WG4 - Planning: status and roadmap

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A. Monteiro

E-Reporting

I: source apportionment

Regional, urban and local background increment…

(I) **Information on source apportionment (Article 13)**

(1) Code(s) of exceedance situation (link to G)

(2) Reference year

(3) Regional background: total

(4) Regional background: from within Member State

(5) Regional background: transboundary

(6) Regional background: natural

(7) Urban background increment: total

(8) Urban background increment: traffic

(9) Urban background increment: industry including heat and power production

(10) Urban background increment: agriculture

(11) Urban background increment: commercial and residential

(12) Urban background increment: shipping

(13) Urban background increment: off-road mobile machinery

(14) Urban background increment: natural

(15) Urban background increment: transboundary

(16) Local increment: total

(17) Local increment: traffic

(18) Local increment: industry including heat and power production

(19) Local increment: agriculture

(20) Local increment: commercial and residential

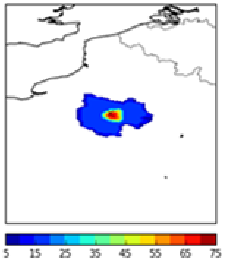
(21) Local increment: shipping

(22) Local increment: off-road mobile machinery

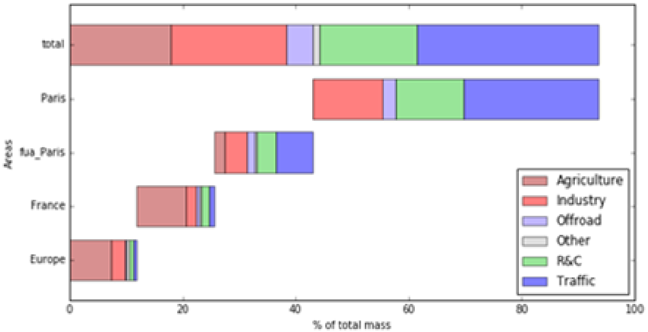
(23) Local increment: natural

(24) Local increment: transboundary

SHERPA Report

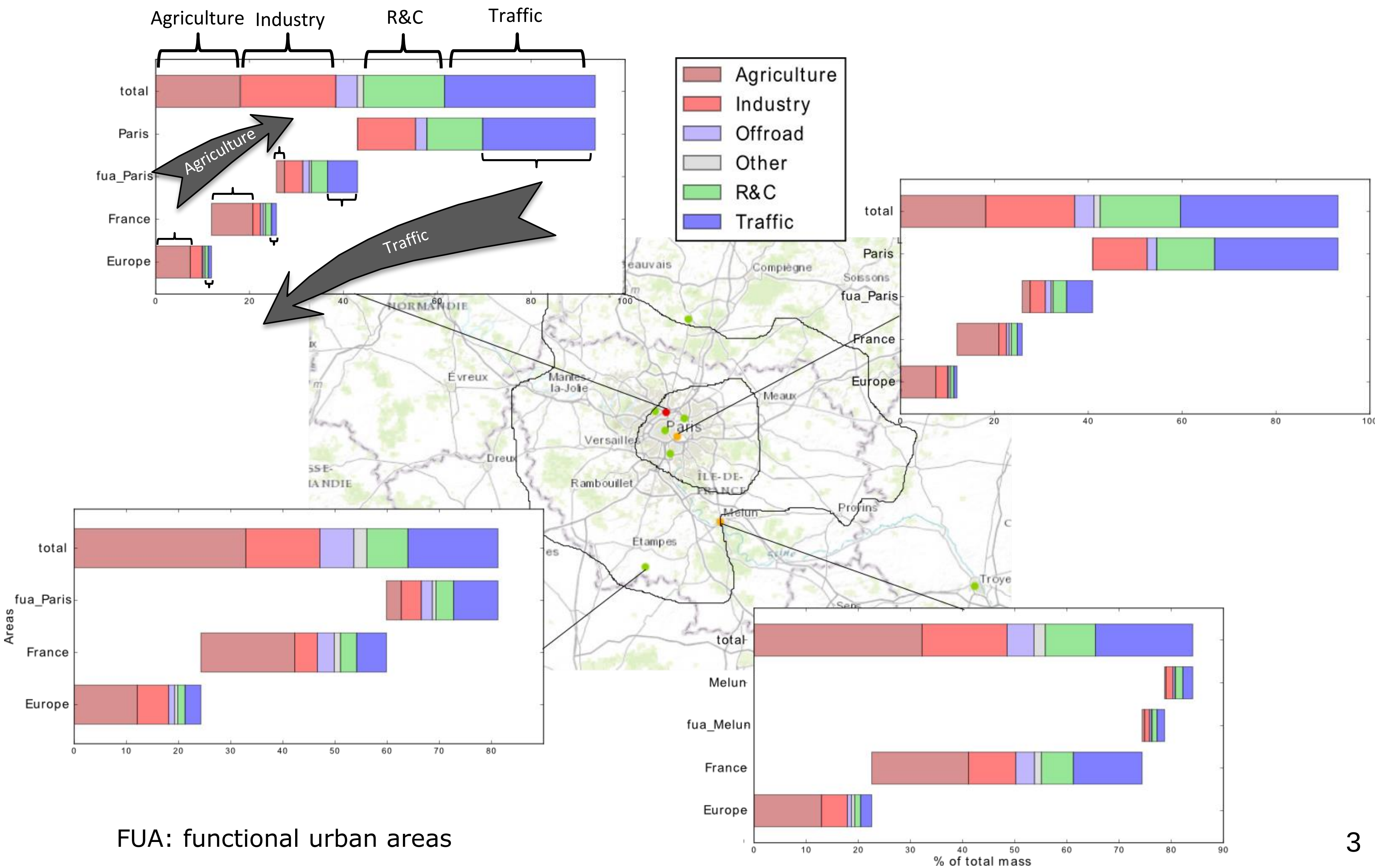


Paris S. Denis (FR04058)
Location: 2.36W, 48.93N
SHERPA: V1.1
AQM: Chimere
Emissions: EC4MACS
Meteo: ECMWF
Pollutant: PM2.5



	Europe	France	fua_Paris	Paris	total
Agriculture	7	9	2	0	18
Industry	3	2	4	12	20
Offroad	0	1	1	2	5
Other	0	0	0	0	1
R&C	1	1	3	12	17
Traffic	1	1	6	24	32
Natural+other			6		

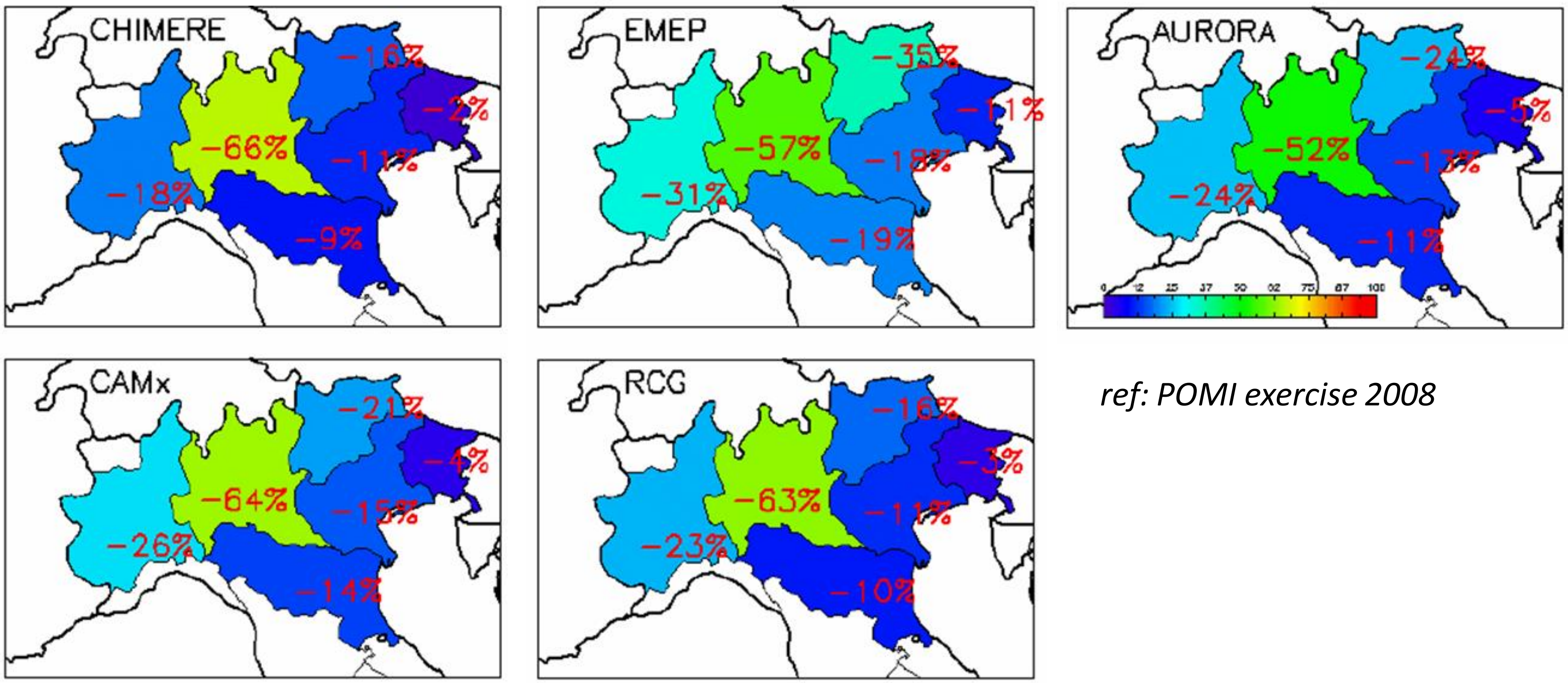
E-reporting: SHERPA



FUA: functional urban areas

Variability of Model Results: North of Italy

Percentage reduction of PM10



ref: POMI exercise 2008

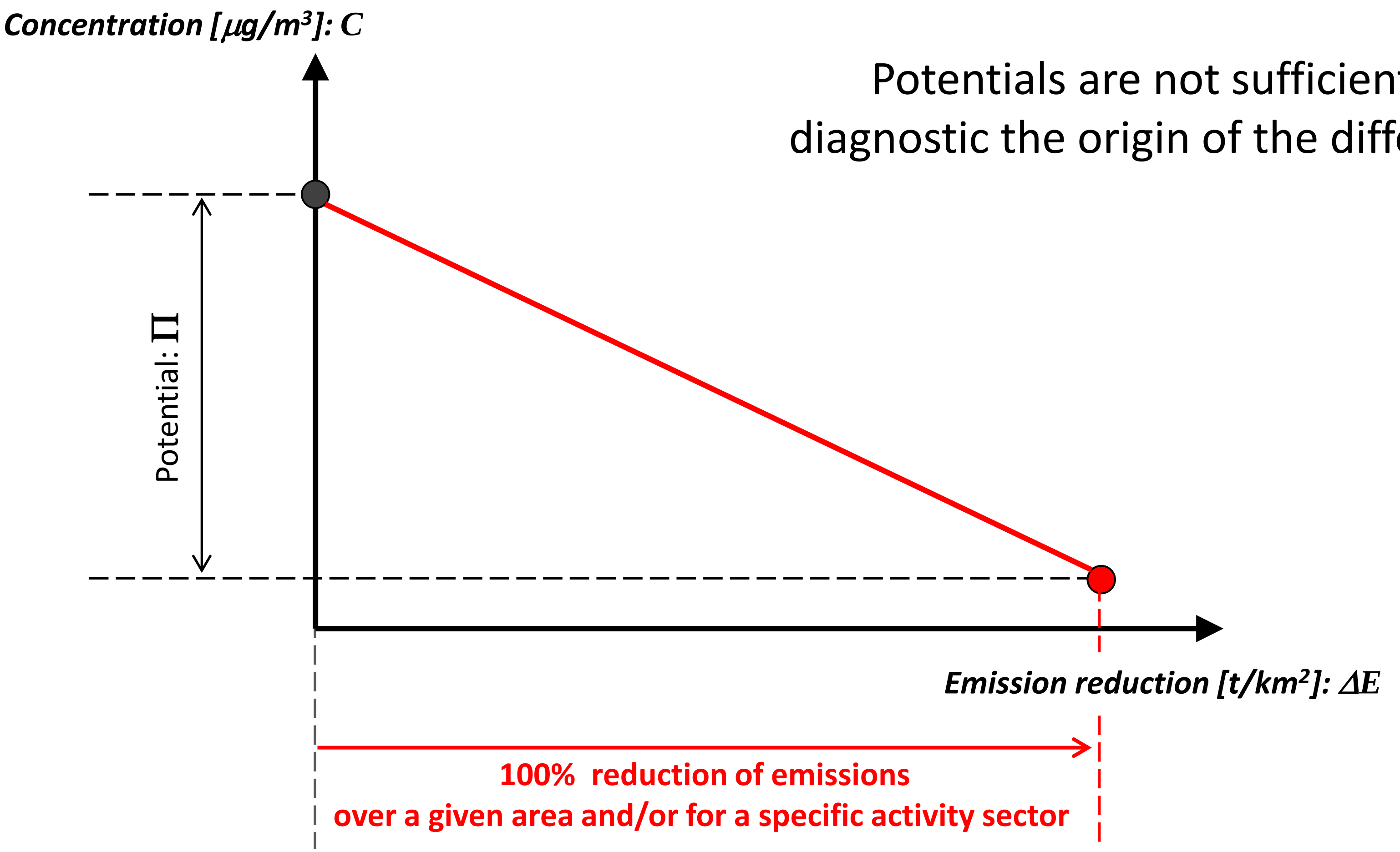
100% emission reduction: ΔC = Potential (Π)

Area — Activity sector

Model Benchmarking: Potentials

100% emission reduction: ΔC = Potential (Π)

Potentials are not sufficient to diagnostic the origin of the differences



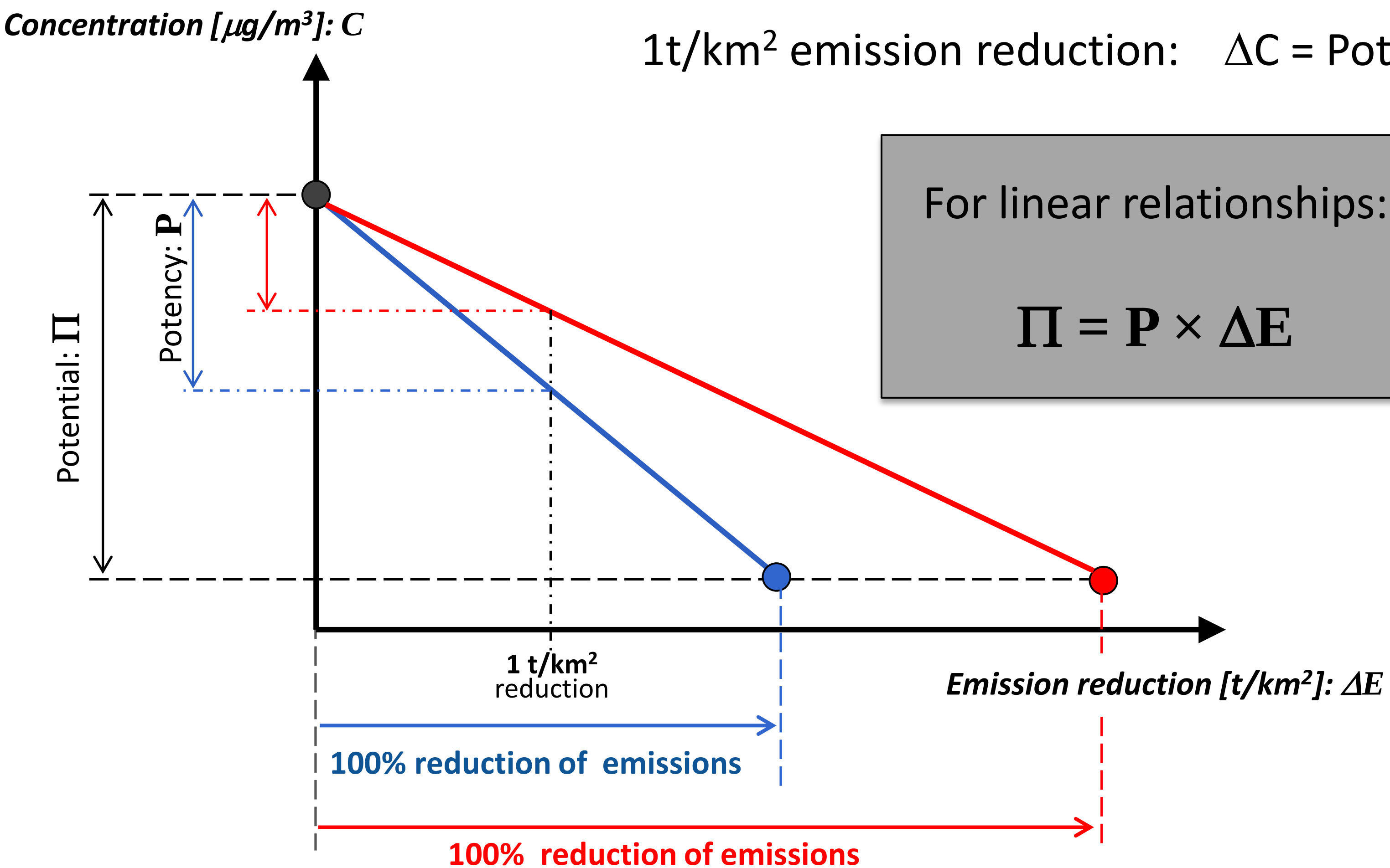
Model Benchmarking: Potentials & Potencies

100% emission reduction: ΔC = Potential (Π)

1t/km^2 emission reduction: ΔC = Potency $(\mathbf{P})$

For linear relationships:

$$\Pi = \mathbf{P} \times \Delta\mathbf{E}$$



Model Benchmarking: Potencies & potentials

The benchmarking of a model system (Emission + Air Quality models) in dynamic mode involves the verification of emissions and of two indicators: Potential and Potency.

$$\Pi = P \times \Delta E$$

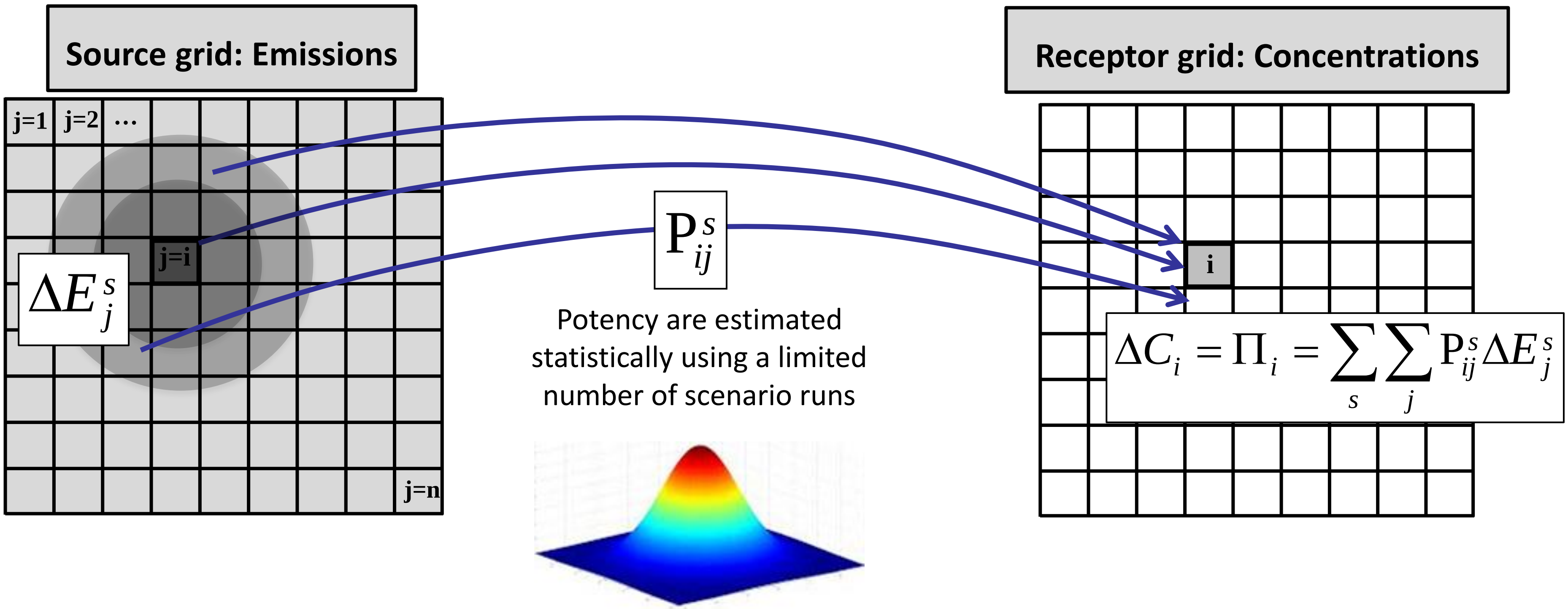
Potentials can be compared with “measurements” (source apportionment)
WG3

Potencies are model specific. They can just be benchmarked against other models.
WG4

Emissions are an input of the models. They can just be benchmarked against other emission dataset.
WG2

Model Benchmarking: SHERPA

SHERPA estimate statistically **potencies** in order to calculate **potentials** in every grid cell using the **emissions** in every cells.

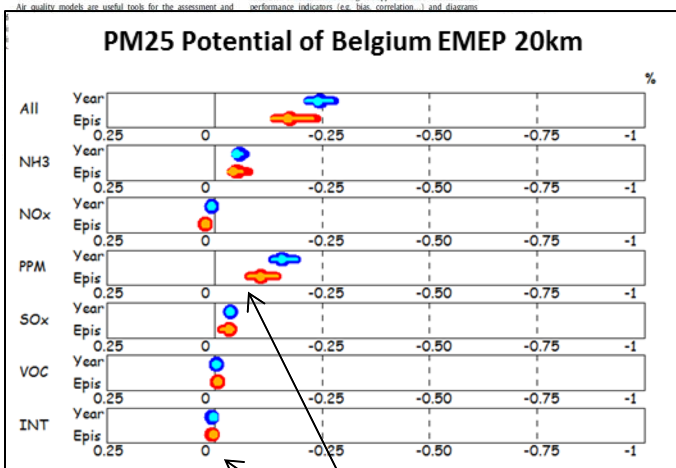


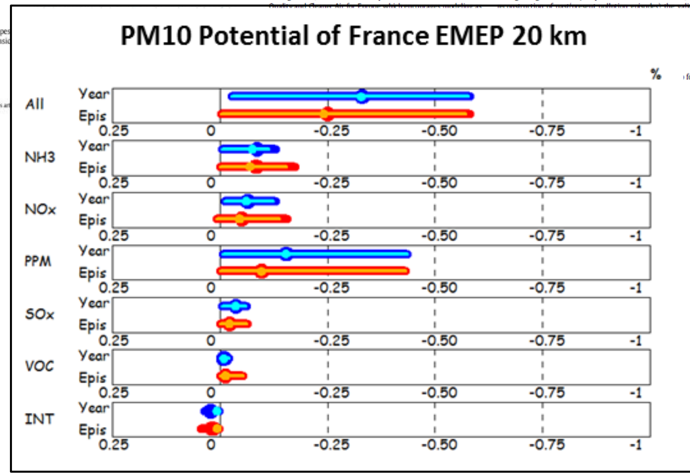
SHERPA calculates potencies and potentials which are specific to the CTM used to trained its Source/Receptor relationships: SHERPA can be used as **benchmarking tool** able to compare different models in dynamic mode

Status: Indicators estimation

Use the indicators to test dynamic behavior:

- in term of location
- across historical model versions
- in term of resolution
- across different models

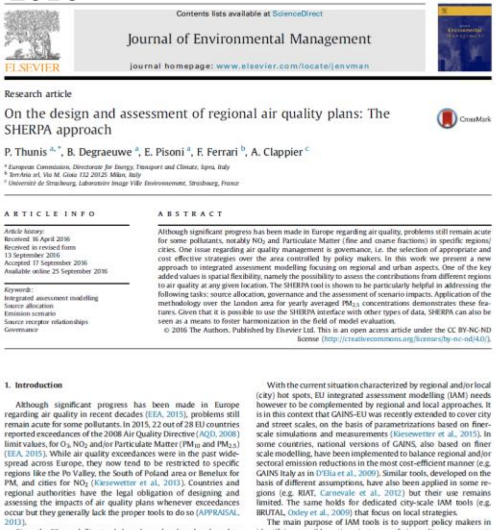




low level of non linearity

Status: SHERPA improvement

2016

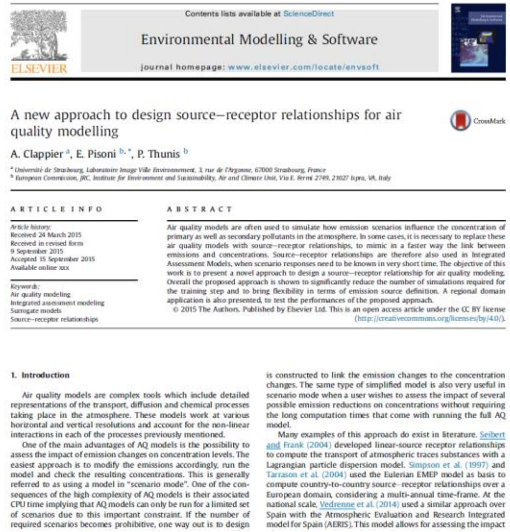

Journal of Environmental Management

Research article

On the design and assessment of regional air quality plans: The SHERPA approach

P. Thunis, B. Degraeuwe, E. Pisoni, F. Ferrari, A. Clappier

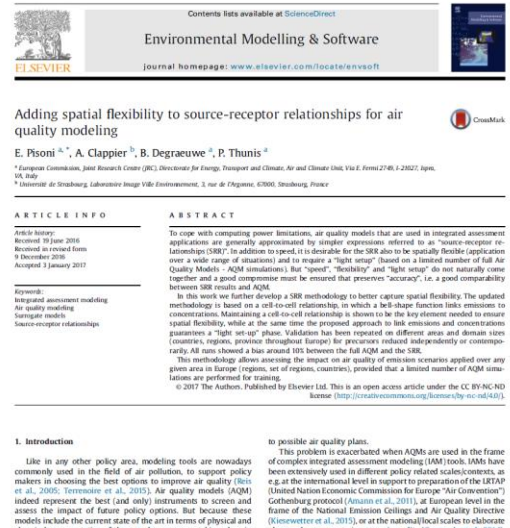
2015


Environmental Modelling & Software

A new approach to design source–receptor relationships for air quality modelling

A. Clappier, E. Pisoni, P. Thunis

2017


Environmental Modelling & Software

Adding spatial flexibility to source-receptor relationships for air quality modeling

E. Pisoni, A. Clappier, B. Degraeuwe, P. Thunis

A new version of SHERPA will available at the end of the month:

- improvement of SRR
- E-reporting

Roadmap: WG4

- Support the e-reporting process.

- Use SHERPA as a benchmarking tool for models and emission inventories.

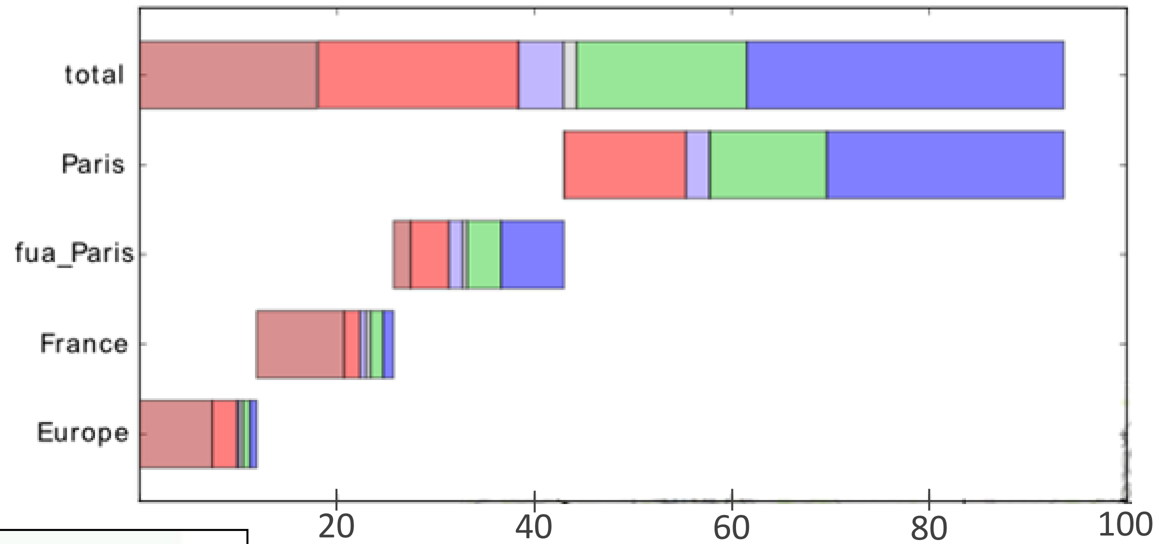
- Develop methodologies to quantify the emission contributions from each spatial scales (urban, regional, national, European and extra-European) in order to validate air quality model estimations.

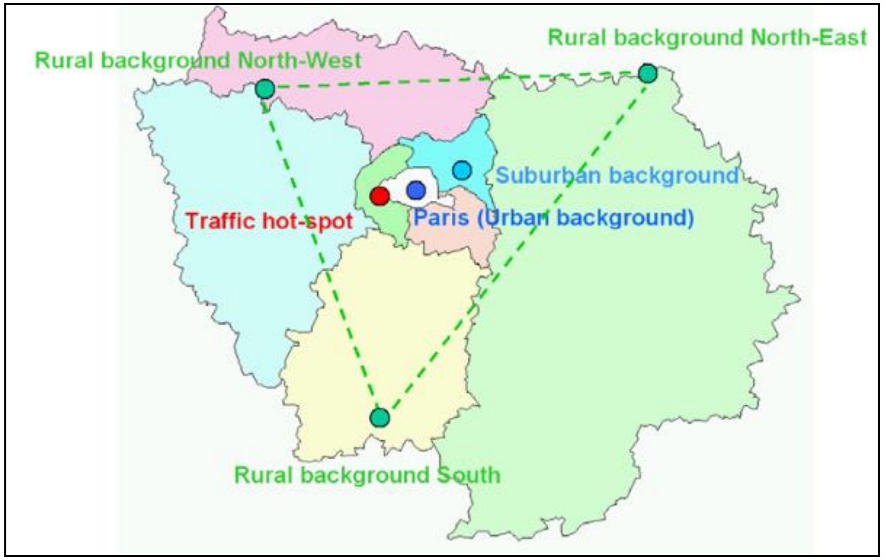
- To provide overall support to model users (SHERPA, air quality models...) in their planning activities (measures, model scenarios).

- Contribute to the harmonization of the specifications used to classify abatement measures that can be selected at the regional/local scales.

Roadmap: interaction WG4-WG3

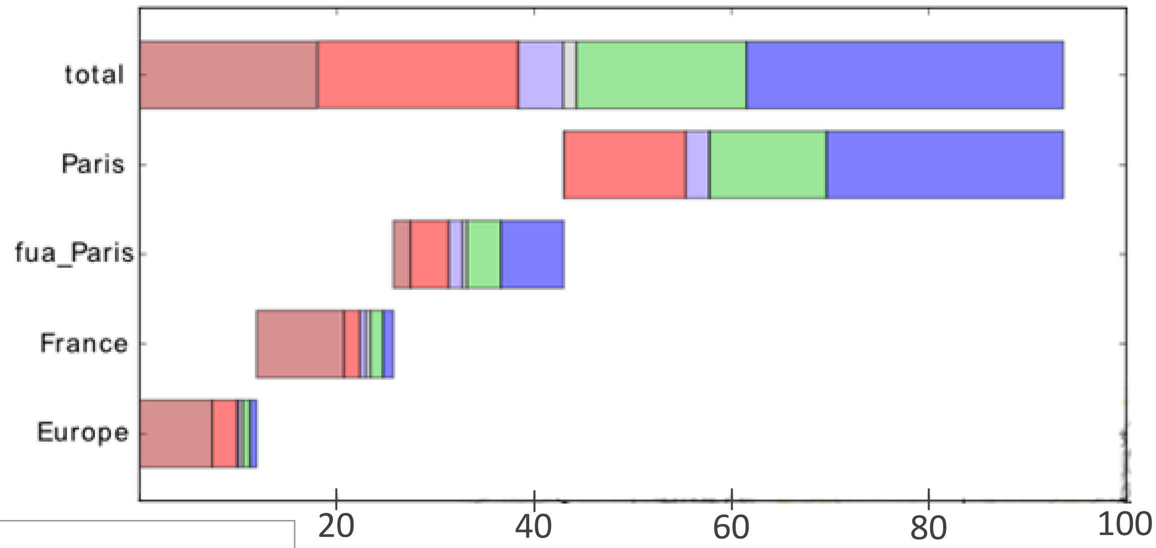
Spatial Source Apportionment

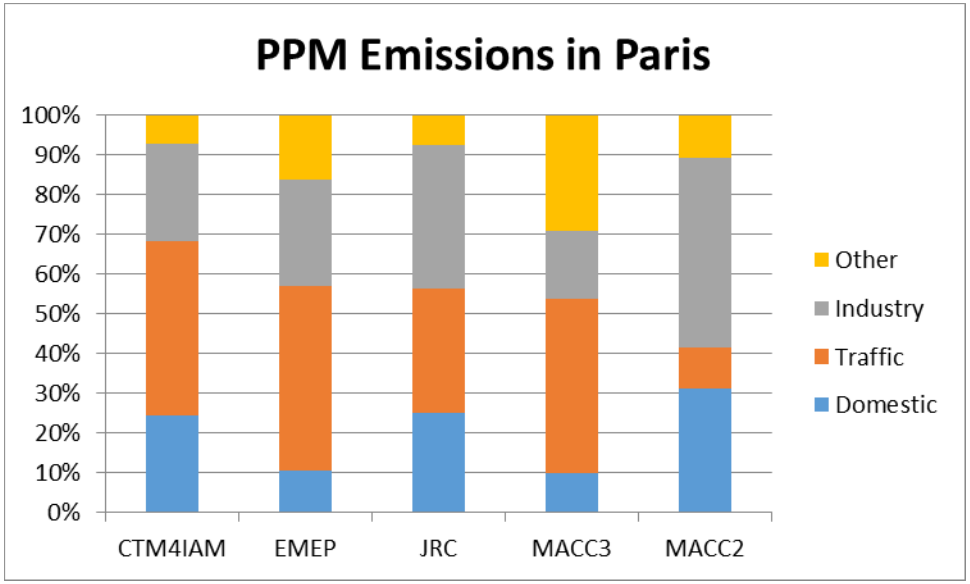




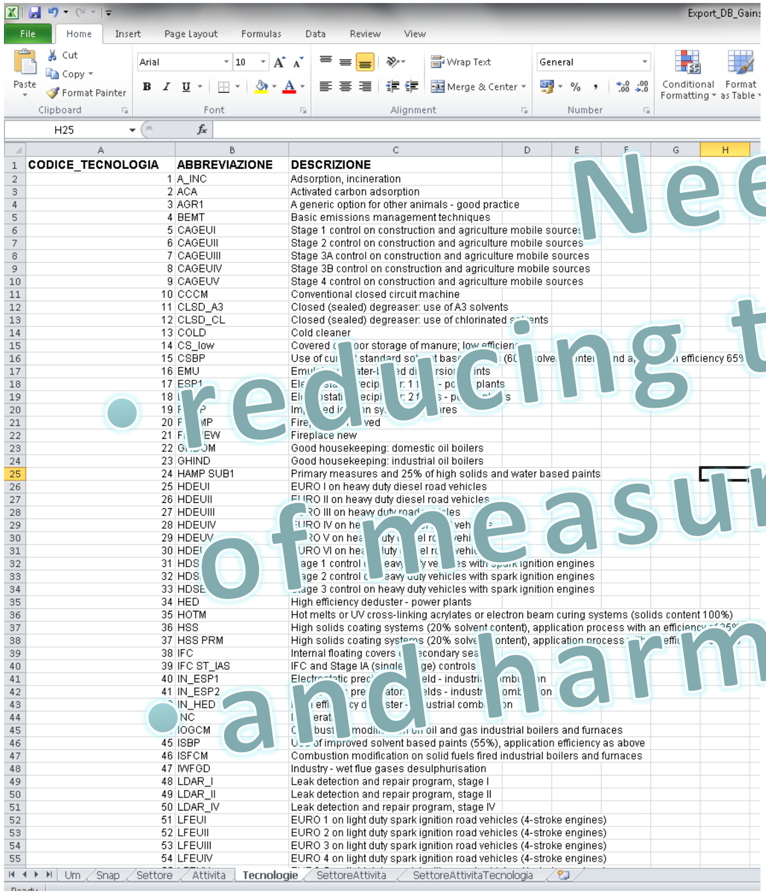
Roadmap: interaction WG4-WG2

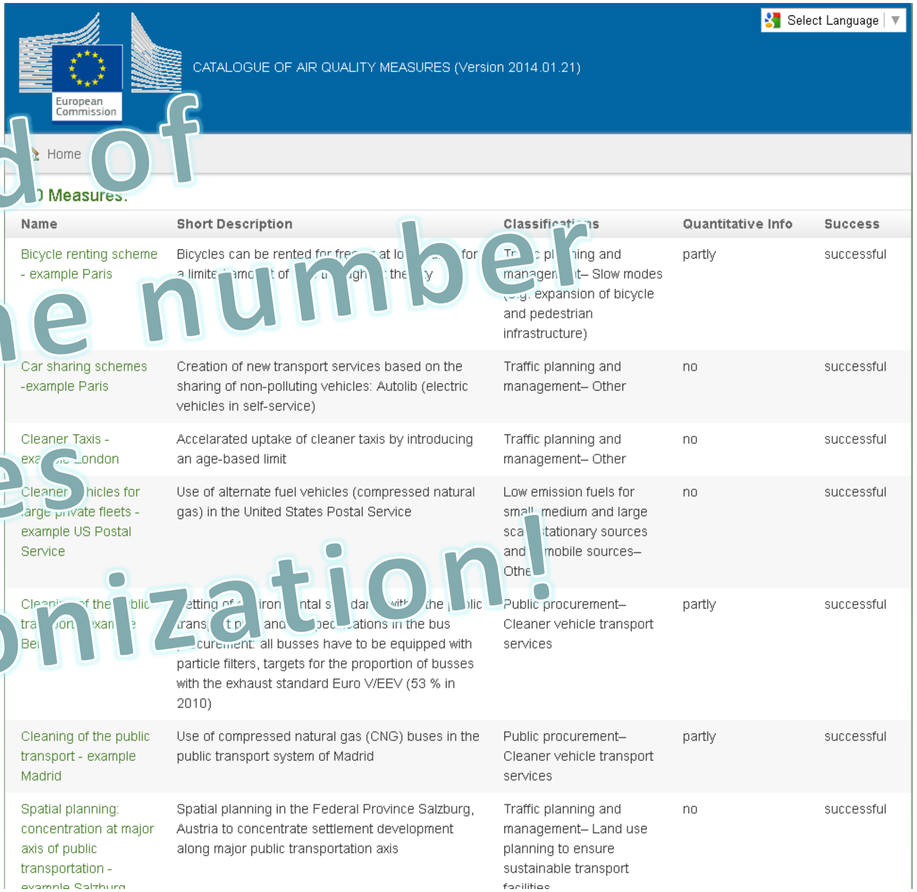
Emissions-concentrations: SRR





Last meeting in June…



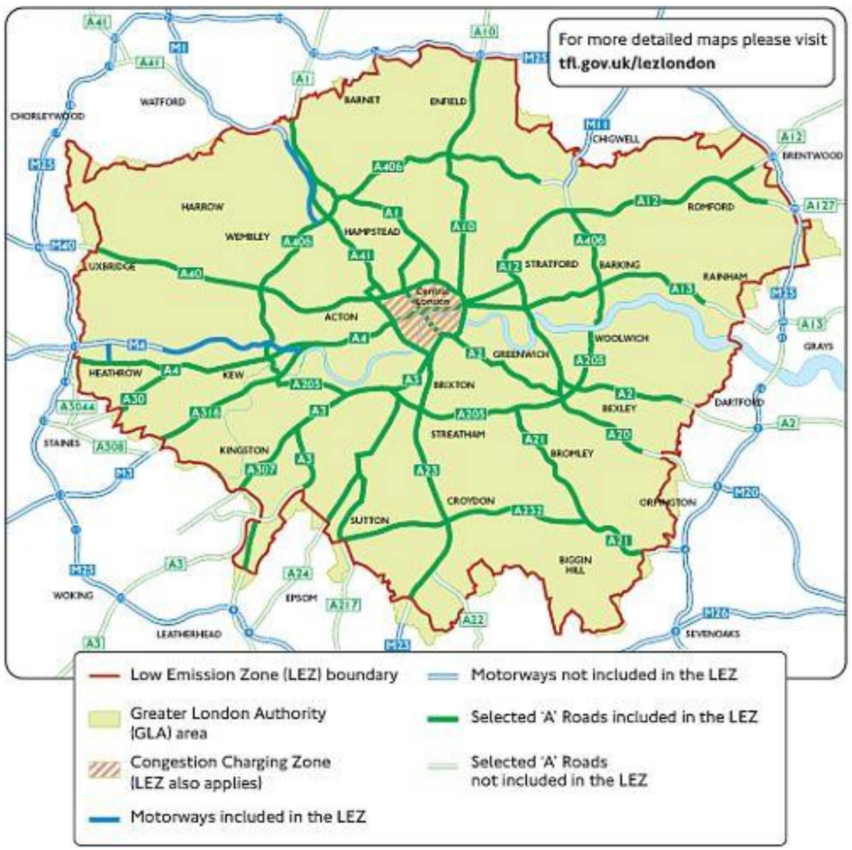


- Need of reducing the number of measures
- and harmonization!

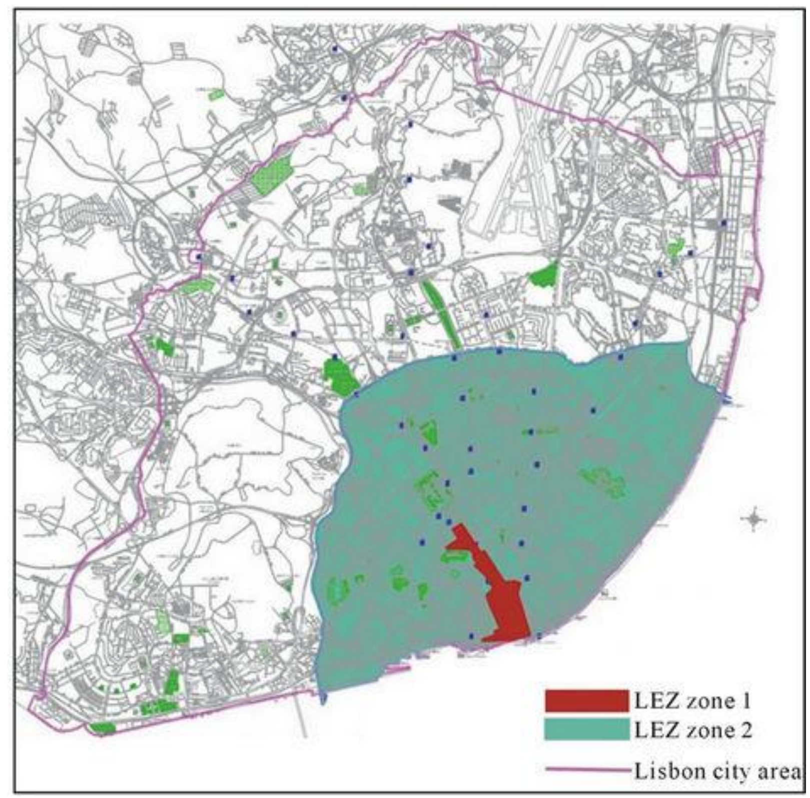
Why is there a need for harmonization?

Example: Low Emission Zone

In LONDON



In LISBON



Why there is a need of harmonization?

measures → **ΔE** → **ΔC**

IF MEASURES ARE HARMONIZED…

In terms of:

- Characteristics
- Format
- Dimensions
- Pollutants
- …

→

EMISSIONS WILL BE HARMONIZED

emission reduction will be similar and possible to estimate with accuracy

→

SHERPA TOOL

can then be used properly and successfully (only depending on validation – WG3)

Questions

Is there a need for continued benchmarking?

How can we best support plans & programs?

The measure database: A useful step forward?

Heel hartelijk bedankt