Working Group 3 Source Apportionment Workplan

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FAIRMODE
Forum for air quality modelling in Europe

Outline of the presentation

1. Why is it important to identify sources?
2. Methodologies for source apportionment (APPRAISAL project)
3. Proposed activities for future work
4. e-reporting
5. Standardisation
6. Topics for discussion

What do AQ Directives say about pollution sources ?

DIR 2008/50/EC

Reduction of emissions at source (Preamble point 16)

Local, regional and national air quality plans (Annex XV A item 5)

Background measurements (Annex IV A)

Ozone precursors (Annex X A)

Natural sources, road salting and sanding (Articles 20 and 21)

Public information (Annex XVI item 4)

One of the overarching principles of the Thematic Strategy on Air Pollution.

Emitted quantities and transboundary sources responsible for pollution are to be listed when drafting air quality plans.

To judge the enhanced levels in more polluted areas, assess long-range transport, support source apportionment analysis and understanding of specific pollutants.

Measurements to monitor the efficiency of emission reduction strategies, to check the consistency of emission inventories and to help attribute emission sources.

To provide evidence of exceedances attributable to natural sources or winter sanding or salting of roads.

Information about exceedances of alert thresholds including indication of main source sectors or categories and recommendations for action to reduce emissions.

What do AQ Directives say about pollution sources ?

Localization of monitoring stations (Annex III B item c)

Urban background locations shall be located so that their pollution level is influenced by the integrated contribution from all sources upwind of the station.

DIR 2004/107/EC

Target Value exceedances (Article 3 item 3)

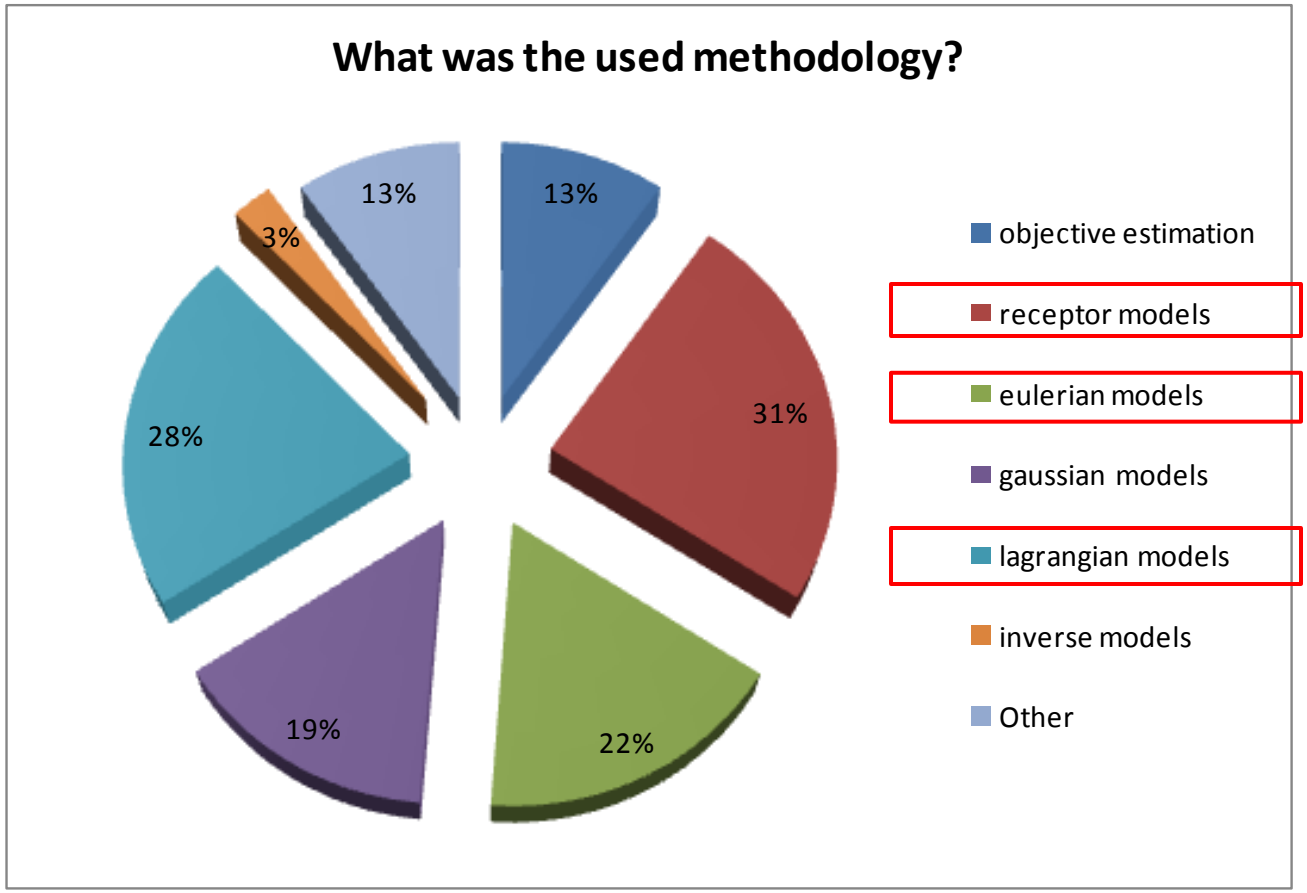
Aiming at implementing measures to attain target values, MS are requested to specify zones and agglomerations where such values are exceeded and to indicate source contributions.

Transmission of information and reporting (Article 5 item d)

MS shall forward to the Commission information concerning the sources contributing to the exceedances.

European Commission

Source apportionment in integrated assessment studies

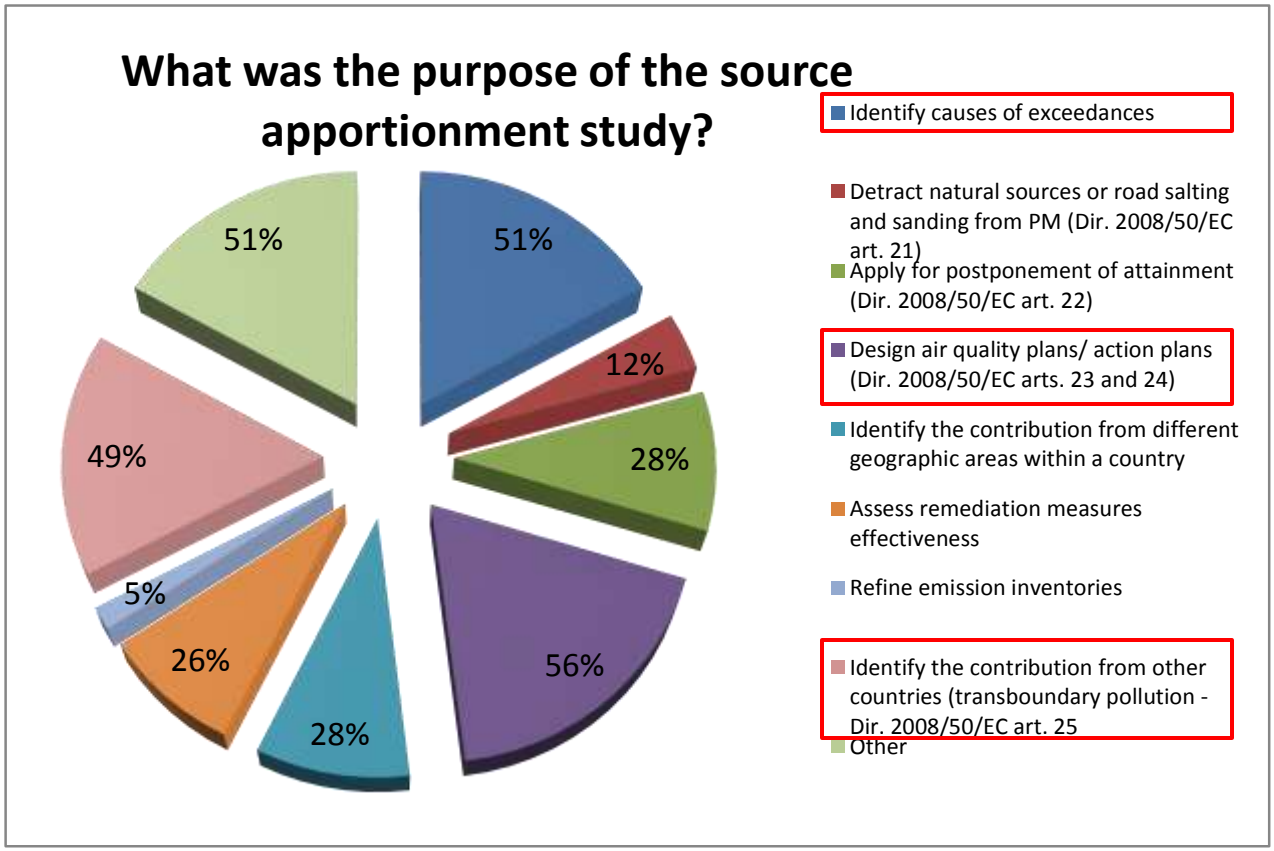


Source: Appraisal deliverable 2.6 - http://www.appraisal-fp7.eu

Joint Research Centre

Appraisal project

Source apportionment in integrated assessment studies



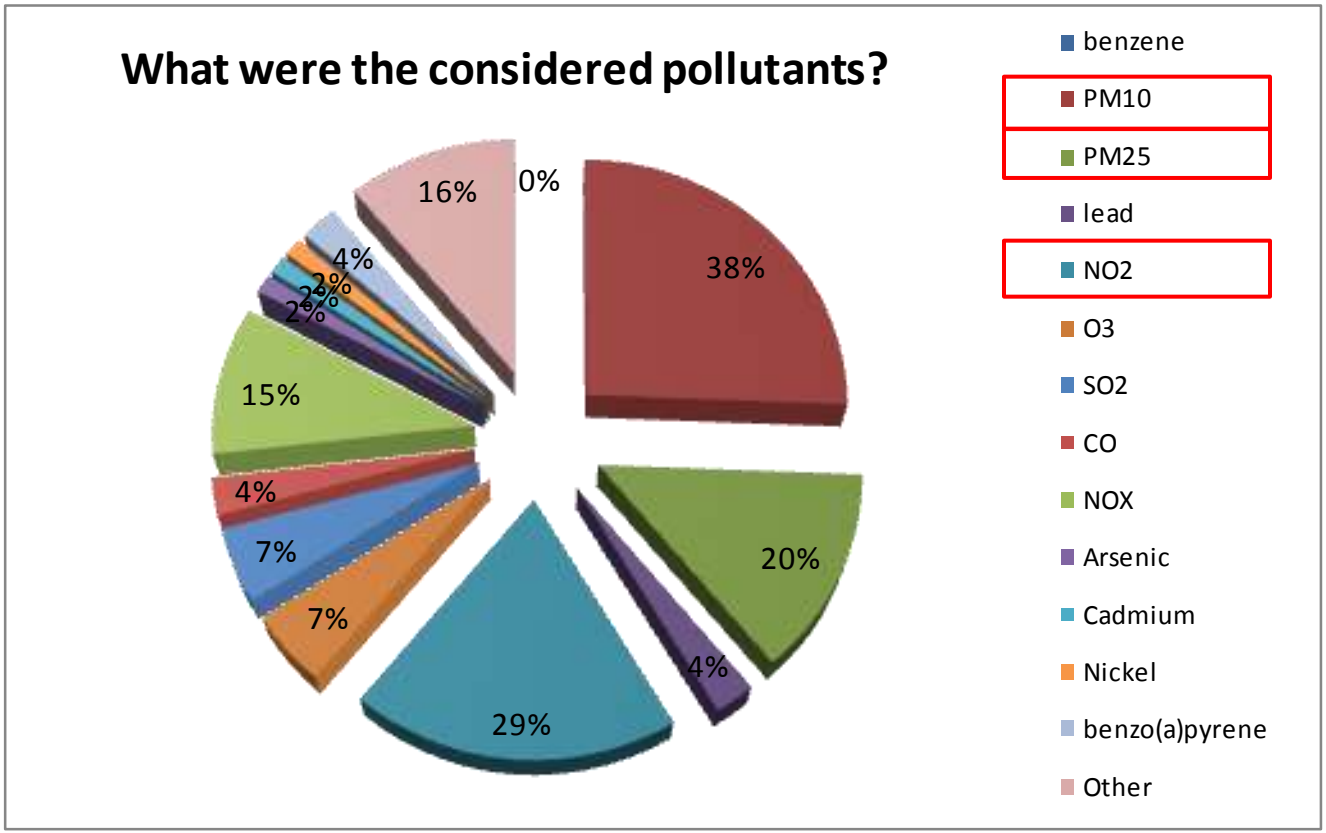
The main reasons are associated to obligations deriving from the AQD:

- to design air quality plans or action plans,
- to identify the causes of exceedances, and
- to identify transboundary pollution

Source: Appraisal deliverable 2.6 - http://www.appraisal-fp7.eu

Appraisal project

Source apportionment in integrated assessment studies



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Future Work – Need analysis

Starting from lessons learned during the first phase of the activity.

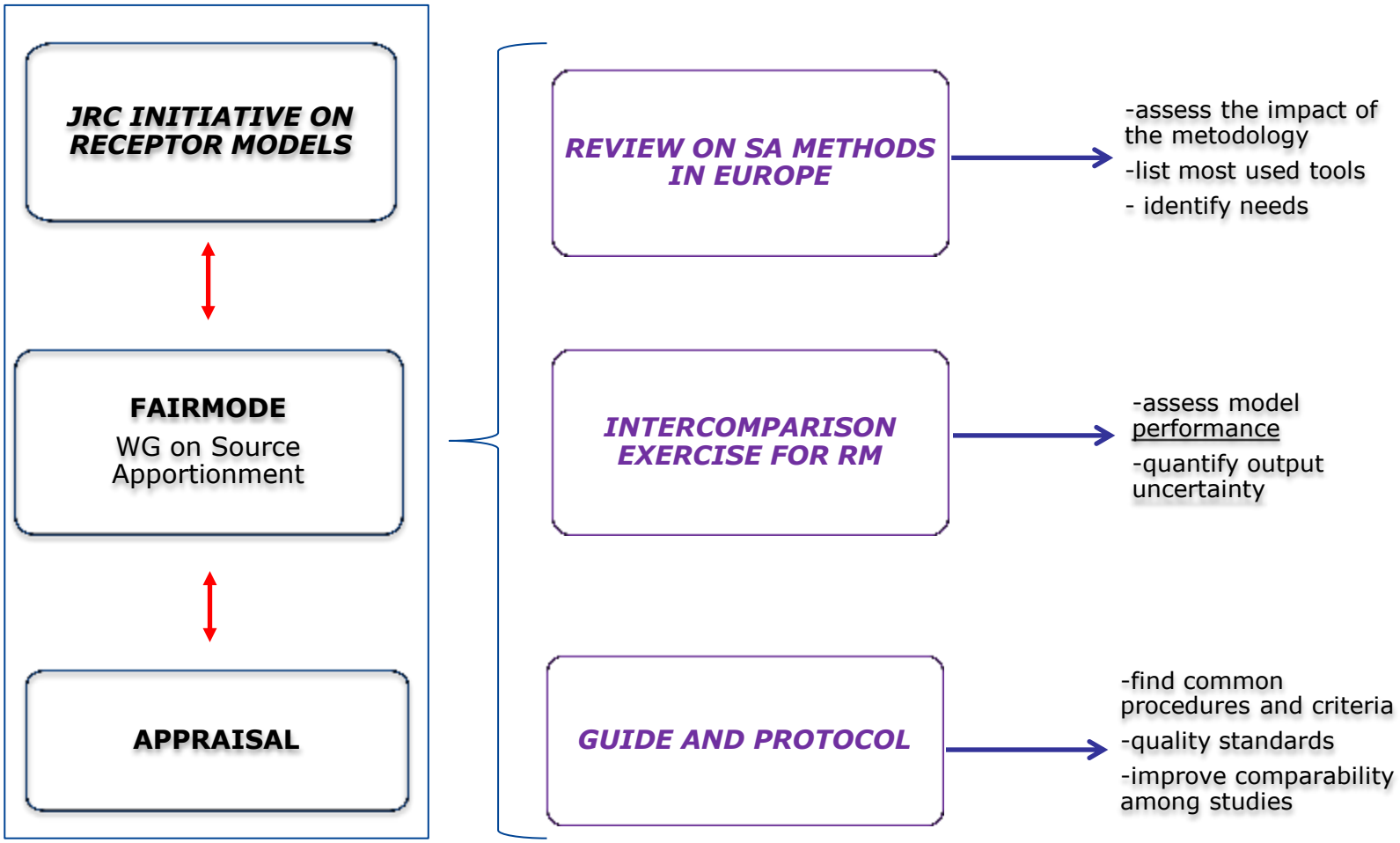
Identified needs:

1. Quantification of model performances
2. Harmonisation of methodologies
3. Promote availability and quality check of input data

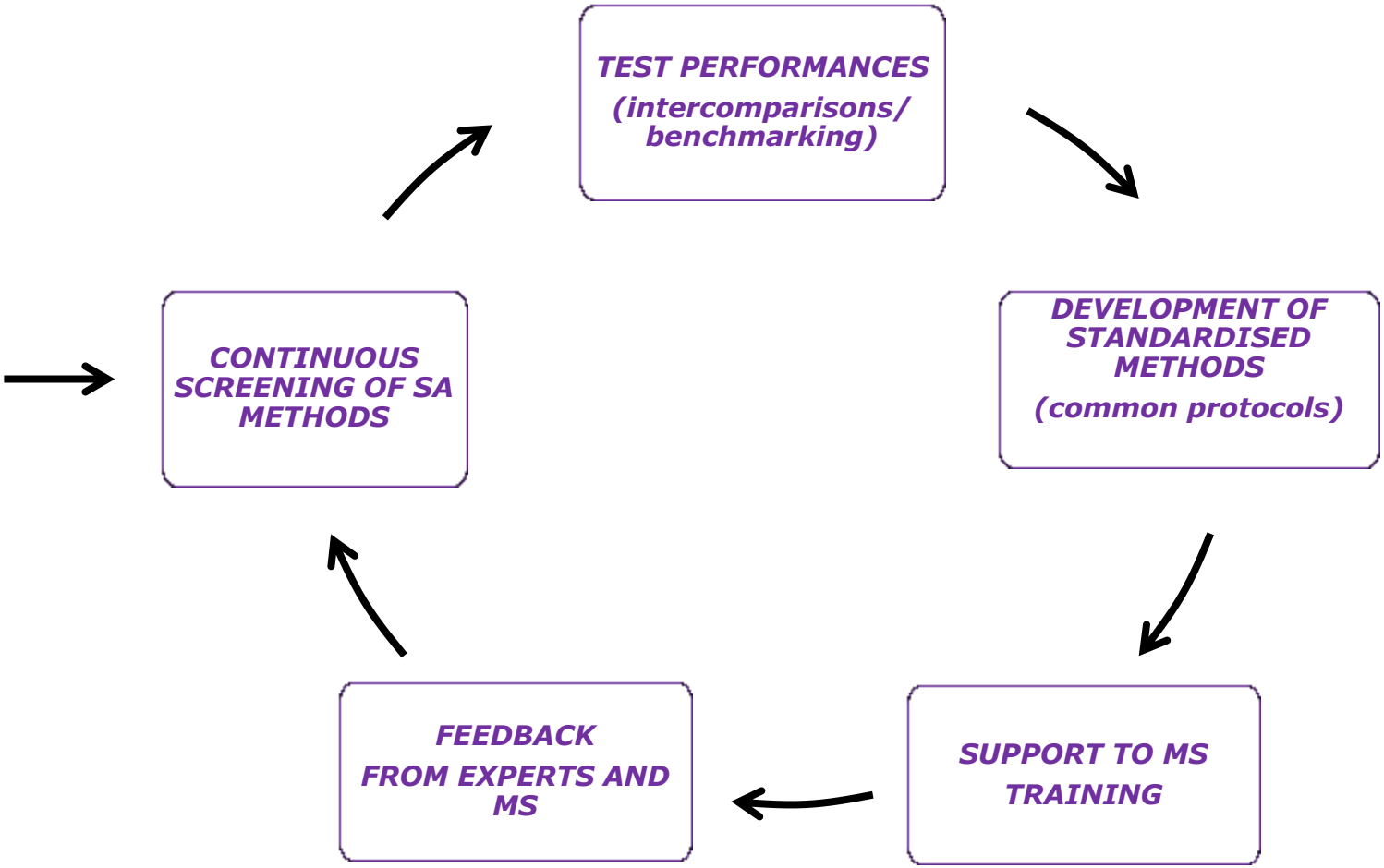
4. Extension of technical work to CTMs, Lagrangian and other SA techniques
5. Mutual validation and integration among different SA techniques (including EI)
6. Promote capacity building in MS
7. Seek feed back from users and authorities

8. Extend the range of pollutants: PM, NO_2, VOCs , O_3
9. Implement quantification of both source categories and geographic areas

Harmonization of source apportionment methods 2010-2013



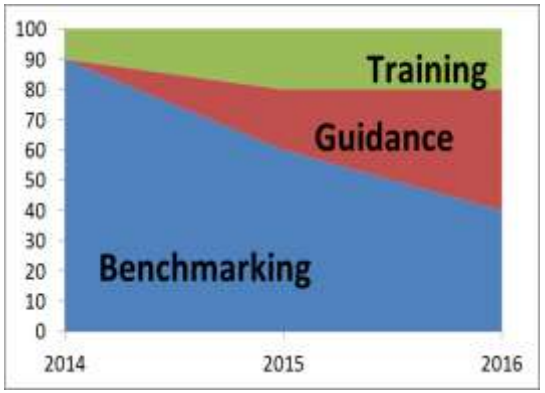
Harmonization of source apportionment methods scheme



FAIRMODE WG3 – Proposed activities 2014-2016

Main activities

1. Inter-comparison for receptor-oriented and source-oriented models in collaboration with EURODELTA
   Development of indicators and evaluation methodology
2. Development of website with repository for European source profiles
3. Capacity building initiatives



Other activities

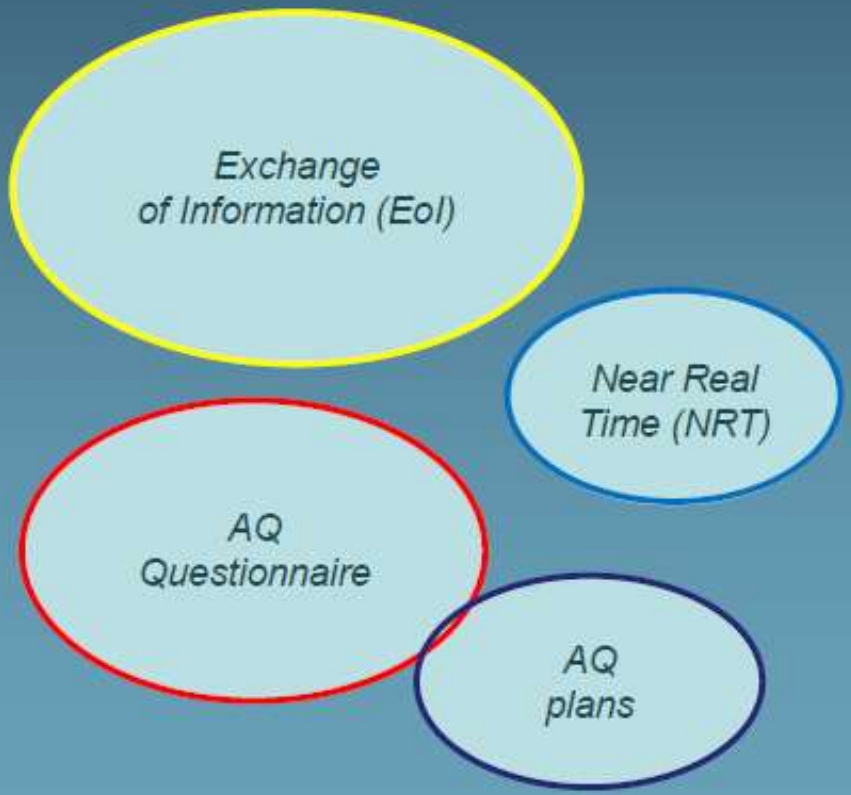
1. Test and update current Common Protocol for Source Apportionment – feed back from users.
2. Explore spatial representativeness of source contribution estimations
3. Mutual validation with EIs

e-Reporting

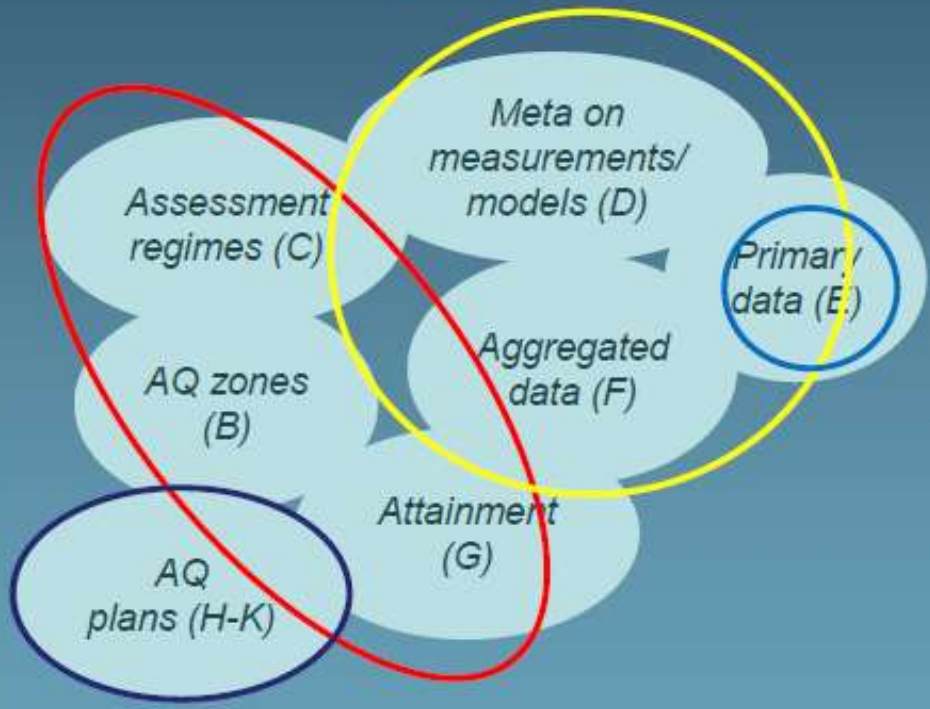
- **e-Reporting** implementation of reporting of monitoring data is advanced but this is not the case for modelling. FAIRMODE could contribute to a better definition of data flows.
- e-Reporting of modelling data is seen as an unnecessary additional work and non-mandatory one.
- Models (if quality is guaranteed) can complement monitoring under specific conditions (led to savings). FAIRMODE may contribute to define the rules.
- More involvement of FAIRMODE in the development of e-reporting (first step, participation in next PILOT meeting)

Air quality reporting in transition:

- how has it been?



- how is it going to be?



European Environment Agency

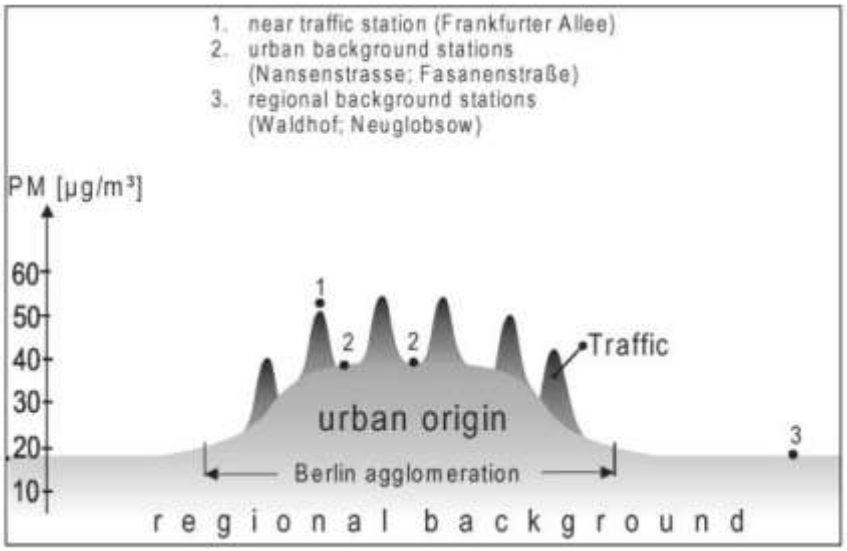
Slide from Artur Gsella (EEA)

e-Reporting

- An exceedance situation 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, 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.

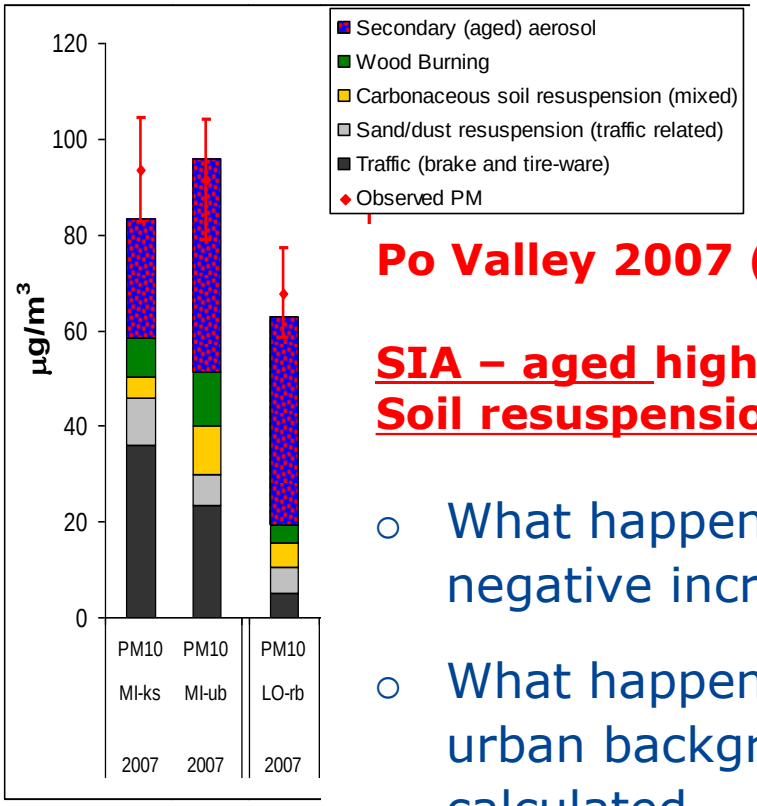
Guidance to Decision 2011/850/EU

- **Regional background** is the split of total regional background in µg/m³ .
- **Urban background increment** represents the concentrations arising from emissions within towns or agglomerations, which are not direct local emissions (in µg/m³).
- **Local increment** identifies contributions from sources in the immediate vicinity of the exceedance situation.



Lenschow et al., 2001 AE

e-Reporting



Po Valley 2007 (Larsen et al, 2012):

SIA – aged higher in rural bkg. than urban bkg.
Soil resuspension higher in urban bkg than kerbside

- What happens in these cases? Should we report negative increments?
- What happens with studies carried out in a single urban background site? No increment can be calculated
- Shouldn't be better to report the contribution of the sources in a given site without assuming that the Lenschow hypothesis is applicable everywhere?

Standardisation

Three future work activities were proposed in the frame of CEN/TC 264 that are related to FAIRMODE:

- *Modelling air quality: performance requirements, QAQC; relation with FAIRMODE*
- *Representativeness, classification, siting of monitoring stations; relation with Aquila, Fairmode*
- *Source apportionment (receptor models) to explain limit value exceedances; relation with FAIRMODE and JRC initiative*.

- Standardisation is well developed in the field of measurments. The standards are referred to as reference methods in the legislation.

- There is not a common view about the opportunity of starting a standardisation process for modelling methodologies in Europe.

FAIRMODE WG3 – Topics for discussion

1. Comments on the proposed WG3 work programme
2. What's the best way to implement a feed back mechanism for documents like the Guide and Common Protocol?
3. Should we discuss further the implications of the new e-reporting rules on the source apportionment studies ?
4. The harmonised methods tested under Fairmode should be used for the development of official technical standards (e.g. ISO, CEN)?
5. Is it necessary to perform further work on the quantification of Natural Sources, and Road Salting and Sanding?

Thank you for your attention