

Integrated Assessment Modelling in Sweden

The current Integrated Assessment Modelling (IAM) activities in Sweden are supposed to provide assessments of future air pollution policies in Sweden (and Europe) as well as providing a Swedish basis for future optimisation of abatement costs following implementation of policies related to air quality and climate change.

The core IAM activities in Sweden concern additional aspects to cost calculation modules and construction of a Swedish modified GAINS model. The activities related to cost calculations and cost minimisation consist of investigating the theoretical foundations and the practical modelling possibilities for abatement measures that involve structural and behavioural changes in an IAM. This is as an addition to the calculations on fuel shift and fuel saving measures already implemented in GAINS. The activities aimed at developing a Swedish IAM model will include close collaboration with IIASA and the APD team. The final objective is to have a Swedish IAM model with a higher resolution than the European so that interaction between detailed ecosystem models and the Swedish GAINS can be facilitated. This model will also have the form of a modified GAINS including other covariates such as behavioural and dynamic restrictions related to the cost minimisation procedure. It is the intention of the working group to have a model with economic and ecosystem features that might serve as helpful and complementing input to the APD team in their future developments of the GAINS model.

The following tasks will be performed in the Swedish IAM:

- **Theoretical considerations of cost calculations in IAM models**
 - Overview of the cost module in GAINS/RAINS
 - Theoretical formulation of the cost of activity changing measures
 - Method development - Activity changes as measures or scenarios?
- **Further inclusion of activity changing measures in a Swedish GAINS model**
 - Harmonising cost calculation theories with practical modelling
 - Adjusting the method for GAINS cost calculations
- **Development of a Swedish GAINS**
 - Model adjustments to Swedish settings
 - Adjustment of background data and cost calculations
- **Integrated assessment modelling at a national scale**
 - Case study

Short facts:

Financing institution: Swedish EPA

Starting date: November 2006

End date: 2012

Air Pollutants covered: SO₂, NO_x, NH₃, PM and GHG

Environmental impacts considered: Acidification, eutrophication, health effects.

Atmospheric modelling: not decided.

Additional information:

The initial focus of the Swedish GAINS is the abatement cost calculation module. The Swedish GAINS will have supplemental features to the European GAINS model.

Other and later aims are to model ecosystem impact using high resolution dynamic models ecosystem models by the end of phase two of the project. In addition to ecosystem effects, health effects are also desired to model with high resolution. This increases the requirements on atmospheric modelling tools used in the Swedish GAINS. Nothing is decided yet on the atmospheric modelling tool used for the Swedish GAINS.

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