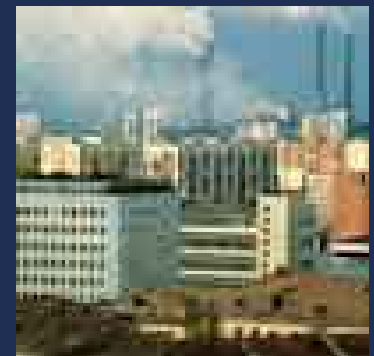


Emission report to EMEP: from experience of preparation in Belarus

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Some conclusions from experience of 2002 emission data preparation by new format

In general common format, reporting and checking systems are useful.

But some weak spots of new system were detected:

- NFR classification is not good enough for pollutants emission reporting – it was designed for GHG inventory;
- the Guidebook is in SNAP structure – this adds problems in emission reports in NFR system preparation;

-a lot of emission sources are not shown directly in NFR system (inclusion of them into 'Others' not effective because there are no guidelines how to estimate);

-there are a lot of positions which are not important for pollutants emission (Forest and Grassland conversion...) or there are no guidelines for estimation of emissions;

- previous years reports: how they should be updated?

Assessment of resources needed for national data preparation

Very draft estimates of time necessary for emission report preparation are shown below.

Revealing of sources of information

Required information is heterogeneous (emissions, production statistics, fuel consumption, mobile sources, pesticides etc.), accordingly there are a lot of owners of information. Depending on required estimates resolution and other circumstances from 10 to 20 days are necessary;

✓ **Detection of formats of information available** (electronic format, hard copy, extract and copy out manually) **and whom should be contacted** – 20-30 days;

✓ **Preparing of official inquiries** to information holders and their dissemination – 20-30 days;

- ✓ **Getting of information, analysis, database formation – 80-120 days;**
- ✓ **Calculation module preparation or updating – 20-40 days;**
- ✓ **Data transformation into appropriate format for calculation – 50-100 days;**
- ✓ **Emission calculation, verification, spatial distribution – 30-40 days;**
- ✓ **Results transformation into output format – 30-40 days;**
- ✓ **Verification, final report – 20-40 days**
- ✓ **Information report – 10-20 days;**
- ✓ **Reply onto questions, improvements of the report – 10-20 days;**
- ✓ **Total: 300-500 days.**

Some proposals

- Comments should be issued by TFEIP what we should show in the table 1b (POPs): air emissions, application, productions etc;
- Special additions needed for the Guidebook devoted to new pollutants: PCB, HCB etc. which will show how to estimate their emissions;
- Priorities should be announced:
 - a) between good totals, good by-sectors, good point sources;
 - b) between common format and full list of sources;
 - c) between formal common names or distinct source;
- connection of reporting format to protocols and decisions of EB concerning names of sources will be useful;
- ranking of sources will be useful: most important (main) sources per pollutant should be shown in tables;

2002 emission report of Belarus: sample

TABLE IV 1A: National sector emissions: Main pollutants, particulate matter and heavy metals														
Version 2002-1														
COUNTRY:	BY	(as ISO2 code)												
DATE:	29.01.2004	(as DD.MM.YYYY)												
YEAR:	2002	(as YYYY, year of Emmissions)												
<i>NFR sectors to be reported to CLRTAP</i>			A = Allowab	<i>Yearly minimum reporting</i>										
				Main Pollutants					Particulate matter			Priority metals		
				Nox	CO	NMVOC	Sox	NH3	TSP	PM10	PM2.5	Pb	Cd	Hg
				Gg NO _x	Gg	Gg	Gg SO ₂	Gg	Mg	Mg	Mg	Mg	Mg	Mg
1 A 1 a	(a)	1 A 1 a Public Electricity and Heat Production		29,11	4,56	0,28	27,18	0,01	155,0	NE	NE	2,18	0,11	0,13
1 A 1 b	(a)	1 A 1 b Petroleum refining		0,495	0,27	0,00	0,53	0,00	0,0	NE	NE	NE	NE	NE
1 A 1 c	(a)	1 A 1 c Manufacture of Solid Fuels and Other Energy Industries		0,32	1,14	0,00	0,48	0,00	0,0	NE	NE	NE	NE	NE
1 A 2	(a)	1 A 2 Manufacturing Industries and Construction	A	10,94	28,4	0,38	20,29	0,00	10627,0	NE	NE	22,60	0,83	0,40
1 A 3 a ii (i)		1 A 3 a ii Civil Aviation (Domestic, LTO)		IE	IE	IE	IE	IE	IE	NE	NE	IE	IE	IE
1 A 3 a ii (ii)		1 A 3 a ii Civil Aviation (Domestic, Cruise)		IE	IE	IE	IE	IE	IE	NE	NE	IE	IE	IE
1 A 3 b	(a)	1 A 3 b Road Transportation	A	82,1	35,2	166,4	35,20	0,01	25500,0	NE	NE	1,07	0,01	0,00
1 A 3 c	(a)	1 A 3 c Railways		IE	IE	IE	IE	IE	IE	NE	NE	IE	IE	IE
1 A 3 d ii		1 A 3 d ii National Navigation		IE	IE	IE	IE	IE	IE	NE	NE	IE	IE	IE
1 A 3 e	(a)	1 A 3 e Other (Please specify in a covering note)	A	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
1 A 4 a	(a)	1 A 4 a Commercial / Institutional		5,02	20,4	0,62	16,981	0,01	6731,0	NE	NE	0,24	0,02	0,02

Institutional arrangements

Emission inventory system in Belarus is based on annual statistical reporting of enterprises. Primary reporting forms are summarized by regional offices of the Ministry on Statistics and Analysis. Main office of the Ministry on Statistics and Analysis generalize reports of the regional offices and produce annual report on air protection in the split of regions, branches of economy, cities and ministries. The data on emissions in annual reports includes data on annual emission of main pollutants (SO_2 , CO, NO_x , hydrocarbons and VOC) and specific pollutants (more than 70).

Data on emission of the main pollutants is given divided into emission from fuel combustion and emission from technological and other processes.

Additional information in the annual report: number of reported enterprises, number of sources of emission, level of abatement etc.

Particulate is given as total (TSP) and in split by chemical composition (for instance, by SiO_2 content).

Annual emission reporting system summarizes data from more than 2000 enterprises; it is assumed that they represent about 95% of total emission.

Specific features of national emission inventory system which cause difficulties for UNECE emission reporting

- Emissions in national statistics are summarized according to branches classification scheme (so-called OKONH) which did not coincide with SNAP and NFR classification schemes. Additional information is necessary for distribution of emission.
- Mobile sources emission are not reported. They are estimated by the consumption of fuel on the national and region levels. From the list of pollutants for mobile sources only SO₂, NO_x, VOC, dust and Pb are accounted. Tyre and break wear, as well as road abrasion are not considered.
- Domestic sources (for instance, heating) are not taken into account.

- Agriculture sources (collective farms, agricultural activities on the whole) are not taken into account in a regular way.
- Waste management and disposal are not accounted regularly (except CH₄ in GHG inventory and waste incineration).
- Solvents and paints application generally are not considered except industrial activities.
- There are no information on emission of some pollutants (all POPs, HM – mercury, Zn, Se, PM₁₀ and PM_{2.5})

The process of EMEP emission inventory preparation

EMEP inventory report is prepared using the following methodology:

- Emission data on pollutants which sources are rather completely covered by statistics.

This data was distributed by SNAP and NFR classification schemes and reported as-is (main pollutants – SO_x, NO_x, CO). VOC emission data was also prepared by this approach.

- Emission data on pollutants some sources of which are not covered by national statistics (NH₃, TSP, heavy metals).

- For these sources emissions were calculated by the simplest approach (using emission factors) and these values were incorporated in common reporting table together with statistical information.

- Emission data for pollutants for which there are no any information in statistics (all POPs).

For these pollutants emissions were calculated by simplest approach using emission factors and included into the report.

Initial statistical data for emission calculation

Data of the Ministry on Statistics and Analysis, data of the Ministry on Natural Resources and Environmental Protection, Ministry on Emergency and some others were used for emission assessment.

Emission factors were taken from the Atmospheric Emission Inventory Guidebook (2002) and by results of own emission sources testing as a contribution to EMEP (Belarusian contribution to EMEP 1996-2002) – for heavy metals and POPs.

Parallels between national and SNAP (NFR) sources classifications

Emission report on the Ministry on Statistics and Analysis gives main pollutants distributed by fuel combustion emission and technological process emissions. This makes possible to reclassify emissions into SNAP and NFR formats.

Emissions from fuels combustion were calculated on the basis of statistical reporting using the following aggregation;

- category “combustion in energy production and transformation” was considered as equivalent of the SNAP sector 1;
- category “sold to population” – as category SNAP 0202;
- category “combustion in residential-communal sector” – as category SNAP 0201;
- category “used for transport” – as analogous of the sector 07+08;
- difference between “used directly as fuel” and sum of “combustion in residential-communal sector” and “used for transport” – as SNAP 0301.

An assessment of completeness

According to guidelines as missing the sources reported as NE are considered.

1 A 4 b Residential - SO₂, No_x, CO, NMVOC PM, POPs and HM emissions were calculated

3 A PAINT APPLICATION - Important for NMVOC

3 B DEGREASING AND DRY CLEANING - Important for NMVOC

4 B MANURE MANAGEMENT (c) - All Except NH₃ NH₃ emissions most important for this sector were calculated

4 D AGRICULTURAL SOILS - All

4 F FIELD BURNING OF AGRICULTURAL WASTES – All No statistics

5 B FOREST AND GRASSLAND CONVERSION – All Important for GHG only

6 A SOLID WASTE DISPOSAL ON LAND – All No emission factors

6 B WASTE-WATER HANDLING - Maybe can be shown as IE: this sector emission can't be extracted from total

Greatest missing sources in emission inventory are in sectors 1A4b (Residential – some subsectors), 3A (Paint application), 3B (Degreasing and dry cleaning), 4D (Agricultural soils).

Main contribution of missed emission sources for main pollutants are expected into NMVOC. Some missing are also into PM, SO₂, NO_x and CO.

General comments on 2002 emission inventory

- NMVOC emissions data do not include a few important sources.
- TSP emissions estimates should be considered as draft.
- Dioxins/furans emission data is based on simplest methodology – calculations using emission factors. No emission measurement.
- PAH emission data is based on emission factors attributed from measurement of some sources.
- PCB and HCB emission inventory is very preliminary and based on current state of knowledge. Area sources (polluted soils, landfills, leaks and spills etc. were not estimated.
- main amount of time is spent for statistical data collection and data transformation into suitable format