



The new mechanism to exchange AQ data: e-reporting

Technical meeting, 24-25 June 2015

FAIRMODE 
Forum for air quality modelling in Europe

The logo for FAIRMODE (Forum for air quality modelling in Europe) consists of the word "FAIRMODE" in a bold, white, sans-serif font. To the right of the text is a graphic element made of a 4x4 grid of squares. The squares are colored in shades of teal and white, forming a pattern that resembles a stylized 'M' or a grid of data points.

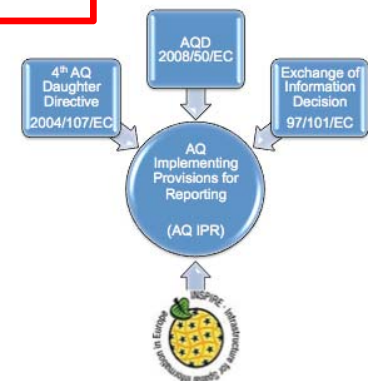


COMMISSION IMPLEMENTING DECISION 2011/850/EU of 12 December 2011

laying down rules for Directives 2004/107/EC and 2008/50/EC of the European Parliament and of the Council as regards the reciprocal exchange of information and reporting on ambient air quality:

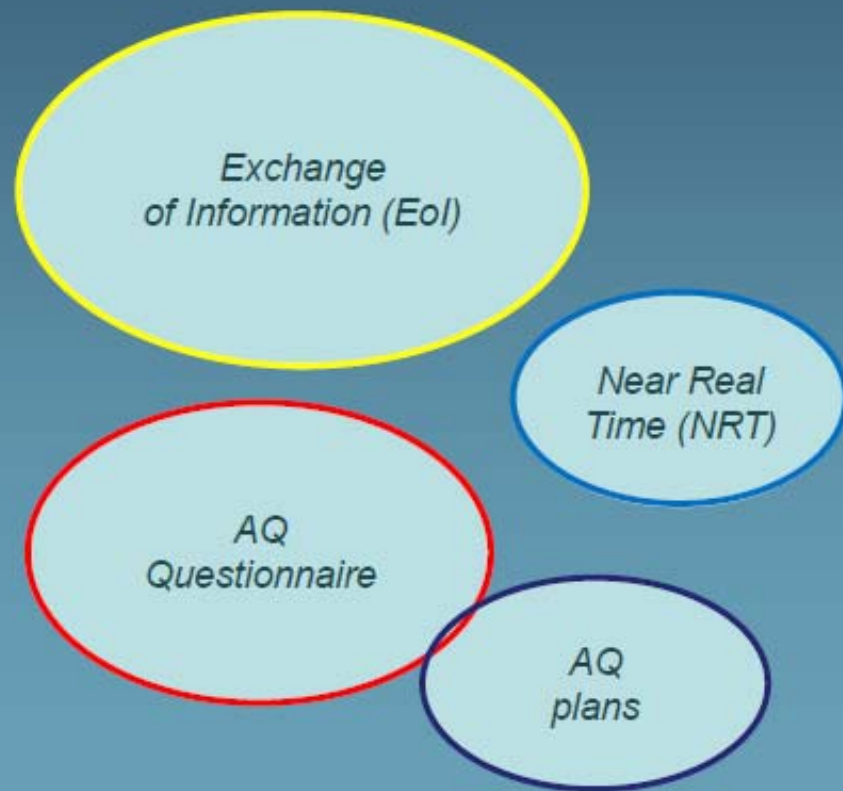
- Data flow B: air quality management **zones**
- Data flow C: **assessment regimes** for zones (sampling points within zones)
- Data flow D: sampling points, stations, **measurement methods** (processes), etc.
- Data flow E1a: primary **validated measurements**
- Data flow E1b: primary **modelling results**
- Data flow E2: primary **up-to-date** measurements
- Data flow F1a: **aggregated**, validated measurements
- Data flow F1b: **aggregated** modelling results
- Data flow F2: **aggregated**, up-to-date measurements
- Data flow G: **attainment** (aggregation within zones, approved by MS)

- Data flow H: air quality plans
- Data flow I: **source apportionment**
- Data flow J: scenario for the attainment year
- Data flow K: measures

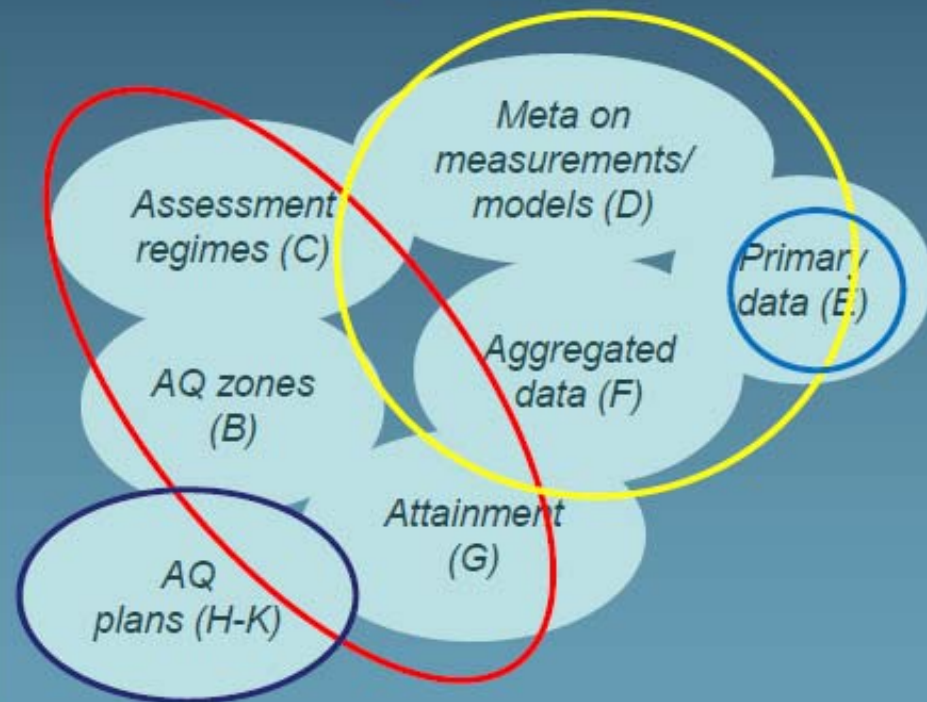


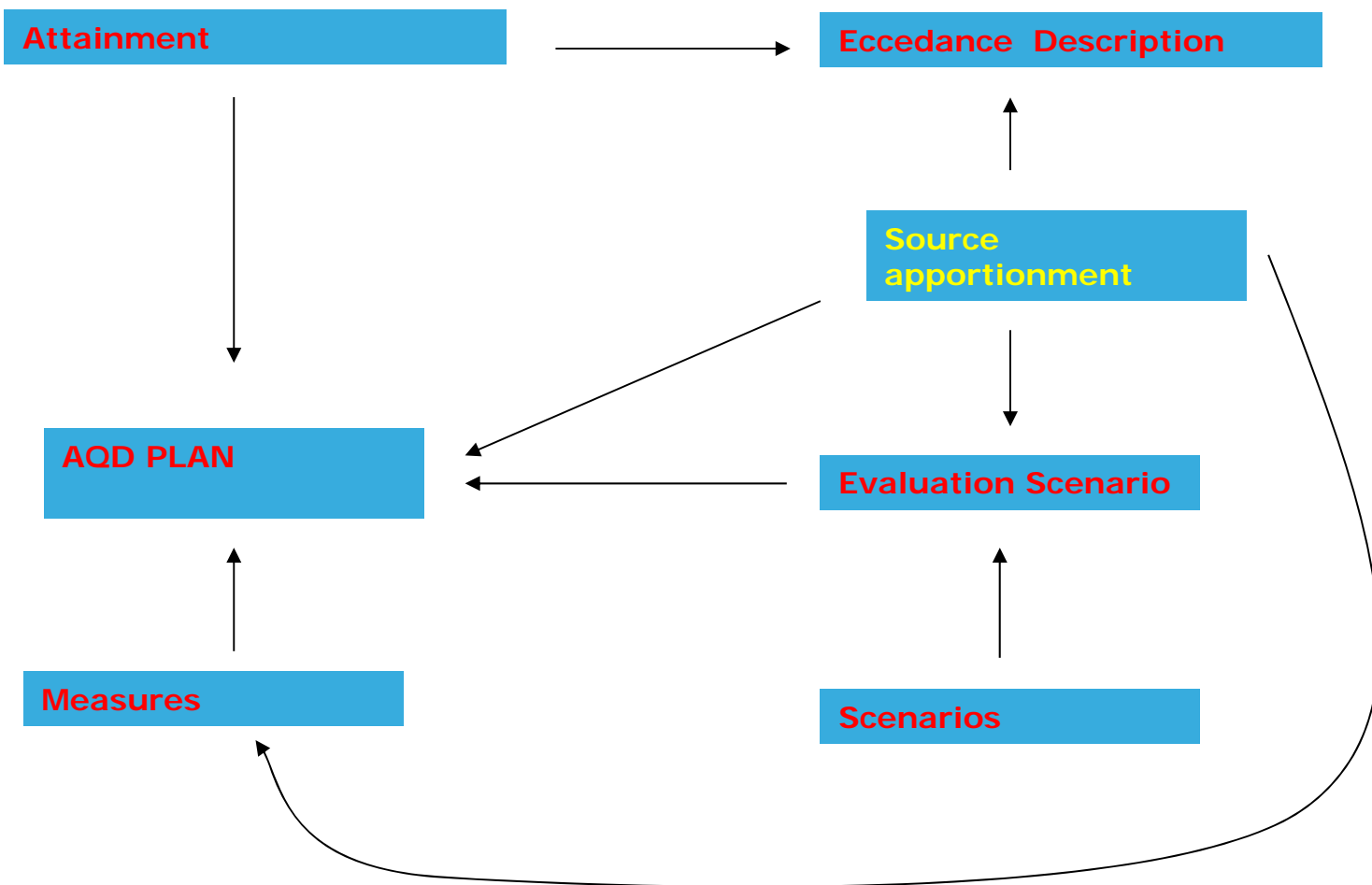
Air quality reporting in transition:

- how has it been?



- how is it going to be?







Emission sources classification

Contribution of a source below 3 % may be labelled not significant.
The main emission source(s) can be selected from the Code list
"Main Emission Sources"

Table 13 Main emission sources

Main Emission Source	UNFCCC CRF category	Description
Energy	1.A.1	<u>1. Energy</u> /A. Fuel Combustion /1. <i>Energy Industries</i>
Industry	1.A.2 2.	<u>1. Energy</u> /A. Fuel Combustion /2. <i>Manufacturing Industries and Construction</i> <u>2. Industrial Processes</u> /A. Mineral Products, B. Chemical Industry, C. Metal Production, D. Other Production
Transport	1.A.3	<u>1. Energy</u> /A. Fuel Combustion/3. <i>Transport</i>
Domestic	1.A.4 1.A.5	<u>1. Energy</u> /A. Fuel Combustion/4. <i>Other Sectors</i> <u>1. Energy</u> /A. Fuel Combustion/5. <i>Other</i>
Fugitive emissions	1.B	<u>1. Energy</u> / B. Fugitive Emissions from Fuels /1. <i>Solid Fuels</i> , 2. <i>Oil and Natural Gas</i>
Agriculture	4.	<u>4. Agriculture</u> /A. Enteric Fermentation, B. Manure Management, C. Rice Cultivation, D. Agricultural Soils, E. Prescribed Burning of Savannas, F. Field Burning of Agricultural, Residues, G. Other
Solvents	3.	<u>3. Solvent and Other Product Use</u>
Waste	6.	<u>6. Waste</u> /A. Solid Waste Disposal on Land, B. Wastewater Handling, C. Waste Incineration, D. Other
Secondary		Secondary pollutants originating from precursors , the sources of which are distributed over a large area.
Long-range transport		Transport over distances of several 100 km, originating from sources which are distributed over a large area.
Other		



Incremental approach

- **Regional background** is the split of total regional background in $\mu\text{g}/\text{m}^3$. The regional background level is the concentration of pollutants on a spatial scale of more than about 50 km. It comprises contributions from **outside the exceedance area**, but also from sources **within the exceedance area**. The regional background shall be split, if appropriate data are available, into from within the MS affected and **transboundary** contributions.
- **Urban background increment** represents the concentrations arising from emissions within towns or agglomerations, which are not direct local emissions (in $\mu\text{g}/\text{m}^3$). It is the sum of the following components: **traffic, industry** including heat and power production, **agriculture, commercial and residential, shipping, non-road mobile machinery, natural, transboundary urban background**, and other.



Incremental approach

- **The local increment** identifies contributions from sources in the immediate vicinity of the exceedance situation. The local increment **can be estimated** as the difference between the concentration measured or modelled at the location of exceedance and the urban background level. It is the sum of the following components: **traffic, industry** including heat and power production, **agriculture, commercial and residential, shipping, non-road mobile machinery, natural, transboundary urban background** and other.



Exceedances

- The exceedances reported in Dataset G for the pollutants covered by 2008/50/EC will (on the first occurrence) trigger an AQ plan.
- An exceedance situation (macro) shall be understood as an amalgamation of individual exceedances which by virtue of their similar source apportionment can be managed together.
- If there is a significant difference in source apportionments across the individual exceedance situations (micro), Member States should consider whether it is legitimate to group them into a macro exceedance situation or whether it would be better to split them into smaller groups.



Summary

- Source apportionment is an important task within the framework of the e-reporting process in particular for P&P
- The IPR has defined very precisely the SA information that has to be submitted
- The IPR has also defined an approach that has to be adopted (incremental) and a list of sources (not exhaustive) to report.
- The IPR is relevant for the work of SA experts because MS would support studies that are in line with it
- On the other hand, FAIRMODE can contribute to point out the most suitable methodologies and clarify doubts



Proposal of Working Group 3 on the IPR provisions in the field of source apportionment

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The logo for FAIRMODE consists of a 4x4 grid of squares. The top row has three white squares followed by one light blue square. The second row has two white squares, one medium blue square, and one light blue square. The third row has one white square, one dark blue square, and two medium blue squares. The bottom row has one white square, one dark blue square, and two white squares.



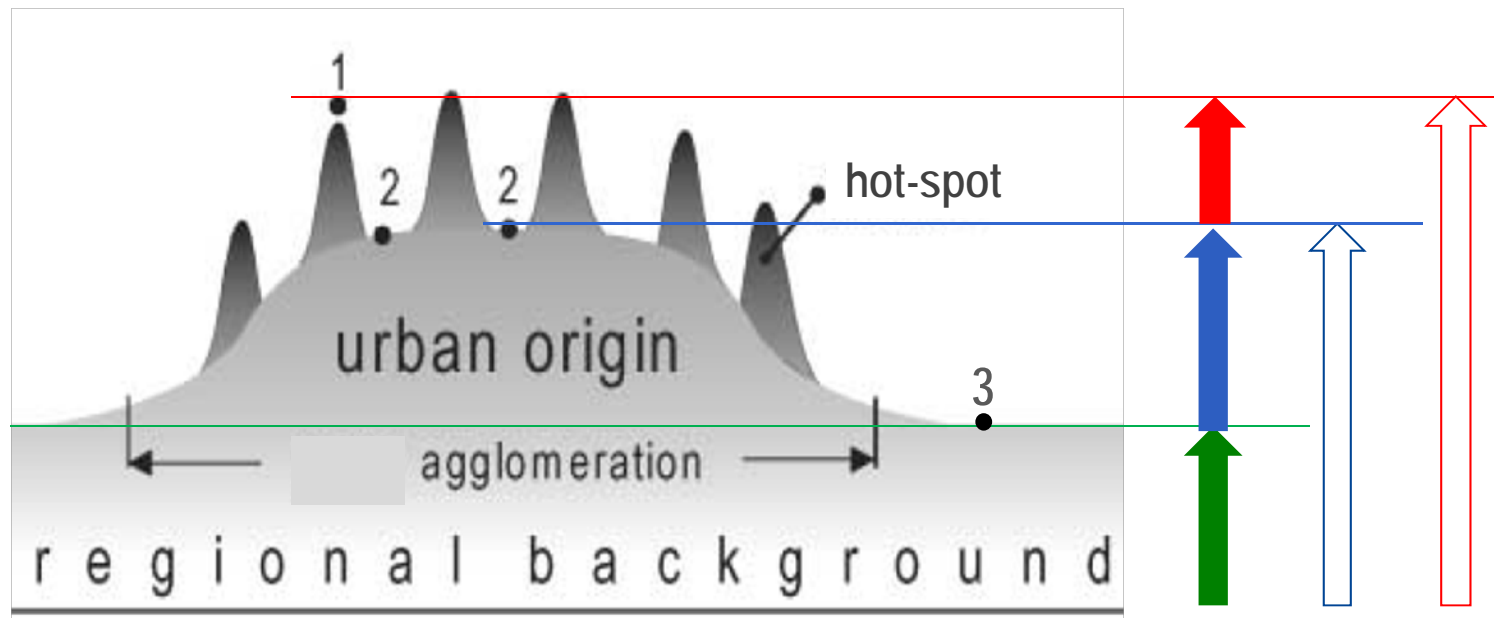
Decision 2011/850/EU

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 (assumption of uniform regional background)

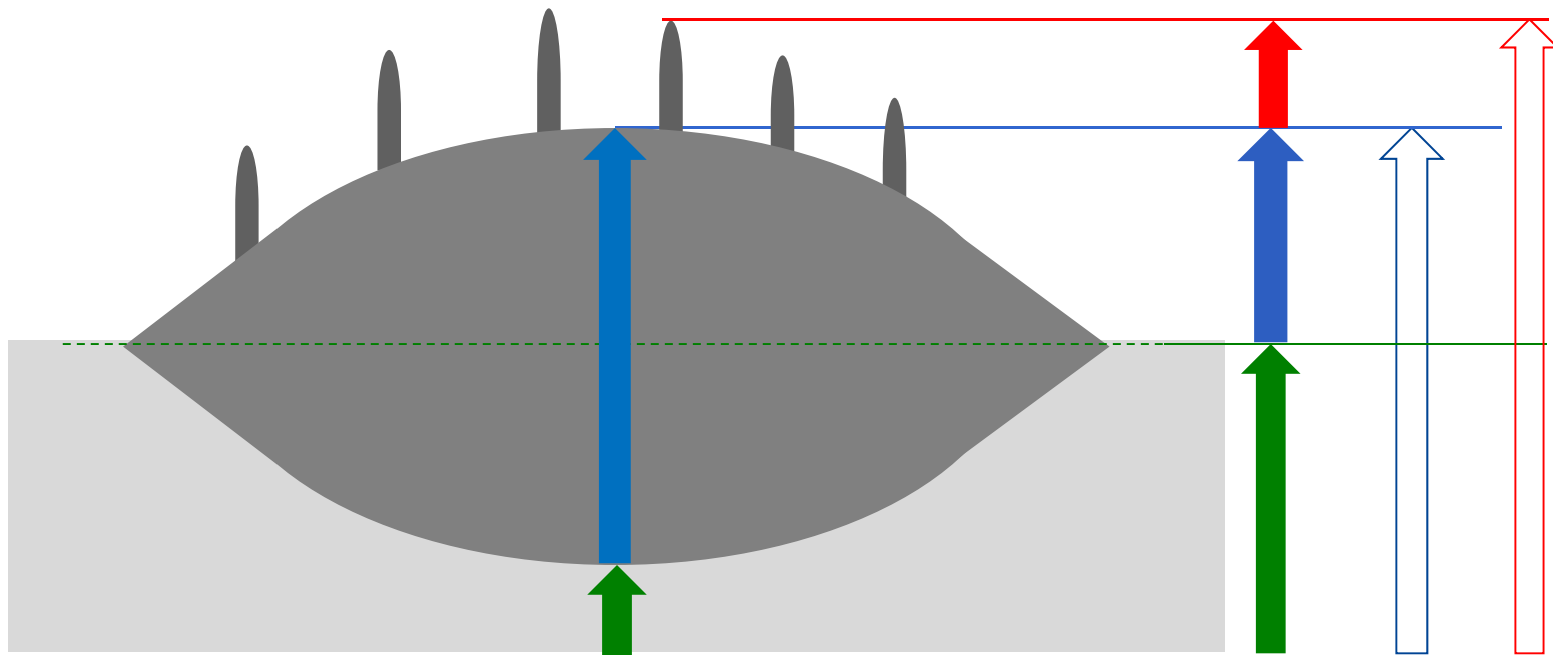


Current approach. (from Lenschow et al., 2001 modified)



The limitations of the incremental approach (assumption of uniform regional background)

Traffic

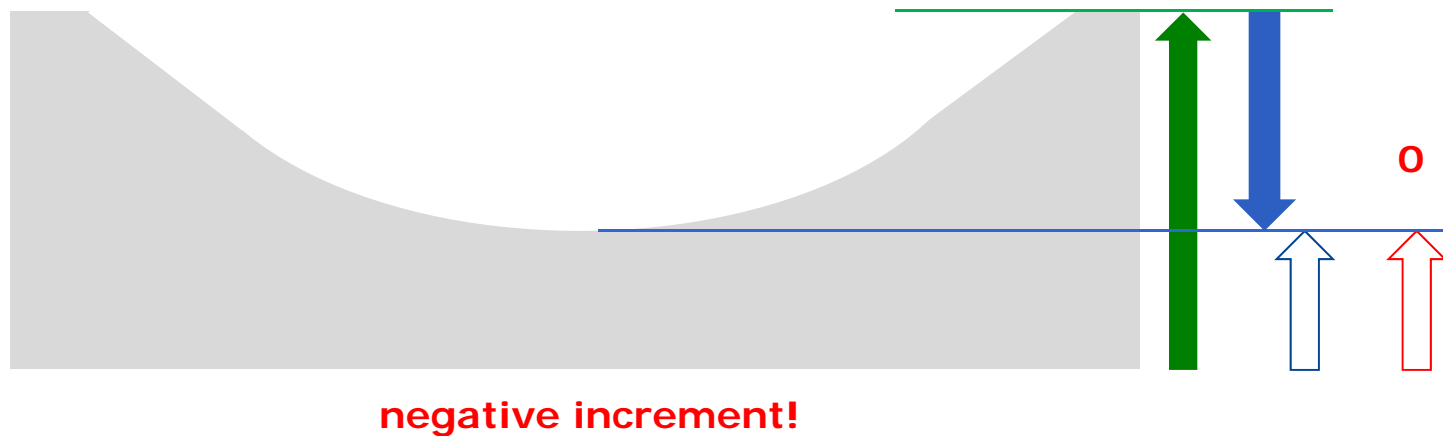


underestimation of urban sources!



The limitations of the incremental approach (assumption of uniform regional background)

Agriculture (NH₄), Secondary (SIA, O₃), biogenic (VOCs)





The limitations of the incremental approach

- The incremental approach is not appropriate to estimate the contribution of the single sources everywhere because some of them may have higher contributions in the background area than in the city (e.g. agriculture, biogenic, biomass burning, secondary sulphate).
- The assumption that the rural levels represent the regional background in the cities is not always realistic.
- It may lead to negative increments or to subestimation of sources!
- To estimate the «differences», either increment or decrement, at least three estimations are needed.
- The uncertainty of the increment is the sum of the uncertainties of the contributions used to calculate it (much higher).



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The list of source categories

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

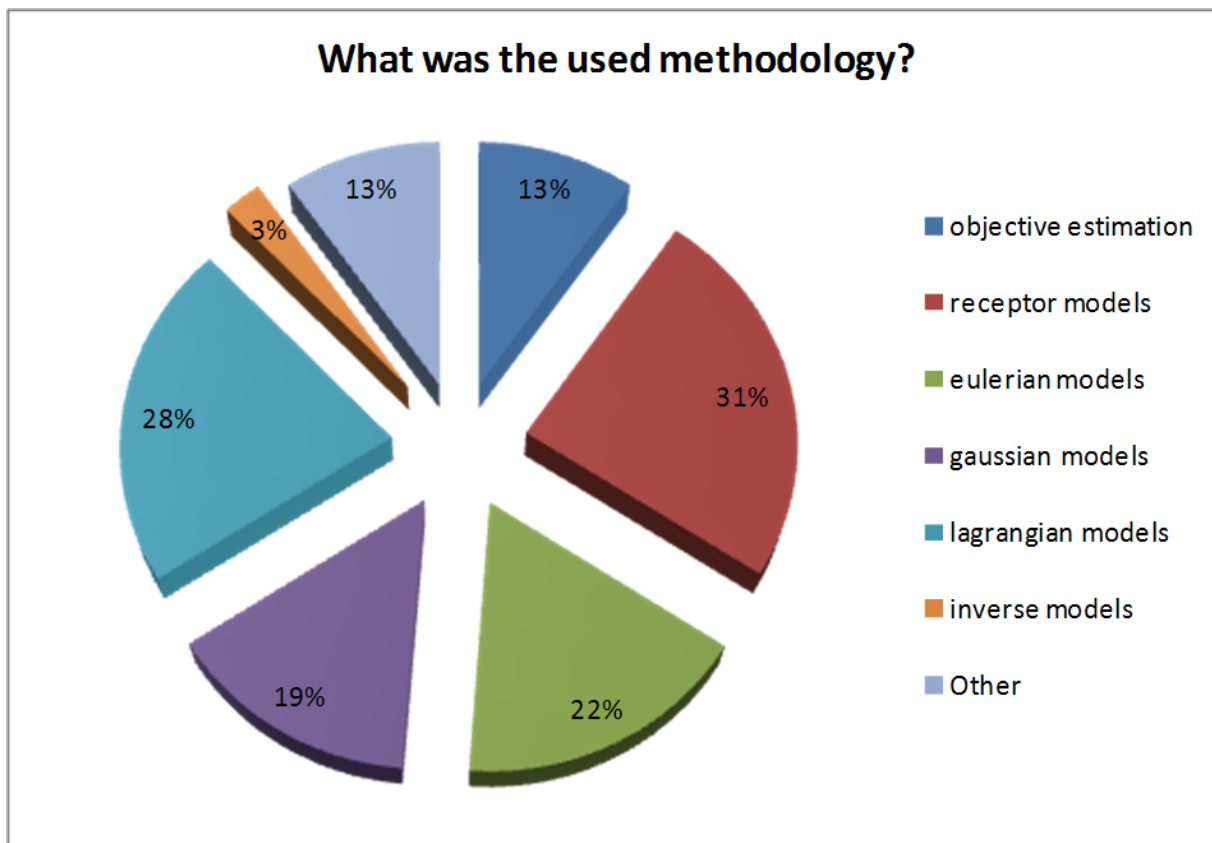
NFR aggregation for gridding

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

+ secondary



SA methodology



<http://www.appraisal-fp7.eu/site/images/download/APPRAISALreportD26v1.pdf>



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).



WG3 preliminary proposal

1. We propose to open the possibility to report either the increments or absolute contribution of every source at a given site.
2. We propose to refer to the latest NFR-UNECE emission source classification (aggregation for gridding) + secondary.
3. WG3 proposes to use source apportionment methodologies with results are reliable and comparable throughout Europe.