

FAIRMODE CONTRIBUTION TO THE E-REPORTING IMPLEMENTATION

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Introduction

In 2014, FAIRMODE, as a European community dealing with harmonisation of air quality modelling, was considered a suitable partner to provide recommendations on:

- a) common quality standards to be met by models in order to be used in e-reporting (assessment) and
- b) discuss which type of common framework would be necessary to adequately describe models and, modelled data (e.g. by means of the model documenting system, MDS).

Moreover, FAIRMODE was also in the position to provide advice about the new data flows (H-K) concerning “plans and programmes” on the basis of the experience gained in the fields of source apportionment and planning

Introduction

The work carried out under FAIRMODE to provide advice to the e-reporting process consisted in three main activities:

- a) to carry out a survey among FAIRMODE national contact points (NCPs) to investigate what are the limiting factors for MS to report modelled data,
- b) to create an “ad hoc” task force to answer the questions submitted by EEA about model formats and model code lists,
- c) to provide advice and support the implementation of data flows (H-K) in collaboration with the JRC (plans and programs reporting tool developer) and report the comments from European experts about source apportionment section of the IPR.

Survey on e-reporting: Questions

If you (as Member State) are currently **NOT including modelled data in your official reporting**, please indicate your agreement/non-agreement with the following proposed reasons.

If you (as Member State) are currently including (or plan to do) modelled data in your official reporting, please indicate **which of the following factors is more problematic** at the moment:

- 1 Lack of technical capacity
- 2 Insufficient reliability of models
- 3 Too expensive and/or time consuming
- 4 Brings too little added value
- 5 Lack of clear and common guidelines
- 6 Limitations of administrative kind
- 7 Lack of clarity in legislation

Multiple choice answers: ranging from 1 to 5 corresponding to: **strong agreement** - **strong disagreement** and facultative comments

15 Member States delivered their answers (PO, NL, PT, CZ, FI, GR, HU, LI, UK, HR, AT, SE, BE, IE, FR)

FAIRMODE Survey results

Limiting factors for including modelled data in official reporting

	Average
Brings too little added value	1.7
Insufficient reliability of models	2.5
Lack of technical capacity	2.9
Too expensive and/or time consuming	3.0
Limitations of administrative kind	3.1
Lack of clear and common guidelines	3.4
Lack of clarity in legislation	3.8

 strongly agree  agree  neutral  disagree  strongly disagree

Summary

1. Most of the answers express the opinion that the little added value of models is not a problem for reporting.
2. In addition, there is a general agreement on the lack of clarity in the legislation as a limiting factor for reporting.
3. For the other proposed motivations the NCPs expressed different opinions.
 - a. The majority of the answers do not consider the reliability of models an issue.
 - b. Many answers agree that common guidelines are missing.
 - c. Finally, a wide range of opinions were expressed about the impact of administrative limitations, the lack of technical capacity and the resources (costs, staff, time) required for modelling.

FAIRMODE was asked to provide a position about the data model of AQ e-Reporting

Topics covered in the questions

- » Feedback on the scope of the model parameterisation code list
- » Feedback on the scope of the modelling meta-data profile and data quality report
- » Feedback on preferred file formats and common projections grid

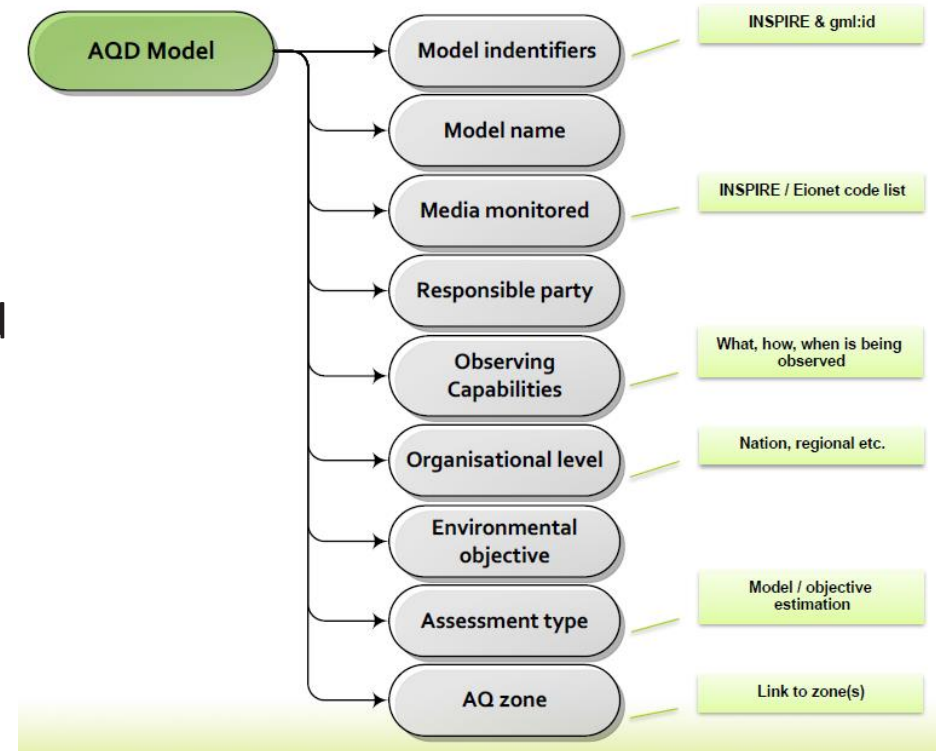
Feedback on the scope of the model parameterisation code list

- » Code list [2] is a good starting point
- » ... but more aspects should be included and the list could be organised according to specific topics:
 - » Model **type** (Eulerian, Lagrangian, Gaussian plume...)
 - » Model **characteristics** (advection, convection, turbulence, deposition, chemical schemes...)
 - » Model **input** (meteo, emissions, topography, boundary conditions...)
 - » Model **application** (assessment of AQ concentrations, assessment of population exposure, source apportionment...)

Id	Preferred label	Definition
advection	Advection scheme	Description of the scheme used to characterise the ...
chemistry	Chemistry or chemical schemes applicable	A description of the chemical schemes or ...
convection	Convection scheme	Description of the scheme used to describe the ...
deposition	Deposition scheme	Description of the deposition schemes used to ...
emissions	Emissions inventory applied	Descriptive text to enable the identification ...
meteorology	Meteorology applied	Descriptive text on the type of meteorology used ...
samplingPoints	Sampling points used	A list of the sampling point used to inform an ...
topography	Topography scheme	Description scheme for the terrain height and/or ...
turbulence	Turbulence	Turbulence profiles based on surface similarity ...

Feedback on the scope of the modelling meta-data profile

- » Model meta data profile is OK
- » Requirement for the IPR dataflow E1b to report hourly data everywhere is too strict and should be modified (some models only provide annual averages)
- » Some applications calculate both concentrations on a grid and on many receptor points (typically located along major roads) → is it possible to report both types of results simultaneously?



Feedback on 'data quality report' element

- » Data quality objectives are a way to ensure that the model is fit for purpose.
- » FAIRMODE's DELTA tool is more and more used as a reference tool to evaluate modelling results in the framework of the AQD.
- » There is a clear need to further develop a model benchmarking system in FAIRMODE and guidance on how to do the modelled data quality testing and reporting → ongoing work in FAIRMODE
- » Difficult to calculate a value for model uncertainty suitable for inclusion in dataflow E

Feedback on your preferred file formats

- » The output file formats mainly used are ASCII style, netCDF or Shapefile.
- » netCDF seems to be the format which is most widely accepted and preferred within the modelling community.
- » GML is flexible, open and supports mixed forms of geographic objects. However, it is not considered as an appropriate format for data reporting. GML is not practical for gridded data and the files are large and slow to use and transfer.
- » Most of the MS do not have modelled data available as a web services.

Feedback on common projection and a common projection grid

- » Common projection is in principle no problem via recalculation of coordinates.
- » FAIRMODE does not recommend a common projection grid because of the following potential problems/questions:
 - » choice of the modelling grid depends on many aspects and a common grid cannot be imposed to modellers for their calculations,
 - » which grid would be suitable for which spatial scale?
 - » which interpolation method should be selected?
 - » what is the risk of impairing the quality of the results?
 - » risk of wrongly comparing modelling data obtained at different scales.

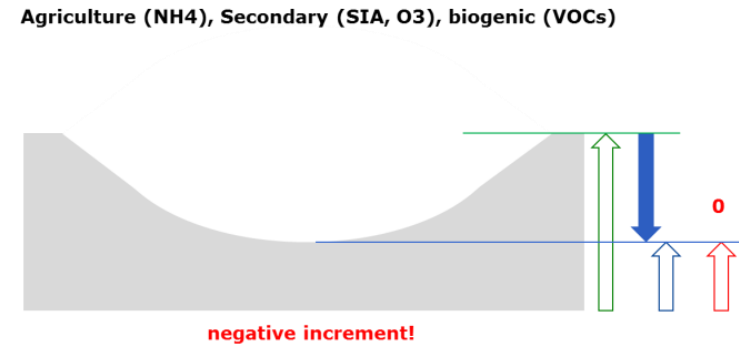
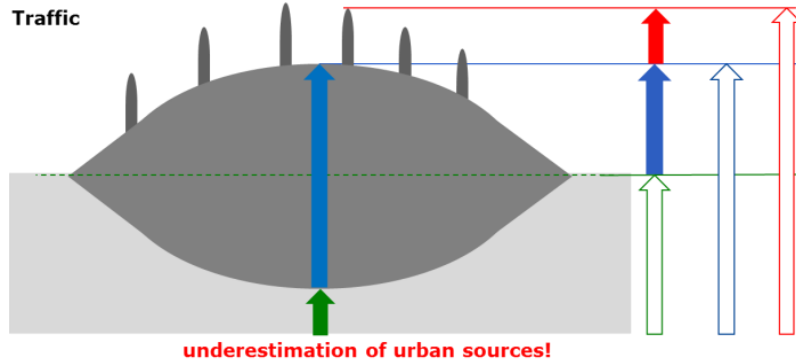
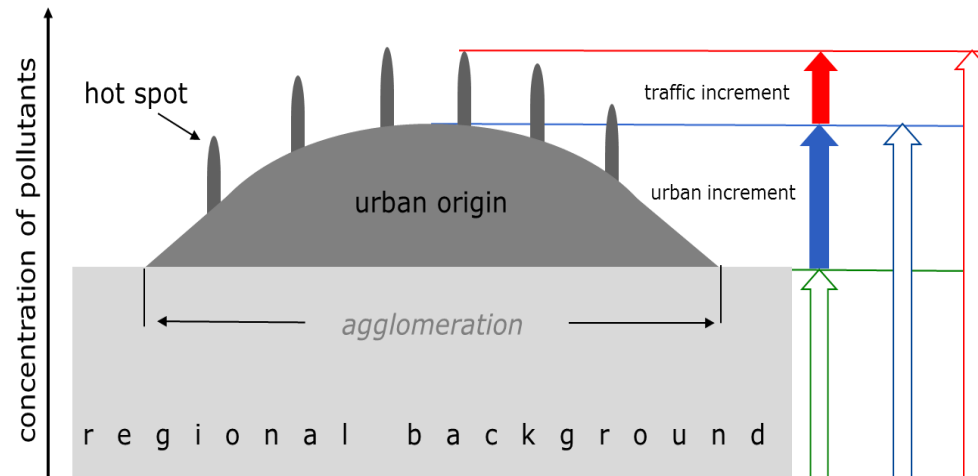
Comments on the IPR provisions in the field of source apportionment

Decision 2011/850/EU

Three main issues concerning source apportionment:

- **The incremental approach.**
- **The fixed list of source categories and mixing of different classifications**
- **The methodologies for source contribution quantification**

The limitations of the incremental approach



The list of source categories

CURRENT



IPR CID 2011/850/EC

Urban and local

traffic
industry, heat and power production
agriculture
commercial and residential
shipping
off-road mobile machinery
natural

transboundary

Regional background

within country

transboundary

natural

CORINEAIR 90

1 Public power, cogeneration, heating
2 Commercial, inst., resid., combustion
3 Industrial combustion
4 Production processes
5 Extraction and distr. of fossil fuels
6 Solvent use
7 Road transport
8 Other mobile sources
9 Waste treatment/disposal
10 Agriculture
11 Other

PROPOSED



NFR aggregation for gridding

A_PublicPower
B_Industry
C_OtherStationaryComb
D_Fugitive
E_Solvents
F_RoadTransport
G_Shipping
H_Aviation
I_Offroad
J_Waste
K_AgriLivestock
L_AgriOther
M_Other

SA methodology

The identification and quantification of the contributions of the different source categories should be carried out with any methodology provided it:

- a) is thoroughly described in the scientific and technical literature,
- b) there are scientific studies that demonstrate it can be successfully applied in Europe, and
- c) its performance has been tested using methodologies (e.g. intercomparison exercises) recognized by international competent organizations (e.g. FAIRMODE, CEN, ISO).

FAIRMODE proposal on Source Apportionment reporting

1. to open the possibility to report either the increments or absolute contributions of every source at a given site.
2. to refer to the latest NFR-UNECE emission source classification (aggregation for gridding).
3. to use source apportionment methodologies which performances are tested using methodologies recognized by international competent organizations .

FAIRMODE follow-up work on e-reporting during 2015

1) Informal guidelines about Plans and Programmes

Fairmode supported the work of dealing with MS quesites about this topic that led to a document with the compilation of all the answers.

2) Composite mapping exercise

FAIRMODE launched an activity aiming at creating a bottom-up composition map of air quality over Europe on the basis of regional/national air quality maps provided by national/regional agencies and modelling teams.

3) Source apportionment intercomparison exercise

The lessons learned in the intercomparison will be used to improve the current guidelines on e-reporting and contribute and contribute to identify the source apportionment approaches that are most suitable for air quality management.

Some ideas for future work ...

Fairmode guidelines and work carried in the CEN WGs could contribute to fill the gap identified in the questionnaires

In the long term, the above mentioned items could contribute to improve the clarity of the legislation about reporting modelled data.

Reducing the differences in the modelling capacities between MS and removing organizational barriers at national level should be also pursued

The better integration of methodologies in the fields of source apportionment and planning is expected to contribute to simplify the reporting burden of MS (e.g. Tools that provide data in the format required by the IPR)

Thank you for your attention

A report on FAIRMODE contributions to e-reporting is available at:

http://fairmode.jrc.ec.europa.eu/document%5Cfairmode%5CFairmode%20recommendations%20e_reporting_final.pdf