DROPS
Development of Macro and sectoral Economic Models to Evaluate the Role of Public Health Externalities on Society

SIXTH FRAMEWORK PROGRAMME

DROPS is a 2-year project (11/2005-1/2008) funded by the 6th Framework Program of the EC, Activity FP6-2004-SSP-4
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The project aim

Is to provide a full-chain analysis related to impact of health protection measures related to priority pollutants as identified by the Environment and Health Action Plan (EHAP), to support the development of cost effective policy measures against pollution related diseases and their wider impacts. The project will achieve this through extending and further developing existing methodologies, models and data to provide an impact-pathway-based model for evaluation of the role of public health externalities on society. The objectives are related to ozone, heavy metals (mercury, cadmium, arsenic, nickel, lead), polychlorinated biphenyls (PCBs), dioxins and indoor air pollution.

Background

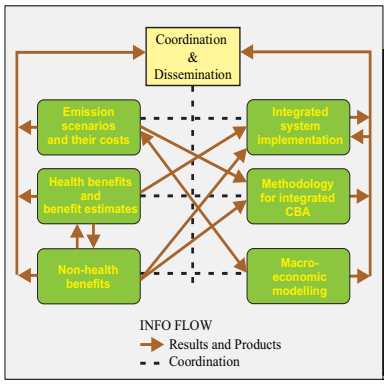
DROPS builds extensively on research and development projects carried in the 5th and 6th FRP for Research and Development of the EC, and on work done to support European environmental policies. Scenarios for abatements of emissions of pollutants to the ambient air are important part of many assessment and research projects. This project will build upon work done in the ESPREME project2 (scenarios and technological options for heavy metals abatement), and on work done for ozone reduction scenarios (such as in the RAINS model3). Emission abatement options and scenarios for PCBs and dioxins will be mainly created using knowledge on emission factors, and will build upon work done for the UN ECE CLRTAP convention, particularly within the UN ECE Task Force on Emission Inventories, co-coordinated by NILU.

A significant scientific challenge is to relate ambient concentrations or deposition to exposure indices used for assessment of the exposure-response relationships for the relevant compounds. For HMs, PCBs and dioxins this often is done using (atmospheric) fate and transport models, and further, extensive exposure modelling e.g. using food basket approaches. Most recently, transport and fate models have been developed within the 5th FRP projects such as POP-CYCLING BALTIC6, or currently executed projects done within the CEFIC LRI initiative7, and their results will be made the basis of the simplified exposure models to be developed in DROPS.

DROPS will

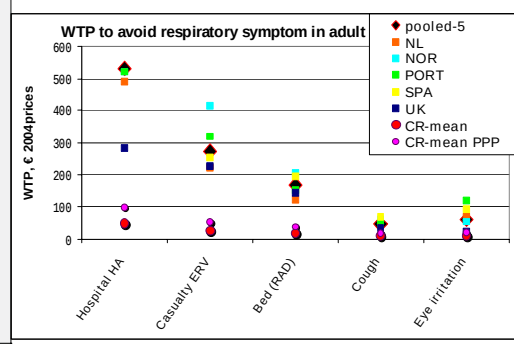
- Identify emission reduction measures and their costs for PCBs, Dioxins and indoor air pollution, and review such information for ozone and heavy metals, particularly through the ESPREME project progress for heavy metals.
- Evaluate benefits of such measures in terms of reduction of health impacts, including possible ancillary benefits, based on data derived from current and previous relevant projects (e.g. ESPREME, MERLIN, INFOS)
- Evaluate uncertainties related to single health estimates and provide guidance on how to deal with these uncertainties
- review existing non-health benefit aspects of emission reductions, identify missing elements and seek to fill in the gaps, such as providing additional valuation estimates
- Based on the cost benefit analysis approach used for the CAFE programme and on its review, develop an integrating methodology that would allow a split between economic and social benefits both direct and indirect
- Construct and evaluate a number of emission abatement scenarios using the integrated system for cost benefit analysis (all scenarios based on RAINS/CAFE and ESPREME)
- Assess the macro-economic impacts of the constructed scenarios for key economic variables broken down by economic sector.

Overall structure and data flows

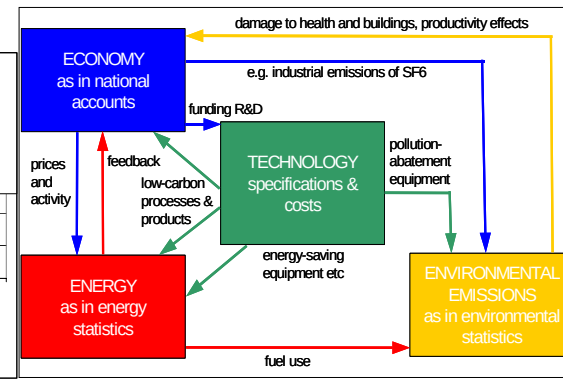


Example: WTP for avoiding resp. symptoms

ExternE (Navrud, 1999, Friedrich & Bickel, 2001)
WTP estimates CZ (CUEC 2005)



Structure of the macroeconomic model E3ME



The DROPS project: http://www.nilu.no/DROPS
The ESPREME project: http://espreme.ier.uni-stuttgart.de
The E3M project: http://www.e3me.com/
The emissions databases: http://www.ietu.pl/

The European Commission CAFE program http://europa.eu.int/comm/environment/air/cafe/index.htm
The European Commission Environment and Health Strategy
http://europa.eu.int/comm/environment/health/strategy.htm
The ExternE project series(NEEDS; MAXIMA; HEATCO, METHODEX)
http://www.externe.info

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