministerial Conference on Environment and Health
Parma, Italy 10-12 March 2010 9

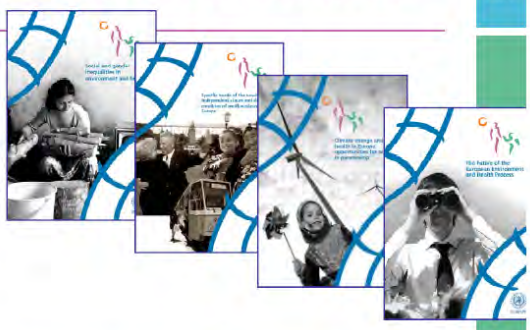
90 side events were organized

- 24 symposia
- 8 standing coffees
- 21 exhibitions stands
- 37 poster sessions

The Fifth Ministerial Conference on Environment and Health
Parma, Italy 10-12 March 2010

New publication and evidence were launched

- 4 policy briefings:
  1. Social and gender inequalities in environment and health
  2. Specific needs of the Newly Independent States and the countries of south-eastern Europe
  3. Climate change and health in Europe: opportunities for partnership
  4. The future of the environment and health process
- Background documents:
  - Health and environment in Europe: progress assessment
  - The Journey to Parma: a tale of 20 years of environment and health action in Europe
  - Progress and challenges on water and health: the role of the Protocol on Water and Health
  - Environment and health risks: a review of the influence and effects of social inequalities



The Parma Conference was the first green Conference on environment and health

FSC

Electronic documents and ecomaterials +

Free tickets for electric public buses and access to bicycles +

Local and seasonal food +

Recycled waste +

Carbon footprint costs offset =

Zero-carbon-footprint

The Parma Declaration is the first time-bound outcome of the environment and health process

European governments adopted a comprehensive plan to reduce environmental risks to health by 2020

Ministers of health and of environment committed to

- provide equal opportunities to each child by ensuring access to safe water and sanitation, physical activity and healthy diets, improved air quality and an environment free of toxic chemicals
- increase efforts to address emerging global challenges like climate change and socio-economic and gender inequalities
- work across sectors
- strengthen the collaboration with countries of Eastern and Southern Europe

The Fifth Ministerial Conference on Environment and Health
Parma, Italy 10-12 March 2010 13

In Parma governments decided a new future of the environment and health process

- During 2010 and beyond, the process will be revitalized through new arrangements.
- It will be steered directly by ministers through regular ministerial conferences, to ensure the highest political profile.
- In September 2010, Member States will gather in Moscow for the 60° WHO Regional Committee for Europe, to endorse the Conference outcomes through a resolution.
- The 53 European countries will meet again at the 6°Ministerial Conference on Environment and Health in 2016.

The Fifth Ministerial Conference on Environment and Health
Parma, Italy 10-12 March 2010 14

Sponsored by the Flemish government

Evaluation Action plan

Hans Keune
(University of Antwerp)

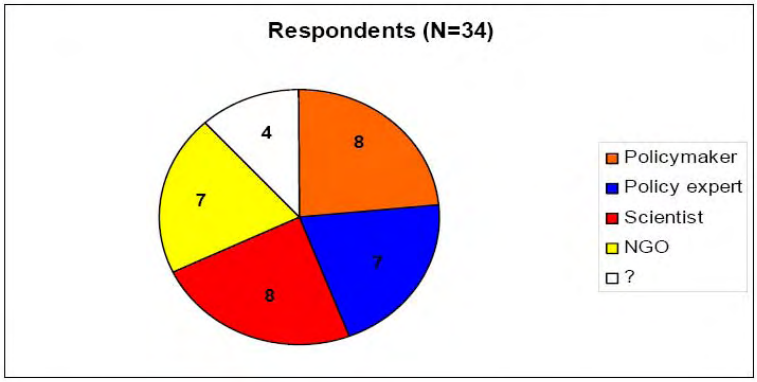
1

Flemish feedback

- Respondents
- General impression
- Stakeholder involvement
- Policy actions
- Government or independent experts?

2

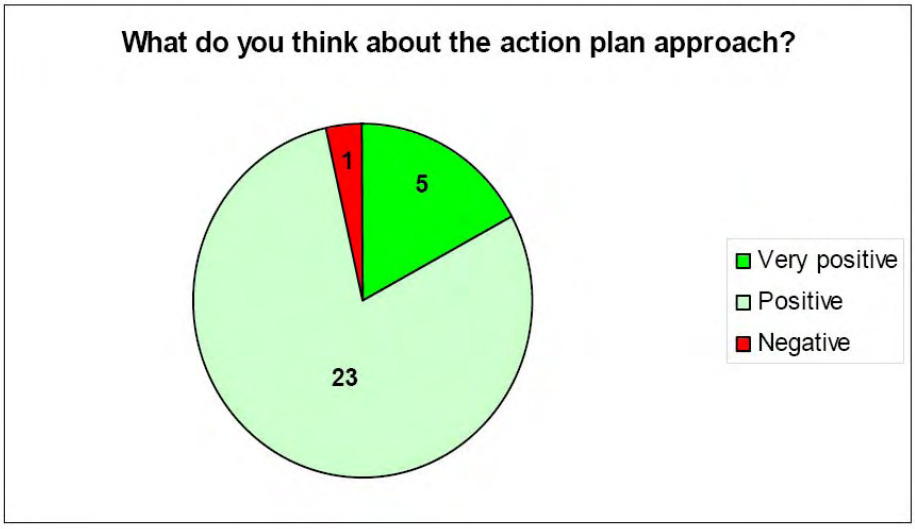
Respondents



Flemish policymaker	3	Scientist	8
Local policymaker	5	Flemish NGO	4
Flemish policy expert	6	Local NGO	3
Local policy expert	1	?	4

3

General impression



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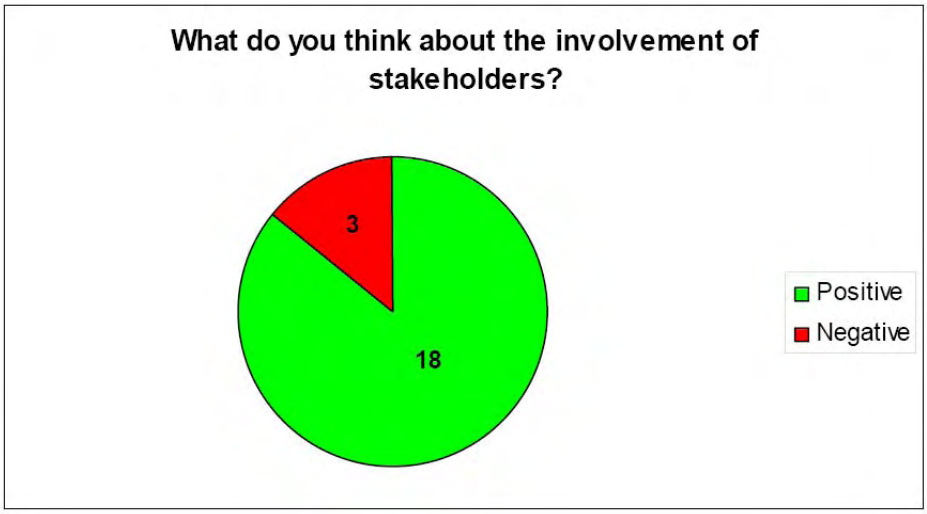
Stakeholder involvement



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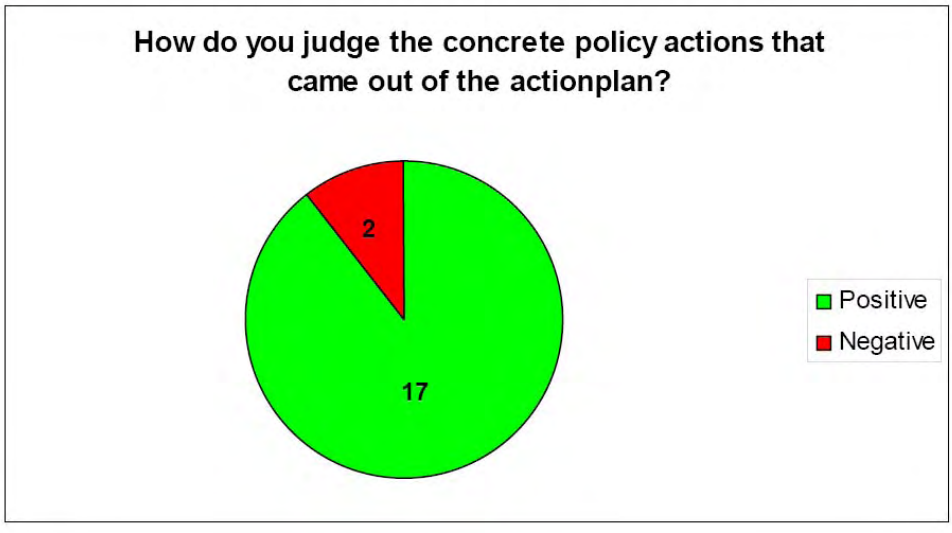
Policy actions



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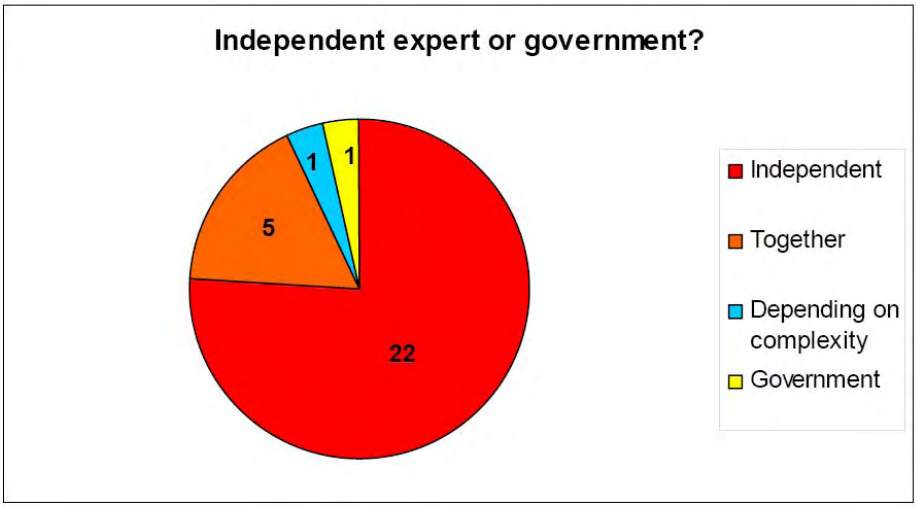
Government or independent experts?



7

International expert review

- Respondents
- General impression
- Innovative?
- Fit to internat. developments in E&H?
- Combination experts – stakeholders
- Cooperation science – policy
- Government or independent experts?

8

Respondents

Name	Organisation
Wim Passchier	Professor health risk analysis University of Maastricht
Ortwin Renn	One of the internationally leading experts on risk governance Professor University of Stuttgart
Thomas Webler	Expert in the social dimensions of risk analysis Professor Social and Environmental Research Institute, Department of Environmental Studies, Antioch University - New England
Paul Stern	One of the internationally leading experts on risk assessment, one of the founding fathers of the analytical deliberative approach National Research Council (USA)
Martin Krayer von Kraus	WHO European Centre for Environment and Health
Gavin ten Tusscher	Chairman Health Care Without Harm Europe Paediatrician
Alena Bartonova	Coordinator EU-Henvinet project Senior researcher NILU Norwegian Institute for Air Research
Lubica Palkovicova	Research Base of the Slovak Medical University
Dorota Jarosinska	Project manager in Environment and Health, European Environment Agency

9

General impression

- All positive; remarks:
- Bridging gap science – policy
- Surpass paralysis by analysis
- Innovative; implementation relevant theoretical concepts; ambitious
- Complicated but necessary process; honest application in a complex field
- Involvement stakeholders very important

10

Innovative?

- 7 positive: yes
- 1: internationally similar applications wrt environmental policy, front line international developments
- 1: concept is not new, but implementation is innovative

11

Fit to internat. developments in E&H?

- All positive; remarks:
- Involvement social scientists
- We cannot wait for definitive scientific proof; traditional risk approach is no longer effective
- Type of approach internationally high on the agenda
- Example case for other countries

12

Combination experts - stakeholders

- All positive; remarks:
- Past one-way communication
- More advantages than disadvanteges; important but a challenge; issue: how to better deal with stakeholder expertise?
- Inevitable; important; gaining trust, support
- Accelerates implementation scientific knowledge in practice
- Guard the risk of imbalance e.g. big influence specific groups (e.g. industry lobby)

13

Cooperation science - policy

- All positive; remarks:
- Procedure = big stimulus
- Accelerates policymaking; mutually beneficial; crucial; necessary
- Exchanging experiences with likewise processes
- Issue: not all involved fully support the ambition especially wrt time investment

14

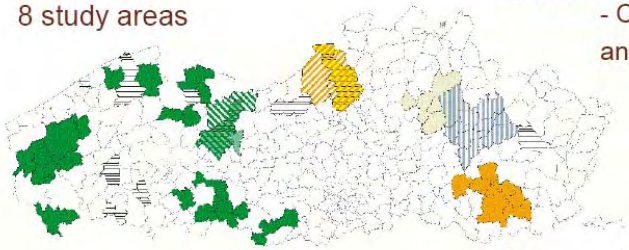

milieu en gezondheid
Universiteit Antwerpen
Government or independent experts?
• 8: independent process experts; remarks:
– Demands specific process expertise (natural scientists and policy makers do not have this)
– Necessary for the involvement of all relevant information/knowledge in the process
– Government is seen as politically biased
– Dependent of complexity
• 1: government can do it:
– But will mostly hire consultants because of logistical reasons
15

From science to policy: translation of human biomonitoring results into policy measures in Flanders (Belgium)

Karen Van Campenhout
Flemish Government
Department of Environment, Nature and Energy
Environment & Health Unit

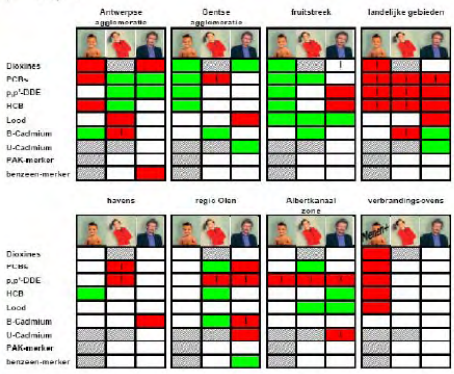
Flemish human biomonitoring program (2002-2007)

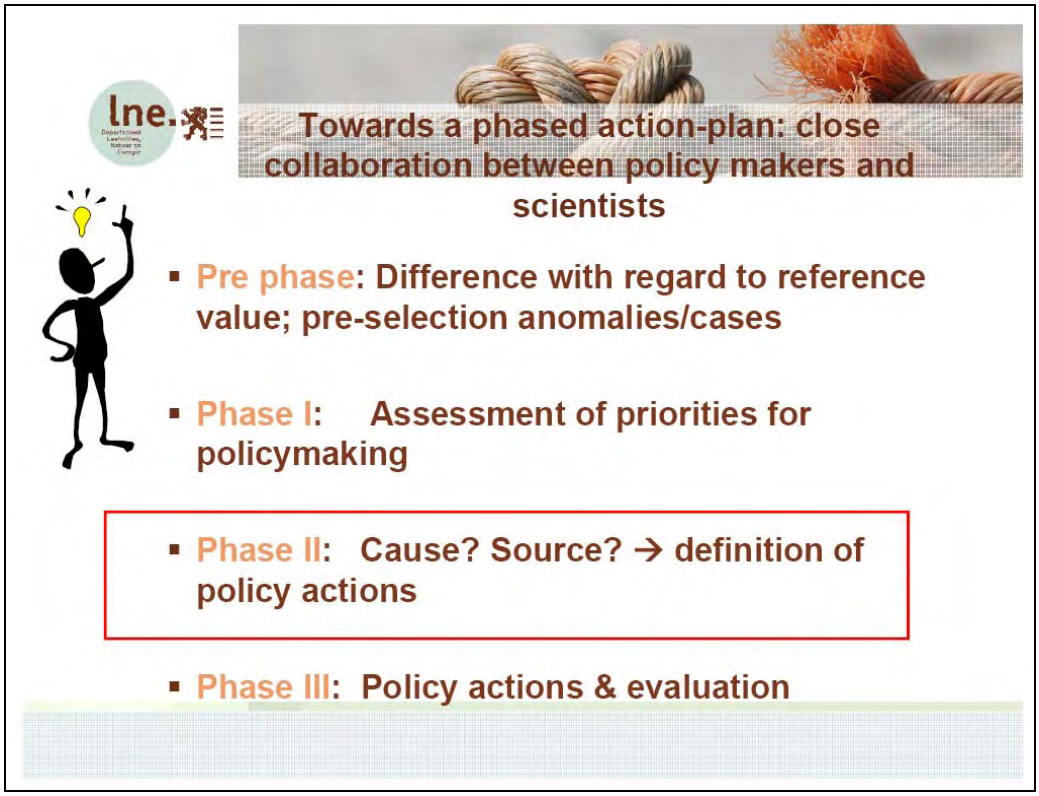
8 study areas



- Covering 1/5th of both population and territory

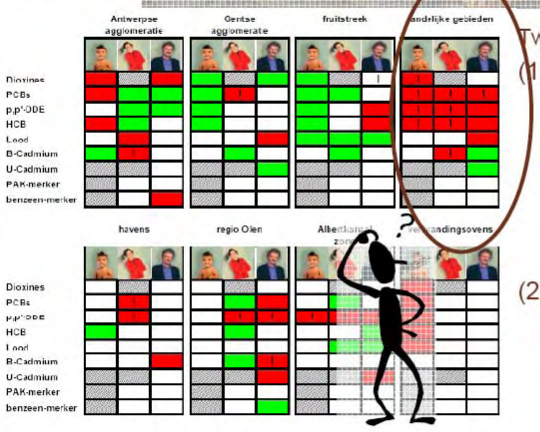
- 3 different age groups
- different biomarkers
- questionnaires




lne.
Towards a phased action-plan: close collaboration between policy makers and scientists
Pre phase: Difference with regard to reference value; pre-selection anomalies/cases
Phase I: Assessment of priorities for policymaking
Phase II: Cause? Source? → definition of policy actions
Phase III: Policy actions & evaluation


lne.
Increased levels chlorinated compounds and asthma incidence
Based on expert judgement and stakeholder jury:
Ministers for health and environment selected two cases for phase II of action plan
increased levels chlorinated compounds in rural areas
and
Increased asthma incidence in cities
Phase II = Cause? Source? → definition of policy actions

Source? Cause? Increased levels chlorinated compounds



Two possibilities

(1) External exposure in rural area higher than other areas due to specific sources (specific stoke behaviour: more wood and char coal stoves, more small industrial sources,….)

(2) External exposure in rural area comparable to other areas but higher exposure due to specific life style factors →more consumption of locally grown food, different type of housing

Selection criteria the rural area: exclusion of industrial sources, high ways, low population density → exclusion impact industrial sources

Source? Cause? Increased levels chlorinated compounds

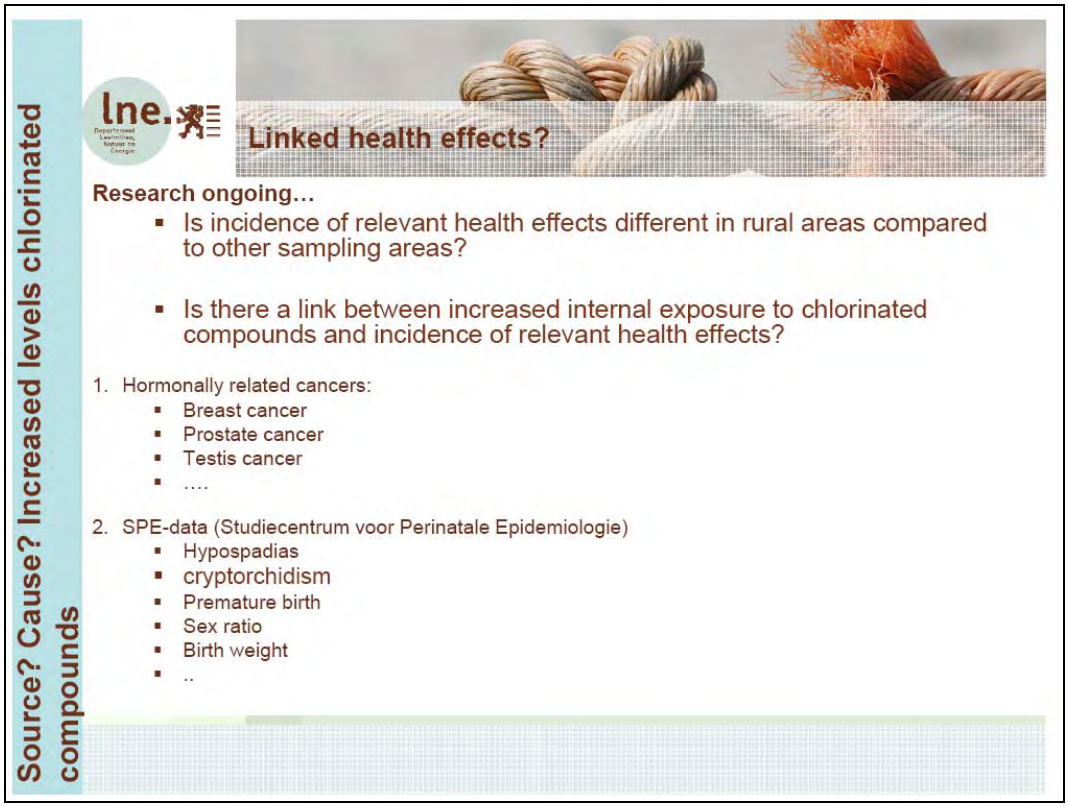
☹ Based on all available data: no clear environmental source/cause for increased blood levels of chlorinated compounds identified

☺ Consumption of locally grown **food items** and **stoke behaviour** (wood and char coal stove) most **important life style factors** which **differ** significantly between the **rural area** and the **other sampling areas**

Both factors increase the chance for increased blood levels of chlorinated compounds and possible health effects

→ **Increased levels of chlorinated compounds in rural areas likely linked with historical (diffuse) contamination and actual contamination (illegal stoke behaviour)**

→ **For both sources consumption of locally grown food important possible uptake route**


Source? Cause? Increased levels chlorinated compounds
lne.
Linked health effects?
Research ongoing…
Is incidence of relevant health effects different in rural areas compared to other sampling areas?
Is there a link between increased internal exposure to chlorinated compounds and incidence of relevant health effects?
1. Hormonally related cancers:
Breast cancer
Prostate cancer
Testis cancer
….
2. SPE-data (Studiecentrum voor Perinatale Epidemiologie)
Hypospadias
cryptorchidism
Premature birth
Sex ratio
Birth weight
..


Action plan chlorinated compounds
lne.
Source identification based on all available data
Bottlenecks and gaps
Need for coordinated approach for and enlargement of different environmental monitoring networks
Need for additional monitoring of possible health effects
Need for adaptation and optimisation of current awareness raising programmes concerning wood burning and open fires for households
Evaluation current relevant policy:
Product policy concerning household incinerators
Regional legislation on open fires and stoke behaviour
Environmental monitoring programmes, human biomonitoring
Prevention and sensitization programmes
Research projects
Additional policy actions: action plan 'chlorinated compounds'
Diffuse and source pollution control
Environmental and human (bio)monitoring
Prevention en sensitization
New

Action plan chlorinated compounds

Diffuse and source pollution control

New

- Insist at federal for level sales ban on 'Miniature garbage incinerator'. Important source of PCBs, dioxines,….
- Active involvement in European legislation process concerning residential wood combustion installations
- Further development of existing Flemish legislation on open fires
- More efficient and complete registration of complaints concerning (illegal) stoke behaviour

Action plan chlorinated compounds

Environmental and human (bio)monitoring

New

- Additional monitoring of exposure (breast milk) to and health effects of chlorinated compounds in rural areas
- Optimization of environmental monitoring programmes: not only source oriented measurements but also
  - determination of background values
  - monitoring of residential and agricultural areas

Action plan chlorinated compounds

Prevention en sensitization

New

- Profound evaluation of existing campaigns
- New campaign on indoor and outdoor stoking/wood burning
- More research on health impact of locally grown food → sensitization

Increased levels chlorinated compounds and asthma incidence

Based on **expert judgement** and **stakeholder jury**:

Ministers for health and environment selected two cases for phase II of action plan

increased levels chlorinated compounds in rural areas

and

Increased asthma incidence in cities

Phase II = Cause? Source? → definition of policy actions

Increased asthma incidence

Flemish situation

Flemish human biomonitoring campaign (1999-2006)

- General: more asthma in urban agglomerations of Antwerp and Ghent
- Significant correlations between asthma and internal exposure to environmental pollutants:
  - Negative correlation between dioxine-like substances in serum and use of asthma medication
  - More asthma and hay fever with increasing blood levels of Pb an Cd (adolescents and mothers)
  - Less asthma with higher blood levels of PCB's, DDE en HCB (elderly)
- Significant correlations between asthma and environmental pollutants:
  - Significant positive correlation between doctor diagnosed asthma and modelled air concentrations of benzene and NO2 (adolescents)
- Newborns:
  - Increased wheezing when mother smoked before or during pregnancy
  - Increase coughing at age of 3 y when exposed at higher PM concentrations
  - More positive allergy tests at at age of 3 y when grown up in urban environment

Action plan asthma

1. **Detailed interpretation of all available (Flemish) data**

Bottlenecks and gaps

- Need for a systematic, comparable, accessible inventarisation of all available Flemish data on asthma and allergy
- Need for quick, easy and 'health relevant' screening techniques: development of bioassays for the assessment of the air quality in Flanders

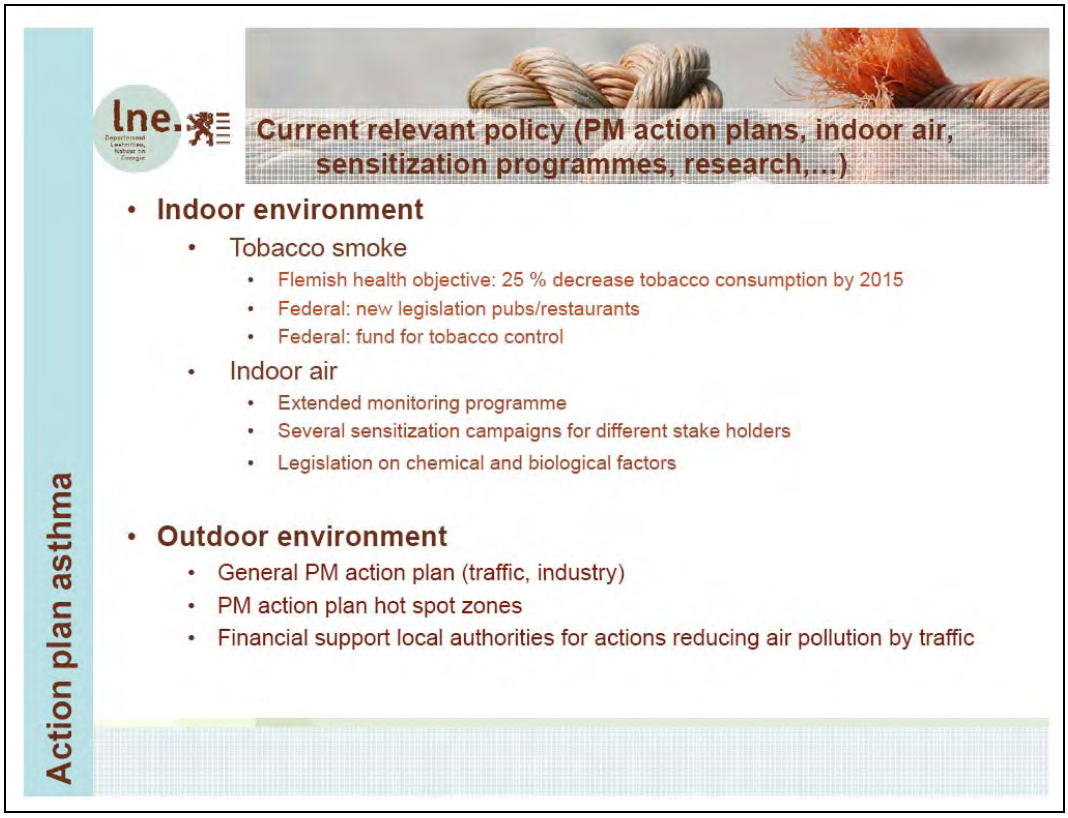
2. **Compilation and evaluation of current relevant policy (PM action plans, indoor air, sensitization programmes, research,…)**
3. **Expert consultation on additional possible policy actions**

Resulted in 5 priorities:

- ***Focus on a healthy indoor air environment: importance of venti***
- ***Profound reduction of traffic related air pollution***
- ***Profound reduction of tobacco addiction***
- ***Optimization of asthma detection***
- ***Optimization of awareness raising and information on asthma***

New

Additional policy actions: action plan 'asthma'


Action plan asthma
lne.
Current relevant policy (PM action plans, indoor air, sensitization programmes, research,...)
• Indoor environment
• Tobacco smoke
• Flemish health objective: 25 % decrease tobacco consumption by 2015
• Federal: new legislation pubs/restaurants
• Federal: fund for tobacco control
• Indoor air
• Extended monitoring programme
• Several sensitization campaigns for different stake holders
• Legislation on chemical and biological factors
• Outdoor environment
• General PM action plan (traffic, industry)
• PM action plan hot spot zones
• Financial support local authorities for actions reducing air pollution by traffic


Action plan asthma
lne.
New
Feasibility study for an extended Flemish 'cohort study environment and health'
Feasibility study on the use of bioassays for air pollution monitoring in relation to human and environmental monitoring
biba
binnenlucht in basisscholen
• Special focus on indoor air quality in schools and nurseries: organisation of forum,
development and dissemination of practical toolbox,…
31 maart 2010
Forum
Gezond Verstand
• New research on indoor environment in 'low energy' buildings
• Awareness raising campaign on a healthy indoor environment for general public and building professionals
• Quantitative estimation of exposure to and health effects of traffic air pollution in Flanders with special focus on UFP and use of specific human biomarkers → additional policy actions

First lessons learnt....

1. The boundary work between different scientific disciplines and between scientists and policymakers is very fruitful but should not be underestimated in complexity, → Learning by doing, 'time consuming', and negotiating…

2. The participation of stakeholders in the policy process should be well defined and focussed

3. An open communication of human biomonitoring results and of the resulting policy response are essential key elements in awareness raising and broadening the social basis for a broad environment and health policy.

Thank you

The study was commissioned, financed and steered by the Flemish Government (Department of Economics, Science and Innovation; Flemish Agency for Care and Health; and Department of Environment, Nature and Energy).

We thank all people involved in this project: biomonitoring participants, experts and stakeholders, policy representatives, and the Centre for Health & Environment, especially Hans Keune, Bert Morrens, Johan Springael and Ilse Loots from the University of Antwerp & Gudrun Koppen and Ann Colles from VITO.

More info: http://milieuengezondheid.lne.be

Karen.vancampenhout@lne.vlaanderen.be

Sponsored by the Flemish government

From science to policy action: translation of humane biomonitoring results into policy measures in Flanders (Belgium)

Hans Keune (University of Antwerp) & Karen Van Campenhout (Flemish Government, Department of Environment, Nature and Energy - Environment & Health)

1

Legal framework human biomonitoring in Flanders (Belgium)

(*B.S.* 03-02-2004) Preventiedecreet Art 51 § 1

The Flemish government:

1. can set up a network for surveillance of exposure (measured in humans) and/or effects of exposure to physical and chemical factors in the population, with the intention to take measures to protect public health.
2. takes at least measures for the development and execution of a program for biomonitoring.
3. can - in execution of &1 - set up a fund (…). For this purpose a mandatory financial contribution can be imposed on industries or citizens that are responsible for the presence of physical or chemical factors harmful to health.

2

Centre for Health & Environment

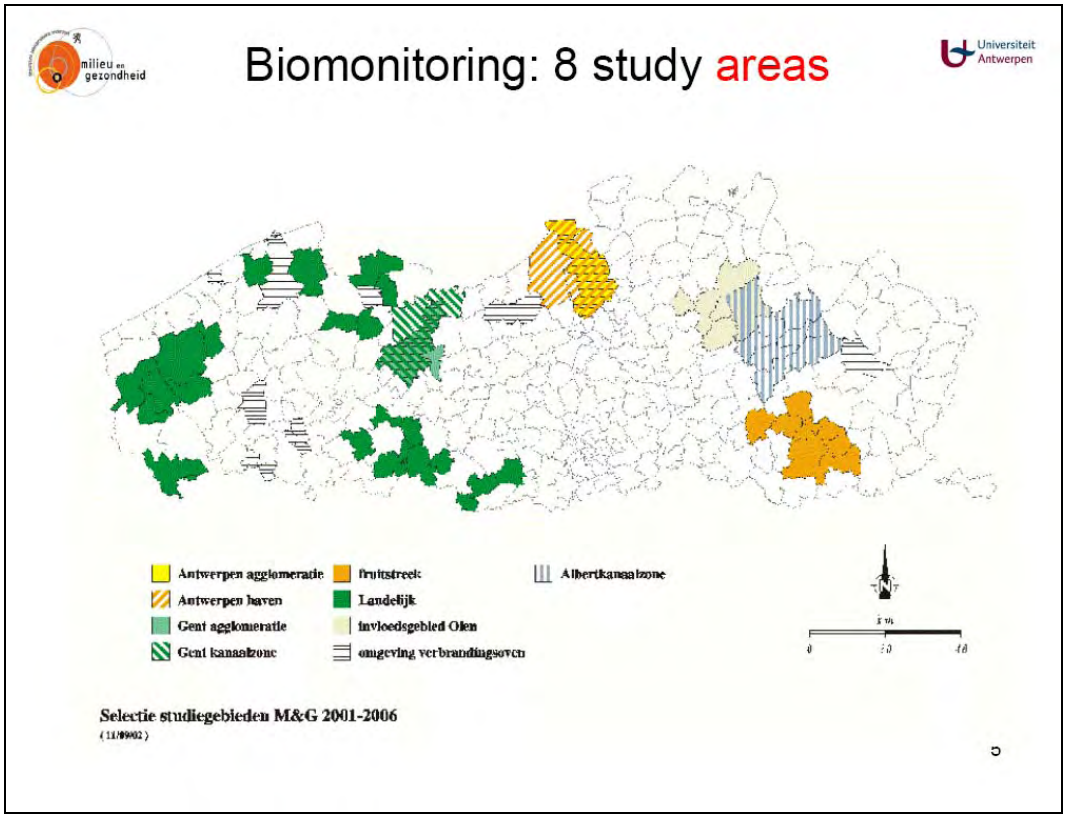
- Funded by Flemish government (2002-2007)
- One of 12 Centres of Expertise
- Policy Relevant Research
- Complex relation environment – health:
  - Human biomonitoring = main project
- Scientists from all universities in Flanders, two Flemish research institutes & university of Maastricht
- Science (environmental & health experts, social scientists) – Policymakers (steering group)

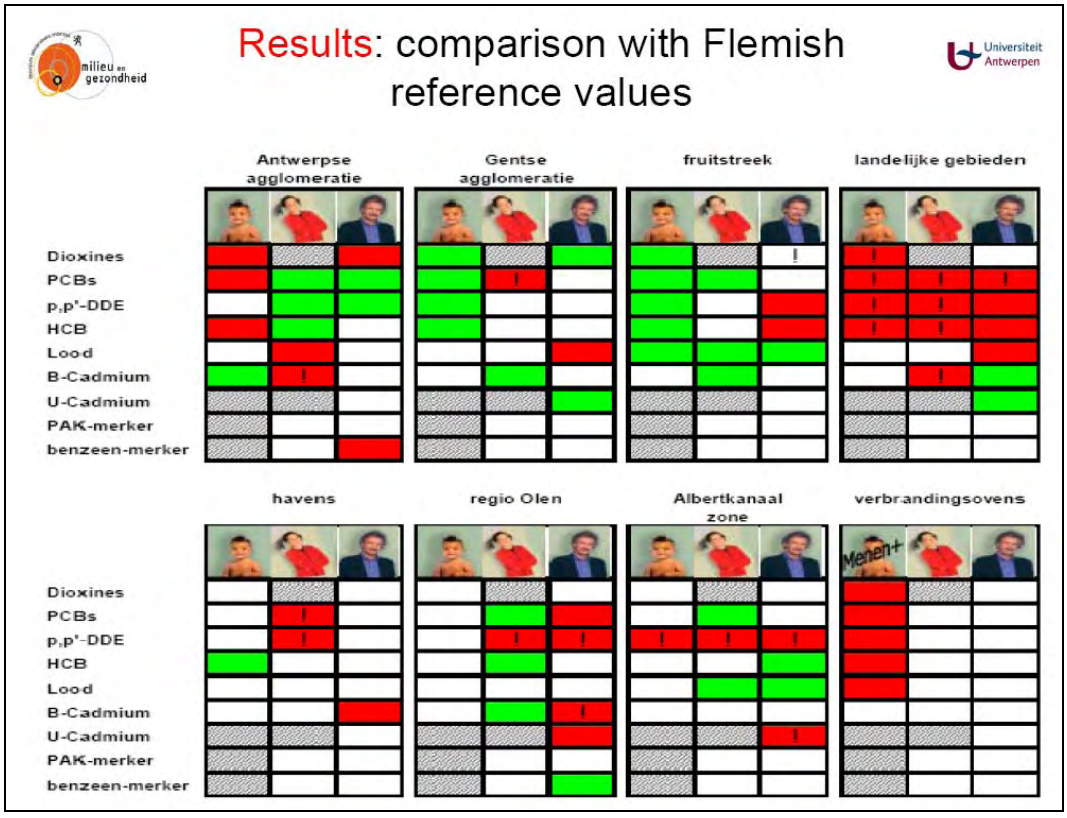
3

Biomonitoring: age groups & biomarkers

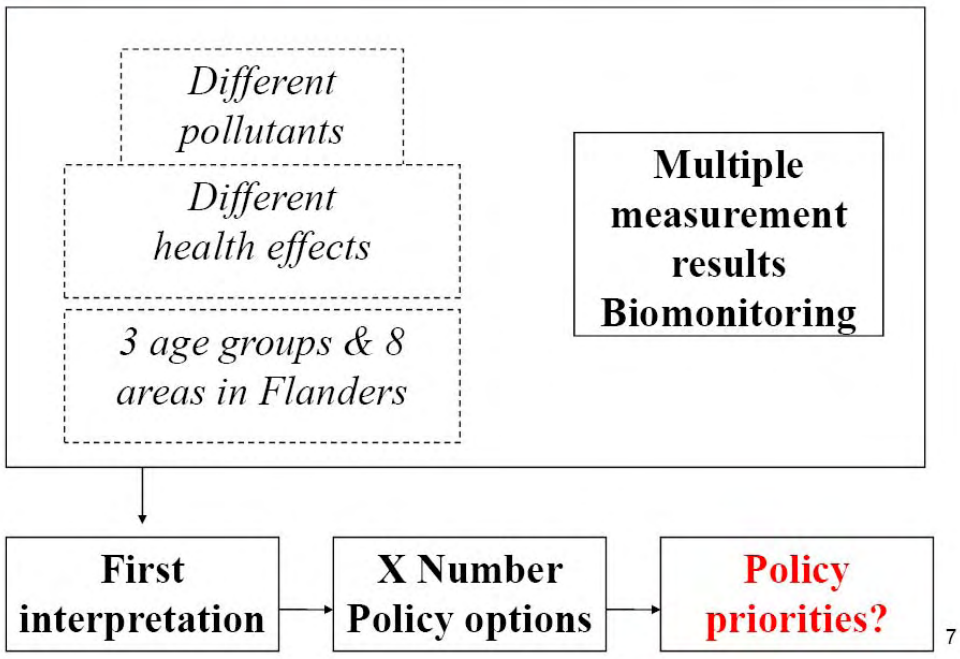
	Newborns: 1600	Adolescents: 1600 (14-15y)	Adults: 1600 (50-65y)
Markers of exposure	***Cord blood:*** cadmium, lead ***Cord blood serum:*** marker PCBs, pesticides, dioxine-activity	***Blood:*** cadmium, lead ***Serum:*** marker PCBs, pesticides ***Urine:*** 1-OH pyrene, tt-muconic acid	***Serum:*** marker PCBs, pesticides, dioxine-activity ***Urine:*** 1-OH pyrene, tt-muconic acid, cadmium
Markers of effect	Biometry, TSH (heel prick), Apgar score, time to pregnancy *Questionnaire:* asthma & allergy *Follow- up of part of children*	***Blood:*** comet test ***Serum:*** hormone balance Biometry, sexual development, hearingtest, *Questionnaire:* asthma & allergy	***Blood:*** comet test, HPRT ***Serum:*** tumour markers ***Urine:*** 8-OH dG *Questionnaire:* asthma & allergy
Co-variables	*Questionnaire:* general+ food *Biochemical analyses:* cholesterol, iron status cord blood	*Questionnaire:* general + food *Biochemical analyses:* cholesterol, iron status blood, urinary creatinine	*Questionnaire:* general + food *Biochemical analyses:* cholesterol, iron status blood, urinary creatinine

4


Biomonitoring: 8 study areas
Universiteit Antwerpen
Antwerpen agglomeratie
Antwerpen haven
Gent agglomeratie
Gent kanaalzone
fruitstreek
Landelijk
invloedsgebied Olen
omgeving verbrandingsovens
Albertkanaalzone
Selectie studiegebieden M&G 2001-2006


Results: comparison with Flemish reference values
Universiteit Antwerpen
Antwerpse agglomeratie
Gentse agglomeratie
fruitstreek
landelijke gebieden
havens
regio Olen
Albertkanaal zone
verbrandingsovens
Dioxines
PCBs
p,p'-DDE
HCB
Lood
B-Cadmium
U-Cadmium
PAK-merker
benzeen-merker

Interpretation: what does this mean…?



7

Design of an action plan

- Scientists, policy representatives & experts: close cooperation (is a prerequisite!)
- Expert reflex:
  - Pile up knowledge: more science will give all answers
  - Objective, unanimous
- Search for the 'right' expert…:
  - No expert = super special
  - Fragmented specialized knowledge
  - No expert capable of drawing final conclusions for policy
- Search for the 'right' knowledge:
  - Scientific complexity: limited knowledge
  - Social complexity: what is important?
- Practice cycle: Desk Research + Expert assessment + Jury advice + Government decision

8

Action plan: phased evaluation

Pre phase: Difference with regard to reference value; pre-selection cases

Phase I: Assessment of priorities for policymaking

Phase II: Cause? Source? → definition of policy actions

Phase III: Policy action & evaluation

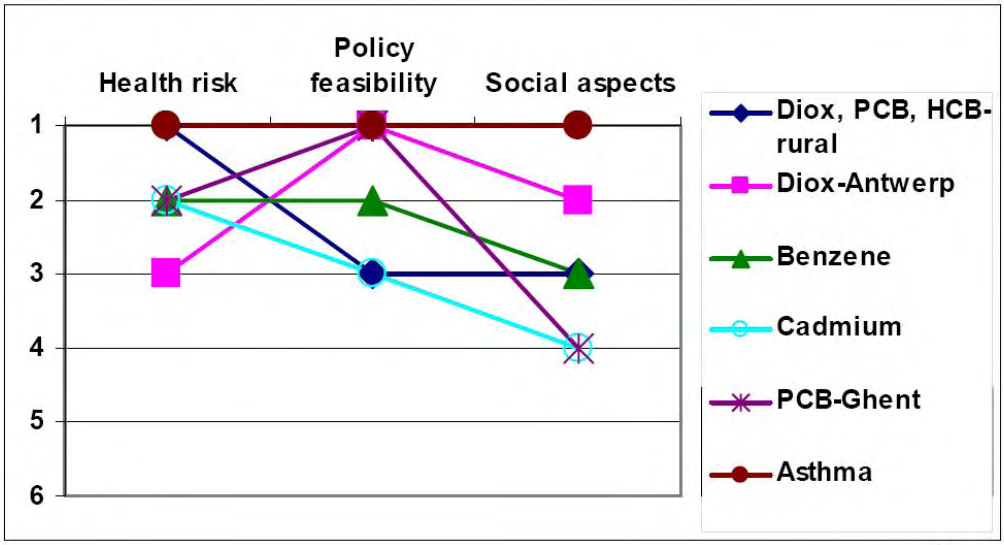
9

Action plan: criteria, stakes & advice

WHAT	HOW	WHO
Interpreting results; defining policy options	Assessment criteria: - *Health risk* - *Policy feasibility* - *Social aspects*	Scientists Policy experts Other experts
Prioritizing Policy options	Weighing criteria	Stakeholder Jury
Policy choice		Government

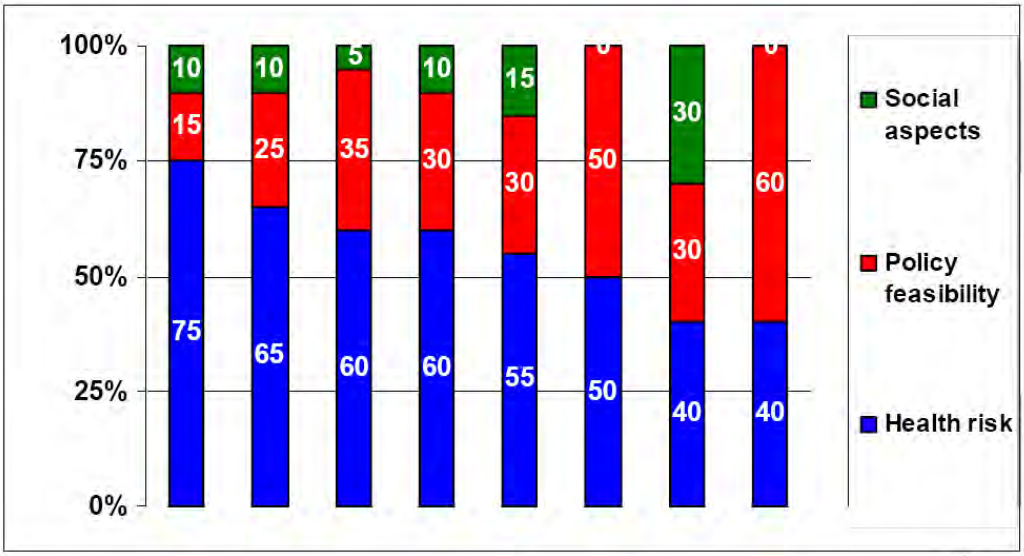
10

Action plan in practice: experts ranking cases on criteria



11

Action plan in practice: jury members' weights of criteria



12

Some conclusions

- Ambitious => complexity on board:
  - Complex science: uncertainties, unknowns
  - Social complexity: different opinions/stakes
  - Different assessment criteria
  - Different actors: science, policy & stakeholders
- Complex process:
  - No alternative approach with regard to complex real world problems except doing nothing or incorporating blind spots
  - Learning by doing and negotiating…

13

Thank you

- We thank all people involved in this project: biomonitoring participants, experts and stakeholders, policy representatives, our colleagues in the Centre for Health & Environment, especially Bert Morrens, Johan Springael and Ilse Loots from the University of Antwerp & Gudrun Koppen and Ann Colles from VITO.
- The study was commissioned, financed and steered by the Flemish Government (Department of Economics, Science and Innovation; Flemish Agency for Care and Health; and Department of Environment, Nature and Energy).

14

Policy integration

Ingvar Thorn, European Environment Agency (EEA) and Swedish EPA

Peter Pärt

Joint Research Centre

Policy integration - outline

- What is policy integration?
- Some examples within the areas Environment and Health, Hazardous Substances and Public health
- Experiences from these EEA projects
- Experiences from SweEPA projects
- Some comments on HENVINET´s policy integration
- Conclusions

What is policy integration - gross list of policy integration examples

Long term	Medium term	Short term
Strategic research Education Scientific syntheses Relations to scientific networks	Contribution to state of environment assessment and reporting	User friendly products, decision support models Contribution to governmental policy work Expert groups and consultancy Communication to business and industry, and NGOs

Interplay between EEA integrated assessments and Commission policy work

Commission services	Policy program
The Parliament/the Council/DG Environment	The European Environment and Health Action plan 2004-2010
DG Enterprise/DG Environment	Registration, evaluation, authorisation and certification and restriction of chemicals (REACH)
DG Sanco	EU Global report on European public health (EUGLOREH)

EU Parliament 2008 and the Council 2007

- Environment and health EEA/JRC 2005
- EEA Stakeholders consultation
- EEA/JRC literature review
- DG Environment Expert groups on priority diseases
- DG Environment E&H action plan
- Participation in Environment and health consultative forum
- Several EEA/WHO assessments on Environment and health (”Turn of the Century”)

REACH

http://ec.europa.eu/environment/chemicals/reach/background/docs/eia-sec-2003_1171.pdf

- EEA contribution on internal Commission document (“extended cost benefit analysis”) about health and environmental benefits
- Emanating from Europé’s Environment; the third assessment
- Sources; Large scale effects EEA 1998, and SWEEPA Impairment in wildlife in relation to EDS (1998)

Global report on health in the EU 2007 www.eugloreh.it and DG SANCO

- EEA contribution on the reporting process and on environmental health determinants, such as climate change, air pollution, hazardous substances, drinking and recreational water, EMF and soil pollution
- Emanating from EEA data-service and assessments (the fourth assessment 2007)
- DG Sanco Public health portal
- Call text support
- Environment and health EEA 2005
- Cooperation with Joint Research Centre and WHO

Experiences from EEA

- Necessary with links to Environment health research competence
- WHO, JRC and DG Research consortia are important partners
- The EEA platform facilitates work in the interface research/policy (”relevant, reliable, timely”)
- Be opportunistic
- Simplify the complexity
- Multiple use of knowledge and data

Experiences from Swedish EPA

- ”Research policy integration” with FP6 and FP7, and with EEA assessment based on the research programmes:
- Environment and health monitoring based on biological indicators
- Risk assessment, health, environment
- Environment and public health

Research/policy Three levels

- Information ($\rightarrow$ one way)
- Communication ($\leftrightarrow$two way)
- Relation ($\Leftrightarrow$exchange of knowledge)

HENVINET - activities

Information	HENVINET portal
Communication	Stakeholder dialogue Decision support tools Uncertainties/ preferable certainties
Relation	Policy integration on this level needs active stakeholder involvement (policy briefs are pilots). Is it a task for a short term research project?

Conclusions

- Links to scientific competence is necessary for policy making. HENVINET has played an important role in information and communication between science and policy
- Several successful EEA examples exist in the area of environment and health
- Intermediary permanent organisations like WHO, EEA and JRC are necessary in policy integration

Appendix B

Poster Abstracts

POSTER PRESENTATIONS:
TOPIC 1 – E&H PROJECTS' RESULTS AND PLANS

Economic assessment of exposure protocols for PAHs and PCBs

Liu, H-Y[1], Bartonova, A[1], Loh, M[2], Palkovičová, L[3], Sram, R[4]

[1] *NILU – Norwegian Institute for Air Research*
[2] *THL – National Institute for Health and Welfare, Finland*
[3] *SZU – Slovak Medical University*
[4] *IEM – Institute of Experimental Medicine, Czech Republic*

This study is one task of a project ENVIRISK (Assessing the Risks of Environmental Stressors: Contribution to Development of Integrating Methodology). ENVIRISK is a 2,5-year (10/2006 – 3/2009) specific targeted research or innovation project under the EU 6th Framework Programme for R & D- Priority 8.1 Policy-oriented research, Contract No. SSPE-CT-2005 – 044232. The aim of ENVIRISK is to develop an integrated methodological framework for identification of health risks caused by exposure to environmental factors, with a view to provide useful information for prevention and targeted policy measures. The framework include the development and piloting of protocols and methodologies for exposure assessment and health impact assessment in specified areas relevant to the implementation of the European Environment & Health Action Plan (EHAP).

The aim of this study is to provide the relevant information for assessing the available options for exposure protocols in the view of providing a cost-benefit recommendation for exposure and health impact assessment. It includes: (i) define the exposure scenarios, methods and protocols for PAHs and PCBs; (ii) summarize the data needs and describe the available data; (iii) analyze the cost for data and information gathering relevant for methods and protocols.

The results showed that (i) there is no available information for the price for the PAHs measurement and its relevant data gathering; (ii) the cost of sampling and analysis is a function of the number of monitoring stations, the sampling method used, the frequency and analytical methodology adopted; (iii) cost for analysis of PAHs and PCBs exposure assessment is different between different countries; and (iv) in average, the cost for analysis of PHAs and PCBs exposure assessment is about 200,000 and 700,000 Euro, respectively.

An epistemological shift towards complexity poses new challenges to the Flemish Environmental Health Policy Arrangement

Stassen, K, Leroy, P

Hogeschool-Universiteit Brussel, Stormstraat 2, 1000 Brussel, Belgium, Stien.stassen@hubrussel.be, Phone: 0032 2 609.82.85

Keywords: Science policy interface, boundary work, policy integration, complexity, environmental health

Environmental health risks are increasingly regarded as complex issues. Complex problems, also labelled ill-defined, wicked or messy, are characterized by radical uncertainty, a plurality of legitimate perspectives and an unclear sense of all consequences and/or cumulative impact of collective action. Complexity goes parallel with three related shifts: (i) beyond the traditional positivistic epistemology, characterized by rationality, full knowability and disciplinary reductionism, (ii) beyond the traditional sectoral policy arrangements, as complex issues transcend these traditional policy fields, (iii) a shift towards new arrangements in the science policy interface, as science is no longer the unquestioned source of legitimacy for policy arguments. To summarize, complexity challenges traditional boundaries and stimulates cross- boundary arrangements at three levels: between scientific disciplines, between policy fields and between science and policy. As a consequence, complexity asks for new epistemological and methodological tools and for novel institutions. All these shifts apply in particular to the environmental health domain.

Starting from these epistemological and institutional perspectives, this PhD-project analyses Flemish environmental health policy arrangements and their recent developments. Based on document analysis and interviews, it analyses the relationship between science and policy in the environmental health domain over the last three decades, and tries to explain its changes - and continuities -. Moreover, it aims at assessing the effectiveness of these novel organisational facilities and methodological tools, albeit it through the eyes of the stakeholders, when it comes to deal with complexity and uncertainty.

In this respect, the Flemish Environmental Health Network is emblematic: it was established in response to the dioxin crises related to incinerators located in residential areas. The network aimed at the actual participation of diverse stakeholders at different policy levels to improve the cooperation and communication between science, politics and society on the one hand, and between environment and health on the other hand. The case exemplifies how the then predominating Flemish environmental health policy arrangement was challenged by a (dioxin) crisis, and how this crisis in turn induced an epistemological and an organisational renewal. Part of this renewal is the development of new tools and methodologies (e.g. a programme of biomonitoring, an action plan to translate biomonitoring data into policy priorities & measures, a guideline to risk communication) and new organisations and platforms (e.g. the Flemish Environmental Health Network; the Flemish Centre of Expertise for Environment and Health).

"Health Risk from Environmental Pollution Levels in Urban Systems" project: Madrid preliminary results

Estrella López Martín, Manuel Posada de la Paz, Pedro Salvador Martínez, Pilar Morillo Gómez, Saul García Dos Santos, Mª Carmen Ramos Díaz, Begoña Artiñano Rodríguez de Torres and Rosalía Fernández Patier

Instituto de Investigación de Enfermedades Raras (ISCIII-Chamartín), C/ Sinesio Delgado, Nº 6, Madrid (28029), Spain, phone: 0034 91 822 29 11, elopez@isciii.es

Keywords: PM10, ozone, cardiovascular, respiratory, mortality, morbidity, Poisson regression models, relative risk.

Abstract (max. 350 words) HEREPLUS (Health Risk from Environmental Pollution Levels in Urban Systems) is a project funded by the European Union that is being developed in four European cities: Rome, Dresden, Athens and Madrid. Health effects of the environment are being determined by combining factors such as air pollutants and vegetation. Time comparison among health data, concentrations of particulate matter and ozone and vegetation type in the study areas are being used to quantify the sanitary risk for the population of each area.

Regarding to Madrid, the territory has been divided into seven homogeneous areas. These correspond to the environmental classification established by the Madrid Community government in 2001 and used for the period 2001-2006 to fulfil the requirements of the EC/96/62/CE Directive concerning the air quality assessment in the European Member States territory. Each area is representative of a specific air quality index. It has been calculated the daily mean of PM10 and O3 concentration values coming from different stations in each area. Madrid municipalities have been assigned to one of the seven Madrid Community areas in order to link the residence place (municipality) of each person (corresponding to a morbidity or mortality outcome) to an environmental area.

It has been calculated the daily number of hospitalizations or deaths, considering the corresponding residence places in each area. The studied causes of death were: total number of deaths related to cardiovascular diseases, respiratory diseases or all-causes except accidents. The following causes of hospital admissions were analysed: total number of hospitalizations related to cardiovascular diseases or respiratory diseases.

Regarding to time, the period of the study has been set between 2003 and 2005.

The chosen person-related variables are gender (male or female) and age (population divided into 3 groups: 0 to 14 years, 15 to 64 years and more than 64 years).

Poisson regression models are being used for modelling the relationship between the exposure and response variables. The importance of constructing these models is that they enable quantification of the statistically significant associations between the environmental variables and analyzed health outcomes (deaths or hospitalizations), by calculating the relative risk, that is obtained from the models estimates values.

Acknowledge Funding Source: EUROPEAN UNION

Conditions of Safety, Health and Hygiene in Carpentry Shops in the District of Figueira da Foz

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Keywords: Safety at Carpentry Shops, Noise exposure, HSW

The general objective of this study was to study the conditions of safety, health and hygiene in the carpentry shops in awareness that these factors influence the efficacy of these shops but we looked in particular at the level of noise workers were exposed to. This study was carried out over two school years, 2006/07 and 2007/08 and can be classified as descriptive and exploratory, level I with a transversal cohort. The sample type was non-probabilistic and by convenience. The study was executed through a check-list to evaluate general conditions of HSW, through non-participatory observation of noise levels using a sonometric device, *Bruêl & kjaer*, model 2260, series 2335758, class I. For data description a statistically simple descriptive method was used (measures of location and dispersion) and presuppositions were tested through applied statistics of (parametric or nonparametric - Symmetry, flattening, Normal distribution). Hypotheses testing applied were: χ^2 of Adherence, Mann-Whitney, Kruskal-Wallis, *t*-Student for a sample; *t*-Student for independents samples, ANOVA factor (*Welch test*) and the multiple comparison test Games-Howel. Statistical interpretation of the tests were made with a significance base of α=0,05 (I.C. 95%). Analysis revealed that in terms of safety, health and hygiene few workplaces met legal standards. The level of conformity to HSW: for "*Noise and Vibrations*", for the majority of carpentry shops (80%), was unsatisfactory. Likewise, ±50% of the carpentry shops were in *insufficient compliance* for legal norms of ventilation, temperature and humidity, manual transportation of loads, dangerous substances, general maintenance, ergonomics, protection from machines and operations, and individual protection in the areas of sanitation/clothing/and food services. However, the carpentry shops with organized HSW services had better results in terms of noise compared to those which did not have organized HSW services, although the differences were not significant ($\alpha>0,05$). Average *Lex* values of 8h were significantly higher ($\alpha<0,001$) than those legally stipulated (80.00 dB(A). Evaluation by analytic parameter *LAeq* (the sound level remaining equivalent) by type of machine showed significant differences (*p-value<0,001*). The "*circular saw*" and the "*band saw*" were the machines with the highest continual level of noise compared to the other machines.

Levels of Particulates in Areas of Metropolitan Lisbon and Porto

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Keywords: Public Health, Indoor Air Quality, Atmospheric Pollution, Particulates levels

This study is of particular concern at the level of public health, since exposure to certain types, sizes and concentrations of particulates cause adverse effects on welfare and health of certain populations. The main objective of the study was to evaluate the variation in levels of particulate concentration over the past years in major metropolitan areas of Portugal. By definition, this study is *Descriptive-Correlational* (level II). It was retrospective in nature. It was designed as a sample study comprised of all the samples (concentration of airborne particles) collected during the years 2005, 2006 and 2007 by the monitoring stations in metropolitan areas of Lisbon and Oporto. For data description, simple descriptive statistics were used (measures of location and dispersion) and presuppositions were tested through applied statistics of (parametric or nonparametric - Symmetry, flattening, Normal distribution) were tested. Hypotheses tested were: ANOVA a fixed-effects model I for independent samples; ANOVA for Repeated Measurements a fixed-effects model I; ANOVA for mixed effects; ANOVA II for fixed effects. Statistical interpretation was based on the level of significance α=0,05 (I.C. 95%). The results obtained for the calendar year 2005, were significantly higher *(α<0,001)* than the value 40 $\mu g/m^3$ considered acceptable for the average concentration of airborne particulates in both the cities of Lisbon and Oporto. However, measurements of particulates taken in 2007 were significantly lower *(α<0,001)* in both cities. Thus, we conclude through observation that a statistically significant reduction*(α<0,001)* in the average amount of airborne particulates took place during the three years of the study. This tendency was most clearly confirmed in Lisbon and Oporto where the reduction of particulates was the sharpest between 2005 and 2006 *(α<0,001)*. Broken into hourly periods, a significant reduction was recorded *(α<0,001)* of the average concentrations of particulates during the three years of the study within the different periodic testing schedule. In terms of particulate levels analysed in according to local, the highest concentrations in Lisbon were recorded at: "Avenida da Liberdade" and "Entrecampos", and the lowest in "Odivelas". For Oporto, the highest concentrations were recorded at "Vila do Conde" and "Espinho", with "Antas" having the lowest concentration.

Occupational Stress in Prison Guards – Via the 'Occupational Stress Indicator'

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Keywords: Occupational Stress, Prison guards, Public Health

Occupational stress has become a factor within public health since it has obvious effects on interpersonal and family health, productivity and satisfaction in the workplace. Although a degree of stress is involved in every profession, prison guards are particularly vulnerable. This is largely due to prisons being institutionally rigid organizations, with conditions easily leading to states of tension, imbalance and insecurity identified as occupational stress. The aim of this study was to evaluate the stress levels experienced by guards during their work. The study is defined as *Descriptive-Correlative* (level II) of transversal cohort. The study was conducted from Janeiro to July 2009 in Coimbra. The sample type was non-probabilistic and by convenience. The "*Occupational Stress Indicator*" scale was used as the instrument of evaluation for simple statistical description and presuppositions were tested through applied statistics of parametric or nonparametric. Statistical interpretation of the tests were made with a significance base of $\alpha=0,05$ com IC de 95%. The study sample consisted of 30 guards, 82% of whom were male with the majority in the 40-49 age bracket. The predominant educational level extended to the 9th grade with most guards having 21 or more years of service. Finally, most guards were in the professional category "leading prison guard". The male guards who had completed secondary education or above in the category " prison guard 1st class" were those with the greatest job related stress (*p-value* >0,05). In terms of career level, those ranked "prison guard 1st class" and "chief prison guard" sensed stronger sources of pressure in the workplace (*p-value* >0,05). In terms of age, a negative correlation was found with the "career and satisfaction" sub-scale which allowed us to conclude that it was the younger guards who experienced the greater sources of pressure (*p-value* <0,05). Furthermore, positive and significant correlations were found between the sub-scales "career and satisfaction", "intrinsic sources of work pressure", "climate and organizational structure" and "work-home interface". Finally, those professionals with 21 years or more of experience perceived greater sources of pressure in all the sub-scales in comparison to those with fewer years of service (*p-value* >0,05).

Acknowledge Funding Source: Coimbra Penitentiary

Granite's Influence on the Radon Level in Vila Pouca de Aguiar (Village in Portugal)

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Keywords*:* Radon, environmental risk, natural radioactivity, granite

Natural radiation is responsible for about 82% of the annual dosage of radiation received by humans. Half of this comes from radon gas emitted from uranium in rocks and soil and may accumulate in poorly ventilated spaces like homes and cellars. Exposure to this gas may provoke lung tumours. The district of Vila Pouca de Aguiar is above the Penacova-Régua-Verim fault, a largely granitite region where this stone is also commonly used in building construction. This study was carried out to determine the concentrations of radon gas in homes in correlation to the presence of granite. This was a descriptional-correlational study, level II, of transversal cohort of two years in duration; sub-divided into two distinct phases: (2007/2008 e 2008/2009). This research was conducted in the village of Vila Pouca de Aguiar. The study sample comprised 9 homes with granite (*experimental group*) and 10 homes without any granite in their structure (*control group).* Sampling was non-probabilistic and by convenience. Data was collected using passive detectors type LR-115 and a *check list* conforming to the characteristics of the homes studied. Data was elaborated in a simple, descriptive manner (measures of location and dispersion) and presuppositions were tested through applied statistics of (parametric or nonparametric - *Symmetry, flattening, Normal distribution*). Hypotheses testing were through: *t*-Student for a sample; *t*-Student for independent samples, ANOVA fixed factor; Kruskal-Wallis; rho de Spearman. The results showed that the average radon concentration in homes in Vila Pouca de Aguiar (823,74 Bq/m^3) significantly exceeded the 400 Bq/m^3, standard set in national legislation. The minimum concentration of radon measured was 184 Bq/m^3 and the maximum was 2588Bq/m^3. It was discovered that indicators such as "age of home", construction materials", "pavement", options for ventilation" and number of doors did not significantly influence the radon levels found in the interiors of the homes, pointing to the conclusion that soil composition, mainly that containing granite is the principal source of radon.

Acknowledge Funding Source: Nuclear Technological Institute (Portugal)

An interdisciplinary research on pediatric asthma admissions using satellite based information on optical thickness of atmospheric aerosol triggers

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Keywords: Paediatric hospital asthma admissions, satellite remote sensing, aerosols, optical thickness

There are enough data demonstrating the association of aeroallergen levels, air pollution and weather conditions with asthma exacerbation and hospital asthma admissions (HAA). It has also been observed a wide international variation in the prevalence and severity of asthma symptoms. Understandably, because of the suspected sources and causes of asthma exacerbation, particular health conditions maybe more prevalent in the developed world than in developing countries. Research has suggested that there is a predominantly local aspect and a notable temporal and spatial variance in the incidence of HAA. While the impact of these disorders is expressed differentially in various population sub-groups and/or geographic areas, the strength of the above mentioned associations between specific outdoor environmental conditions and asthma exacerbations remains unclear. Atmospheric attenuation has been recognized, measured, and associated with cause and effect strategies in various ways throughout the evolution of the remote sensing sciences. Current approaches to understandings in the field have inspired its consideration as an index of HAA triggers.

This paper presents an early exploration of the relationship of atmospheric attenuation in terms of aerosol optical thickness (AOT) using satellite image contrast reduction comparisons (as a measure of AOT variations over time) between a reference image and a series of object images. These object images correspond in time to specific periods of observed HAA rates. Daily counts of HAA of the three main Children's Hospitals in Athens-Greece, recorded by the hospital registries during a 4-year period (2001-2004), were obtained. An evaluation of the correspondence of the variation in the relative AOT variation is found to suggest preliminary consistencies with the observed HAA flux. Given increased global environmental awareness and the adverse effects of certain worldwide economic developments, the understanding of HAA related mechanics is an important tool for health policy formation and execution. The application of these understandings on the part of public and private sectors can have significant applications for both the developed and developing nations of the world.

Acknowledge Funding Source: Professor Garry Higgs is currently in Greece under a Fulbright Foundation fellowship.

Joint Chinese-European investigation how Alternative Decarbonisation policies Effect public health and well-being in selected cities - JADE

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Keywords: greenhouse gas emissions, reduction policies, health impact, ecosystem impact, air pollution

On the COP 15 in Copenhagen in December 2009 a consensus was reached regarding the long-term objective of a global climate policy. However the unique chance to agree on binding policies with high environmental, health and well-being synergies was missed. Both GHG emissions and environmental exposures originate from the same sources. Hence the reward of alternative GHG reducing measures on public health, well-being and sustainability across different socio-economic groups, cultures and disparities must be assessed. Therefore, the aim of JADE is to develop a methodological framework and a series of target-aimed and/or specific policy-dependent scenarios to identify site-specific optima concerning GHG mitigation policies with regard to health and well-being in urban areas. After a current-state assessment, stake holder-driven site-specific scenarios will be identified, the changed environmental exposure of the urban population will be simulated with numerical models, and health and eco-system impact assessment will be performed. The transportation sector will be one focus, thermal efficiency and the impact on power production another. GHG reduction measures acting upon transport are anticipated to result in large health impact - air pollutants are emitted in close distance where people live. The role of classical fuel options such as coal, oil and gas as well novel fuels such as bio-fuels and technologies e.g. E-mobility will be addressed. The analysis will be undertaken in four selected cities in Europe and China representing rather different conditions (Budapest, Madrid, Beijing and Lanzhou). Stakeholder participation will guarantee a high reliability of the scenarios to be developed and analysed within JADE. The results of JADE shall be made transferable to other urban agglomerations. Therefore, the project will be conveyed to the relevant stakeholders in the scientific community and the public by workshops, conferences, reports and presentations ("open days").

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HENVINET expert consultation on health and policy implications of decaBDE

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Keywords: Environmental health, expert elicitation, decaBDE, stakeholder approach

Deca-brominated diphenyl ether (decaBDE) is a flame retardant widely used in products such as electronics and textiles. It is persistent in the environment, but differs from other polybrominated diphenyl ethers (BDEs) with respect to some important physicochemical properties. DecaBDE has therefore been less strictly regulated in many countries than other BDEs. Even if regarded less toxic, there are indications of toxicological effects, such as endocrine and neurodevelopmental disruption.

The aim of HENVINET is to establish a long-term environment and health network between researchers-stakeholders-policymakers in order to make relevant up-to-date information and the latest scientific opinion available for society. One issue in focus within HENVINET was decaBDE. An expert consultation to evaluate the state of the current scientific knowledge of decaBDE and its potential impact on health and policy considerations was organised by the consortium using a method recently applied for phthalate evaluation. Through two questionnaires and one expert workshop, the consultation aimed at identifying priorities for further action and arriving at a final expert advice for policy makers.

The results of the questionnaires and the workshop were presented as a short policy brief, summarizing the experts' recommendations and advice.

The experts agreed that there is a need for more research and monitoring of decaBDE to better support policy on this substance. Top three priority research areas were defined as:

1. The extent to which the substance is transformed to compounds with more tissue accumulating and toxic properties in the environment (OH-BDEs and BDEs with lower bromine content);
2. The extent to which humans and animals are exposed to the compound, especially from food and dust;
3. The extent to which decaBDE is transformed to more harmful substances in the human body.

Also suggestions to improve the current knowledge were to better organise research collaborations between publically funded institutions and universities at the European level. And in addition to publically funded research, industry should be required to provide more toxicological data.

Also, the experts considered that there is a need for information on alternative substances with putative lower risk than decaBDE.

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Health implications of HBCD – Results of an expert elicitation

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Keywords: Hexacyclobromododecane, HBCD, Endocrine disruptor, Expert elicitation

Hexabromocyclododecane (HBCD) is one of the major brominated flame retardants (BFRs) used to prevent different materials from catching fire. The HBCD concentration in the environment has increased since 2001. The major concerns about HBCD are its persistence and its potential for bioaccumulation, and there are indications of toxicological effects, such as endocrine disruption. Different countries use different policies regarding the production and use of HBCD. HBCD is one of the substances chosen to be evaluated by the Henvinet consortium. The aim of Henvinet is to establish a long-term environment & health network between researchers, stakeholders and policymakers.

An expert elicitation to evaluate the state of the current scientific knowledge of HBCD and its potential impact on health and policy considerations was organised by Henvinet using a method recently applied to evaluate phthalates (1), consisting of two questionnaires and one workshop.

The results from the questionnaires and the workshop arrived at concrete expert advice for policy makers and priorities for further action were identified:

- Experts agreed that more information is needed about the HBCD compound in order to better understand its health impact. This requires more investment in fundamental science as well as certain policy measures such as monitoring activities. The experts suggested more focus on three priority research areas: 1) Epidemiological and toxicological studies of HBCD 2) Concentration of HBCD in the target tissue, especially on individual HBCD isomers 3) Exposure to HBCD. The experts also agreed that better information on safety of alternative substances with lower risk than HBCD is needed.
- A short policy brief on the current situation with HBCD and the results of this Henvinet expert elicitation on HBCD was written aimed at decision makers.

The Henvinet method presented here is not intended as a substitute for Risk Assessment, but is meant as a rapid assessment tool aimed at highlighting different view points on key knowledge-related issues for policy making. The method was previously used within the Henvinet project on phthalates (1). The method was useful to identify priorities for further research on HBCD, as well as valuable recommendations for policy makers with respect to HBCD.

(1) Poster "HENVINET expert elicitation on health and policy implications of phthalates".

Acknowledge Funding Source: All experts responding to the questionnaires and attending the workshop are gratefully acknowledged.

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Health impact assessment of particulate matter (PM_{10}) and Ozone (O_3) in Mexico City Metropolitan Area

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Keywords: Health impact assessment, air pollution in Mexico City Metropolitan Area

Background: Health Impact Assessment (HIA) is an instrument for identifying the effect of policies, plans, programs, and projects on population health and health equity. HIA use information on exposure, baseline mortality/morbidity and exposure-response functions from epidemiological studies in order to quantify the health impacts of existing situations and/or alternative scenarios.

Objective: The aim of this study was to assess the health impact of exposure to particulate matter less than 10 micrometers (PM_{10}) and ozone (O_3) in Mexico City Metropolitan Area.

Methods: HIA is based on standard approaches to derive the number of adverse effects that are attributable to some established risk factor. The calculation requires three basic pieces of information: 1) Frequency or occurrence of a health problem in the population, 2) PM10 levels and 3) The quantitative information about the association between exposure to PM10 and the occurrence of health outcomes (concentration response function-CFR). The quantification of benefits was done by comparing the current burden with the one expected if air quality was at some lower levels. Geographic Information System was built to estimate the population exposure to PM10. To compare different estimates we select three different sources of CFRs: international meta-analysis, Mexico City studies and ESCALA data (ESCALA is a recent multicenter project that examines the association between health effects and air pollution in several cities in Latin America.)

Results: The reduction of current levels of PM_{10} to the WHO standards would result in about 2306 (882-1499) fewer annual **deaths** using ESCALA CFRs. This reduction is more important in people older than 65 years with 1369 (1029-2184) avoided deaths and 265 (55-468) for >1 year. For ozone 631 (441-796) deaths per year could be reduced if the annual mean of 8-hour average maximum values was reduced to 50 ppb. The evaluation also included estimations of long term-effects on mortality and death due to respiratory, cardiovascular and brain's vascular causes.

Conclusions: The results of the study will provide useful information to policy makers for implementing management policies for the next 10 years.

Acknowledge Funding Source: Instituto de Ciencia y Tecnología del Gobierno del Distrito Federal

Chlorpyrifos and neurodevelopmental toxicity: Critical assessment and expert elicitation

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Organophosphate (OP) compounds are used worldwide in agriculture and gardening to control insect pests. They also have residential and indoor applications for pest control, especially for cockroaches and termites. OPs act by inhibiting acetylcholinesterase, thus affecting nerve function in insects, humans and other animals. Most of the animal and human studies published between 2000 and 2007 refer to the OP chlorpyrifos (CPF).

There are concerns about the safety of CPF in the environment. While previous studies have shown levels of CPF that are safe in adult animals, recent evidence indicates young animals and humans may be more sensitive to CPF toxicity. In young animals, CPF is neurotoxic and mechanistically interferes with cellular replication and differentiation. This leads to alterations in the synaptic transmission in neurons.

OPs are used frequently in Europe for pest control due to their low price and broad spectrum of activity. In 2003 they accounted for over 59% (4645 tonnes) of insecticide sales in the EU, with CPF the top selling insecticide (15.6%, 1226 tonnes). CPF was also one of the most widely used OPs in the US for pest control, but the US Environmental Protection Agency imposed a ban on the sale of CPF for residential use in December 2001.

The consideration of whether to ban OPs for domestic use in Europe is a complex process involving both health and lifestyle considerations. Moving from scientific data to policy interpretation is a nontrivial challenge, because public health risks are scientifically very complex. Scientific assessment of environmental health risks is faced with large, sometimes irreducible, uncertainties, knowledge gaps, and imperfect understanding, and may also have conflicting claims and scientific controversy.

In order to better inform policymakers of the scientific basis of any proposed action, an expert elicitation was undertaken to identify areas of the research in need of further examination. This study considers the environmental health effects of CPF exposure in utero and during childhood and its relationship with neurodevelopment. The results will be used to form the basis of a decision support tool which has the aim of preparing policymakers with the necessary scientific background to address the concerns surrounding OPs and their applications in the home.

Experts fear serious effects of a warmer climate on respiratory health

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Keywords: Climate change, experts, health impacts, policy making

For assessment of current scientific knowledge regarding climate change and health in 2009 we consulted 48 experts in the field of respiratory and environmental medicine, public health and epidemiology. All had recent publications listed in PubMed on asthma and air pollution or climate change, and had been studying European populations.

Sixteen out of 48 experts accepted to evaluate the causal model for climate change effects on respiratory health we had developed. There was an overall high consensus among the experts with the majority having a medium or high level of confidence in claims related to climate change and respiratory diseases. The consensus was high for all questions related to extreme heat and ground level ozone. Consensus was high also for claims stating that increased exposure to damp buildings and wet building material will increase the frequency of acute asthma and respiratory morbidity and that the increased concentrations of ground level ozone will result in increased population exposure. The consensus was lowest for questions related to dust mites and climate change.

Even if the results may be biased due to the composition of participating experts, the scientific literature clearly support increased exposure to heat and ozone to cause serious health effects. Water damaged buildings and indoor mold is also correlated with more respiratory illness.

At a final workshop with nine of the sixteen experts there was consensus that no important pathway was missing in the causal diagram that was evaluated, but that the relevance of different stressors and health risks could be different in different regions also within Europe. The workshop participants found it a problem that on the one hand mitigation and adaptation are sometimes in conflict. On the other hand sometimes they offer a win-win situation. For policy making such differences are important to take into account.

Acknowledge Funding Source: This study was part of the Henvinet Project

Predicting safe levels for estrogenic compounds based on in vitro estrogenic potencies and fate of the compound in the body.

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Keywords: Estrogen, ER-luc reporter gene assay, rat uterotrophic assay, effect-based benchmark doses

In vitro assays capable of detecting ER-receptor activation provide a useful screening strategy for identifying xenoestrogens in a sample. In general, good correlations have been observed between in vitro estrogenic potencies and effect doses obtained with the in vivo rat uterotrophic assay, indicating that in vitro estrogenicity assays can be good predictors of in vivo estrogenic activity. In spite of this, limitations still occur in the in vivo predictive value of in vitro estrogenicity assays, since such assays do not take the kinetic characteristics of a compound into account that would occur in the in vivo situation. The present study investigates whether combining in vitro estrogenic potencies with kinetic characteristics of a compound can improve the in vivo predictive value of the in vitro assay. To this end, the effects of differences in serum albumin binding between compounds and the effects of differences in hepatic availability on the correlation between in vitro-based ethinylestradiol equivalencies (EE2EQs) and rat in vivo uterotrophic responses were determined. Results revealed that the correlation between the EE2EQs and the in vivo uterotrophic responses could especially be improved by taking differences in hepatic availability into account. Correcting the EE2EQs for both differences in albumin binding and hepatic availability did not further improve the correlation. The approach applied can form a basis for deriving effect-based benchmark doses.

Acknowledge Funding Source: KWR, Watercycle Research Institute

POSTER PRESENTATIONS
TOPIC 2 – DECISION SUPPORT TOOLS (DSTS)

Spatialization of air emissions in Piemonte

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The Region of Piemonte monitors the state of environment on its territory on a regular basis. One important issue to monitor is spatial distribution of air pollutants. Information on emissive activities are gathered every year in the Regional Emission Inventory, and emission amounts are estimated by means of the INEMAR model and methodology, developed by Regione Piemonte, CSI Piemonte and a cooperation of other Italian Regions. The output of the model is an estimation of total amounts of selected pollutants emitted in each municipality in one year. Data from the inventory are available on the internet by means of a searchable database IREAWEB.

Spatial representation of emission on municipality base, however, is not sufficiently detailed for purposes of Public Administration such as decision making an environmental planning. Since the Region disposes of a relevant patrimony of spatial information on territory, an effort was made to use such information to locate emission with better detail. Data sets corresponding to emission sources have been selected, such as mayor traffic roads, urban areas, industrial areas, landfills, crops, livestock etc., and a correspondence was defined between emission sources and spatial data sets.

Considering detail scale of available data and characteristics of air pollutant diffusion, it was chosen to locate emissions on a grid of 1 km of pace. Spatial data have been intersected with the grid and total emissions of each municipality have been distributed to cells, proportionally with the extent and type of spatial features included in each cell. The result is a set of maps representing spatial-spread of air pollutants. Several maps have been produced, each representing a combination of emission activity and pollutant. Maps are available in the internet through a web-GIS service.

After conducting the experimental work on the inventory INEMAR 2005, the work was repeated for the inventory of 2007 and the web service publishing the data was updated with the new maps.

Application of the ISHTAR Suite for the Assessment of Environment and Health Oriented Policies in 7 European Metropolitan Areas

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The main objective of the ISHTAR (Integrated software for Health Transport efficiency and Artistic heritage recovery) Project (2001-2005) was the realisation of an Integrated Suite of models that integrates several software tools for the simulation of the effects of transport and land use policies on the urban environment, air quality, population health and artistic heritage.

The ISHTAR Project had four main scientific and technological objectives:

- The integration of a large number of software tools and the creation of specific modules for the simulation of key processes such as transport and its direct impacts on the urban environment.
- The achievement of a high spatial and temporal flexibility, for maximizing the possibilities of application from local short-term actions to widespread long-term policies.
- The development of specific modelling areas such as policies effects on citizens behaviour, the integrated 24 hours simulation of traffic emissions, noise and safety, the microscopic analysis of air pollution effects on health and monuments.

Starting from the simulation of the effects of the postulated measure on citizens behaviour in terms of daily movements, the suite calculation path goes through the modelling of transport, vehicles safety and emissions of pollutants and noise, pollutants dispersion and noise propagation, exposure to pollutants, noise and accidents and related risk assessment, monuments degradation, up to the overall comparison of the alternative scenarios in terms of cost-benefit or multi criteria analysis. The software modules are integrated by a Software Manager that controls the tools execution, and is linked to a User Interface, a suite Database and a commercial GIS.

The ISHTAR Suite was tested in the seven metropolitan areas involved in the FP5 EESD Programme ISHTAR Project: Athens, Bologna, Brussels, Graz, Grenoble, Paris and Rome, with the analysis of different measures and policies. The main results of these case studies and the lessons learned in view of future refinement and exploitation of the tool are described in this work. The case studies include new road infrastructure analysis in central Graz, Bologna Province and Attiki region, traffic banning measures in metropolitan Brussels area, Paris (car free day) and central Rome, and measures in favour of public transport in Grenoble. The testing led to the solution of a number of modelling and software issues, and allowed to qualitatively assess the modules of the ISHTAR Suite.

These applications gave several positive indications on the performance of single tools and of the whole integrated software, but also put into evidence areas of improvement as it regards models refinement and user friendliness. In the near future the ISHTAR suite will be available for use in Europe and elsewhere for advanced planning and evaluation of urban and metropolitan environmental policies having health protection as the main goal.

Key References:

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Modeling Pareto efficient PM10 control policies in Northern Italy to reduce health effects

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Keywords: External costs. Health impacts, Integrated assessment modeling, Pareto efficiency, PM10 air quality policies

High PM10 concentrations can cause human health problems, both related to short-term and long-term exposure to particles. In this work the impact of efficient PM10 control problems in Northern Italy is assessed by means of a two-stage methodology. In the first stage a multi-objective optimization approach is applied. The multi-objective problem defines two control objectives (the emission reduction costs and the air quality index) to be minimized varying the decision variables (precursor emission reductions). The solution of the multi-objective problem are the Pareto efficient PM10 control policies. In the second stage, the ExternE methodology is applied to estimate health impacts and external costs for the efficient emission reduction scenarios computed in the first stage. The methodology has been applied over Lombardia region, one of the most polluted areas in Europe.

Acknowledge Funding Source: The research has been developed in the framework of the Pilot Project QUITSAT (Qualita´ dell'aria mediante l'Integrazione di misure da Terra, da Satellite e di modellistica chimica multifase e di Trasporto – contract I/035/06/0), sponsored and funded by the Italian Space Agency (ASI). The work has been also developed in the frame of EU NOE ACCENT (Atmospheric Sustainability). The authors are grateful to Prof Giorgio Guariso (Politecnico of Milano, Italy) and to APD-IIASA staff (Atmospheric Pollution and Economic Development - International Institute for Applied Systems Analysis) for their valuable suggestions.

SILAM: Numerical modelling system for emergency preparedness and the key components of chemical weather

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Keywords: Dispersion modelling, atmospheric chemical composition, chemical transport models

The Poster presents the current status of **emergency** and chemical composition modelling system SILAM. The system uses input information about anthropogenic, biogenic, natural, and complex, such as wild-land fires. The dispersion tools in the framework allow to choose between the Eulerian and Lagrangian dynamic kernels. The chemico-physical modules allow computations of radioactive pollutants (the model database includes 496 nuclides with decay chains, dose rates and doses targeting up to 23 organs of the human body); basic SOx-NOx-NHx-O3 chemistry; size-segregated aerosol compounds, natural allergenic pollutants, production of sea salt; and probabilistic estimates of plume dispersion expressed via volume- and area-of-risk.

The three main parts for modelling the key components of the chemical weather modelling are: the anthropogenic emission databases with simple temporal disaggregation, biogenic emission models for evaluating emission of natural aerosols and their precursors, and the Fire Assimilation System (FAS) jointly developed by Finnish Meteorological Institute and Russian State Hydrometeorological University. Two FAS versions are based on (partly) independent satellite products from the MODIS instrument: Temperature Anomalies (TA) of the Rapid Response systems (hot-spot counts) and the Fire Radiative Power (FRP). The observed quantities – the pixel absolute temperature and radiative emissivity – are converted to emission fluxes via empirical emission factors.

The products are available in near-real time and thus are utilized for the operational evaluation and forecasting of the atmospheric composition and exposure over Europe. Information from all three sources is consumed by the chemical transport model SILAM that is used in both forecasting and re-analysis modes. A few representative examples will be shown about actual events happened during recent years.

Acknowledge Funding Source: EU-GEMS and MACC, ESA-PROMOTE, Finnish Academy-IS4FIRES and POLLEN projects

POSTER PRESENTATIONS
TOPIC 3 – E&H PROJECTS' EXPERIENCE WITH POLICY-SCIENCE INTERFACE

HENVINET Networking Portal: Web community joining health and environment professionals

HENVINET Project Consortium

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Keywords: Social networking, communication, health, environment, policy, science

The HENVINET project has the primary goal to support informed policy making by integrating environment and health issues, for the greater purpose of protecting the health of populations and individuals. To facilitate this integration, the project has created a networking portal which is designed specifically for joining the global environment and health community. With a range of innovative tools for locating and accessing expertise, sharing knowledge, views and networking with peers, HENVINET empowers a multi-stakeholder approach to addressing the most pressing environment and health issues at hand. The HENVINET portal provides environment and health professionals and stakeholders anywhere in world with the ability to:

- *Network with peers:* Engage with a community of scientists, policymakers and stakeholders to share expertise, views and information.
- *Access the experts:* Search for and pinpoint specific expertise, and efficiently communicate and discuss concerns and specific topics with renowned experts.
- *Tackle global challenges:* Effectively collaborate within self-forming communities and forums that bring together a relevant portfolio of experts and stakeholders to address the issues at hand.
- *Set the agenda:* Shape the agenda of the Environment and Health community by participating in communities and forums discussing hot-topics of today and tomorrow.
- *Share opportunities:* Advertise conferences, symposia, research calls, job opportunities and the like to a broad range of professionals.

The networking components of the portal will be presented, along with how these components are envisioned to join environment and health professions in an interactive web-based community.

Acknowledge Funding Source: EU FP6

Psychotropic Substance Contents in the Air Across Italy. Concentration Levels and Relationships

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Keywords: Psychotropic substances; atmospheric particulate; organic toxicants.

Two in-field campaigns were performed in winter and summer 2009 to evaluate the psycho-active substances content in airborne particulates across Italy. Twenty eight sites were investigated in the first campaign, and thirty nine in the second. Cocaine was found almost everywhere, although some localities were rural or suburban. The maxima were recorded in Milan in both periods (yearly average ~0.20 ng/m3), and high values in the Northern cities and in Rome (~0.1 ng/m3). 9-tetrahydrocannabinol, cannabidiol and cannabinol usually affected the air at lower extents than cocaine. The concentrations detected of nicotine (0.4÷121 ng/m3) and caffeine (0.04÷52 ng/m3) exceeded those recorded before. Drug concentrations were compared with those of n-alkanes, PAH and PM10 affecting the atmosphere. The drug behaviours seemed to be independent of those of any organic toxicants. Looking to meteo-climatic situation, the drug concentrations were usually lower during summer, as a consequence of the low boundary layer heights typical of winter. Nevertheless, the summer decrease was much lower than that characterizing other particulate compounds. Further investigations are necessary to elucidate if illicit substances modulate with the abuse prevalence and to assess the true impact of meteorology influencing the pollutants dispersion and deposition.

Acknowledge Funding Source: Italian National Research Council, Institute of Atmospheric Pollution Research (free research)

Health Effect Screening

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Keywords: Health effect, screening, impact assessment, scenarios, environmental exposure

What is the Environment Health Impact Assessment?

The Environment Health Impact Assessment (EHIA) is an instrument that provides advance insight into the various factors that can affect the health of residents in a city. An EHIA provides a clear picture of health-related problems and opportunities with regard to urban development projects, changes in spatial planning or infrastructure, and national restructuring projects.

Tool developed in 2000, 5th update 2010, commissioned by government departments for environment and health

- For municipal health services
- Aim: to let local government take health into consideration in decisions concerning urban planning, urban restructuring and traffic circulation plans.
- How: providing insight into environmental health quality by a visual presentation on maps
- See at a glance where problems arise and where opportunities lie
- Helps decision making by providing insight
- Enables a healthier design of the living environment
- Avoid foreseeable future problems (public concern, financial)

How does it work?

- Survey of all relevant environmental sources and factors (exposure data, population data)
- Determine the environmental burden for every factor
- Assign a health impact assessment score (EHIA-score)

Environmental factors:

- Air pollution
- Noise
- Odour
- Electromagnetic fields
- External safety risks
- Soil pollution

Sources assessed in EHIA:

- Industry
- Road traffic
- Railway traffic
- Shipping traffic
- Aircraft traffic
- Soil
- Overhead powerlines

Acknowledge Funding Source: Ministry of VROM, the Netherlands

Needs and concerns in support of policy making in the field of environment and health expressed by Mexican stakeholders

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Keywords: Support of environmental and health policy making; Mexican stakeholders.

As part of HENVINET's activities we performed semi structured interviews in order to know the needs and concerns aimed to support policy making in the field of environment and health in Mexico (at federal and local level). In this work we present the main results.

General comments on priorities: According to the information provided, there is a need for: Available and accessible scientific evidence about exposure to contaminants. Information on contaminated passives sites characterization, and proper methodology to diagnose and prioritize environmental risks. Hazardous waste management procedures. A national inventory of chemicals. Having clear regulation and legislation processes and improving the communication between researchers and decision makers.

Feeding information on health effects into the policy making arena*:* These depend on the availability and sensibility of policy makers. First, to have access to brief and concise information that could be understood by both the technical and political side. Second, it's important to have the language adapted to secretaries, deputies and advisors in the presidential area. Last, the orientation regarding where the actions should be directed should not be neglected.

Emerging issues*:* Persistent organic compounds, accidental spillages, hydrocarbons basic sanitation, electronic residues, child health, nanomaterials.

Priority areas for research: water, chronic degenerative diseases, multi-routes of exposure

How to prioritise research: by an integral diagnosis of environmental risks, considering which are the most prevalent pollutants, by an opened and transparent process of consultation between researchers, public sector, industry, civil society and NGOs.

Obstacles for action*:* Ignorance of what environmental health is; and lack of enough attention in the political agendas; lack of integral norms and policies; low research budget; lack of acceptance and participation of the industrial sector; and international negotiation, especially with USA.

Other important issues*:* Information addressed to children should be included as well as information assessment; and have the information available in Spanish.

"Approaching the European scenario and getting to know the policies and risk management in developed countries will help us to adapt them to the reality of the developing countries' context. And in this way it will contribute to an improved management of these countries".

Acknowledge Funding Source: HENVINET

Enhancing the Impact of 'Environment and Health' Projects and their Relevance to Policies and Informed Decision-making

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Keywords: HENVINET, European policies, priority diseases, European Environment and Health Action Plan.

Health and Environmental Network (HENVINET) is an European Union (EU) project; which aim to review, exploit and disseminate knowledge on environmental health issues based on the research and practices for wider use by relevant stakeholder. Following HENVINET objectives, the current work assess the strategies to bring together the ongoing and recently completed 'environment and health' research projects to support the relevant information process for the implementation of the European Environment and Health Action Plan (EHAP). The poster specially focuses on projects related to the priority diseases identified by the EHAP i.e. asthma and allergies, cancer, neurodevelopment disorders and endocrine disrupting effects. The poster also highlights the relevance of Decision Support Tools (DST) and the need of feedback process for planning and implementation of relevant policies. Furthermore, special attention was paid for the development and strategic linking of research priorities (including gaps) and their implications for European Research Framework Programmes (FPs) in relation to 'environment and health' projects.

Human biomonitoring in an Italian high environmental risk area: study design and results delivery, communication and ethical issues.

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Keywords: human biomonitoring, communication, recommendations, ethics

In the high environmental risk area of Gela, Niscemi and Butera (South Sicily) an epidemiological study using human biomonitoring (HBM) data was planned in year 2007, in the framework a technical assistance programme developed by the World Health Organisation on behalf of the Sicilian Region, named SEBIOMAG. The Gela industrial area includes chemical production plants, an oil refinery plant and a power station, burning coal derived by refining process.

The SEBIOMAG study had the objective of identifying the exposure of the community to environmental pollutants, to promote tailored remediation activities and to establish the knowledge base for a permanent environmental health surveillance system.

If compared to the other highly polluted sites, the Gela area is a case in which many important data on environmental matrices and health outcome are available. However the data are scattered, being a clear example of the lack of coordination between environment and health data collection and management. A multidisciplinary working group has been established to study present pollution-exposure-effect data, to identify further information needs and to help HBM data interpretation.

Communication activities had a crucial relevance during the SEBIOMAG HBM survey and the multidisciplinary group developments, ranging from relation-building with local communities and social stakeholders, information collection and diffusion, public meetings and training activities. The production of information materials, a detailed questionnaire including a section on risk perception and information sources, as well as the legal forms to be signed by HBM survey was completed by meeting with groups of citizens, to examine comprehension and readability.

The result were given to each of the 270 donors during three days spent in Gela by the whole SEBIOMAG research group, and a public conference with decision makers was also organised. 60 PCBs, some PBDE and heavy metals were monitored. Among them arsenic appeared as the most important in terms of community exposure: 20% of donors had level of arsenic higher than the baseline (known from comparable Italian places) in blood and urine samples.

A detailed report on the whole survey was delivered to the competent authorities, including the following recommendations: to repeat analysis in urine to permit arsenic speciation; to monitor air, tap water and food to understand the actual exposure source; to evaluate individual susceptibility.

In absence of decisions for continuing the studies and for primary prevention measures by public authorities, ethical issues concerning the donors and the community can affect future studies and public health activities. The ethical questions posed by researchers, to be developed in the presentation, are linked to study design, results release and communication.

Acknowledge Funding Source: Sicilian Region trough contract with the World Health Organisation funded SEBIOMAG survey

Urban Environment: Integrated Assessment of Environment and Health

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Keywords: urban environment; environment and health impacts; integrated assessment and policy

More than three quarters of European citizens live in urban areas, therefore ensuring a high quality urban environment is critical for human well-being. The environment in which people live plays a fundamental role in people's health, but this environment is a complex system of interactions between exposure to pollutants eg air pollution, noise, poor quality water, chemicals etc, and other environmental, economic, social and health aspects. For example, urban air quality problems and climate change share common drivers, such as urbanization, population growth, mobility, energy consumption, with a range of impacts on human health.

Despite gaps in scientific understanding and remaining uncertainties, a wide consensus on the existence of links between certain diseases and the environment justifies taking preventative and precautionary measures to reduce environmental burdens to protect human health. The Thematic Strategy on the Urban Environment (COM(2005) 718 final) emphasises the environmental challenges facing cities and the significant consequences for human health, the quality of life of urban citizens and the performance of the cities. The Strategy aims to improve the urban environment, making cities more attractive and healthier places to live. Furthermore, as urban environmental quality is the result of drivers in many areas at different scales, policy response at all governmental levels ranging from local to European are necessary.

This growing recognition of the complexity of interactions between environmental factors and their impacts on human health within the urban socio-economic and cultural context calls for a more integrated approach in developing and implementing responses. More integrated and balanced solutions linking all levels of governance from EU to local, offer opportunities to tackle multiple problems, creating new synergies.

For example, local city based examples of an integrated approach seem to be successful in reducing both local air pollution and noise levels. Significant synergies and co-benefits are also possible through a concerted consideration of air quality and climate change policies. Improved coherence of air legislation with climate change policy actions is needed to fully capture synergies that exist between air pollution and climate change mitigation to better protect human health.

Acknowledge Funding Source: HENVINET Health and Environment Network

Aphekom - Lessons from Local Experiences in Bridging the Gap Between Science and Air Quality Policies

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Keywords: Aphekom; Air Pollution; Stakeholders; Uncertainties

Public decisions regulating environmental issues such as air quality rely on the proper integration of complex scientific evidence. Aware that pressing gaps remain in stakeholders' understanding of the continuing threat on health represented by air pollution, the Aphekom project aims to develop and deliver reliable and actionable information and tools on the health impacts and monetary costs of air pollution, so decision makers can set more effective local and European policies, health professionals can better advise vulnerable groups and individuals can make better-informed decisions.

Policies regulating atmospheric pollution may seem relatively straightforward to conceive from the human health perspective. But in reality, decisions imply the agreement on multiple criteria that are often divergent. Preferences can be influenced by individual, institutional and ideological dimensions of multiple participants which often remain implicit.

Since Aarhus convention's enforcement even more, the decision-making processes increasingly involve stakeholder participation and offer possibilities to study both the features of the science – decision interface and the influence of stakeholders. Stakeholders' perception and needs have been the focus of several investigations, but decisive factors are still to be uncovered.

Aphekom's work package 7 focuses on sharing knowledge and uncertainties between scientists and stakeholders in an attempt to improve the science/policy interface. Methods and tools are being developed and applied to local case studies. A comparison of two examples will be presented:

- A multicriteria assessment of the Air Quality Action Plan of the Paris Metropolitan area using deliberation support tools; this was performed by participants to the various working groups that contributed to its elaboration. The focus was on compliance to existing standards and allowed to generate debate around different issues such as environmental inequalities or quality of life.
- The mechanism and results of a citizen panel organised in the Brussels Capital Region to integrate actions towards the implementation of a regional framework of actions in order to improve air quality. This work was also structured as a multidimensional and long-term strategic vision.

Acknowledge Funding Source: A multicountry project working in 25 cities across Europe (EC Grant Agreement 2007105) coordinated by InVS in France and managed by a consortium of European institutions that investigate air pollution and its impact on health

Problems of pesticides/ chemicals regulations in developing countries

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Keywords: Pesticide regulations, chemical regulations, developing countries

Pesticides are dangerous chemicals that are designed to kill and in their use the fact called pesticide dilemma has always been around and created lots of controversy. The dilemma which is about having different health and environmental hazardous effect created a wide scientific research by academics, governments, corporations and regulatory agencies in developed world to justify their use. In recent decades the problem turned to be wider because many other chemicals other than pesticides entered the daily life of people. This resulted in development of a very careful laws and regulations in developed world to avoid consequences but in developing countries and countries in transition the scenario is different. Most of these developing countries are blind consumers of these pesticides/ chemicals without proper regulations so disastrous problems like 25 millions case of pesticide poisoning/ year only in agricultural workers started to happen in these countries following their unregulated use of these compounds. Pesticide/ chemicals regulations are very important and developed countries always have a big plan to prepare, renew and enforce them but for developing countries different factors are preventing them to have these regulations and to enforce them. These problems like lack of proper infrastructures, lack of risk communications etc. are so deep that in recent years ended in those big figures of poisoning/ suicidal cases and environmental problems. This situation ended to more exposure of people to a wide variety of pesticides/ chemicals in developing countries compared to developed World. Then what would be the solution? Is there a simple solution for this big problem? Could we bridge the gap between North and South to solve the problem? Perhaps a Global Harmonization System (GHS) for pesticide/ chemical regulations would solve the problem to some extent. One important key issue would be capacity making/ ICT work and more and more involvement of Civil Society Organizations (CSO) and NGOs of developing countries in some important issues like pesticide/ chemical regulations. In recent years development of REACH laws and regulations in Europe opened a door of hope to solve the problem in developing countries.

Acknowledge Funding Source: I am very proud to have been able to communicate with globally known pesticide/ chemical regulatory people and agencies and for most with different PAN sections in the World (PAN-North America, PAN-AP Asia Pacific, PAN-Africa, PAN-Europe, PAN-Germany), EPA, DPR, PMRA, REACH, CFIA, David Suzuki Foundation in Canada in the past 10 years.

I acknowledge and I appreciate different NGOs in Canada and especially in Ontario for their generous information/ communications about these important issues. I spent all these years in absolute poverty in my country Iran and in Canada (2003-2008) following my goal to help people and environment globally.

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KEYWORDS		
Health and environment Network (HENVINET)	Network portal	Science-policy-communication; Stakeholder engagement

ABSTRACT
The aim of this report is to describe the ways to raise public participation and awareness of environmental health issues. It includes: (1) science-policy communications and stakeholder engagement; (2) network portal; (3) knowledge evaluation on hot topics within environmental health fields; and (4) decision support tools for practitioners. In addition, this report summarizes the main outcome from the HENVINET final conference. It includes: (1) complexity in environment and health; (2) tools for practice; (3) communication strategies; and (4) exchange of knowledge and results with related projects and research initiatives.

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A Unclassified (can be ordered from NILU)
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