Some initial (personal) thoughts on assessing uncertainty in integrated assessment modelling

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Policy, Science and Risk

- Good policy is based on robust, evidence-based science

- Robust science requires quantification and assessment of uncertainties

- Significant risk to the cost and attainability of policies to reduce environmental effects

- Need policy decisions made in the full knowledge of these risks

There are roles for (at least) three types of assessment

- Alternative cases (energy projections, EMEP meteorology,...)

- Base case plus sensitivity (health hypotheses, ...)

- Uncertainty analysis

What is the right balance of these?

What are the sources of uncertainty which need to be assessed?

- Emissions (activity levels, emission factors, technology implementation rates)
- Atmospheric transport & processes (alternative met model drivers in EMEP, high-level v low-level S-R relationships, ...)
- Environmental and health effects
- Optimisation methodology
- Costs of measures
- Benefits assessment

Need scientifically-relevant and policy-relevant outputs

- Probability of achieving a desired environmental outcome
- Probability distribution of costs
- Probability distribution of benefits
- Probability that ceilings will be unattainable
- Dominating uncertainties, how they may be reduced
- Policy measures to reduce the impact of uncertainties