

# Externalities Work on EU Air Quality Directives and the CAFE Programme

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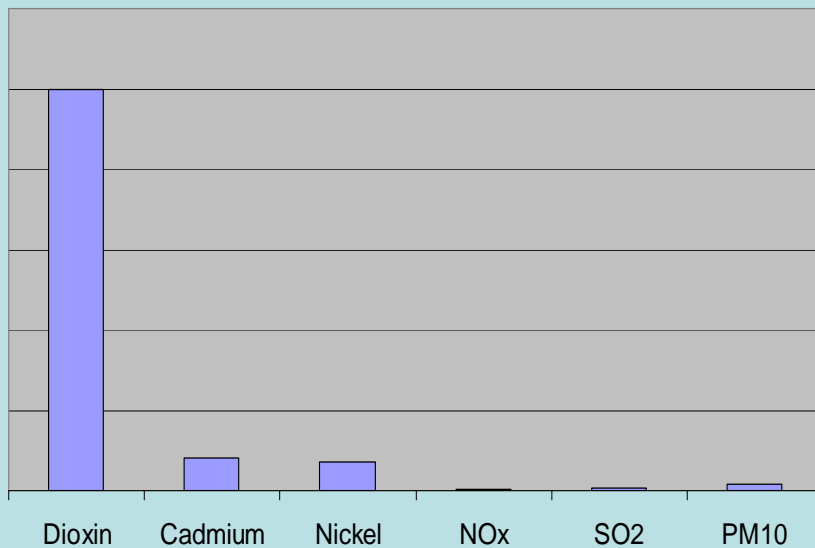
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# Examples of EU legislation and ExternE-style CBA

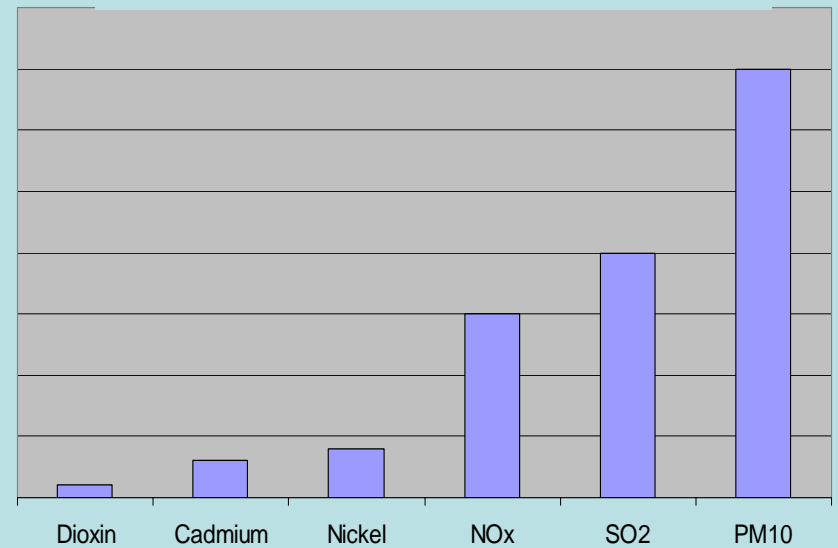
- Daughter directives on air quality
  - PM<sub>10</sub>, SO<sub>2</sub>, NO<sub>2</sub> and lead (1997 – 1998)
  - CO and benzene (1997 – 1998)
  - Ozone (1997 - 1998)
  - PAHs, heavy metals (2000 – 2001, decision pending)
- Emission ceilings
  - Acidification Strategy (1997)
  - Gothenburg Protocol (1997 – 1999)
  - NECD (1998 – 2000)
- Emission standards
  - Large Combustion Plant Directive
  - Waste Incineration Directive

# Waste Incineration Directive - damage from different pollutants

Damage per tonne of pollutant



Damage per tonne of waste  
for a modern incinerator



# Extent of application of ExternE in air quality policy support to date

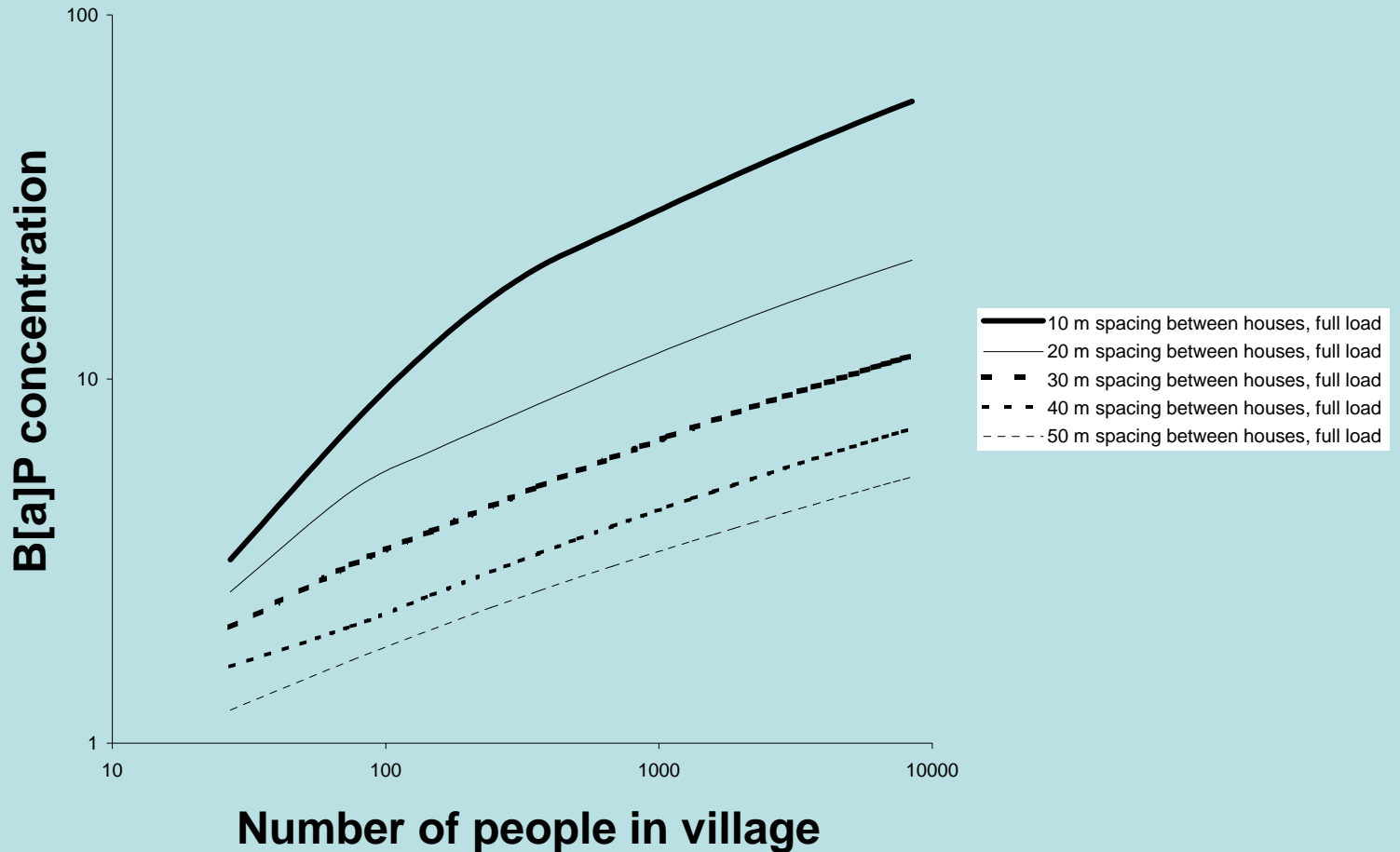
- Overall framework of the impact pathway approach ✓
- Stock at risk ✓
- Dispersion modelling ✗ (✓)
- Selection of response functions ✓
- Valuation – mortality ✗ ✓
- Valuation – other end-points ✓

# Air quality modelling

- EMEP
  - Emission ceilings
  - Ozone
- ‘Tailored’ methods for dealing with hot-spots
  - E.g. PAH assessment for 4<sup>th</sup> Daughter Directive
    - Industrial emissions lead to highest concentrations  $\gg 1\mu\text{g.m}^{-3}$
    - Domestic emissions lead to highest exposure, but concentrations  $\ll 1\mu\text{g.m}^{-3}$
- Both link to ExternE method with no difficulty



# Air quality modelling (PAHs)



# Valuation of mortality

- ExternE team preference for VOLY for non-cancer air pollution impacts
- European Commission preference for VOSL
- Can use both – sensitivity analysis
- Need for discussion around new results (UK study, NewExt, etc.)

# CAFE: Clean Air For Europe

- Objectives

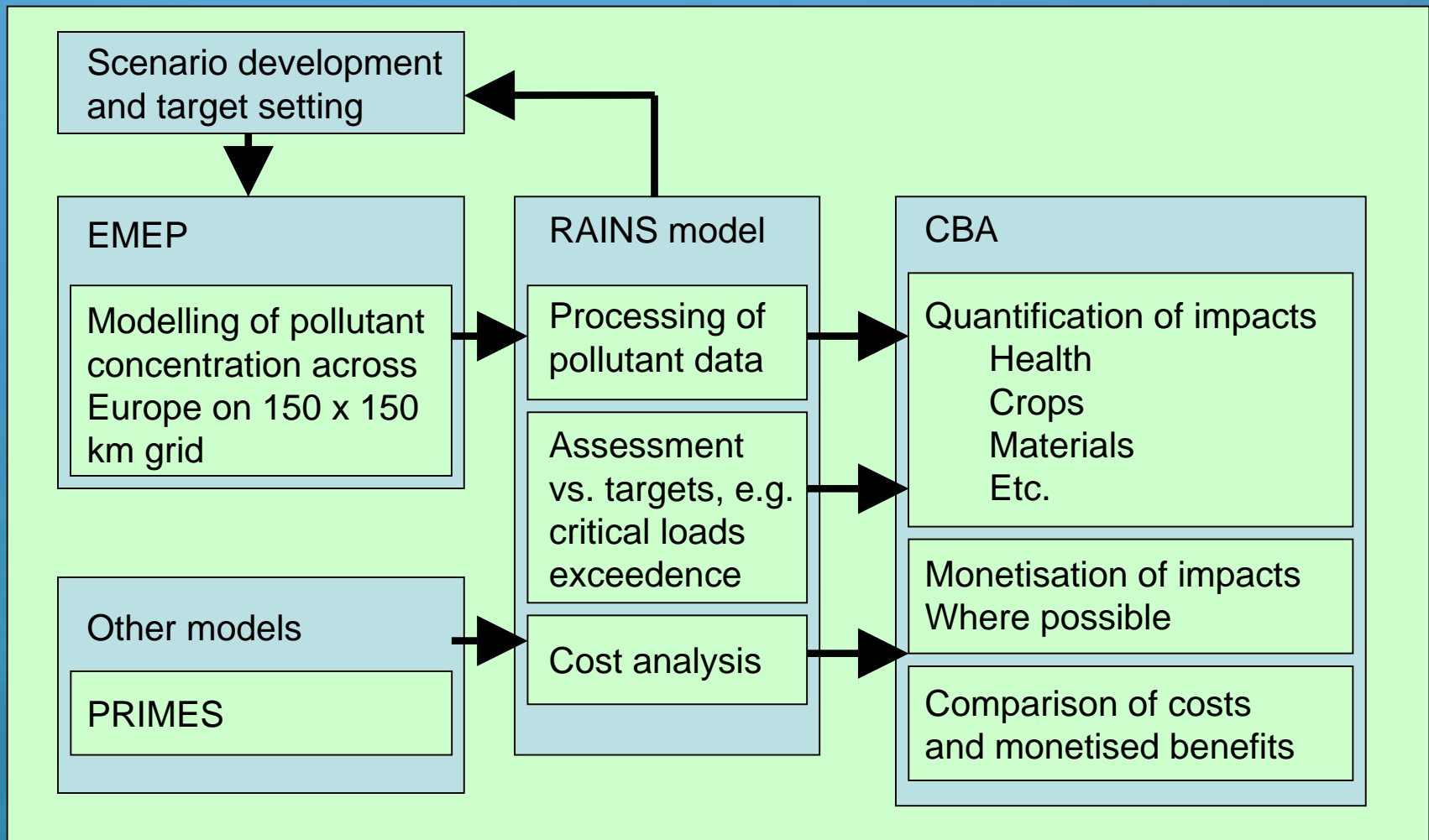
- Development of next generation of EU air quality legislation aimed at the period 2010-2020

- National emission ceilings (link to Multi-Effects Protocol)
    - Ambient air quality standards
    - Emission standards for stationary sources
    - Emission standards for mobile sources
    - Fuel quality standards

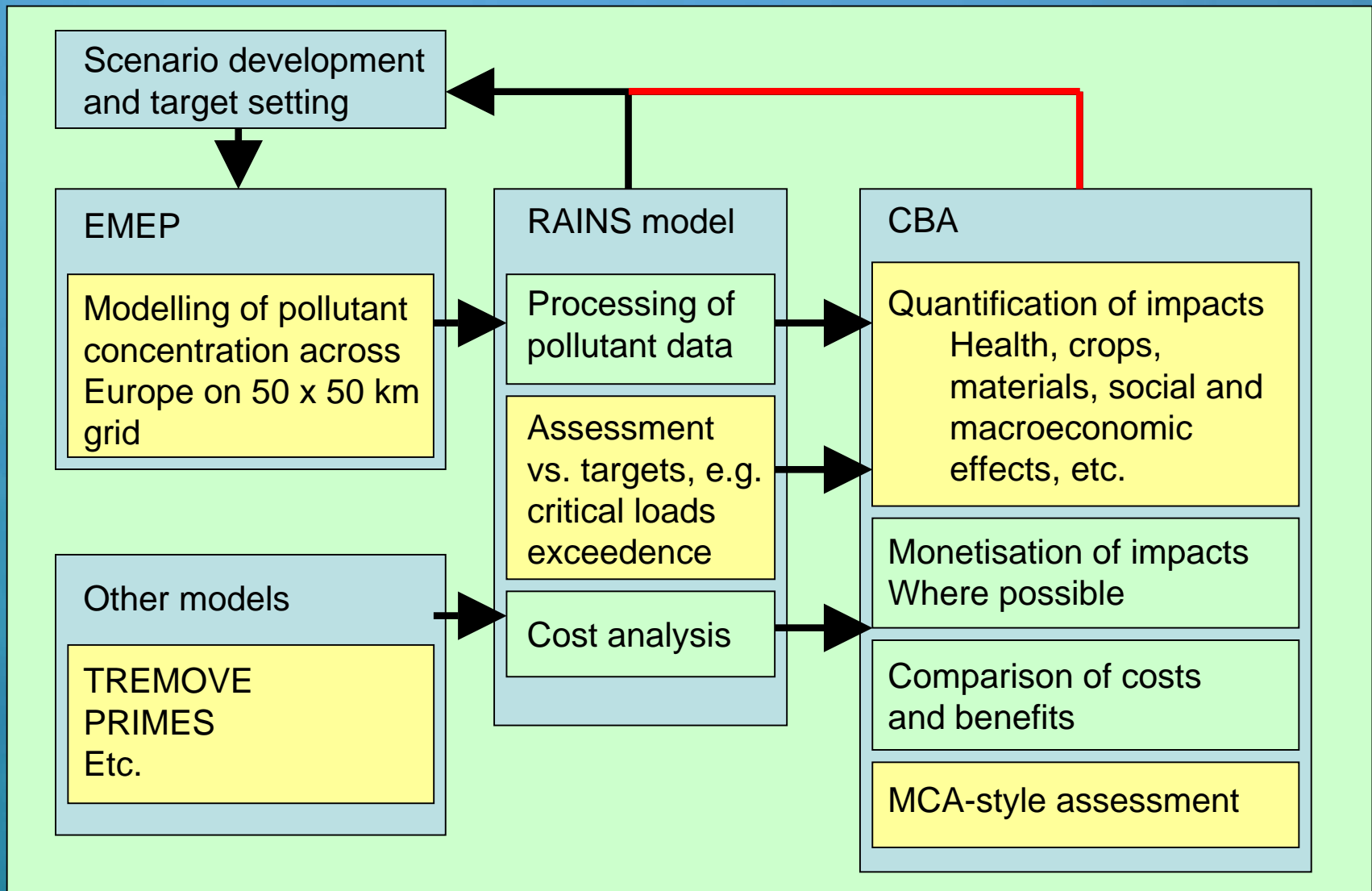
# CAFE: Clean Air For Europe

- Stakeholders
  - EU Member States
  - European Commission
  - EFTA countries (Norway, Iceland, etc.)
  - UNECE secretariat
  - Scientific institutions (WHO, EEA, JRCs)
  - NGOs
  - Industry (oil, vehicle manufacturers, power generators, solvents, etc.)
  - EC links to US
  - US links to EC benefits team

# NECD: Modelling framework



# CAFE: Modelling framework



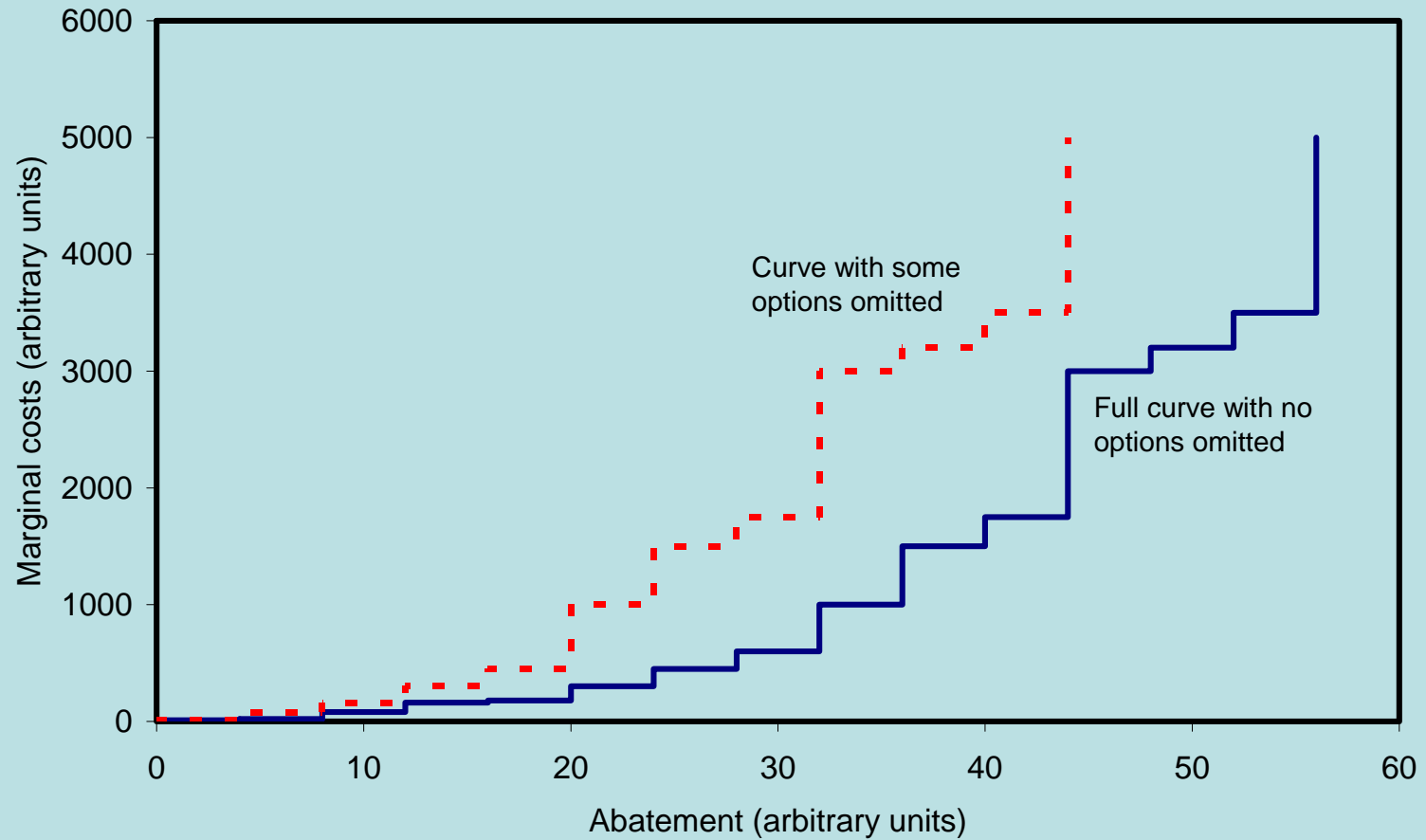
# Major challenges for CAFE CBA

- Review of European stock-at-risk, response and valuation methods and data
- Developing consensus with stakeholders
- Developing an effective dialogue for agreeing approach for valuing mortality
- Developing protocols for 'MCA' that can bring in unquantifiable effects
- Characterising uncertainty for both costs and benefits

# Reliability of cost data

- Generally considered as robust and based on sound technical data, but actually subject to many weaknesses:
  - Routine variability in costs for different plant and systems
  - Failure to account for cost-savings through refinement and innovation
  - Industrial trends (e.g. shift to natural gas)
  - Omission of some measures that may be very cost-effective

# Example of cost-curve problems



# Further thoughts on quantification of costs and benefits

- Need for common assumptions on characterisation of costs and benefits (discounting, inclusion of taxes, etc.)
- Need for more consistency in the way that uncertainties are addressed on both sides of the cost-benefit equation

# Next steps for benefits assessment in CAFE

- Refine methodology report through further review, discussion with WHO, UNECE ICPs, and other stakeholders
- Report back to stakeholders
- Initial analysis of baseline end April/May 2004 (Commission to publish report on the baseline)
- Finalise methodology report (September 2004)
- Main analysis to be completed by mid-2005 for EU Thematic Strategy on Air Pollution