

INTEGRATING CLIMATE CHANGE INTO HEALTH RISK ASSESSMENT

A 2FUN PROJECT CASE STUDY

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OVERVIEW

- × Background
- × 2FUN project
 - + Lisbon case study
 - + 2FUN Toolbox

BACKGROUND

- × Previous studies and programs have identified needs for methods to assess:
 - + Health effects of environmental pollutants under climate change scenarios
 - + Health effects due to multi-pollutant exposures.

- × This is specially true for studies conducted at the local level
 - + EIA, SEA, ELD etc.

EXAMPLE



COMMISSION OF THE EUROPEAN COMMUNITIES

Brussels, 1.4.2009
COM(2009) 147 final

WHITE PAPER

Adapting to climate change: Towards a European framework for action

Commission will work with Member States and stakeholders setting guidelines and exchanging good practice, to ensure that account is taken of climate change impacts when implementing the Environmental Impact Assessment (EIA) and Strategic Environmental Assessment (SEA) Directives and spatial planning policies.

Action (EU and Member States)

- Develop guidelines by 2011 to ensure that climate impacts are taken into account in the EIA and SEA Directives

CLIMATE CHANGE & ENVIRONMENTAL POLLUTANTS

- × Climate change can affect environmental distribution & toxicity/bioavailability of pollutants
- × Special concern for human health:

+ Air pollutants

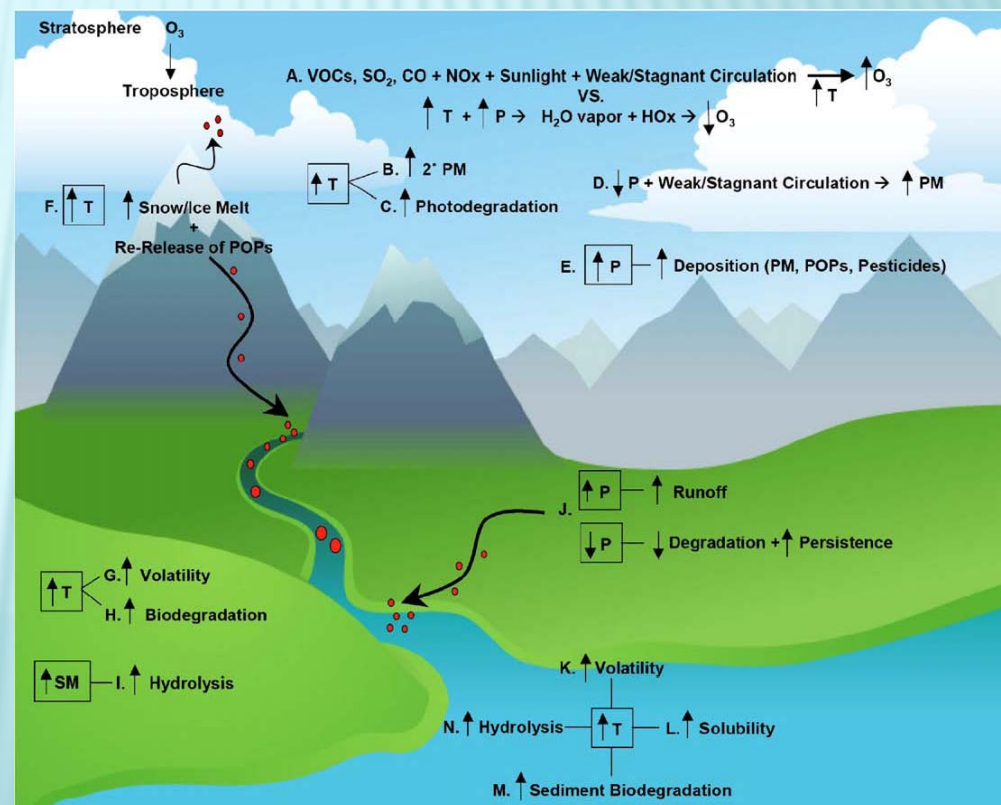
× O₃ & PM

× Pollen

+ POPs

+ Pesticides

+ Nanoparticles?



2FUN PROJECT

- × 2-FUN is an integrated EU DG Research project
- × Aim is to provide decision-makers with state of the art tools to analyze the current and future trends in environmental conditions that may lead to health problems. It focuses on the following topics:
 - + Construction of future environmental and socio-economic scenarios relevant for health risk /impact assessment
 - + Toxicity assessment of chemical mixtures
 - + Integration of children's issues in health risk assessments
- × Methods developed for:
 - + Local scale assessments
 - + Minimal resource requirements (i.e. normal desktop computer)
 - + Tested on 3 contrasting case studies

2FUN CASE STUDIES

- × Case study 1

 - + Air pollution in Lisbon

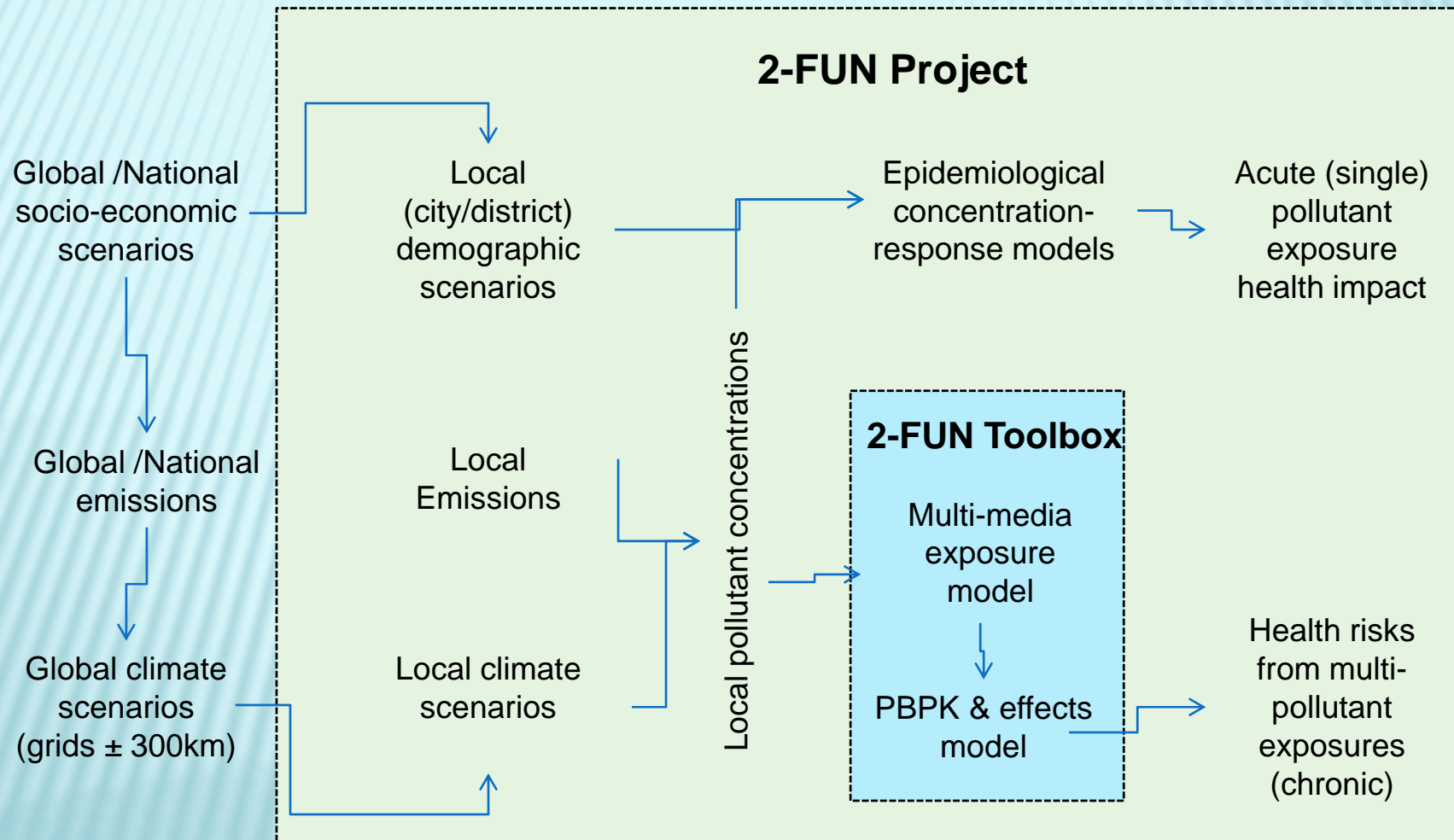
- × Case study 2

 - + Water pollution in Paris

- × Case study 3

 - + Soil contamination in industrial towns in Poland

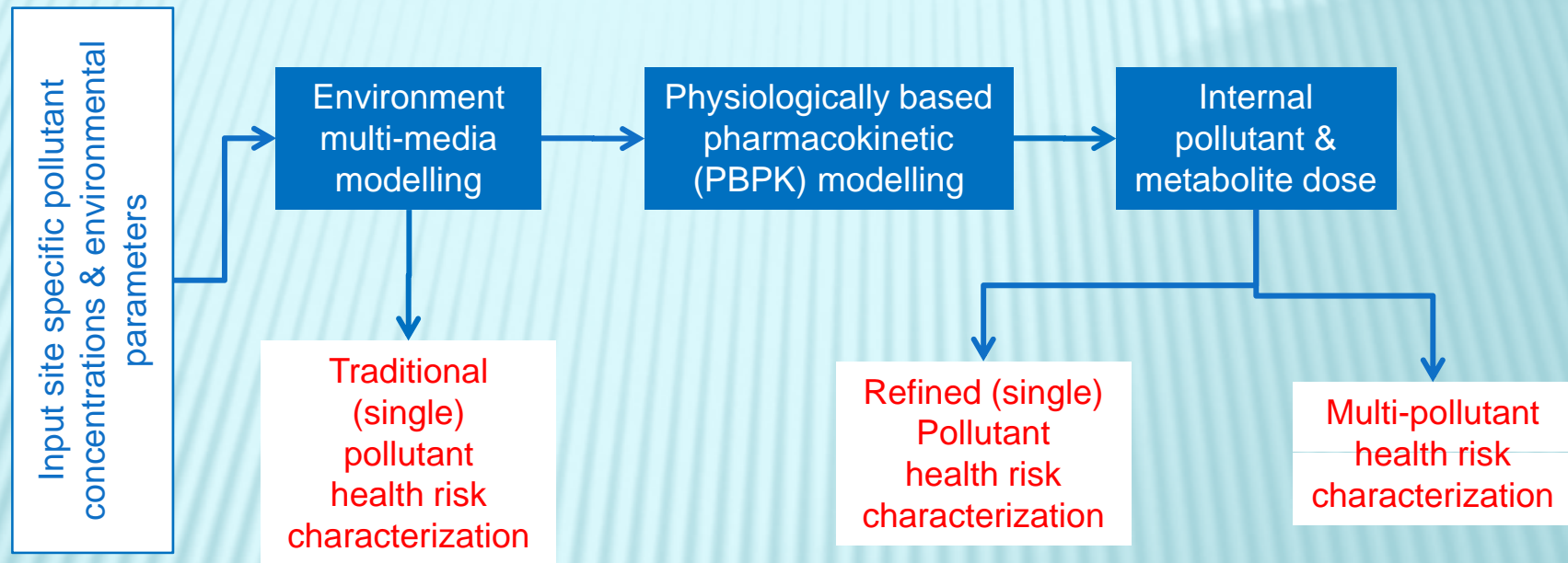
2FUN CASE STUDY 1: AIR POLLUTION IN LISBON



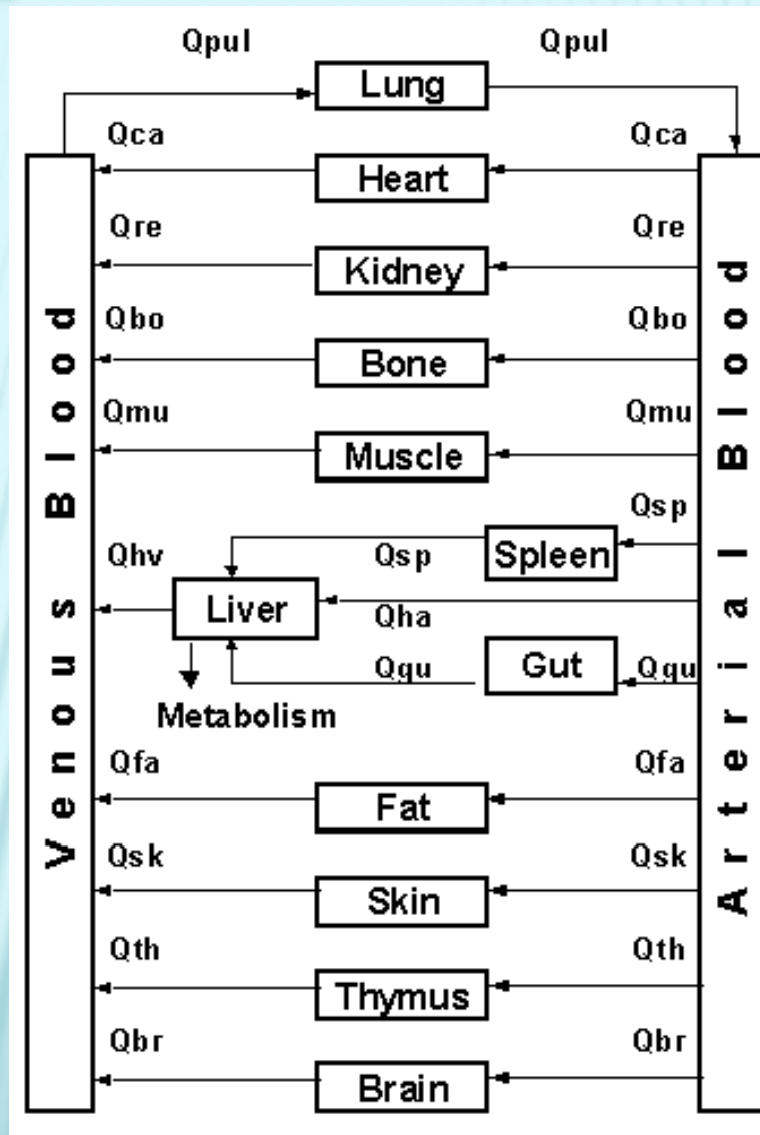
2FUN CASE STUDY 1: AIR POLLUTION IN LISBON

- × Downscaling climate scenarios (*finished - next speaker*)
- × Linking future climate to air quality models (*ongoing*)
- × Using the 2 FUN toolbox (*ongoing*)
 - × Chronic effects (children & adults)
 - Current ambient air concentrations:
 - Benzene & Metals (on PM)
 - Current & future (2020s & 2050s) ambient air concentrations
 - EIA
- × Using epidemiologic/statistical relationships (GAM etc.) (*international per review*)
 - × Acute effects
 - Heatstress,
 - Ozone & PM2.5

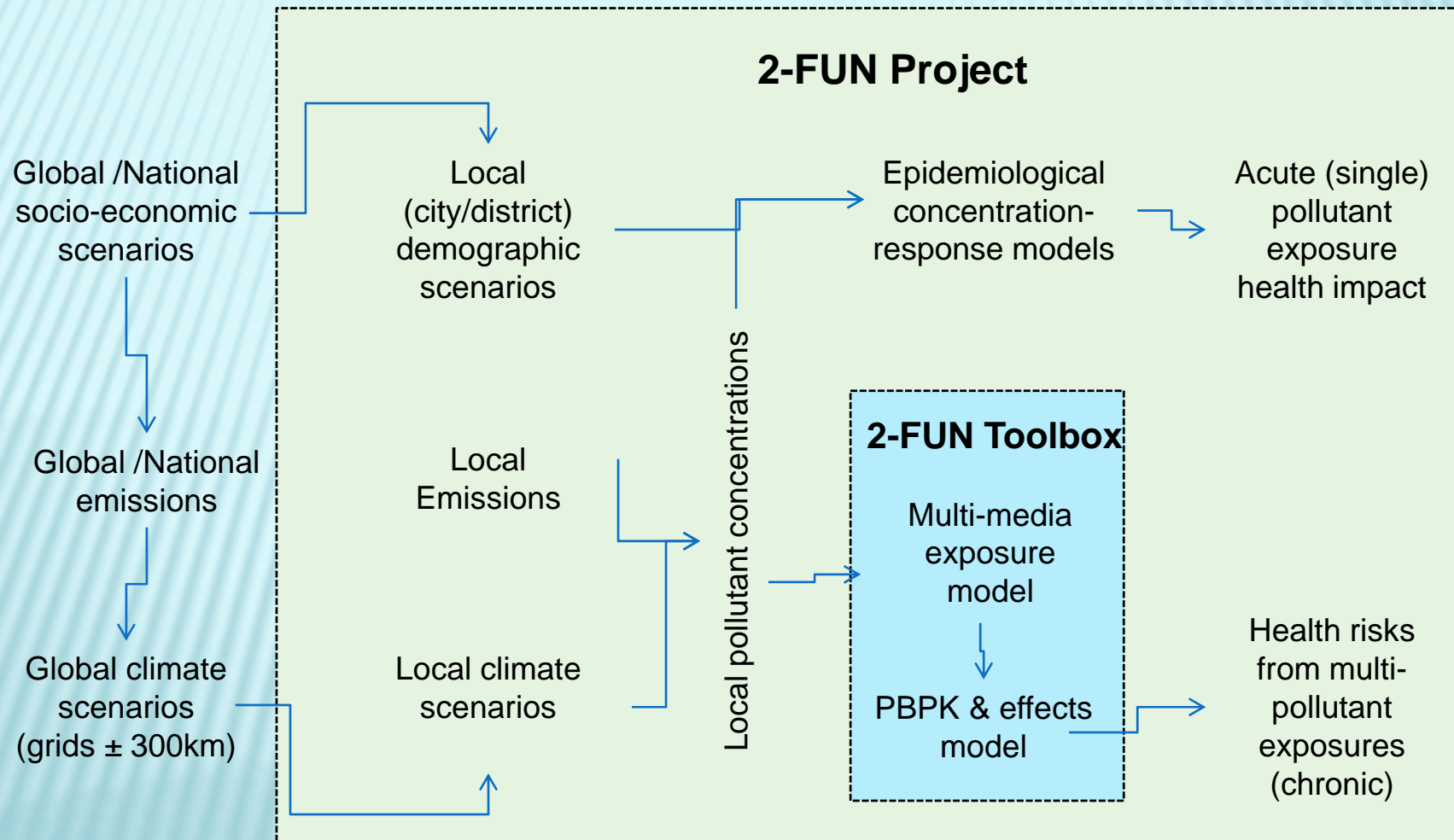
2FUN PROJECT TOOLBOX



PBPK MODEL



2FUN CASE STUDY 1: AIR POLLUTION IN LISBON



CASE STUDY OUTCOMES

- × The assessment methodology
 - × Value to EIA studies and other studies assessing environmental health risks from chemical exposures at the local level – Harmonized approach
 - × Allows for more focused human biomonitoring studies
 - × Acute study - identify Lisbon population vulnerability to air pollutants & compare with other EU cities
 - × Since climate change adaptation actions need to be conducted predominately at a local level, the climate downscaling method presented will be of interest to local municipalities and industries (i.e. not just health sector).

2FUN TEAM

- + Institut National de l'Environnement Industriel et des Risques (France)
- + Technical University of Denmark (Denmark)
- + Electricité de France (France)
- + Facilia AB (Sweden)
- + Fundação da Faculdade de Ciências da Universidade de Lisboa (Portugal)
- + Institute for Ecology of Industrial Areas (Poland)
- + Institute of Public Health Ostrava (Czech. R)
- + Joint Research Centre – European Commission
- + Università Cattolica del Sacro Cuore (Italy)
- + Helmholtz Centre for Environmental Research (Germany)
- + Università Ca Foscari Venezia (Italy)
- + Flemish Institute for Technological Research (Belgium)

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