

RESEARCH ON CLIMATE CHANGE AND ENVIRONMENTAL RISKS

EUROPEAN COMMISSION, DIRECTORATE-GENERAL FOR RESEARCH

INTRODUCTION

The newsletter gives information on current research issues on climate change, on natural hazards and on risks to health from the environment. Research on these issues is being funded by European Commission's Research Directorate-General, Environment Directorate. The target audience is researchers, public authorities, students and others who are committed to or interested in the areas covered by the newsletter. Please forward the newsletter to anyone you believe will have interest in receiving it. Contact point for registering or cancelling your registration for the newsletter is given at the bottom of the page.

First Issue of 2010



Climate change

EU project highlights

New project on climate change mitigation policies: RESPONSES launched 1st of January 2010

The project RESPONSES (European responses to climate change: deep emissions reductions and mainstreaming of mitigation and adaptation), organised its kick-off meeting at the VU University Amsterdam (Institute for Environmental Studies) from 21 to 22 January 2010. The key objective of RESPONSES is to identify and assess EU climate-change policy responses that achieve ambitious mitigation and environmental targets. Simultaneously, it will seek to reduce the Union's vulnerability to inevitable climate-change impacts. The consortium comprises nine partners including one partner from each China and India. The project represents an important follow-up of several articles in the Copenhagen Accord, agreed at COP 15 in December last year.

Science meets policy

United Nations Climate Change Conference (COP15), Copenhagen, Denmark, 7-18 December 2009.

The UNFCCC COP 15 was held in Copenhagen 7-18 December 2009 and was undoubtedly the most challenging and high profile climate meeting ever held. More than 120 heads of state and government attended the high level segment. Close to 50,000 participants were registered. Multiple large demonstrations were held during the two weeks of the conference, and press attention was unprecedented. The conference highlighted the differences in views among parties, even after two years of intense negotiations, many of which could still not be overcome.

The key outcome of the Copenhagen Conference is the "Copenhagen Accord" (CA). The Accord was negotiated among around 30 Heads of State and Government, responsible for more than 80 % of the global CO₂ emissions and representing all key interest groups. Moreover, its formal adoption was supported by the vast majority of Parties. The Accord recognises the scientific view that the increase in global temperature should be below 2 degrees Celsius, and the crucial role of reducing emission from deforestation and forest degradation (REDD), it falls short of many of the other EU objectives. It has a number of serious weaknesses, such as lack of global mid-term or long-term reduction targets and the fact that it is not legally binding and does not expressly foresee the conclusion of a legally binding Agreement in 2010.

Publications

[European Research Framework Programme – Research on Climate Change](#)

This publication gathers the abstracts of European research projects on climate change and related to climate change which have been completed recently or are ongoing under the sixth and seventh framework programmes for research. This document aimed at providing a relevant overview of research activities on climate change funded by the European Community to participants to the third World Climate Conference held in Geneva in August 2009 and to the UNFCCC 15th Conference of the Parties meeting in Copenhagen in December 2009.

[Brochure Research on Climate Change – presented at the United Nations Climate Change Conference \(COP-15\)](#)

This six-page brochure presents a sample of climate-change projects from the Sixth and Seventh Framework Programmes. It was prepared specifically to be presented at COP-15 in December 2009

The Directorate General for Research participated within the EC delegation, and was involved in:

1. Participation in the Thirty-First Session of the Subsidiary Body for Scientific and Technological Advice (SBSTA 31)

2. Organizing side events within the EU umbrella.

The SBSTA closing plenary endorsed the results of the work done in numerous working groups over the first week of COP 15. It adopted conclusions on a) the Nairobi Work Programme on Impacts, Vulnerability and Adaptation to Climate Change, b) methodological guidelines on the implementation of the reductions of REDD, c) Research and Systematic Observation, d) Development and Transfer of Technology and e) Response Measures. SBSTA also adopted the annual report on the review of greenhouse gas emission inventories in developed countries, and conclusions on bunker fuels. The adopted conclusions are mostly procedural as these issues are linked to the main negotiation on the future climate regime and no progress was possible on individual issues in isolation from the rest of the 'negotiating package'.

The Parties did not find agreement on three SBSTA items, namely HFCs (F Gases), the inclusion of carbon capture and storage (CCS) in the CDM, and common metrics to calculate the CO₂ equivalence of greenhouse gases. All these items were referred to SBSTA 32 in 2010.

DG Research prepared a brochure for UNFCCC - COP15 on Research on Climate Change in the European Research Framework Programme, and arranged side events on the following issues:

Deforestation, forest conservation and the climate change challenge (10 December):

The event focused on the main challenges of land-use change, deforestation and forest conservation in relation to the discussions under the LULUCF and REDD segments of climate negotiations.

EU combats climate change with research on low carbon technologies (15 December 2009):

The side event has been jointly organized by three Directorates of DG Research (Environment, Energy and Energy/Euratom). The objective of the meeting was to inform policy makers, stakeholders, NGOs and media of the EU research on low carbon technologies, presenting relevant initiatives and projects – including ITER – as well as options and analysis of low mitigation scenarios, their costs and contribution of each technology to reach ambitious climate change targets.

Contributing to Global Knowledge on Climate Change – Working with Partners from Developing Countries (14 December 2009):

The event was opened by the Director General of Directorate General for Research Mr. JM Silva Rodriguez, and had – as a keynote speaker – the Chairman of IPCC, Rajendra Pachauri, and presentations from prominent European scientists. The objective was to highlight how European Framework Programme climate research is developing effective cooperation with international partners from developing countries to address the global challenge of climate change.

GEOSS for Climate (12 December 2009):

This side-event was the opportunity to highlight the GEO activities relating to Climate Monitoring, in particular with respect to the 2015 GEO Climate strategic target. The objective of this session was to introduce the GEO initiative and GEOSS to members of the Community interested in and concerned with Climate Change issues.

The economics of climate change (16 December 2009)

This side event focused on economic aspects of climate change impacts, adaptation and mitigation both on a global level, and on a sectorial, European level with a focus on water, agriculture and health. The director of California

Useful links

[European Commission, Directorate - General for Research - Environment.](#)

[New video: Cracking Climate Change](#)

A special 26-minute video from our *Futuris* programme on *Euronews* tells how research is working to crack the problem of climate change.

[Climate change page.](#)

[Environment and health page.](#)

[Natural hazards page.](#)

Climate Change Center, UC Berkeley, Prof. Michael Hanemann gave the key note presentation on Climate Change: The Challenge for Economics.

European Community becomes an enhanced observer to IPCC

During its [31st session in Bali](#) (26-29 October, 2009) the Intergovernmental Panel on Climate Change ([IPCC](#)) granted an 'enhanced observership status' to the European Community.

The decision, taken by the IPCC 31st Plenary meeting, recognises the special status of the European Community and gives Commission representatives the right to speak and to introduce proposals, like any IPCC Member, but not to vote. This is in line with the Commission proposal and strengthens further the contribution and visibility of EU research activities and initiatives at international level. For more information please read the [press release](#).

EU project highlights

DAMOCLES International Symposium, Brussels, 10-12 November 2009

The DAMOCLES International Symposium on "The Arctic climate system, its present status, future evolution and potential impacts" held in Brussels from the 10 - 12 November was one of Commissions research highlights in 2009. The presence of 150 prominent scientists from all over the world underlined the importance of this symposium and of arctic research in general.

The polar regions are especially vulnerable to climate change due to disproportionately high warming of the Arctic region with all its consequences. It was evident that Polar research, due the dimension of the scientific problem, should be address in an integrated, multidisciplinary approach. This was the birth of the Integrated project **DAMOCLES** 'Developing Arctic Modeling and Observing Capabilities for Long-term Environmental Studies', **which became one of Europe's flagship projects in the area of Arctic and Climate research** (for details please visit the website: <http://www.damocles-eu.org/index.shtml>). The project was designed to develop an integrated ice-atmosphere-ocean monitoring and forecasting system for observing, understanding and quantifying climate changes in the Arctic. The results of the project entered into the Symposium conclusions and final declaration.

The international symposium highlighted that climate change affects the sensitive system of the Arctic much more severe than thought. During the last 100 years, the Arctic atmosphere has warmed almost twice as fast as the global average, and the sea-ice cover has rapidly decreased and thinned during at least three decades. The scientists concluded that, unless CO2 emissions are curbed significantly, a stabilisation of the Arctic's climate system will be unlikely.

To learn more:

Press Release: [Arctic is warming faster than thought](#)

DAMOCLES Symposium:

- [Article](#)
- [Full version of the Final Declaration](#)
- [Short version](#)



Environment and health

Science meets policy

Annual congress of the European Societies of Toxicology (EUROTOX 2009)

The annual congress of the European Societies of Toxicology is one of the major events in the Environment and Health area in Europe. Over 1300

participants from 53 countries as well as 44 exhibitors attended the 46th meeting of the European Societies of Toxicology in Dresden between 13-16 September 2009.

The motto of the conference was *'Safety for People and Environment'*. The congress included a large number of oral sessions that addressed all relevant research issues in toxicology (risks related to pesticides, endocrine disrupters, nanotechnologies, drugs; alternative testing methods; new technologies based on 'omics' to study toxicological exposures and health effects), debates (there was, e.g., an interesting debate on whether nanotechnologies pose a risk for human health or not, one person arguing for and another against), posters, and seminars.

DG Research organised a seminar entitled *'Current and future activities and challenges for European research in human and environmental toxicology - the perspective of the European Commission'* and an information stand. Emerging issues and gaps identified in the event include:

- (i) health outcomes of complex real-life exposures;
- (ii) problems in regulatory toxicology, i.e., how the regulatory authorities who have to evaluate chemical risk data to take decisions can interpret the huge amount of data being generated by the 'omics' technologies (transcriptomics, proteomics, metabolomics...);
- (iii) Although more and more regulatory toxicologists are needed, there is paradoxically less and less education in this field in European universities.

EU project highlights

COPHES: European network on Human Biomonitoring

Human biomonitoring (HBM) is an effective tool to assess human exposure to environmental substances and in some cases their potential health risks. It is seen as an essential element in a strategy for environmental health impact assessment.

In support of the European Environment and Health Action Plan 2004-2010, European scientists and stakeholders from 35 institutions in 27 European countries formed a 'COntortium to Perform human biomonitoring on a European Scale' - COPHES, funded by the European Community's Seventh Framework Programme (FP7/2007-2013).

COPHES will develop a functional framework allowing the collection of comparable HBM data throughout Europe. Indeed, currently the many studies in the European Union too often gather fragmented data that do not allow full exploitation. The framework will also include a roadmap for integration of HBM data with environmental and health information and will address ethical aspects specific for the collection and storage of human material and data.

Improved comparability of European HBM data will allow cross boundary evaluation of human exposure and support the elaboration of background levels and guidance values. This will facilitate, for example, the identification of potential high exposure populations or subpopulations and lead to focused research projects.

HBM is an important tool to support environment and health policy making. It allows superior quantification of exposure of the general European population to existing and emerging environmental substances. HBM also enables evaluation of policy actions aimed at reducing exposure, more comprehensive health impact assessments of policy options, control of chemical regulations (e.g. REACH), etc.

Starting from an inventory and analysis of similarities and discrepancies in existing and planned HBM studies in different EU Member State, harmonized study protocols will be prepared and tested out from 2011 onwards. Although the focus at this stage is given to methyl mercury, cadmium, phthalates as well

For your agenda

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

The Fifth Ministerial Conference on Environment and Health organized by WHO/Europe and hosted by Italy, is the next milestone in the European environment and health process, now in its twentieth year. Focused on protecting children's health in a changing environment, the Conference will drive Europe's agenda on emerging environmental health challenges for the years to come. DG Research, and in particular the Directorate Environment, will participate in the event by sharing a Commission stand and organising two side events.

[More information](#)

Publications

[Report International Public Health Symposium on Environment and Health Research. Science for Policy, Policy for Science: Bridging the Gap.](#)

The WHO Regional Office for Europe and the Carlos III Institute for Health of the Spanish Ministry of Science and Innovation, with the support of the Spanish Ministry for Health and Consumer Affairs and the European Commission's Directorate- General for Research organized the International Public Health Symposium on Environment and Health Research. The Symposium provided a platform for mutual collaboration between public health professionals and researchers in the field of public health in general, with

as environmental tobacco smoke, further substances will be included in the coordinated approach. Measurements thereof depend, however, on priorities and funding possibilities of Member States.

An extensive training and capacity building programme will also be developed for European countries expressing their interest. Furthermore, an extended communication strategy will target not only the scientific community and the individual participants in studies, but also policymakers, stakeholders and the population at large.

The project is coordinated by BiPRO GmbH, Germany, in close collaboration with the Katholieke Universiteit Leuven, Belgium. It started on 1 December 2009 and is scheduled to run for 3 years. More information is available on the project website: www.eu-humanbiomonitoring.org

SEAWIND – Sound Exposure and Risk Assessment of Wireless Network Devices

Public exposure to electromagnetic fields (EMF) in the radio frequency spectrum has increased dramatically in the last two decades. While research has mainly focused on the exposure and health risk evaluations of cellular networks and mobile phones, studies on the effects of the pervasive and prolonged EMF exposure on human health due to the exponential growth of wireless network device usage in homes, offices and schools are lacking.

The SEAWIND project is an EU funded collaborative under the *7th Framework Programme, Theme 6 “Environment (including climate change)”*; sub-activity “*Environment and Health*” aimed at broadening the scientific basis for assessing the potential adverse health risks of electromagnetic field exposure due to the ubiquitous presence of wireless network devices in everyday life. Major gaps in knowledge will be closed to provide the guidelines, procedures and instrumentation necessary for reliable risk assessments of wireless network devices. The project also aims to provide novel tools and information to empower the scientific community, industry and regulatory agencies to evaluate the risks and benefits of new and existing technologies for their safe and beneficial use in society prior to market introduction.

SEAWIND will address the entire scientific spectrum from dosimetry to biology. The first step of the initiative is to provide a comprehensive assessment of the incident field exposure of installed wireless local area networks (WLAN or WiFi) or wireless metropolitan area networks (WMAN or WiMAX), body-mounted and body-worn wireless personal area networks (WPAN) and WLAN devices, and specific wireless applications in industry, e.g., novel RFID logistic applications, in typical residential and occupational scenarios, such as in homes, offices and classrooms. Using high-resolution anatomically MRI based surface models that represent a wide spectrum of the human population, the induced fields in the human body will be numerically determined. After screening for potential biological sensitivities at the molecular, developmental and functional levels in cells, these specific data combined with the current body of literature on biological interactions of EMF covering the entire radio-frequency spectrum will be evaluated with respect to the safety and risks of the investigated technologies. A comparison to other exposures, such as cellular mobile devices, base stations, TV, Radio, etc will also be included.

In addition, guidelines for optimizing installation and usage to maximize connectivity and minimize exposure will be established. The missing instrumentation, calibration techniques, and assessment procedures for performing technically sound compliance testing will also be developed and disseminated to the relevant international standardization groups (CENELEC, IEC, ICES, ARIB, etc.). A newly developed set of communication and dissemination tools for improving risk communication will be tested together with key stakeholders and users.

When completed, the project will contribute to the societal and scientific objectives for providing the necessary information and tools to explore the potential health concerns and risks associated with the EMF exposure of

particular emphasis on environment and health, contributed to the preparations for the 2010 Ministerial Conference on Environment and Health and helped set priorities for future policy-oriented environment and health research in the European Union. Concluding that much remained to do to close the science-policy gap, the Symposium participants recommended a range of tools and institutional structures to bridge it.

wireless network devices.

The SEAWIND effort consists of eight world-renowned expert groups representing a wide range of expertise ranging from engineering to biology from five European countries, including Switzerland, Germany, Belgium, Greece, and Denmark. This three-year initiative commenced on December 1, 2009 and is coordinated by Prof. Niels Kuster of the IT'IS Foundation for Research on Information Technologies in Society. Twenty scientists representing the eight expert groups and the European Commission representative, Dr Tuomo Karjalainen, gathered in Basel, Switzerland on December 14-15, 2009 to successfully kick-off the project and generate a more detailed project agenda.

For more detailed information, please visit www.seawind-fp7.eu



Natural hazards

International Workshop on Disaster Risk Reduction - Dialogue between scientists and stakeholders

The European Commission (Climate Change and Environmental Risks Unit of DG Research), together with the United Nations International Strategy for Disaster Reduction - UNISDR Europe Office, organized the International Workshop "Disaster Risk Reduction - Dialogue between Scientists and Stakeholders" on the 29-30 October 2009 in Brussels.

The objectives of this event were:

- to enable a better dialogue and exchange between the scientific community working in the field of EC funded research projects on natural hazards and different policy and users communities (e.g. Policy Directorates, stakeholders, representatives form UNISDR, National Platforms, civil protection, etc);
- to present concrete achievements and research results that are of interest to managers and policy makers;
- to reflect on past and ongoing research as well as to prioritize future challenges and needs;
- to strengthen collaboration between UNISDR and DG Research in supporting National Platforms and other actors towards DRR Research and Implementation of results in the Europe region.

The discussions during the workshop revealed some main challenges or constraints in the field of disaster risk reduction, namely:

- Data and inventory: availability, consistency, interoperability
- Sustainability (Data, information, models, ...) beyond the projects' time-life
- Uncertainty quantification and propagation
- Forecasting/predictability
- Long term risk management (global change...)
- Vulnerability assessment
- Huge gap in knowledge of social & economic vulnerability
- Cost (direct, tangible and intangible) of natural hazard impacts
- Multi/Mono hazard approach (advantage/disadvantage)
- Complexity – interconnectivity
- Prioritization of research objectives and actions
- Funding
- Difficulties in dissemination action (language, culture, effective participation of stakeholders,..)
- Concern about the developing countries.

[Download the poster of the workshop.](#)

[View the presentations.](#)

Publications

[Principles of multi-risk assessment: Interaction amongst natural and man-induced risks](#)

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