Progress on the work with integrated assessment modelling in Russian Federation, Belarus and Ukraine

Katarina Yaramenka

NIAM, Laxenburg, 2011-03-21

IVL Swedish Environmental Research Institute

Outline

- Progress of IAM in Ukraine

- Progress of IAM in Belarus

- Progress of IAM in Russian Federation

- Cooperation in EECCA countries under the Convention on Long-Range Trans-boundary Air Pollution

- Conclusions

Progress of Integrated Assessment Modelling in Ukraine

Assessment models in Ukraine:

- GIS-based models with the main purpose of <u>flood zones identification</u> and plotting ("Panorama")

- Models for <u>health risk assessment</u> from air pollutants:

  -OND (popular in EECCA countries)

  -SCREEN (European dispersion model)

  -<u>MLAD1</u> (national model)

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Progress of Integrated Assessment Modelling in Ukraine

The **GAINS model adaptation** in Ukraine:

- The main purpose, capabilities and interface of the model were studied in detail

- Purposes and potential areas for application of the GAINS model in Ukraine were identified

- Current work: analysis of the input data, comparison of GAINS input data classification and structure to the data available at Ukrainian State Statistics Committee

Progress of Integrated Assessment Modelling in Ukraine

Some **results of the GAINS model simulations**:

- total emissions of GHG

- costs of emission control

- life expectancy loss from PM

- emission trends for some pollutants (SO2)

- emissions of NH3 and VOC by sub-sectors

- removal efficiencies for some abatement measures in agriculture

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The **GAINS model potential** in Ukraine:

- Development of cost-effective control strategies for emission reduction

- Reorganization of economic sectors based on the results of simulation for the developed control strategies

- Orientation to compliance with international standards in energy, industrial and transport sectors

Progress of Integrated Assessment Modelling in the Republic of Belarus

IAM activities are conducted in the framework of the state scientific programs under the task of the Ministry of Natural Resources and Environmental Protection of the Republic of Belarus.

Compilation of activity data:

- National statistical data for 1990-2005 were compiled in the GAINS format and submitted to CLRTAP secretariat and IIASA in November 2010

- The data are harmonized with the national emission inventory system

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Progress of Integrated Assessment Modelling in the Republic of Belarus

Development of control strategies:

- High level of uncertainty due to the lack of detail in the national emission reduction policy. The policy is mainly based on target emission reduction values which implies a broad set of control strategies applicable for the purpose of reaching these values.

Parametrization:

- Update of emission factors, removal efficiencies and abatement costs; mainly for iron and steel production, cement and lime processes where these parameters tend to differ quite much from those currently used in GAINS

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Scenarios for PM abatement:

3 scenarios were developed and analysed in terms of resulting emissions, abatement costs and health impacts:

- Baseline, no additional measures

- CLE (adopted air protection programs are considered)

- MTR (best available control technologies are implemented)

Need for further parametrization to increase accuracy of the results

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Integrated assessment of NH3 emissions:

- Emission time-series assessment;

- Abatement options analysis;

- Emission and costs projection;

- Scenario analysis

6 scenarios with different efficiency of abatement measures and their implementation rates

Maximum achievable ammonia emission reduction is <u>45.5 kt/year</u>, respective costs are <u>347 mln. Euro/year</u>

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Planned activities:

- Integrated assessment of NOx emissions

- More attention to health and ecosystem impacts

- Development of new control strategies and scenarios

- Assessment of the possible impact of uncertainties (in both emissions and costs estimates) on policy making

Progress of Integrated Assessment Modelling in the Russian Federation

- GAINS Russia, module divided into 24 aggregated regions

- Currently <u>activity data</u> (2005) are compiled for:

  -SPET: St. Petersburg, oblast Leningradskaja, Novgorodskaja, Pskovskaja

  -Kola Karelia: oblast Murmanskaja, the Republic of Karelia

- Active work with open-source <u>EMEP model</u> to get source-receptor dependencies for emissions, for a purpose of identification of mutual impact of emissions from different subjects of the Russian Federation.

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Progress of Integrated Assessment Modelling in the Russian Federation

The latest news

- <u>Guidance document</u> on application of the GAINS model in the state environmental management system of the Russian Federation

- <u>New energy scenario</u> for Russia until 2020 (GAINS Europe): increase of coal consumption – increase in emissions of all major pollutants by 35-70% in 2020 (base year 2010), together with related increase in critical loads exceedance and loss of life expectancy

Progress of Integrated Assessment Modelling in the Russian Federation

Plan for phase III of the Swedish-Russian project:

- Continued collection and verification of the input information

- Updating cost ant regional parameters

- Continued work on getting source-receptor dependencies using EMEP model calculations, for further investigation of "region-to-region" impact

- Development of new scenarios in accordance with state environmental legislation and policies (e.g. Euro standards in transport sector)

Cooperation under the CLRTAP

- Coordinating Group on promotion of actions towards implementation of the LRTAP Convention in EECCA countries **(EECCA Coordinating group)** got official approval by EB in 2010. The group is led by experts from the Russian Federation (SRI Atmosphere).

- **2011-03-18 First session**, in preparation for Gothenburg and HM Protocols revision. One of the goals: to elaborate a common position of EECCA countries for the forthcoming meeting of WGSR in Geneva in April 2011.

Cooperation under the CLRTAP

Obstacles for protocol ratification:

- Lack of experts

- Lack of technical potential

- Current legislation system is often not well developed and not adjusted to the ratification procedure

- Emission reporting system doesn't correspond to the requirements

- Need for additional sources of financing and collaboration projects with other countries

- Language barriers (some important documents are not available in Russian)

Conclusions

- In Ukraine, the GAINS model is not of high priority since there is a national model used for the same purposes. The national experts are acquainted with the GAINS model's capabilities, they are analysing the potential for the model use and performing input data analysis and structuring;

- In Belarus, the GAINS model is prioritized and actively used for assessments of emissions, abatement measures and related costs. Prioritized pollutants: PM, NOx, NH3. One of the major problems is high uncertainty;

- In Russia, the focus is made on data compilation for individual regions and on the assessment of internal transboundary pollution between regions. Experts are working actively with both GAINS and EMEP models.

- There is an active cooperation between EECCA countries under the LRTAP Convention which can further encourage IAM activities

Used material

Russian Federation:

Irina Morozova, Julia Ignatyeva (JSC "SRI Atmosphere")

Ukraine:

Nadiia Ovchynnikova (Ministry of Environmental Protection)

Belarus:

Sergey Kakareka, Anna Malchykhina, Olga Krukovskaja (Institute for Nature Management)

Andrei Pilipchuk (Ministry of Natural Resources and Environmental Protection)

UNECE Secretariat:

Sunny Uppal

IVL Swedish Environmental Research Institute

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