

WG2

Summary and recommendations for the next workplan

FAIRMODE Technical Meeting
27-29 June 2016, Zagreb, Croatia

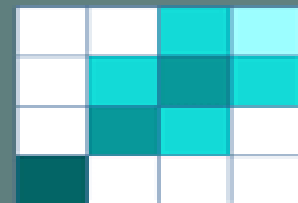
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¹ Barcelona Supercomputing Center - Centro Nacional de Supercomputación, Earth Sciences Department, Barcelona, Spain.

FAIRMODE

Forum for air quality modelling in Europe



Evaluation of emissions

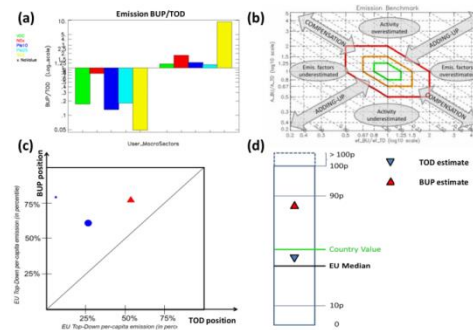
Benchmarking

Best Practice



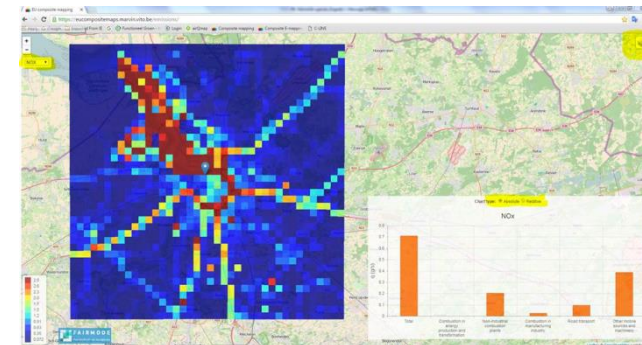
- Mapping (survey)
- Opportunities
- Challenges

△ Emission tool



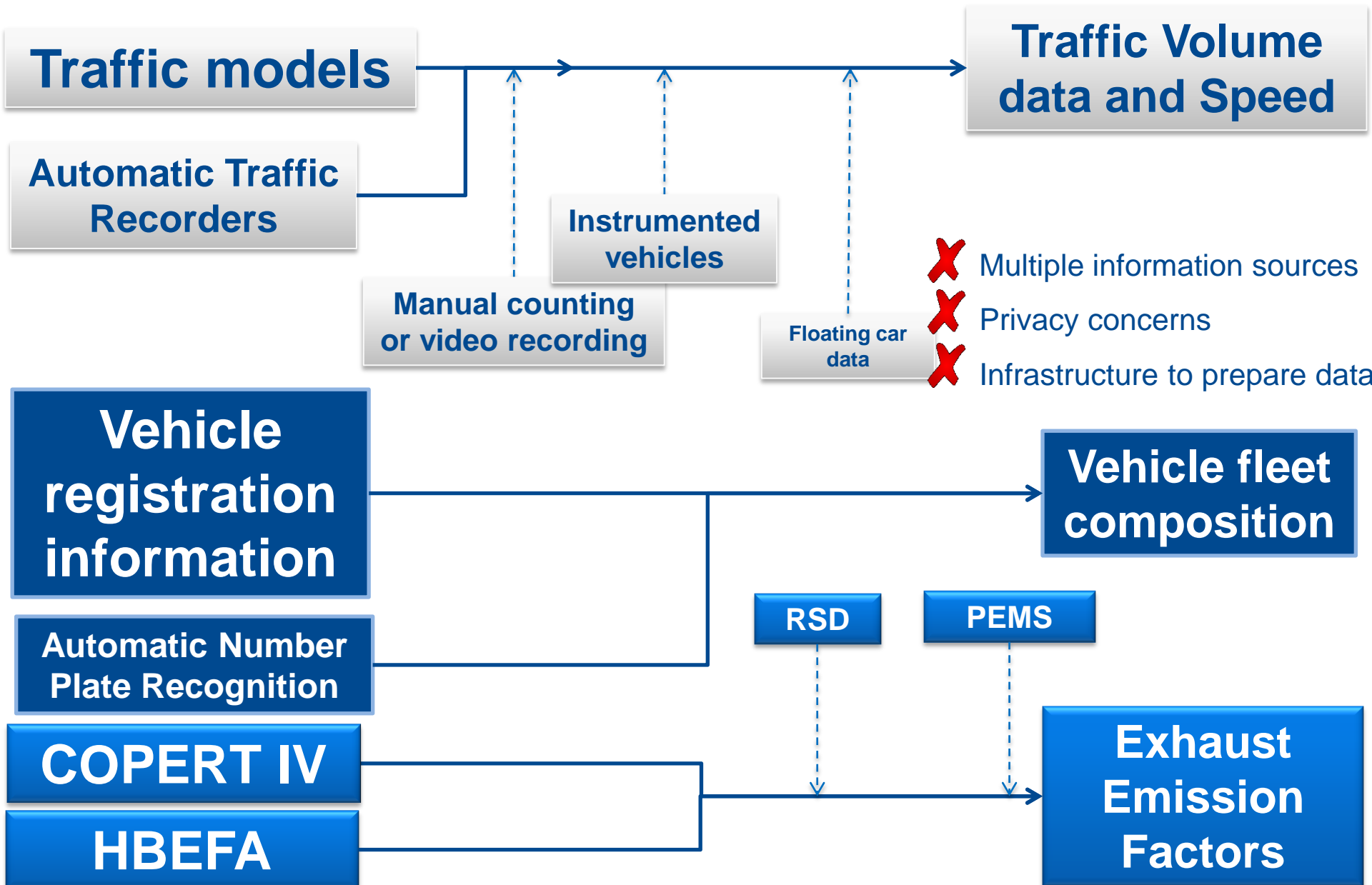
- Training
- Benchmarking Conclusions
- Feedback on the Tool

Composite Emission Map



- Benefits
- Requirements
- Outcomes

Traffic Emissions: Most used approaches

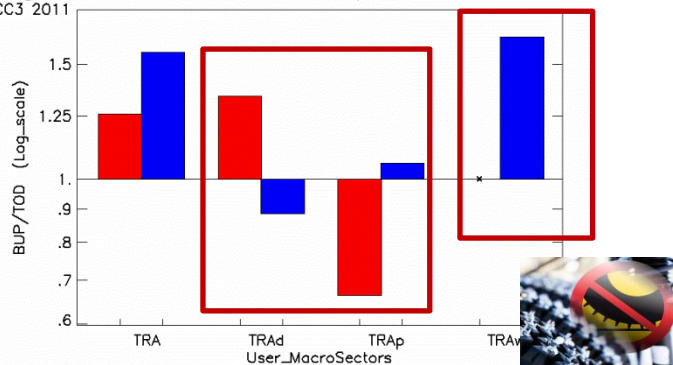


Benchmarking: Bottom Up vs Top Down

- Good progress with the practice of the Δ -tool
- Better understanding of the Diamond Diagram
- Important issues indentified (Oslo, Bergen, Trondheim, Greece, Athens, Stockholm, Madrid, London):
 - **Resuspension** (not included in the National Emission Inventories)
 - **Residential Combustion** (practices/spatial proxies cannot be extrapolated from one country to another)
 - **Other mobile sources** (need for a more disaggregated classification)

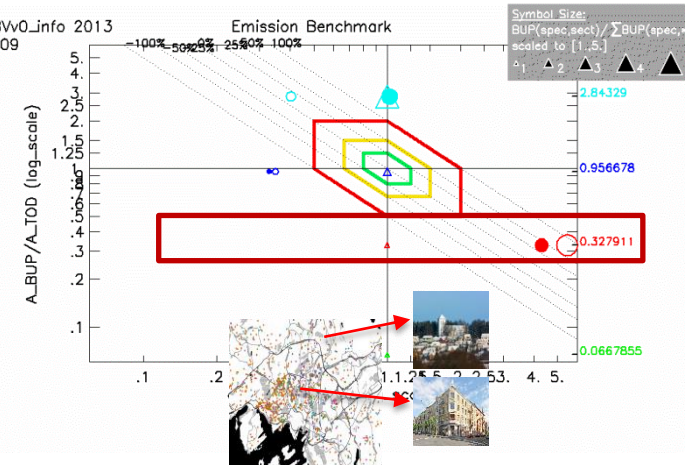
BU_SWE-Region-Stockholm_2013 2013 Emission BUP/TOD
TNO-MACC3 2011

NOx
PM10
x NoValue



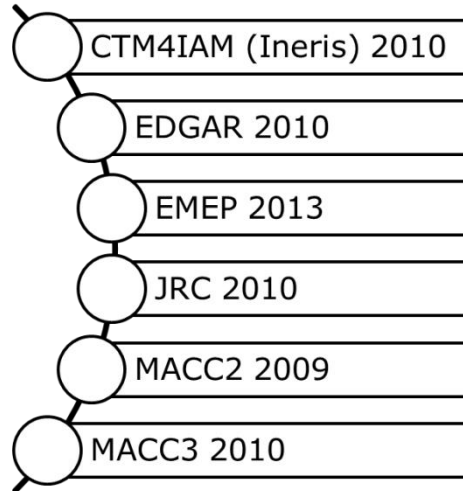
BU_OSLO_NBW0_info 2013
EC4MACS 2009

DOM
IND
OFFROAD
TRA
NOx
PM10
PM25

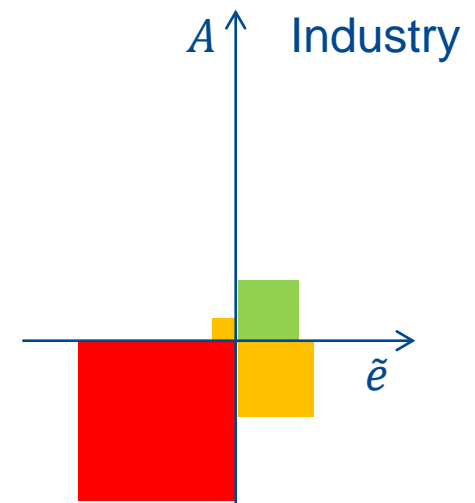
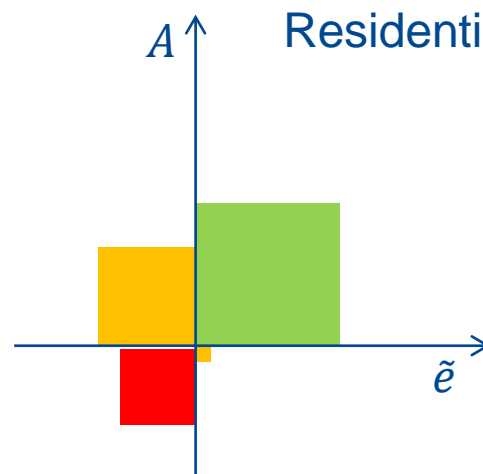
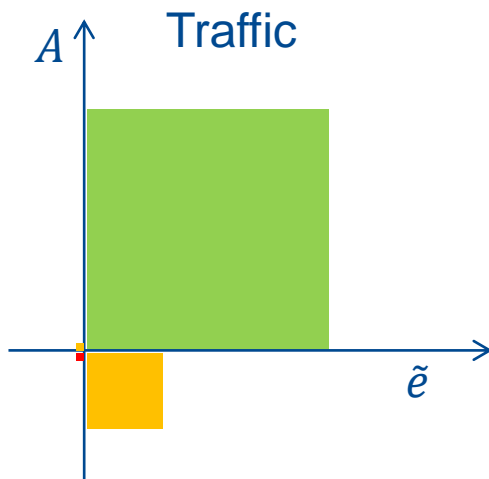


Benchmarking: Top Down vs Top Down

Inventories



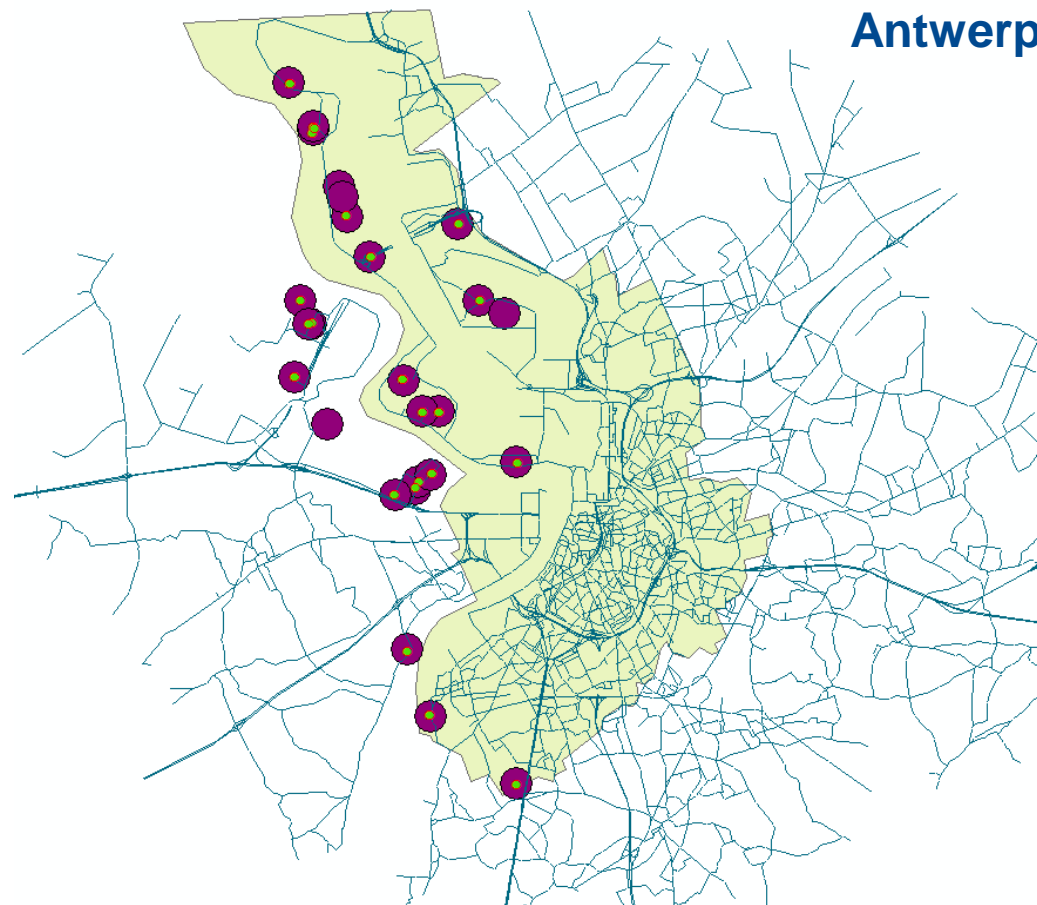
Regions



Recurrent issue → Problem with industry and residential combustion

Antwerp

- E-PRTR database
 - Geographical Location
 - Emissions
- Diffuse industrial emissions (small combustion installations)

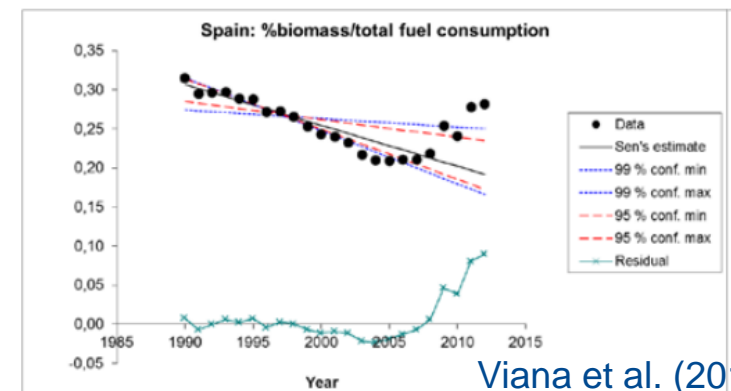
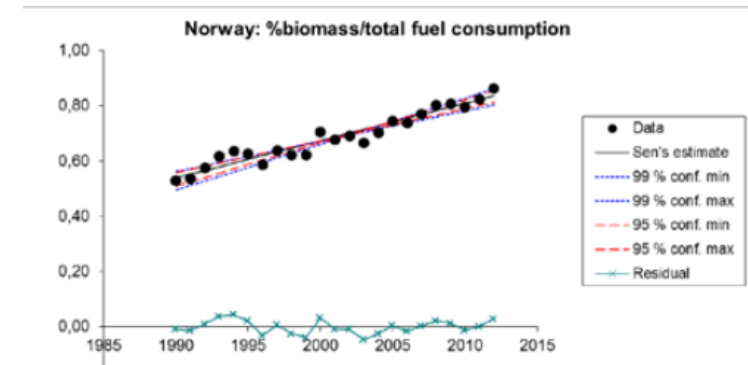
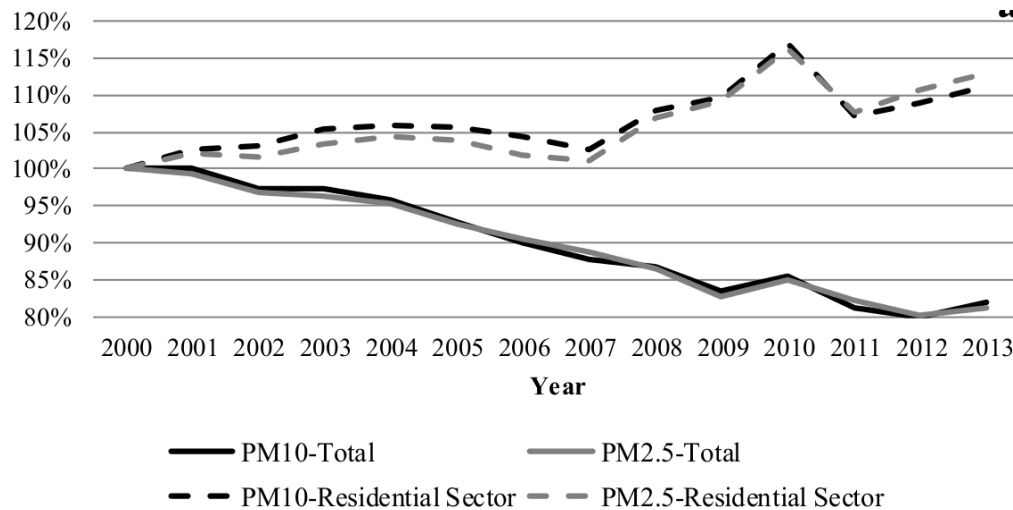


Ton/year	NO _x	PM ₁₀	PM _{2.5}
Local dataset (2012)	12488	425	219
CLRTAP (2010)	12589	0	0
E-PRTR (2012)	11422	106	0

Use of wood and other biomass in residential sector **enhanced by:**

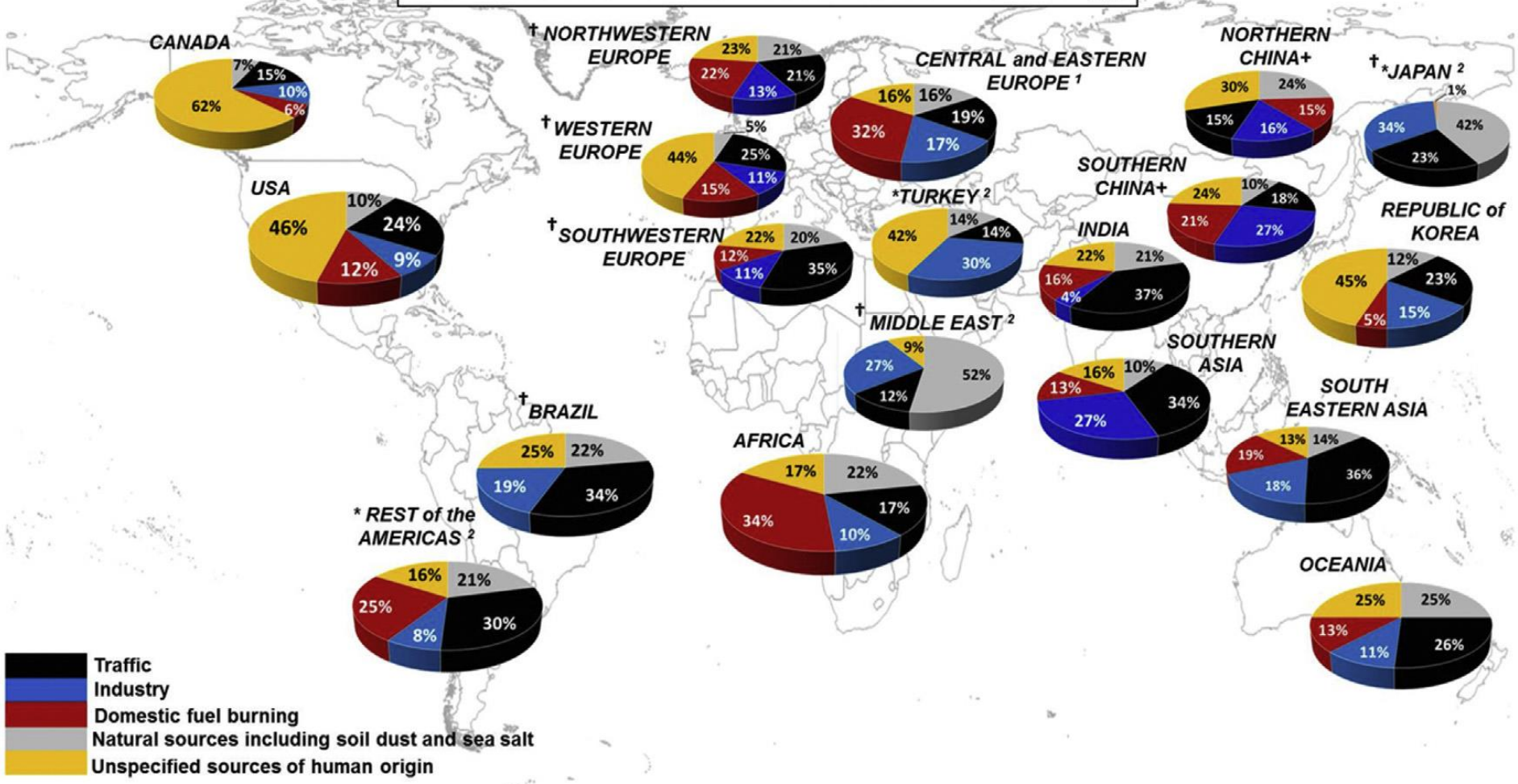
- **National GHG strategies** and targets for renewable energy
- Increase during the **economic crisis** of other fuel prices (e.g. fuel oil)

Lack of regulation of small combustion appliances (**Eco-design Directive**)



Contributions to cities' ambient particulate matter

Pollution Source contributions to Total PM_{2.5}

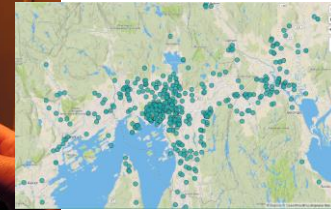
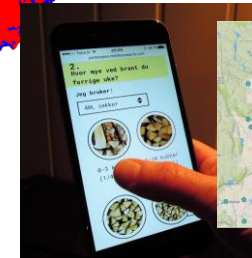
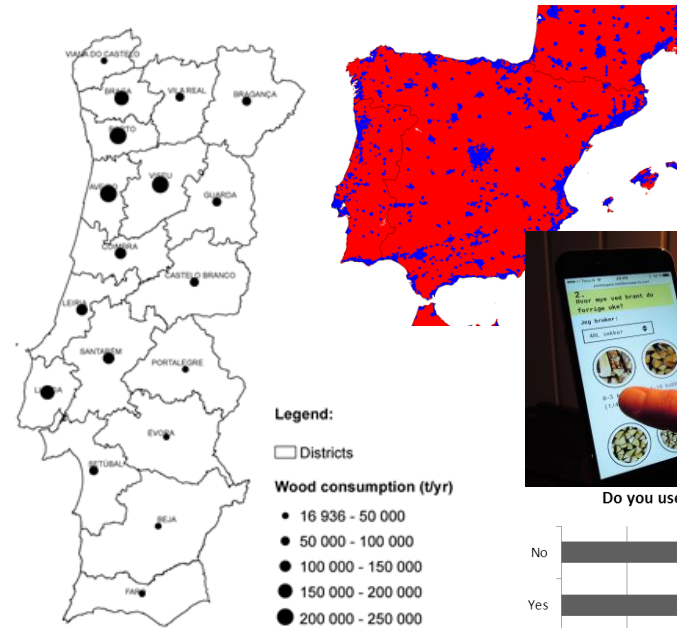


Karagulian et al. (2015)

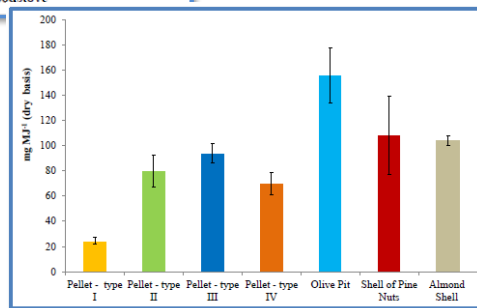
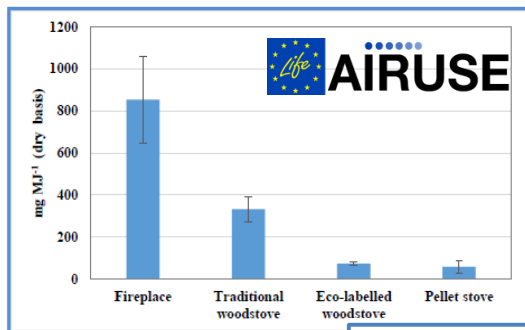
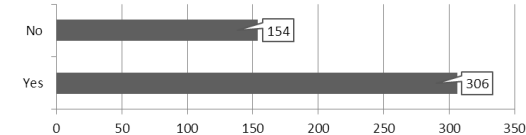
Residential Combustion: Activity Data and Emission Factors

Activity data:

- Survey questionnaires
- Population maps (rural/urban)
- Crowdsourcing, web crawling, image recognition



Do you use wood burning for residential heating?



Emission Factors:

- Type of appliance (open fireplace, traditional stove)
- Type of solid fuel (pellets, olive pit)



European
Commission

Assessment



**Fairmode
Practice
Wheel**

Planning



Emissions

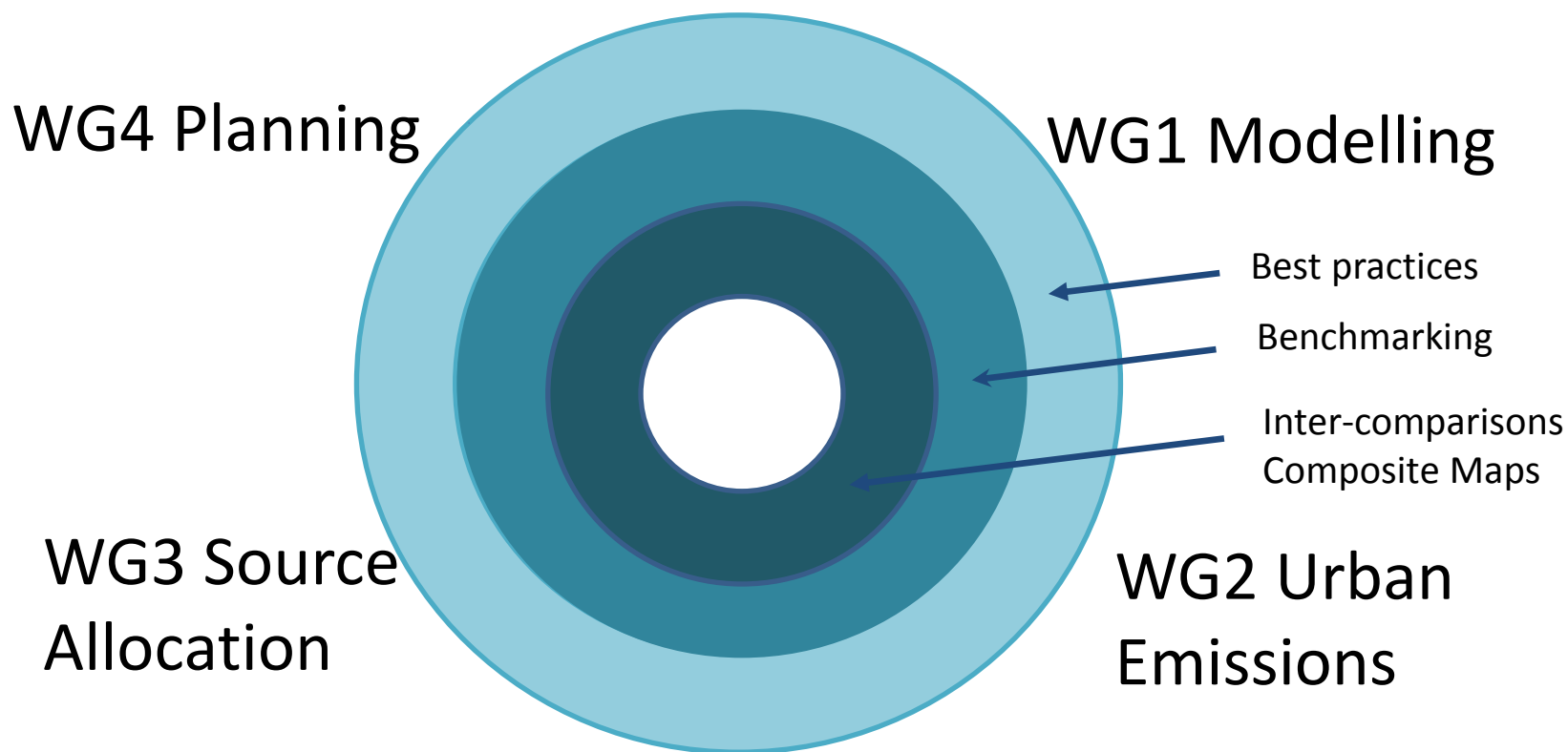


**Source
apportionment**



Research
Centre

"THE FAIRMODE KNOWLEDGE WHEEL"

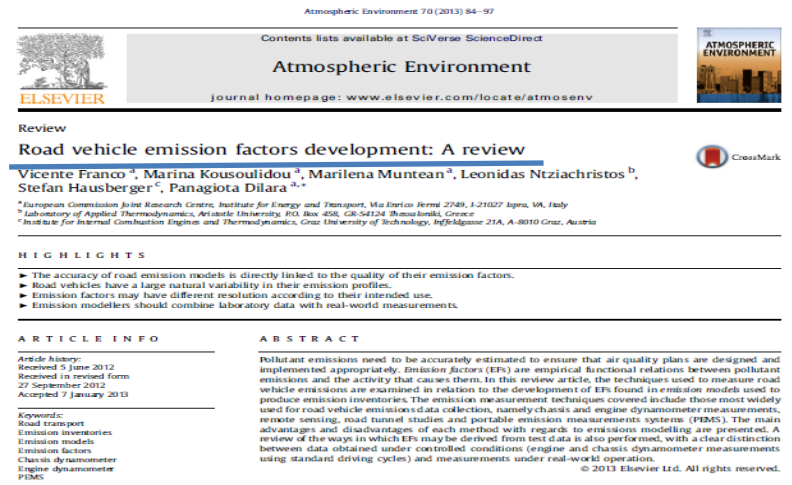


Best practices 2017-2019

Possible focus for WG2 emission work

- Resuspension
- Residential combustion - Wood burning
- Small combustion and industry
- Agriculture

Priorities in terms of expertise or relevance to Plans&Programs work



What should FAIRMODE do in terms of best practices?

- Promote best practices, how?
- Publications?
- Literature reviews?
- Experience exchanges?
- JRC reports?



Benchmarking 2017-2019

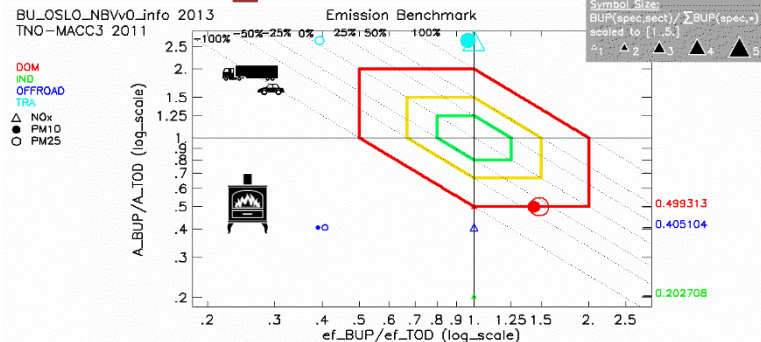
- WG2 goal as a group is to provide local emission information knowledge to urban, regional, national and European assessments

How to involve more people on FAIRMODE emission benchmarking ?

- Promote composite map exercise
- Bilateral group communication – skype meetings
- Training sessions with presentations

- METHOD: Evaluation of Local inventories vs Europeanwide inventories in the Δ -emission benchmarking tool

Oslo – TNO_MACC-III



Composite Emission Mapping Exercise

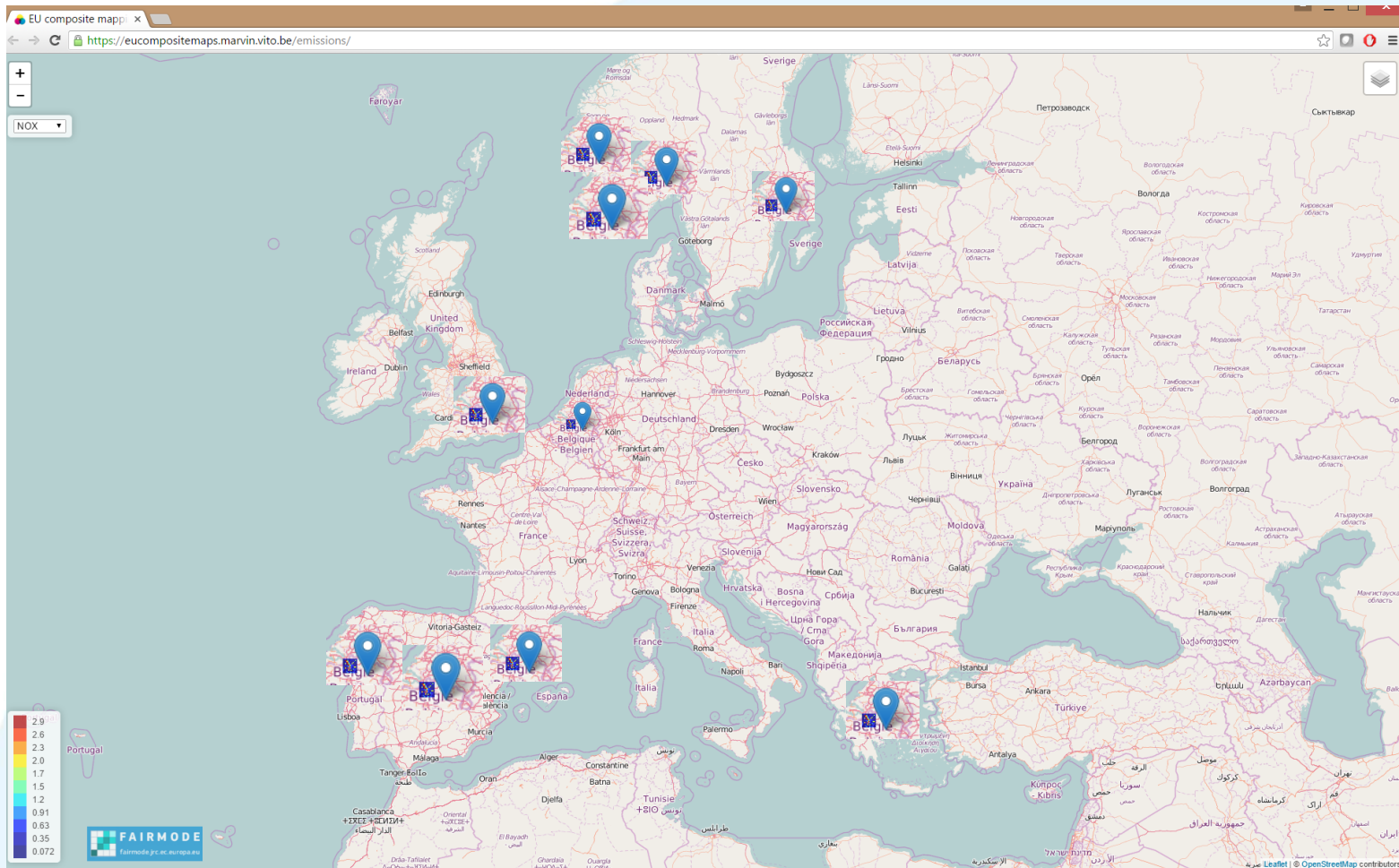
WG2 added value

- ✓ Contribution to the «FAIRMODE Practice Wheel»
 - Assessment of emissions in «National plans & programs»
 - Identification of relevant measures from knowledge on the share of emissions

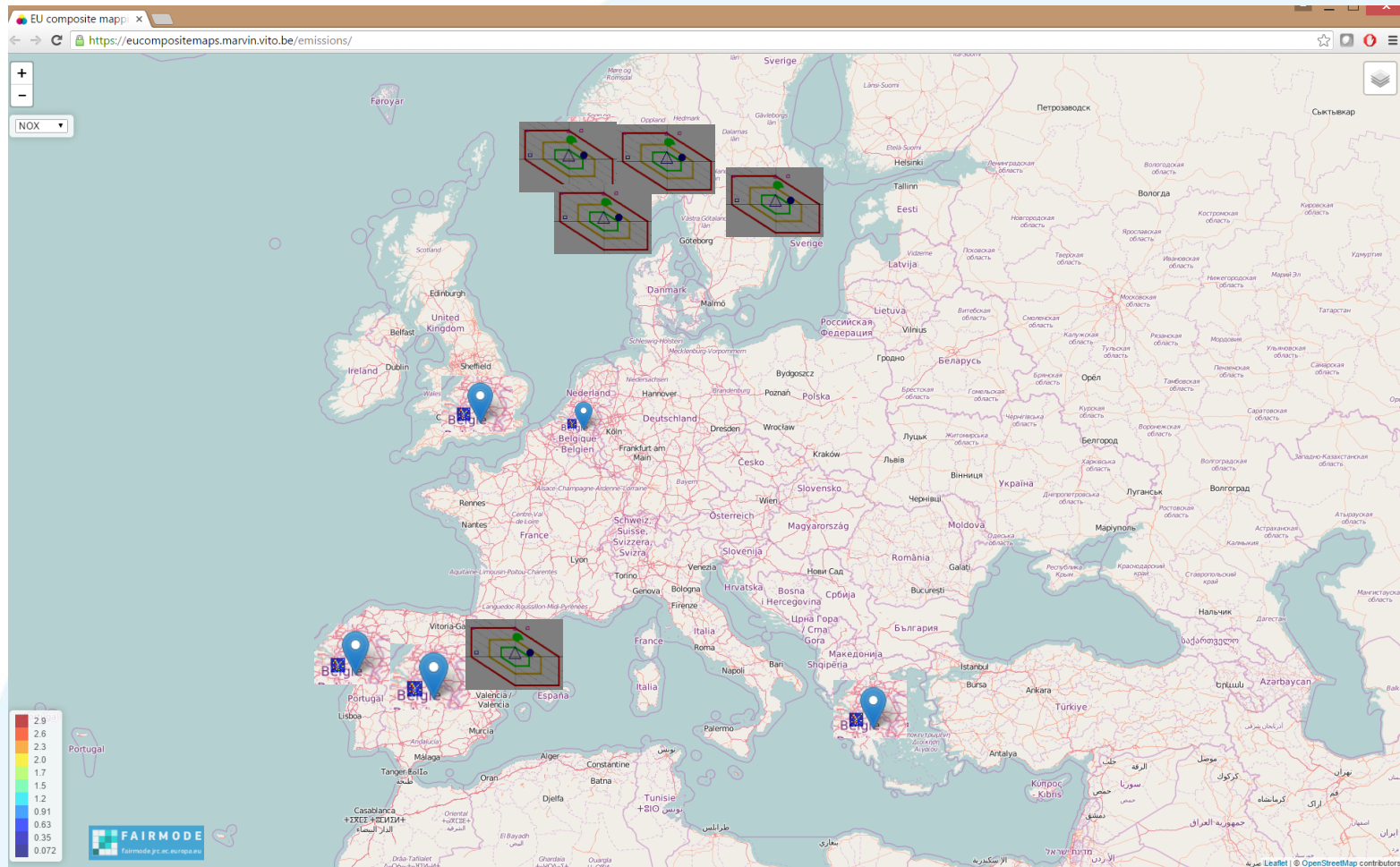
- ✓ WG2 local knowledge can (in time) add to a complete Europe-wide composite map and provide relevant feedback to improve TD inventories from EMEP (regulatory), TFIAM (EC4MACS) and CAMS (TNO-MACC)

- ✓ Emission information can help interpreting CTM results and differences between countries

Composite mapping for emissions



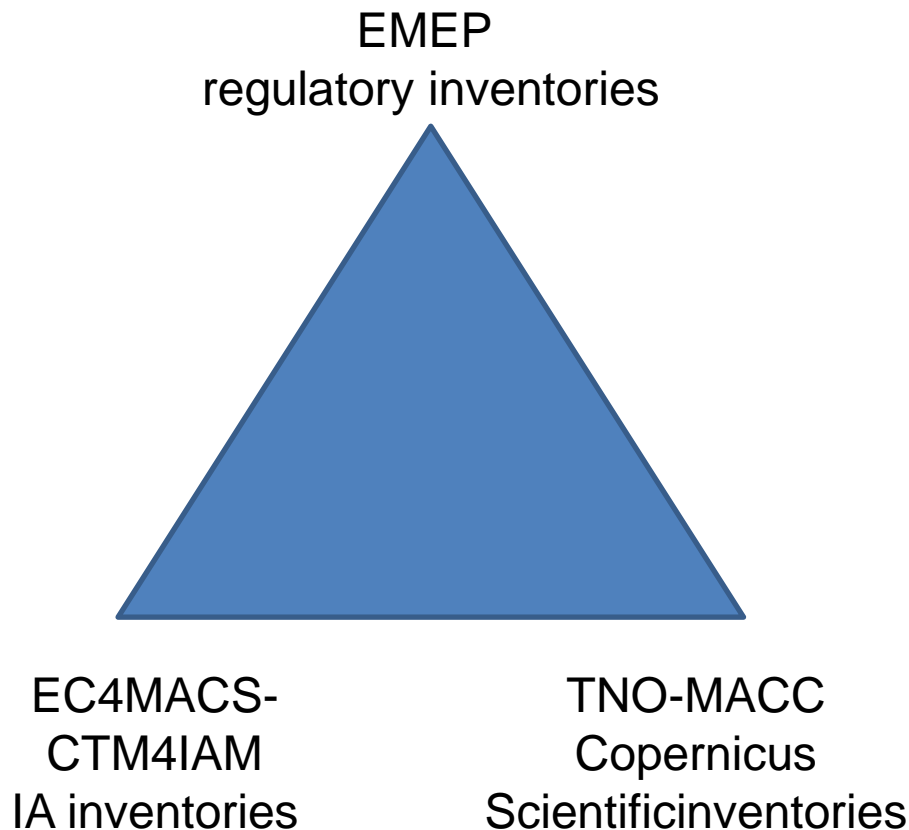
Composite mapping for emissions



FAIRMODE WG2 ADDED VALUE

Diamond diagrams as quality control and feedback to national EU wide TD inventories

Dissemination - I



- Consider a video for training on how to use the tool
- Upload Training presentation on how to interpret the results from the tool
- JRC-reports
- Participation at relevant meeting meeting sfor feedback to EMEP, MACC and E inventory
- GEIA presentation – joint publication

Dissemination - II

- Identification of appropriate fora to report on FAIRMODE benchmarking and competence building capabilities in support for Air quality policies
- GEIA ?
- CCAC ?
- Covenant of Majors ?
- ICLEI ?
- TFEIP, TFIAM...

Save the Date!



The 18th GEIA Conference

*Emissions Science for a Healthy Environment:
The interplay of human versus natural
influences on climate and air quality emissions*

13 – 15 September 2017



University of Hamburg
Max-Planck Institute for Meteorology
Hamburg, Germany

Details available soon at www.geiacenter.org

