GAINS, air emission inventories and data completeness

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Russian-Swedish bilateral cooperation project:
"Development of the Co-operation within CLRTAP"

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SMED
Swedish Methodology for Environmental Data

Outline of the presentation

- GAINS and input data needs
- Data collection
- Role of air emission inventories
- Data completeness
- Example of Swedish air emission inventory system
- Conclusions

On-going bilateral projects

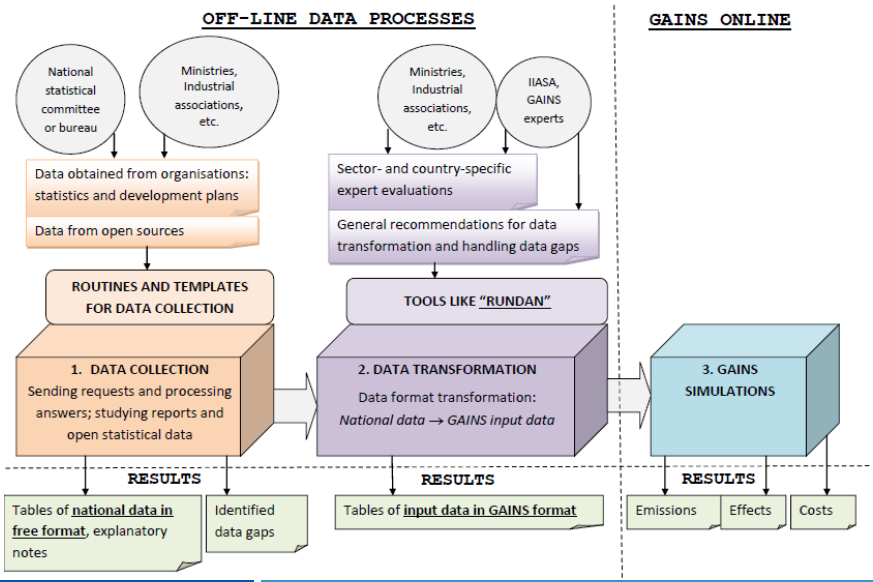
- Russian Federation - Sweden
- Belarus - Sweden
- Ukraine – Sweden

- Objective:
  - Increased capacity to use the GAINS model as a national tool for policy support

- Overall experience from projects:
  - Data completeness and data availability is a primary obstacle

The GAINS model

- GAINS is an Integrated Assessment Model (IAM) where information on air pollutants is integrated
  - emissions
  - technical abatement options
  - costs
  - dispersion
  - effects
- Used for calculation and optimization of European abatement strategies for air pollution within ”UN ECE Convention on Long Range Transboundary Air Pollution (CLRTAP)”.
- GAINS model developed by IIASA (The International Institute for Applied Systems Analysis) (www.iiasa.ac.at)



Data collection

- **Established data collection procedure** implies:

  -identified data types needed for each GAINS sector;

  -identified level of data aggregation needed (federal districts, oblast, city);

  -identified organisations – data providers for each data type;

  -agreement on (long-term) cooperation between data providers and data users;

  -developed and documented routines for obtaining/delivering data (request, report, online-research), including, if possible, desirable data format;

- Data collection procedure can be connected to or separated from the one for Kyoto protocol reporting (legally defined procedure with distributed responsibilities between organisations);

Bilateral projects in Russia, Belarus and Ukraine (with Sweden)

- Goal is being able to use national GAINS model as a tool for policy and planning purposes
- Must create complete input data, otherwise the national results can be misleading
- No country has complete national input data!
- IIASA has made assumptions for all countries based on international databases and models
- Where national data are missing, use IIASA assumptions = BEST AVAILABLE ESTIMATES.

Guidance developed in bi-lateral project with Russian Federation

- Guidance document on application of the GAINS model in the state environmental management system of the Russian Federation /Руководство по применению модели GAINS для решения природоохранных задач в Российской Федерации
- www.rusaco.se (Russian-English)
- Also information on the project, on air pollution in general, air pollution and air protection in the Russian Federation
  – Useful links

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Role of national air emission inventory

- Updated and reported regularly, based on national activity data and emission factors
- Get an overview and identify important sources
- Basis for national planning and strategy for abatement control measures
- Basis for assessing development of air emissions over time
- Follow-up under Conventions
- **As input to GAINS model calculations, or validation of GAINS model results**

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LRTAP Convention Guidance

- EMEP/EEA- Emission Inventory Guidebook in Russian
  - http://www.eea.europa.eu/publications-ru/emep-eea/
    - The translation was carried out by SRI Atmosphere, JSC and its partners in the Russian Federation
    - Funded by Norway, EEA and SRI Atmosphere
- CEIP - Center on Emission Inventories and Projections
  - http://www.ceip.at/
  - Reporting instructions
  - Country submissions of inventories
  - Emission data
  - Review procedure and review results
  - Many useful links

Requirement for useful national air emission inventory

- Complete data
  - All important sectors and sources estimated
  - No major data gaps
- Preferably based on national data.
  - If not available, best available estimates!
- **Best available estimates**:
  - Default values from EMEP/EEA Emission Inventory Guidebook
  - Data from international databases
  - National expert estimates
  - Other national information or studies
  - Proxys from countries with similar conditions
  - …

Completeness, comparison of data sets

- Example of data sets:
  - Data reported to CLRTAP/UNECE
  - Data reported to UNFCCC (SO_2, NOx, NMVOC)
  - National data in GAINS
  - Data in GAINS as estimated by IIASA
  - Other national information
  - Comparison with data from countries with similar conditions

- Are data reasonable?
- Identify data gaps and differences!

Analysis of identified differences

- Sectors/sources included?
- Activity data?
- Emission factors?
- Assumptions/methods/other underlying data?

- Document identified differences and data gaps
- Make a plan for stepwise improvement of data
- Prioritize important sources!

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One example: Swedish air inventory work and data collection

- Annual inventory project
  - Lead by a project leading team (one from each of four organization)
  - Greenhouse gases and air pollutants covered in the same system
  - Common workspace and archive at www.projectplace.se
- Work guided by a quality assurance/quality control (QA/QC) system and manual
- Identified authorities to contribute by calculated or other input data (or review of calculated data).
  - Swedish Ordinance 2005:626 defines responsibilities for authorities
- Inventory compilers collect remaining data

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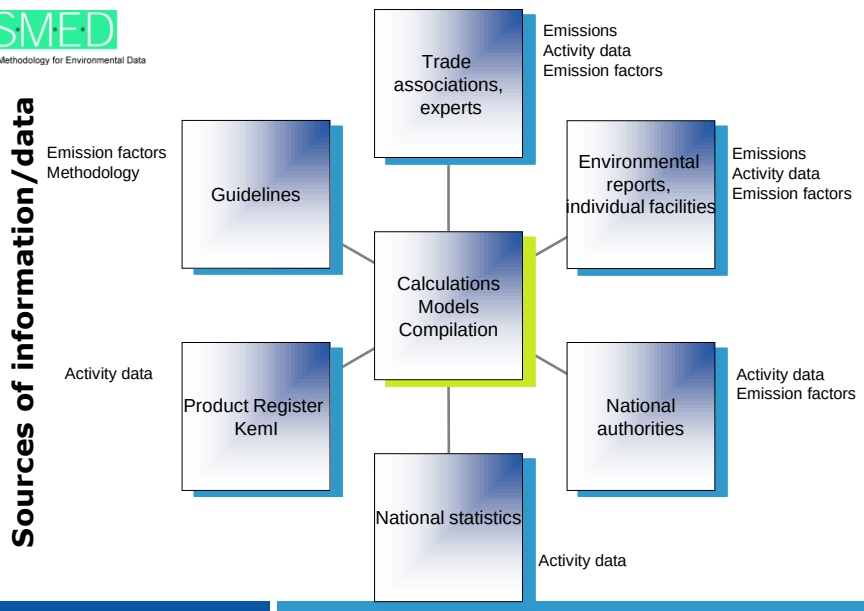

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Data handling

- All common data and documents are kept and archived at a workspace on the web, accessible to all inventory staff.
- Confidential input data are archived separately.
- A technical support system is the master database. It allows for some quality control (QC), as well as archiving and version control.

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Annual Process of Air Inventory Preparation

Improvements

- Data collection
- Data processing
- Compilation (reporting tables, inventory reports), internal audit
- Submission to the Swedish EPA
- National independent review (GHGs), corrections, suggestions for improvements
- Swedish EPA submits to the Ministry of Environment
- Ministry of Environment submits to Conventions and EU
- International review, suggestions for improvements

Conclusions

- An established system and process important for reliable and complete input data collection
- Define data needed and data providers
- Develop long-term co-operation for data delivery
  - input to emission inventory
  - additional data as input for GAINS, e.g cost, scenarios, technologies
- Develop co-operation with relevant experts
  - emission factors, technical experts, independent review etc
- Quality system and plan for stepwise improvements
- Enough resources

Thank you for your attention!

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