Community-funded research on air pollution and health

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### Main DGs and agencies of the Commission addressing E&H health issues

#### FUNDING OF EUROPEAN RESEARCH

<table>
<thead>
<tr>
<th>RESEARCH</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Research Directorate-General (DG Research):</strong></td>
<td></td>
</tr>
<tr>
<td>✓ <strong>Environment Directorate</strong></td>
<td></td>
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<tr>
<td>✓ <strong>Health Directorate</strong></td>
<td></td>
</tr>
<tr>
<td>✓ <strong>Biotechnologies, Agriculture and Food Directorate</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Information Society and Media Directorate-General (DG Infso)</strong></td>
<td></td>
</tr>
</tbody>
</table>

#### POLICY MAKING

<table>
<thead>
<tr>
<th>Environment DG (DG ENV)</th>
<th>European Environment and Health Action Plan (EHAP), air pollution, noise-related issues, climate change, water pollution, REACH...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health and Consumer Protection DG (DG SANCO)</td>
<td>EHAP, Public health policies (EMF, indoor air issues...), Community legislation on food contaminants, risk assessment committees (SCHER, SCENHIR), Programme of Community Action in the Field of Health 2008-2013...</td>
</tr>
<tr>
<td>Enterprise and Industry DG</td>
<td>Community legislation on substances, REACH...</td>
</tr>
<tr>
<td>Employment, Social Affairs and Equal Opportunities DG</td>
<td>Occupational health...</td>
</tr>
</tbody>
</table>

#### OTHER ACTORS

<table>
<thead>
<tr>
<th>Joint Research Centre DG</th>
<th>Validation of chemical testing methods, EHAP...</th>
</tr>
</thead>
<tbody>
<tr>
<td>European Environment Agency</td>
<td>Reporting...</td>
</tr>
<tr>
<td>European Chemicals Agency</td>
<td>REACH</td>
</tr>
<tr>
<td>Framework Programme</td>
<td>Nb projects dealing with impact of air pollution on health</td>
</tr>
<tr>
<td>----------------------------------------------------------</td>
<td>------------------------------------------------------------</td>
</tr>
<tr>
<td>Sixth Framework Programme of Research (2002-2006)</td>
<td>11</td>
</tr>
<tr>
<td>Seventh Framework Programme of Research (2006-2013)</td>
<td>2 (after 1st call)</td>
</tr>
</tbody>
</table>
Air quality-related health impacts: FP5 projects
AIR POLLUTION-RELATED HEALTH IMPACTS

Air Pollution and Respiratory Health

AIRALLERG – Effects of Outdoor and Indoor Air Pollution on the Development of Allergic Disease in Children.
BIOAIR – Longitudinal Assessment of Clinical Course and Biomarkers in Severe Chronic Airway Disease.
ECHRS II – European Prospective Study on Environment, Allergy and the Lung.
HELMOS – Biomarkers for the Non-invasive Assessment of Acute and Chronic Effects of Air Pollutants on the Respiratory Epithelium.
HEPMBeAP – Health Effects of Particles from Motor Engine Exhaust and Ambient Air Pollution.
MOCALEX – Measurement of Occupational Allergen Exposure.
PAMCHAR – Chemical and Biological Characterisation of ambient coarse, fine and ultrafine particles for Human Health Risk Assessment in Europe.
PATY – Pollution and the young combined analyses of cross-sectional studies of respiratory health of children and air pollution.
PAWG – Programmable Air Wave Generator with Controlled Temperature, Pressure, Humidity and Air Wave Frequencies for Calibration.
RAIAP – Respiratory Allergy and Inflammation due to Ambient Particles – A Europe-wide Assessment.
RUPIOH – Relationship between Ultrafine and Fine Particulate Matter in Indoor and Outdoor Air and Respiratory Health.

Air Pollution and Genotoxic or Carcinogenic Effects

AMBIPATH – Mechanism-based Approaches to Improved Cancer Risk Assessment of Ambient Air Polycyclic Aromatic Hydrocarbons (PAHs).
CHILDRENENETWORK – European Network on Children’s Susceptibility and Exposure to Environmental Genotoxicants.
EXPAH – Effects of PAHs in Environmental Pollution on Exogenous and Endogenous DNA Damage.
GEN-AIR – Molecular Changes and Genetic Susceptibility in Relation to Air Pollution and Environmental Tobacco Smoke: a case-control study in non-smokers nested in the epic investigation.

Air Pollution and Cardiovascular Effects

AIRGENE – Air Pollution and Inflammatory Response in Myocardial Infarction Survivors: Gene-environment-interactions in High-risk Group.
HEAPSS – Health Effects of Air Pollution on Susceptible Subpopulations: Ultafine particles and myocardial infarction.
MAAPHR – Multidisciplinary Approaches to Airborne Pollutants Health-Related Issues.

Air Pollution and Networking, Risk Assessment

AIRNET – A Thematic Network on Air Pollution and Health.
EMECAP – European Mercury Emission from Chlor-alkali Plants.
MULTIPLE STRESSORS AND FACTORS AND HEALTH IMPACTS

- E21-4AYC – Environmental Influences and Infection as Aetiological Agencies in Atopy and Asthma in Young Children.
- EPILYMPH – Environmental Exposures and Lymphoid Neoplasms.
- GEOPARKINSON – Parkinsonism and Parkinson’s Disease.
- PASTURE – Protection against Allergy: Study in Rural Environments.
- PDECAE – Prevalence and Determinants of Childhood Asthma and Allergies across Europe.

EU Research on Environment and Health - Results from projects funded by the Fifth Framework Programme

Final reports: http://ec.europa.eu/research/environment/themes/projects_en.htm

FP6 projects addressing air pollution and health issues
Impetus for increased spending on E&H issues: European Environment and Health Action Plan [EHAP] adopted in 2004 → 66 projects funded by the Sixth Framework of Research (2002-2006) with a total EC contribution of over €200M → results starting to become available
(Action 5 of EHAP) Integrate and strengthen European environment and health research → make full use of the results from EU and nationally funded projects.

- Review of European research on the most indoor air-relevant health effects and respective exposures to contaminants in indoor air
- Evaluation of interventions on environment and health exposure reduction measures on a regional level and promoting of implementation of successful initiatives in other regions of Europe
- Focus on the exchange of useful practices in two areas: (i) the reduction of traffic-related health hazards (ii) improvement of indoor air quality
- Main objective is to increase the information on the PM characteristics throughout Europe, describing the PM-system with respect to geographical and meteorological conditions, particle formation processes and their transport.
- Identification of the remaining knowledge gaps in the field of air pollution and health in relation to the objectives of Environment & Health Action Plan
- IAQ a minor aspect

Final workshop Brussels 16-17 September 2008

- ENVIE: www.envie-iaq.eu/home.html
- PRONET: http://www.proneteurope.eu
- COST ACTION 633: http://cost633.dmu.dk
- CAIR4HEALTH: www.cair4health.eu
(Action 6 of EHAP) Target research on diseases, disorders and exposures → improve knowledge of the links between environmental exposures and four priority diseases and to strengthen the integration of the research results into relevant policy measures.

- asthma, allergy
- neuro-immune disorders
- cancers
- endocrine-disrupting effects

Establishment of a network of European centres of excellence conducting integrated multidisciplinary research programmes on allergy/asthma and environmental factors (e.g., outdoor and indoor pollution), nutrition, lifestyle (including occupation), infections and genetic susceptibility.

Identification of how genes and the environment cause the development of asthma.

Identification of both risk and protective factors, with the long-term aim of preventing the illness.

Establishment of expert teams for each of the four priority diseases of the European Environment and Health Action Plan (allergy/asthma; cancer; neurodevelopmental disorders; endocrine disrupting effects), to summarise the current scientific basis regarding the links between health and environment.

GA2LEN: www.ga2len.com
GABRIEL: www.gabriel-fp6.org
HENVINET: www.henvinet.eu
✓ aims at producing a new integrated risk assessment framework, based on the full chain approach (causal chain spanning sources of pollution, releases into various media, dispersion and transport, exposure medium inhalation/dermal contact/ingestion, intake, uptake, dose, health effects and impacts)
✓ Sub-projects (SP),
  ❑ SP1 will review and develop the tools and methods needed for integrated assessments;
  ❑ SP2 will review and develop monitoring and modelling methods necessary to support integrated assessment;
  ❑ SP3 will apply the methods developed in SP1 to seven policy areas (Transport, housing, agricultural land use, water, household chemicals, waste and climate);
  ❑ SP4 will design a web-based integrated assessment toolbox or system which will be the operational means to assess environment and health risks.

Housing - including the effects both separately and in combination of environmental tobacco smoke, indoor air pollution (e.g. from cooking and heating, moulds, furnishings etc), noise and indoor climate (including temperature and dampness) on acute and chronic health (respiratory illness, cardiovascular illness, winter mortality and infant mortality).

- (Action 7 of EHAP) Develop methodological systems to analyse interactions between environment and health → research into the adequacy of current risk assessment and possible development of new methodologies to assess better the risks coming from environmental factors, and to improve economic valuation and impact analyses of prevention strategies

✓ INTARESE: www.intarese.org
✓ NOMIRACLE: http://viso.jrc.it/nomiracle
✓ HEIMTSA: www.heimtsa.eu
✓ 2-FUN: www.2-fun.org
✓ DROPS: www.nilu.no/DROPS
✓ ENVIRISK: http://envirisk.nilu.no
More information on FP6 projects - catalogues


More information on FP5/FP6 projects - websites

http://ec.europa.eu/research/allergy/index.htm


http://cordis.europa.eu/search/index.cfm
Seventh Framework Programme of Research (2006-2013)
Research: filling the gap
Total expenditure on R&D, % of GDP – Barcelona Summit, 2001

Japan: 3.0
USA: 2.7
EU-15: 1.9
Research spending 2005

R&D intensity (GERD as % of GDP), 2005

Source: DG Research
Data: Eurostat, OECD
Note: (1) NL, IT, RO, UK, HR, TR, IS, CH: 2004; AT, FI: 2005.
United States

Chindia

European Union
"United in Diversity"

www.scanbalt.org
What’s new as compared to FP6?

- Increased duration: seven years
- Increased budget: average increase 40% per annum as compared to FP6 (€5 billion in 2006; €9.9 billion in 2013)
- Budget for environmental research: around €200 M in 2006/2007, around €350 M in 2013; sharp increase only from 2011
- New structure: cooperation, ideas, people, capacities
- Basic (‘frontier’) research to be funded via the ‘Ideas’ programme
- Flexible funding schemes. New: support for frontier research. No cost models. Increased EC contribution for S/T (up to 75%)
- Joint Technology Initiatives (long-term public-private partnerships in fields of high industrial/policy relevance)
- Simpler procedures (submission of documents, audit certificates, subcontracting, evaluation criteria etc). Redress procedure.
- Logistical and administrative tasks → external structures
Collaborative research: research activities carried out in transnational cooperation in 10 thematic areas – budget €32.4 bn

Frontier research: “investigator-driven” research carried out across all fields (bottom-up approach) by individual teams in competition at the European level - €7.51 bn

Human potential: Strengthening the human potential in research and technology in Europe - budget €4.75 bn

Research capacity: research infrastructures; regional research driven clusters; unleashing the full research potential in the EU’s “Convergence” regions; research for and by SMEs; “Science in Society” issues; “horizontal” activities of international co-operation – budget €4.10 bn

Euratom

Joint Research Centre (S/T support to EU policies): €1.75 bn

Joint Research Centre (nuclear)
## Cooperation programme: 10 themes

<table>
<thead>
<tr>
<th>THEME</th>
<th>E&amp;H ACTIVITIES COVERED</th>
<th>FP7 BUDGET (€ bn)</th>
<th>BUDGET OF 1st CALL (€M)</th>
<th>BUDGET OF 2nd CALL (€M)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 HEALTH</td>
<td>Cancer, infectious diseases</td>
<td>6.10</td>
<td>637</td>
<td>549</td>
</tr>
<tr>
<td>2 FOOD, AGRICULTURE AND FISHERIES, AND BIOTECHNOLOGY</td>
<td>Food contaminants, animal diseases</td>
<td>1.94</td>
<td>192</td>
<td>110</td>
</tr>
<tr>
<td>3 INFORMATION AND COMMUNICATION TECHNOLOGIES</td>
<td>Personalised exposure measurement devices; ICT for environment</td>
<td>9.05</td>
<td>1 019</td>
<td>477</td>
</tr>
<tr>
<td>4 NANOSCIENCES, NANOTECHNOLOGIES, MATERIALS AND NEW PRODUCTION TECHNOLOGIES</td>
<td></td>
<td>3.48</td>
<td>396</td>
<td>221</td>
</tr>
<tr>
<td>5 ENERGY</td>
<td></td>
<td>2.35</td>
<td>109</td>
<td>70</td>
</tr>
<tr>
<td>6 ENVIRONMENT (INCLUDING CLIMATE CHANGE)</td>
<td>‘Environment and Health’ sub-activity: all areas of E&amp;H</td>
<td>1.89</td>
<td>200</td>
<td>222</td>
</tr>
<tr>
<td>7 TRANSPORT (INCLUDING AERONAUTICS)</td>
<td></td>
<td>4.16</td>
<td>442</td>
<td>283</td>
</tr>
<tr>
<td>8 SOCIO-ECONOMIC SCIENCES AND THE HUMANITIES</td>
<td></td>
<td>0.62</td>
<td>59</td>
<td>N.A.</td>
</tr>
<tr>
<td>9 SECURITY</td>
<td></td>
<td>1.40</td>
<td>120</td>
<td>N.A.</td>
</tr>
<tr>
<td>10 SPACE</td>
<td></td>
<td>1.43</td>
<td>35</td>
<td>N.A.</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>32.4</td>
<td>3 209</td>
<td>N.A.</td>
</tr>
</tbody>
</table>

*Selection of some projects still ongoing*
## Main funding schemes

<table>
<thead>
<tr>
<th>Budget</th>
<th>Average size of consortium</th>
<th>Average duration</th>
<th>Name in FP5</th>
<th>Name in FP6</th>
<th>Name in FP7</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>€4M-€7M (in Environment theme)</strong></td>
<td>3-7 partners</td>
<td>4-5 years</td>
<td>Did not exist</td>
<td>Networks of excellence (NoE)</td>
<td>NoE</td>
</tr>
<tr>
<td>Depends on task; minimum 3 partners</td>
<td></td>
<td>2-5 years</td>
<td></td>
<td>Integrated projects (IPs)</td>
<td>Collaborative project: large scale integrating project or small or medium-scale research project</td>
</tr>
<tr>
<td><strong>Up to €3.5M (in Environment theme)</strong></td>
<td></td>
<td></td>
<td></td>
<td>Shared-cost research project</td>
<td></td>
</tr>
<tr>
<td><strong>Not indicated</strong></td>
<td>Minimum 3 partners</td>
<td>Up to 4 years</td>
<td>Concerted action</td>
<td>Coordination actions (CAs)</td>
<td>Coordination and supporting action (of coordinating or supporting type)</td>
</tr>
<tr>
<td>At least 1 legal entity</td>
<td></td>
<td>2 years</td>
<td>Accompanying measure</td>
<td>Specific support actions (SSAs)</td>
<td></td>
</tr>
<tr>
<td><strong>€100K to €400K per year, up to €0.5M-2M per grant</strong></td>
<td>Individual research team with Principal Investigator named</td>
<td>Up to 5 years</td>
<td>Did not exist</td>
<td>Did not exist</td>
<td>European Research Council (ERC) Starting Independent Researcher Grant</td>
</tr>
<tr>
<td><strong>€100K to €500K per year, up to €0.5M-2.5M per grant</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ERC Advanced Investigator Grant</td>
</tr>
</tbody>
</table>
Topics for 1st call
(Environment and Health sub-activity) and projects funded

- ERA-NET for environment and health
  - Coordination of national environment and health research programmes €2M
  - 5 applications (4 out of scope)
  - 16 applications

- ERA-ENVHEALTH
  - Health effects of indoor pollutants: integrating microbial, toxicological and epidemiological approaches €2.9M

- HITEA
  - Developmental effects of environment on reproductive Health €3.5M
  - 14 applications (1 ineligible)

- DEER
  - Reproductive effects of environmental chemicals in Females €2.9M
  - 6 applications

- REEF
  - Health risk from environmental pollution levels in urban systems €1.4M
  - 2 applications

- HEREPLUS
  - European study of cohorts for air pollution effects €6.9M

- CONTAMED
  - Contaminant mixtures and human reproductive health - novel strategies for health impact and risk assessment of endocrine disrupters €3.5M

- GIS applied to environmental epidemiology
  - European cohort on air pollution

- Health impacts of drought and desertification
  - European network on human biomonitoring
  - 2 applications each

- ESCE
  - Environmental influences on reproduction and development
Topics for 2nd call
(Environment and Health sub-activity)

- Health impacts of exposure to radiofrequency fields in childhood and adolescence
- Comparison of health risks in populations in the Arctic and selected areas in Europe due to the spreading of contaminants resulting from climate change
- Databases based on European cohort studies and their exploitation for advancement of knowledge of environment-health relationships
- European research network on noise and health
- New, improved and validated biomarkers to investigate long-term health impacts of exposure to environmental pollutants
- Quantification of changing surface UV radiation levels and its impact on human health
1st call outcome: Air pollution-related projects funded by areas other than ‘Environment and Health’
<table>
<thead>
<tr>
<th>TOPIC TITLE IN THE CALL</th>
<th>ACRONYM</th>
<th>TITLE</th>
<th>EC CONTRIBUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance indicators for health, comfort and safety of the indoor built environment</td>
<td>PERFECTION</td>
<td>Performance indicators for health, comfort and safety of the indoor environment</td>
<td>€1.5M</td>
</tr>
</tbody>
</table>
### Topic in the Call

**Megacities and regional hot-spots air quality and climate**

<table>
<thead>
<tr>
<th>ACRONYM</th>
<th>TITLE</th>
<th>EC Contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEGAPOLI</td>
<td><em>Megacities: emissions, urban, regional and global atmospheric pollution and climate effects, and integrated tools for assessment and mitigation</em></td>
<td>€3.4M</td>
</tr>
<tr>
<td>CITYZEN</td>
<td><em>Megacity - zoom for the environment</em></td>
<td>€2.9M</td>
</tr>
</tbody>
</table>

Under negotiation: air quality and climate
## TOPIC TITLE IN THE CALL

Impact of exogenous factors in the development of allergy

## ACRONYM

EFRAIM

## TITLE

Mechanisms of early protective exposures on allergy development

## EC CONTRIBUTION

€3M

Under negotiation: allergy
2nd call recently closed: applications to be evaluated in April (a few address indoor air and health issues)
3rd call: topics under preparation - to be published in June/July?
4th call: To be published in January 2009
Launched in November 2007

Funding: €322M (around €50-60M per annum)

Calls for proposals and tenders are managed by the Public Health Executive Agency (PHEA) of DG SANCO

It co-finances projects

Funds are available in a separate budget for organising conferences

Call published two days ago, deadline 23 May 07

Topics on IAQ

Calls for proposals:
Thank you for your attention
Other air pollution-related projects funded by FP5 and FP6 (for info)
<table>
<thead>
<tr>
<th>MULTIPLE STRESSORS, INTEGRATED ASSESSMENTS (INCL. AIR POLLUTION)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FUMAPEX</strong> Integrated systems for forecasting urban meteorology, air pollution and population exposure - <a href="http://fumapex.dmi.dk">http://fumapex.dmi.dk</a></td>
</tr>
<tr>
<td><strong>URBAN EXPOSURE</strong> Integrated exposure management tool characterizing air pollution-relevant human exposure in urban environment - <a href="http://www.nilu.no/urban_exposure">www.nilu.no/urban_exposure</a></td>
</tr>
<tr>
<td><strong>HEAVEN</strong> Healthier environment through the abatement of vehicle emissions and noise - <a href="http://heaven.rec.org">http://heaven.rec.org</a></td>
</tr>
<tr>
<td><strong>ECNIS</strong> Environmental cancer risk, nutrition and individual susceptibility - <a href="http://www.ecnis.org">www.ecnis.org</a></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>PROJECTS OF POLICY RELEVANCE CARRYING OUT REVIEWS/NETWORKING</th>
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</thead>
<tbody>
<tr>
<td>NEPAP  Network for the support of European policies on air pollution - <a href="http://nepap.ivl.se">http://nepap.ivl.se</a></td>
</tr>
<tr>
<td>ACCENT Atmospheric composition change - European network of excellence - <a href="http://www.accent-network.org">www.accent-network.org</a></td>
</tr>
<tr>
<td>ATREUS Advanced tools for rational energy use towards sustainability with emphasis on microclimatic issues in urban applications - <a href="http://aix.meng.auth.gr/atreus/index.htm">http://aix.meng.auth.gr/atreus/index.htm</a></td>
</tr>
<tr>
<td>COST 732 Quality assurance and improvement of micro-scale meteorological models - <a href="http://www.mi.uni-hamburg.de/Home.484.0.html">www.mi.uni-hamburg.de/Home.484.0.html</a></td>
</tr>
<tr>
<td>COST 728 Enhancing mesoscale meteorological modelling capabilities for air pollution and dispersion applications - <a href="http://www.cost728.org">www.cost728.org</a></td>
</tr>
<tr>
<td>COST 633 Particulate matter - properties related to health effects - <a href="http://cost633.dmu.dk">http://cost633.dmu.dk</a></td>
</tr>
<tr>
<td>PROJECT</td>
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<tr>
<td>---------</td>
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<tr>
<td><strong>URBAN AEROSOL</strong></td>
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<tr>
<td><strong>INTEGAIRE</strong></td>
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<td><strong>OSCAR</strong></td>
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<td><strong>SAPPHIRE</strong></td>
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<tr>
<td><strong>PARTICULATES</strong></td>
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<tr>
<td><strong>ARTEMIS</strong></td>
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<td><strong>AIR4EU</strong></td>
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<td><strong>MERLIN</strong></td>
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<td><strong>POLYSOA</strong></td>
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<td><strong>BOND</strong></td>
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<td><strong>ISHTAR</strong></td>
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