FAIRMODE
Forum for air quality modelling in Europe

WG1 - Source apportionment to support AQ management

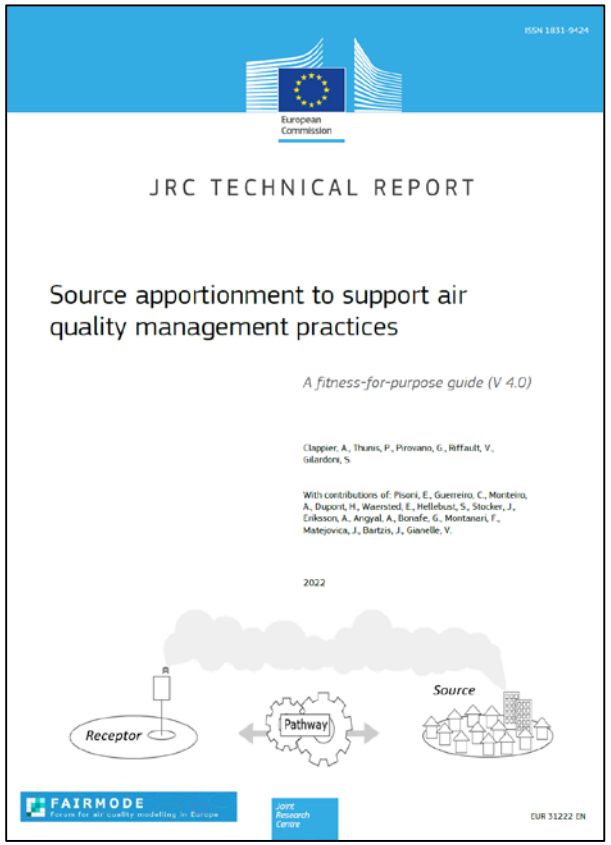
Status

WG1 session

FAIRMODE PLENARY MEETING
Roma - 2-3 March 2023

What did we achieve ?

- Consolidating the fitness for purpose source apportionment guide
- Supporting the e-Reporting process.



An new official guidance version (V4.0) have been edited last year on 2022 October 3d.

doi:10.2760/781626

Updated Recommendations about SA Methods

a) **The incremental approach** is **not recommended** for air quality planning applications. This is because the increment is defined as a spatial gradient which differs from a source apportionment unless the background concentrations are spatially homogenous and the background location is not influenced by the source. The validity of these two assumptions cannot be assessed with the method itself.

b) **Emission sensitivity-based** approaches are **recommended for identification and quantification** of emission sources in the context of air quality planning applications because they reflect directly the impact of emission reduction, however for non-linear species their applications are **limited in terms of emissions strength**, hence the need to carefully assess their range of applicability.

c) **Mass-transfer methods** based on tagging species algorithms built into the air quality model are **suited to identify** the sources that contribute to pollution. These methods can also be used to **complement emission sensitivity-based approaches beyond their range of applicability**. In the case of pollutants involved in linear processes, that is, those characterised by a linear relationship between emission and concentration changes these methods are also suited for quantifying the impact of sources. .

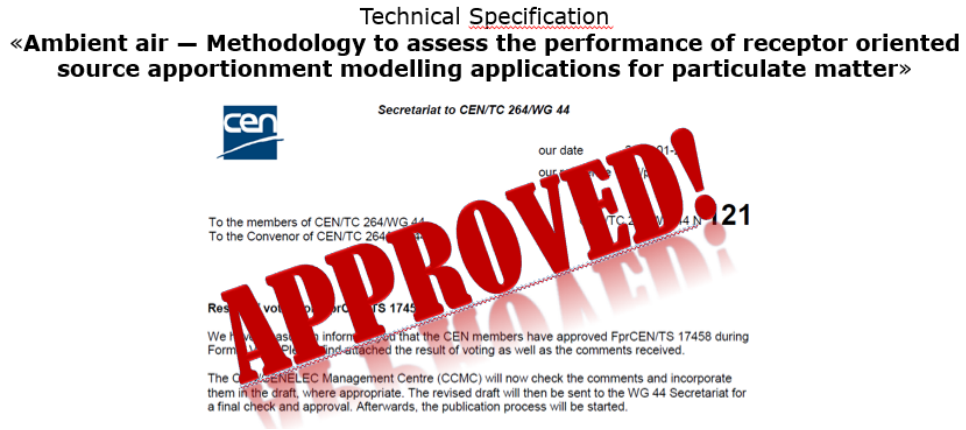
d) **Mass-transfer methods based on receptor models** are **suited for the identification and quantification** of pollution sources but only for pollutants involved in **linear processes**.

What did we achieve ?

- Consolidating the fitness for purpose source apportionment guide
- Supporting the e-Reporting process.
- Supporting pilot regions and cities in their SA estimates.

What did we achieve ?

- Consolidating the fitness for purpose source apportionment guide
- Supporting the e-Reporting process.
- Supporting pilot regions and cities in their SA estimates.
- Interacting with CEN


Technical Specification

«Ambient air — Methodology to assess the performance of receptor oriented source apportionment modelling applications for particulate matter»

Secretariat to CEN/TC 264/WG 44

APPROVED!

To the members of CEN/TC 264/WG 44
To the Convenor of CEN/TC 264

We have pleased to inform you that the CEN members have approved FprCEN/TS 17458 during Formal Vote and find attached the result of voting as well as the comments received.

The CEN-CENELEC Management Centre (CCMC) will now check the comments and incorporate them in the draft, where appropriate. The revised draft will then be sent to the WG 44 Secretariat for a final check and approval. Afterwards, the publication process will be started.

WG44 will resume,

the first meeting will take place on May 24 and 25 in Paris

What did we achieve ?

- Consolidating the fitness for purpose source apportionment guide
- Supporting the e-Reporting process.
- Supporting pilot regions and cities in their SA estimates.
- Interacting with CEN
- Started discussion on the protocol

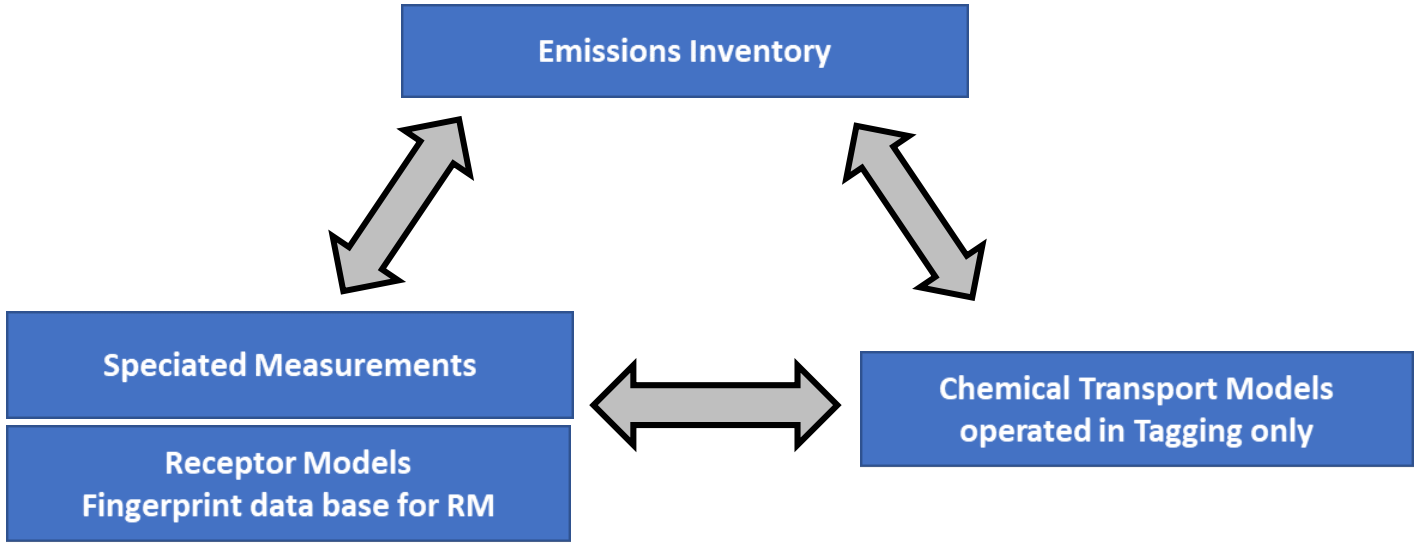
How to best organise the different tools and information that we have to support AQ planning?

Discussion on the protocol

based on the results of the exercise done during the last technical meeting.

Clarifications are needed to :

- ❑ better specify the purpose of the different steps
- ❑ better distinguish between source identification and validation especially concerning the following steps:



Thank you for your attention

WG1 - Source apportionment to support AQ management

Future activities & links to AAQD

WG1 Session

FAIRMODE PLENARY MEETING
Rome – 2-3 March 2023

New AAQD

- **Introduction**
  - (34) Member States should cooperate with one another if, following significant pollution originating in another Member State, the level of a pollutant exceeds, or is likely to exceed
- **Article 5 - Responsabilites**
  - (d) ensuring the accuracy of modelling applications;
- **Article 7 - Assessment regime**
  - Where fewer data are…..Member States may combine measurement campaigns of short duration…. with results obtained from information from emission inventories and modelling
- **Article 8 - Assessment criteria**
  - (2) In all zones where the level of pollutants exceeds the upper assessment threshold established for those pollutants, fixed measurements may be supplemented by modelling applications and indicative measurements to assess air quality….
  - (3) In all zones where the level of pollutants exceeds a limit value, modelling applications shall be used to assess the ambient air quality….
- **Article 9 – Sampling points**
  - (6) The results of modelling applications and indicative measurements shall be taken into account for the assessment of air quality with respect to the limit values and ozone target values.
- **Article 16 – Contributions from natural sources**
  - Member States may, for a given year, identify…zones where exceedances of limit values for a given pollutant are attributable to natural sources…
- **Article 17 – winter-sanding or winter-salting of roads**
  - Member States may, for a given year, identify zones within which limit values for PM10 are exceeded in ambient air due to the re-suspension of particulates following winter-sanding or winter-salting of roads.
- **Article 19 – Air Quality plans (and Article 20 - Short-term action plans)**
  - (1). Where, in given zones, the levels of pollutants in ambient air exceed any limit value laid down in Section 1 of Annex I, Member States shall establish air quality plans for those zones.
- **Article 21 – Transboundary air pollution**
  - (1) Where transboundary transport of air pollution from one or more Member State contributes significantly to the exceedance of any….. in another Member State, the latter shall notify the Member States from which the air pollution originated and the Commission thereof.
- **Article 23 – Transmission of information and reporting**
  - (1) Where transboundary transport of air pollution from one or more Member State contributes significantly to the exceedance of any….. in another Member State, the latter shall notify the Member States from which the air pollution originated and the Commission thereof.

- **ANNEX 5 - DATA QUALITY OBJECTIVES**
  - (F). Promotion of harmonised air quality modelling approaches

- **ANNEX 8 - INFORMATION TO BE INCLUDED IN AIR QUALITY PLANS FOR IMPROVEMENT IN AMBIENT AIR QUALITY**
  - 4. Origin of pollution taking into account reporting under Directive (EU) 2016/2284 and information provided in the national air pollution control programme
    - (d) source apportionment according to relevant sectors that contribute to the exceedance in the national air pollution control programme.

Activities for 2023-2025

- **Consolidating the fitness for purpose source apportionment (SA) guide**
  - complementarity of SA approaches (P.I. vs Tagging vs RMs…)
    - ***Article 8 - Assessment criteria***
    - ***Article 19 & 20– Air Quality plans***
    - *Article 16 – Contributions from natural sources*
    - *Article 17 – winter-sanding or winter-salting of roads*
    - *Article 21 – Transboundary air pollution*
  - extension to O_3, NO_2
    - *Article 7 – Assessment regime*
  - Extension to PMcoarse
    - *Article 16 – Contributions from natural sources*
    - *Article 17 – winter-sanding or winter-salting of roads*

Activities for 2023-2025

- **Supporting the reporting of SA results and update of documentation**
  - Delivery of SA results (e-reporting)
  - harmonization of emission categories/factors
    - *Article 23 – Transmission of information and reporting*
    - *ANNEX 8 - INFORMATION TO BE INCLUDED IN AIR QUALITY PLANS FOR IMPROVEMENT IN AMBIENT AIR QUALITY*

Activities for 2023-2025

- **Developing a SA protocol in support to planning**
  - key components
  - Sequence
  - Purpose
  - complementarity…
  - Contribution to WG44
    - *Article 8 - Assessment criteria*
    - *Article 19 & 20– Air Quality plans*

Activities for 2023-2025

- **Interacting with CEN**
  - Technical Specifications on source oriented SA methods

- **Increase the interaction with the CAMS community in order to provide guidance on the use policy products related to source apportionment and source-receptor relationships**

  - Time plans to be discussed with CAMS

Activities for 2023-2025 - Summary

- **Consolidating the fitness for purpose source apportionment (SA) guide**
  - complementarity of SA approaches (P.I. vs Tagging vs **RMs**…)
  - extension to **O_3**, **NO_2**
  - Extension to **PMcoarse**
- **Supporting the reporting of SA results and update of documentation**
  - Delivery of SA results (e-reporting)
  - **harmonization of emission categories/factors**
- **Developing a SA protocol in support to planning**
  - **key components, Sequence, Purpose, complementarity…**
  - **Contribution to WG44**
- **Interacting with CEN**
  - **Technical Specifications on source oriented SA methods**
- **Increase the interaction with the CAMS community (guidance related to SA)**
  - **Time plans to be discussed with CAMS**

FAIRMODE
Forum for air quality modelling in Europe

WG1 - Source apportionment to support AQ management

CEN WG44 - Updates and new call for experts

WG1 Session

FAIRMODE PLENARY MEETING
Rome – 2-3 March 2023

WORKING GROUP...»RESTART»

- **Reinforcement of the working group**
  - 6-7 FAIRMODE SMs experts expressed their interest
  - 5 WG44 SMs experts confirmed their interest
  - Found a candidate for the position of WG44 Convener (nomination as CEN member in progress)

- **WG44 (restart) meeting - Paris 24-25 May 2023** (back to back with WG43 meeting)
  - Interested experts invited as guests
  - Proposal of a new convenor
  - Preliminary discussion on the new TS (Scope and contents)
  - Organization of future work

TECHNICAL SPECIFICATION FOR SOURCE ORIENTED MODELS (PROPOSAL)

Contents

1. Scope
2. Normative references
3. Terms and definitions
4. Symbols and abbreviations
5. **Fitness for purpose of SA approaches**
6. **Interpretation of SA results**
7. **Application protocol**
8. References

TECHNICAL SPECIFICATION FOR SOURCE ORIENTED MODELS

Scope (Proposal…)

…This CEN Technical Specifications (TS) provides fit-for-purpose recommendations on the most widely used source-apportionment methods for air quality management…

It highlights the main assumptions behind each approach and the circumstances where they give different results and thus possibly different conclusions for air quality management.

The CEN/TS provides a protocol detailing the chronology of the steps to put in place a source apportionment…

The CEN/TS addresses in particular the following **SA methods: incremental, receptor modelling, emission sensitivity analysis (brute force impacts, Decoupled Direct Method), tagging algorithms, and combinations of those**.

The CEN/TS only covers PM as a pollutant.

The overall scope of this document is to support users involved in air quality management in the context of the EU Ambient Air Quality Directives….

OPEN ISSUES (SELECTION…)

Main contents

- Chapters 5 - Fitness for purpose of SA approaches
  - Is CEN TS/Standard the right place for guidance/ overview/support?
  - Fit for purpose check: is there enough consensus on these tests to include them in a CEN document?
- Chapter 6 - Interpretation of SA results
  - Could be part of a TS or should it rely on available literature?
  - What about quality check (= performance evaluation) of SA results??
- Chapter 7 - Protocol
  - This is substantially a new topic, not yet discussed even in FAIRMODE, does it require a different timing?

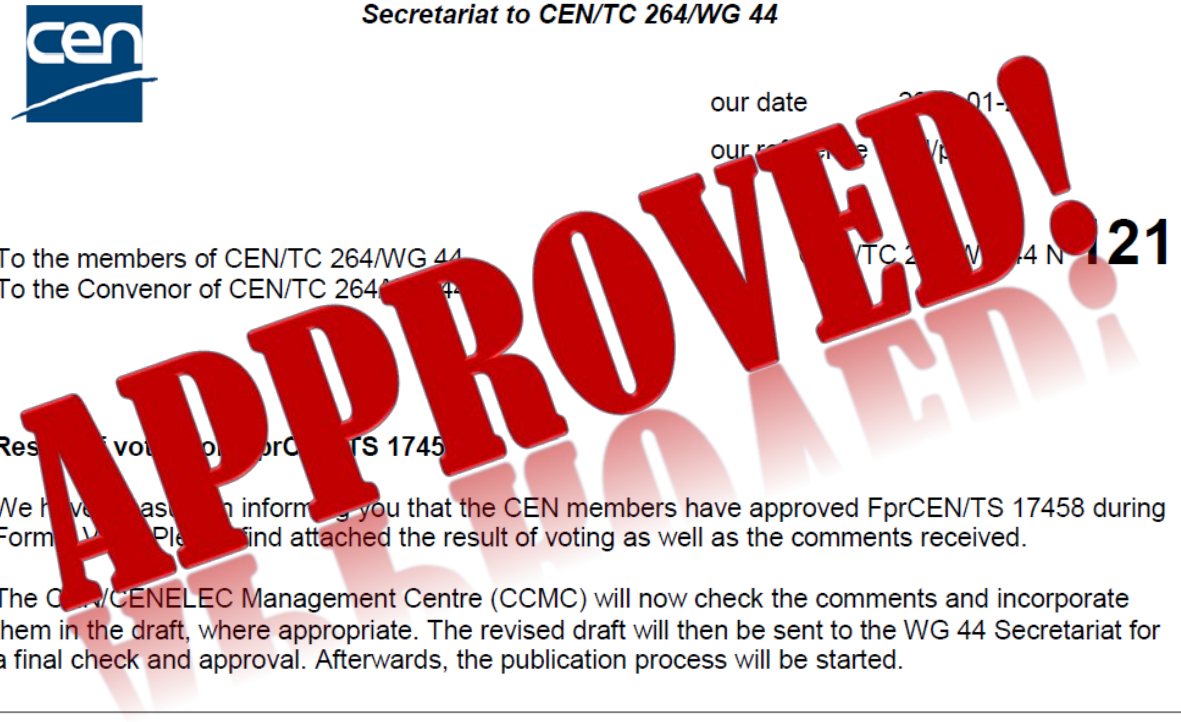
Pollutants

- As a first guess we could focus only on PM25/10, not including NO2 and O3: could it be reasonable?

Type of models and spatial scale

- What kind of models? What spatial scale?
- Could we leave this open in the sense that all methods can a-priori be chosen?

WHERE WERE WE?

Technical Specification

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