# (Ex-post) Assessment of Environmental Impacts

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# What is environmental ex-post analysis?
(in the present context)

-Complement the environmental assessments/information provided by the integrated assessment (GAINS model)

- Make use of accumulated (additional) knowledge on ecosystem impacts of air pollution in the WGE

- Proposed (but not pushed) by the CCE, and welcomed by higher-level Convention bodies

- 'ex-post': after a (the) optimisation run

## **Steps in analysis** (with emphasis on ICP M&M)

1. Receive scenario from CIAM
   (in form of country emissions of S, $NO_x$, $NH_3$, …)
2. Obtain deposition fields by …
   a) using the linearised EMEP model
   b) convincing EMEP to run the Unified Model
      for the given scenario
3. Analyse:
   a) compute various indicators
   b) compare with existing (reference) scenarios
   c) summarise and display results
      [in familiar and novel ways]
4. Report back to TFIAM/WGSR

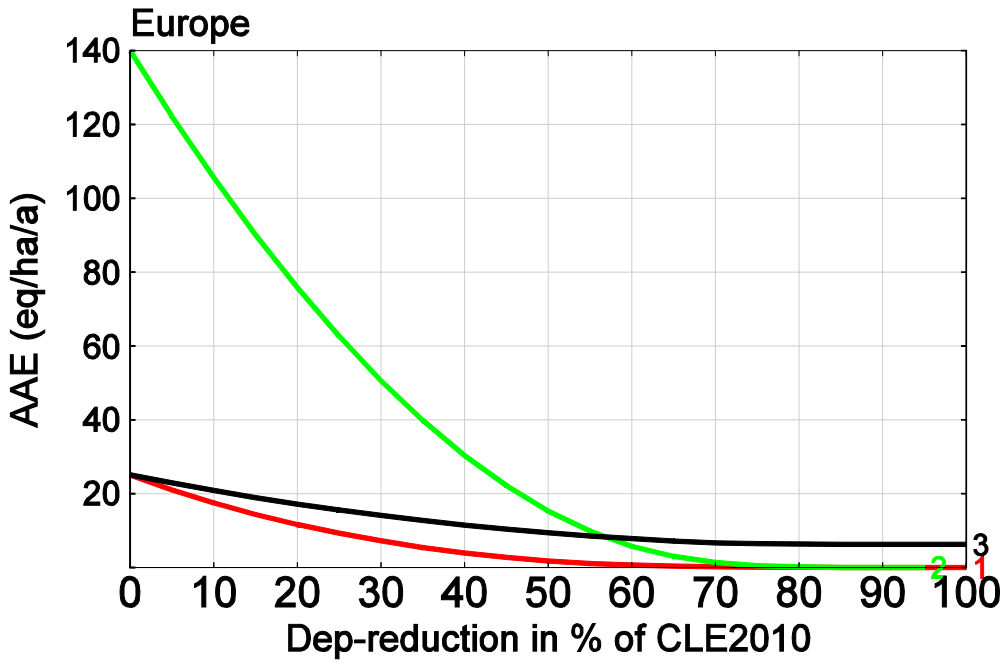
# Computations currently possible at CCE (data and models available)

- Official 2008 Critical Loads data base
  (modelled & empirical; but also earlier versions)
- European Background CL data base (EU-DB):
  To fill in gaps, but also for 'experimental' work
- Emphasis on special/protected areas (Natura 2000)
- NFC dynamic modelling output:
  7 variables for 14 scenarios in 9 reference years
- VSD modelling results (using EU-DB):
  To fill gaps and for experiments/investigations

… and …

- Linearised version of the EMEP model:
  for annual average S, $NO_x$ and $NH_3$ depositions (only)

# Example: Effect of proportional deposition reductions on European CL exceedances




**Green:**
**Nutrient CL-N exceedance**

**Red:**
**Acidity CL exceedance**

**Black:**
**Acidity exceedance due to N reductions only**

0%=490 eq/ha ave Dep ➔ **½-rule** 1eq dep reduction ~ ½ eq AAE reduction

1. At 50-70% reduction no more acidity exceedance
2. At 60-70% reduction no more CLnutN exceedance
3. S reductions are still needed to avoid acidification

Caveats: …

# Questions:

- How often should it be done?

- How fast can it be done?

- Present linearized EMEP model fast to use (by CCE)
  new runs require (time) resources by MSC-W –
  How often can MSC-W make a new model run?
  (and produce additional output for other ICPs?)

- ***How will/shall results be collated (if at all) and reported (to TFIAM/WGS/EB)?***

# Conclusions:

A variety of ex-post analyses can be carried out by the ICP M&M with respect to:

- the exceedance of Critical Loads
- the state and timing of chemical recovery with the aid of Dynamic Modelling (results)
- preliminary biodiversity assessments using empirical critical loads, dose-response functions, first results with integrated models
- ... and all under climate change (if desired) ☺

Important the contributions by other ICPs to make full use of the WGE's accumulated potential and knowledge.