



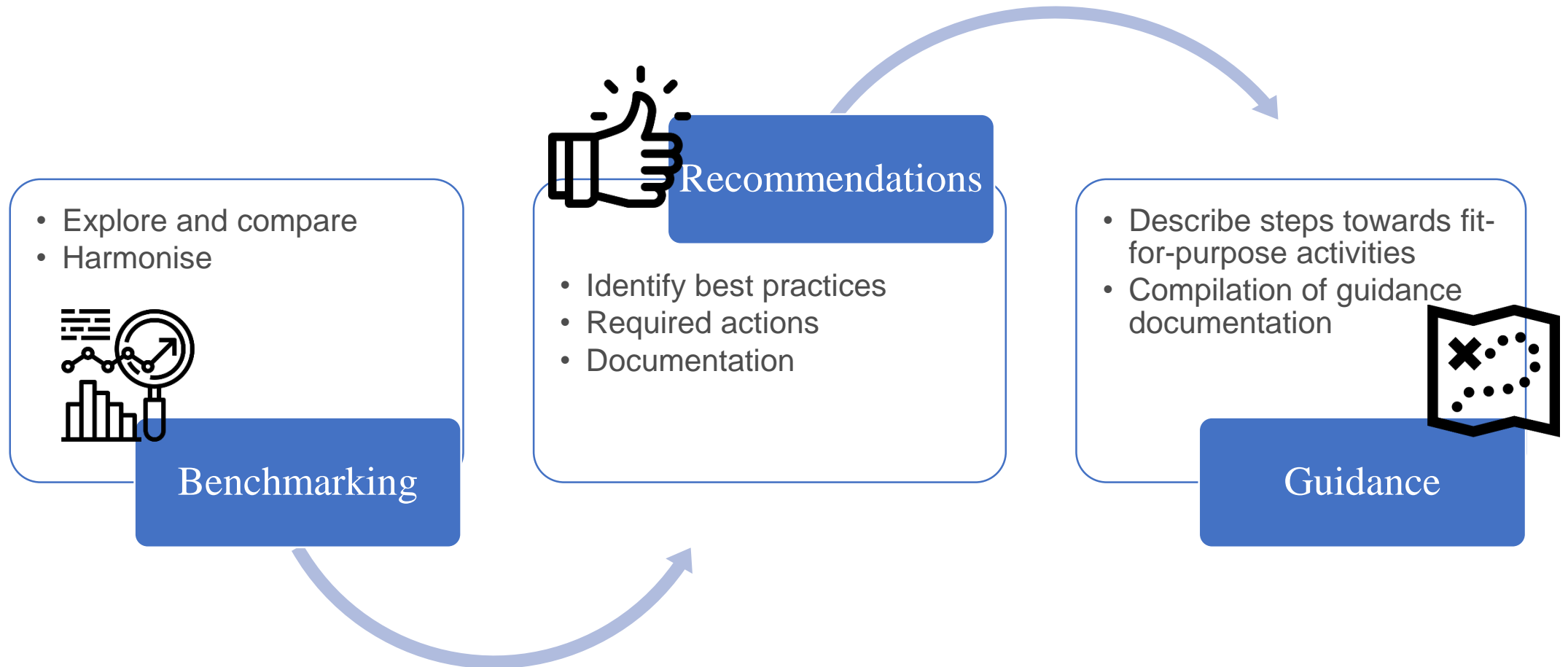
# FAIRMODE Emission Composite Mapping and Metadata requests

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*FAIRMODE Technical Meeting*

*1<sup>st</sup> October 2020*

# FAIRMODE approach - Implementation strategy



Emission benchmarking using  $\Delta$ -tool, Diamond diagrams and the Emission Composite Mapping System (ECM)

Search by name

Year

 ▾

Sector

 ▾

Filter selection to map boundaries

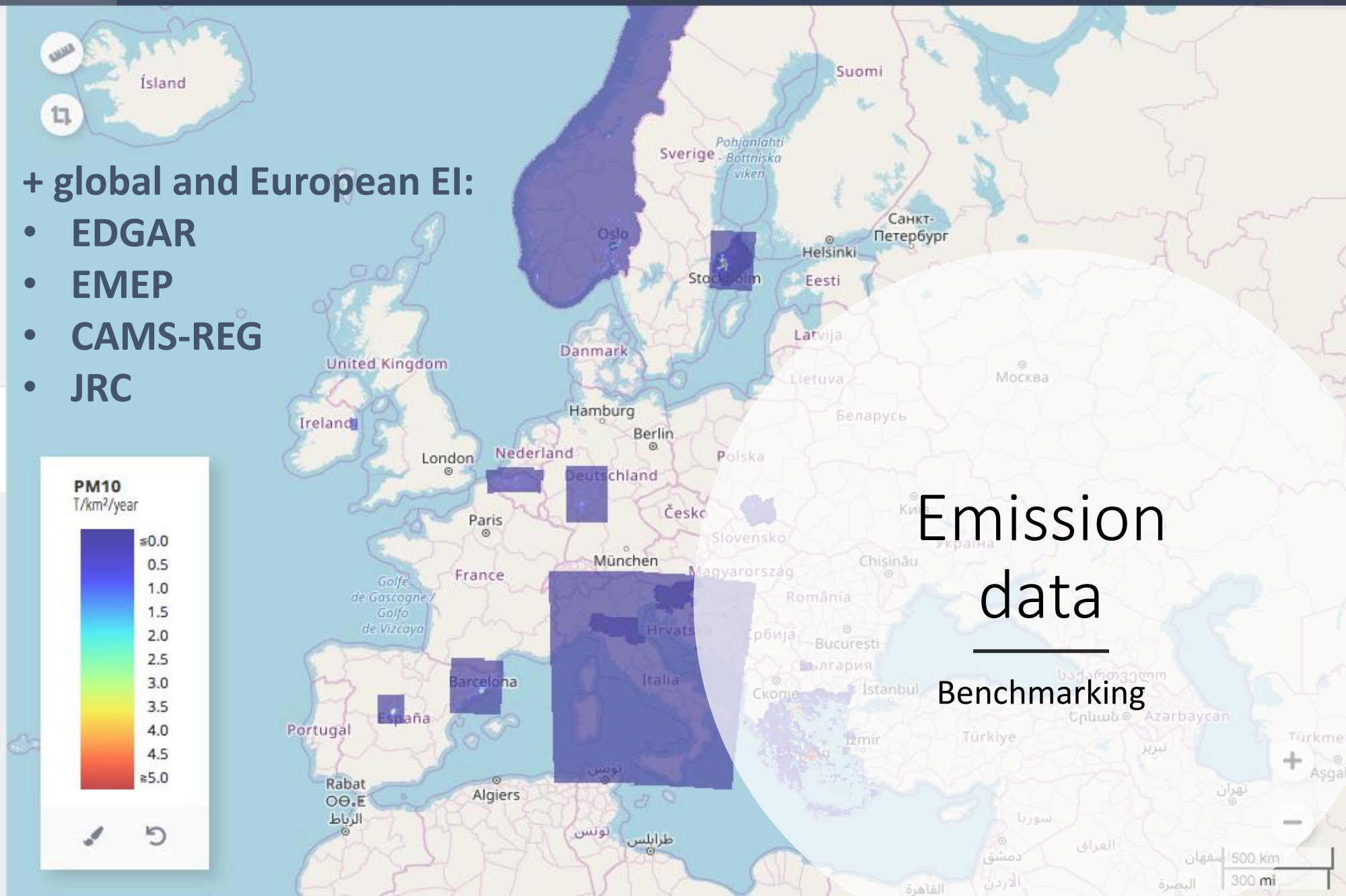
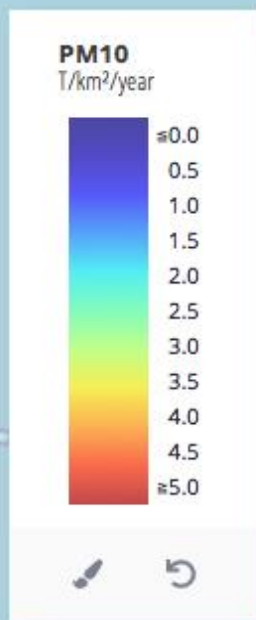
VITO\_2015\_S9\_BE

**ACTIVE LAYERS**

- ARPAE 2013 S7 IT\_EMR
- ARSO 2013 S7 SI
- EPA 2015 S7 IE
- ENEA AMS 2010 S7 IT
- FEIGREGAA NOA 2012 S7 GR
- BSC HERMESv2 2013 S7 ES\_CAT
- BSC HERMESv2 2013 S7 ES\_MAD
- HREIR EKONERG 2015 S7 HR\_Osijek
- HREIR EKONERG 2015 S7 HR\_Rijeka
- HREIR EKONERG 2015 S7 HR\_SIBrod
- HREIR EKONERG 2015 S7 HR\_Split
- HREIR EKONERG 2015 S7 HR\_Zagreb
- IVU 2013 S7 DE\_Hessén
- UM\_GEMAO 2016 S7 PL
- BGR 2014 S7 BG\_Sofia
- SLB 2015 S7 SE
- VITO 2015 S7 BE
- SMHT 2015 S7 SE
- MET\_NORWAY\_2016\_S7\_NO

**+ global and European EI:**

- EDGAR
- EMEP
- CAMS-REG
- JRC





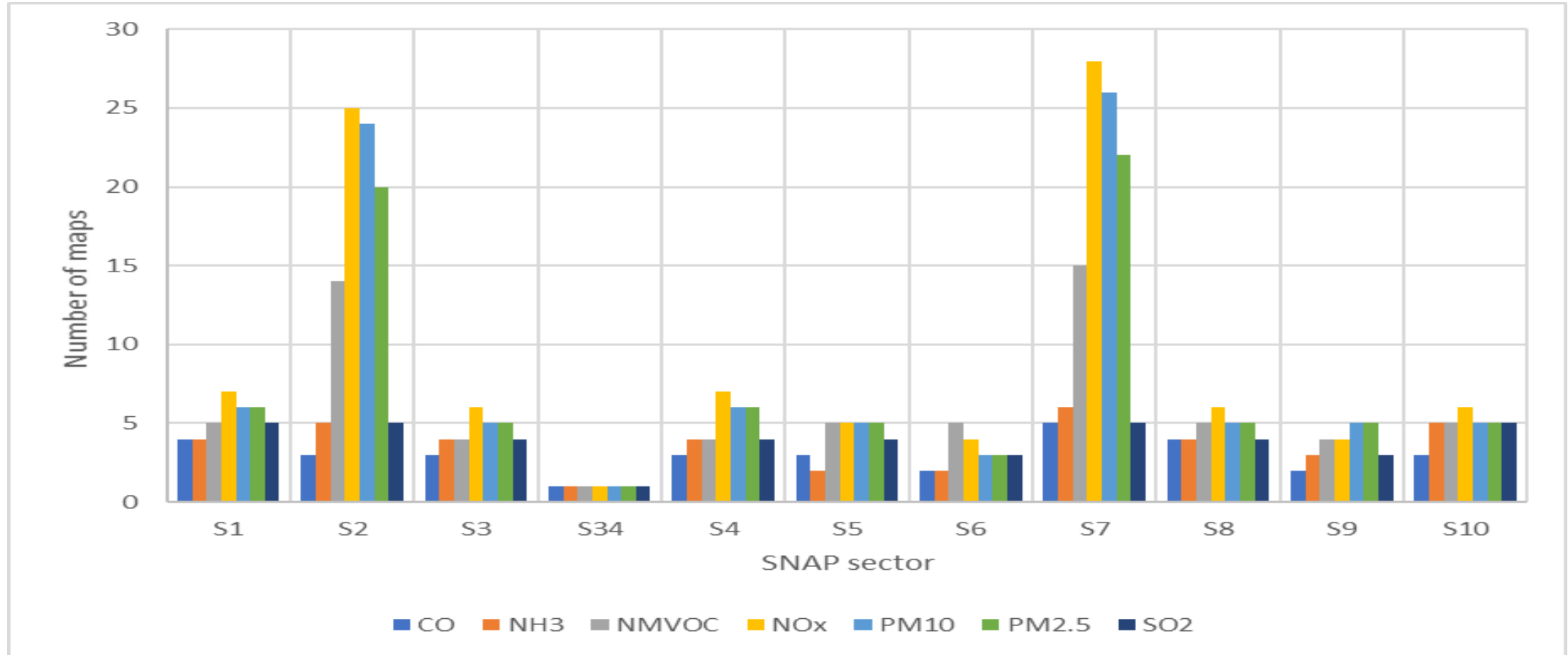
# Emission data currently in ECM

- European-wide emission maps

Name	Version	Available years
<b>CAMS</b>	Reg v11	2015
<b>EDGAR</b>	V4.3.2, V5.0	2012
<b>EMEP</b>		2014, 2015
<b>TNO-MACCII</b>		2011

Country	Country maps	Sub area maps
<b>Belgium</b>	0	56
<b>Bulgaria</b>	8	4
<b>Croatia</b>	0	40
<b>Finland</b>	0	2
<b>Germany</b>	0	7
<b>Greece</b>	0	8
<b>Ireland</b>	0	6
<b>Italy</b>	70	17
<b>Norway</b>	3	0
<b>Poland</b>	0	56
<b>Slovenia</b>	70	0
<b>Spain</b>	0	14
<b>Sweden</b>	4	2
<b>Europe</b>	73	0
<b>Global</b>	16	0

# Emission data per sector currently in ECM



□ Focus on SNAP Sectors 2 and 7 and NOx and PM pollutant components

# Emission estimation approach currently in ECM

Estimation approach	Number of maps (all)	Number of maps (minus Europe/global)
<b>“Bottom-Up”</b>	224	216
<b>Downscaling</b>	2	2
<b>Inverse Modelling</b>	12	12
<b>“Top-Down”</b>	216	135

- ❑ These results indicates that the documentation of emission methodologies in ECM is probably misleading



Search by name

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 ▾

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 ▾

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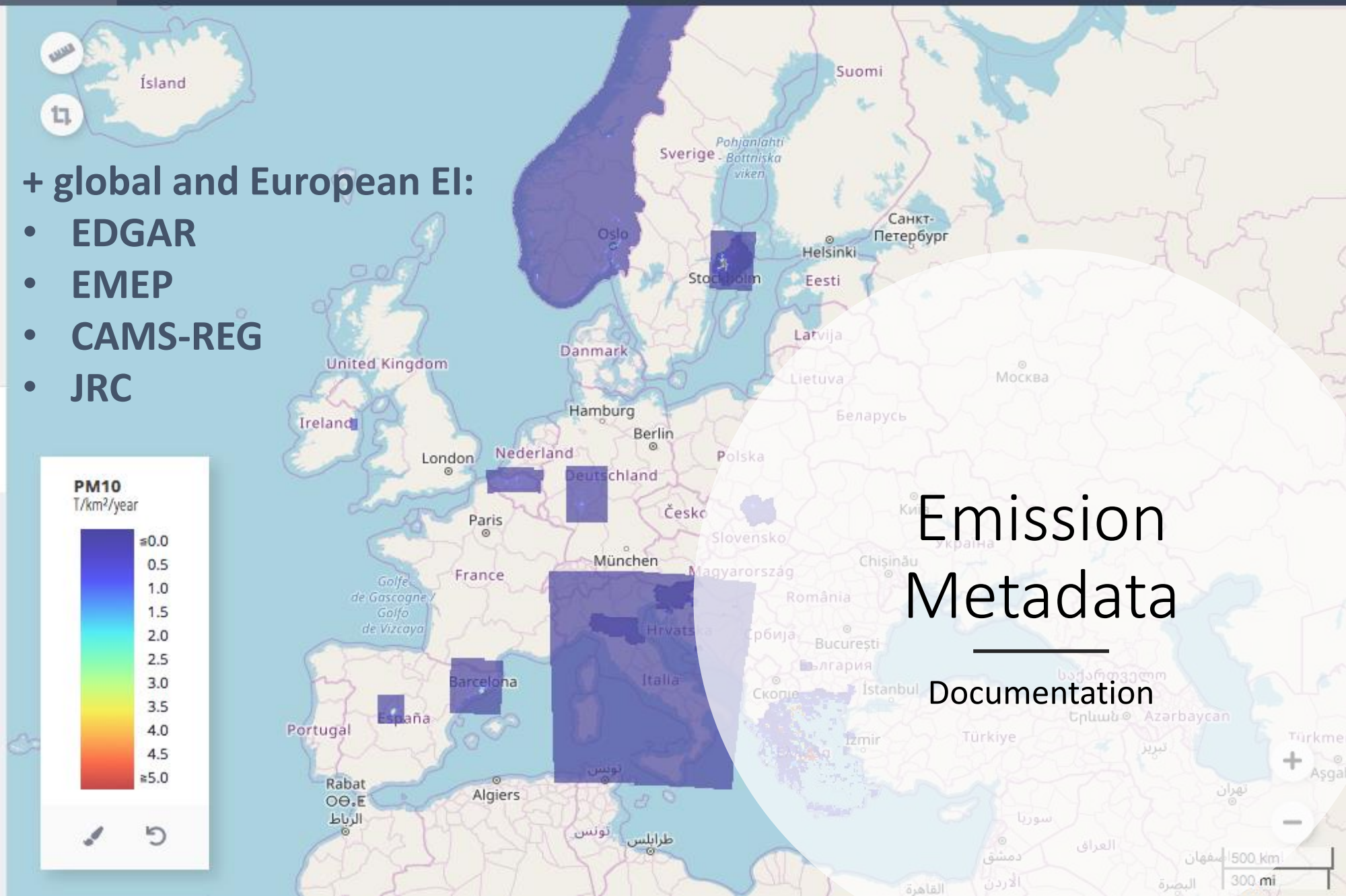
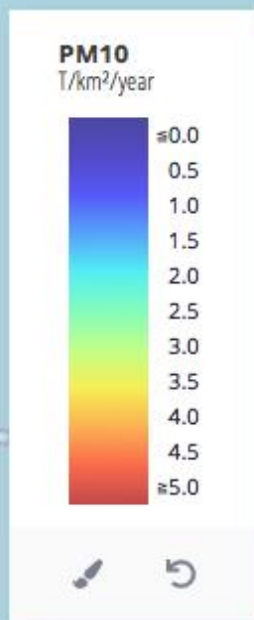
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Emission  
Metadata

Documentation

# Current metadata request in ECM

## DATA BASE: META DATA

	CONCENTRATION	EMISSIONS	
COMMON ATTRIBUTES	Pollutant		
	Country /area (= region/city/...)		
	Model name		
	Year		
	Documentation		
	Version		
	Output frequency		
	Map projection system (EPSG code)		
	SPECIFIC	Model type (Eulerian, ...)	Emission sector (SNAP or GNFR)
		Data assimilation	Estimation approach (bottom up, ...)



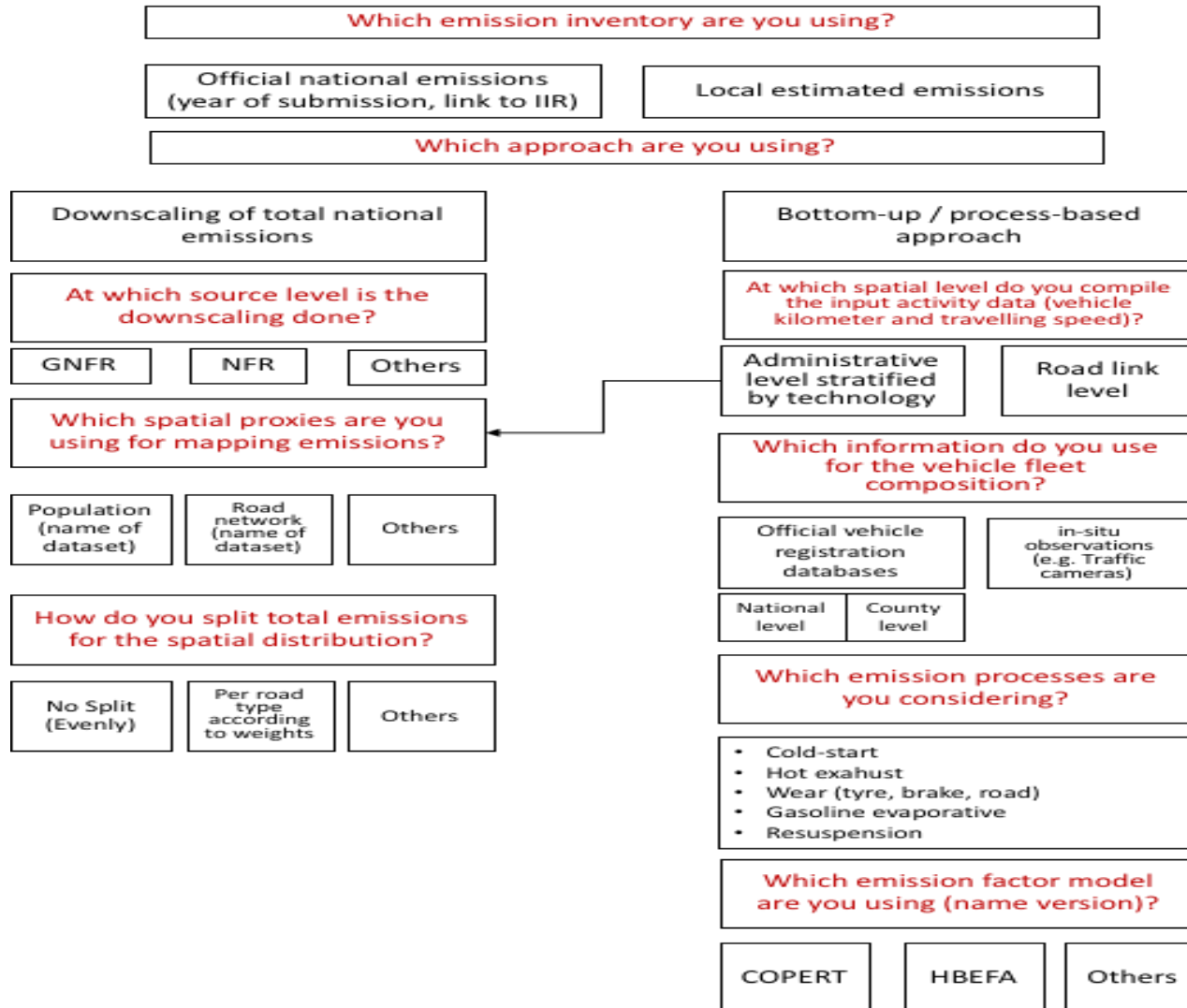
# Proposal for revised metadata request in ECM

Field	Contents- Proposed revised metadata
<b>Code</b>	A descriptive label for the data chosen by the user
<b>Participant</b>	Account owner, user that is logged in to upload the maps
<b>Affiliation</b>	Details on the Account owner (e.g. Institute)
<b>Emission Model Name</b>	Name of the emission model - common to e-Reporting request
<b>Emission Model Version</b>	Version of the emission model - common to e-Reporting request
<b>Year</b>	Year of the emission data – common to e-Reporting request
<b>Output frequency</b>	Yearly, monthly, daily, hourly
<b>Sector</b>	Sector code based on the SNAP nomenclature (S1 – S10) or GNFR nomenclature (Gnfr_A – Gnfr_N)
<b>Emission Estimation approach</b>	Methodology used to estimate/model the emissions: “Bottom-Up”, “Top-Down”, Inverse Modelling
<b>Spatial distribution approach</b>	Methodology used to spatially distribute emissions: “Bottom-Up”, Downscaling
<b>Documentation on-line</b>	Multiple choice at CM decision tree
<b>Documentation</b>	Link to publications/references
<b>Pollutant</b>	CO, NH <sub>3</sub> , NMVOC, NO <sub>x</sub> , PM <sub>10</sub> , PM <sub>2.5</sub> , SO <sub>2</sub>
<b>Country</b>	Name of the country selected from a drop down list
<b>Area</b>	In case the map refers to a part of a country: city, region, ...
<b>EPSG code</b>	EPSG code for the map projection system

# Road transport - On-line Decision Tree



Decision tree – Road transport



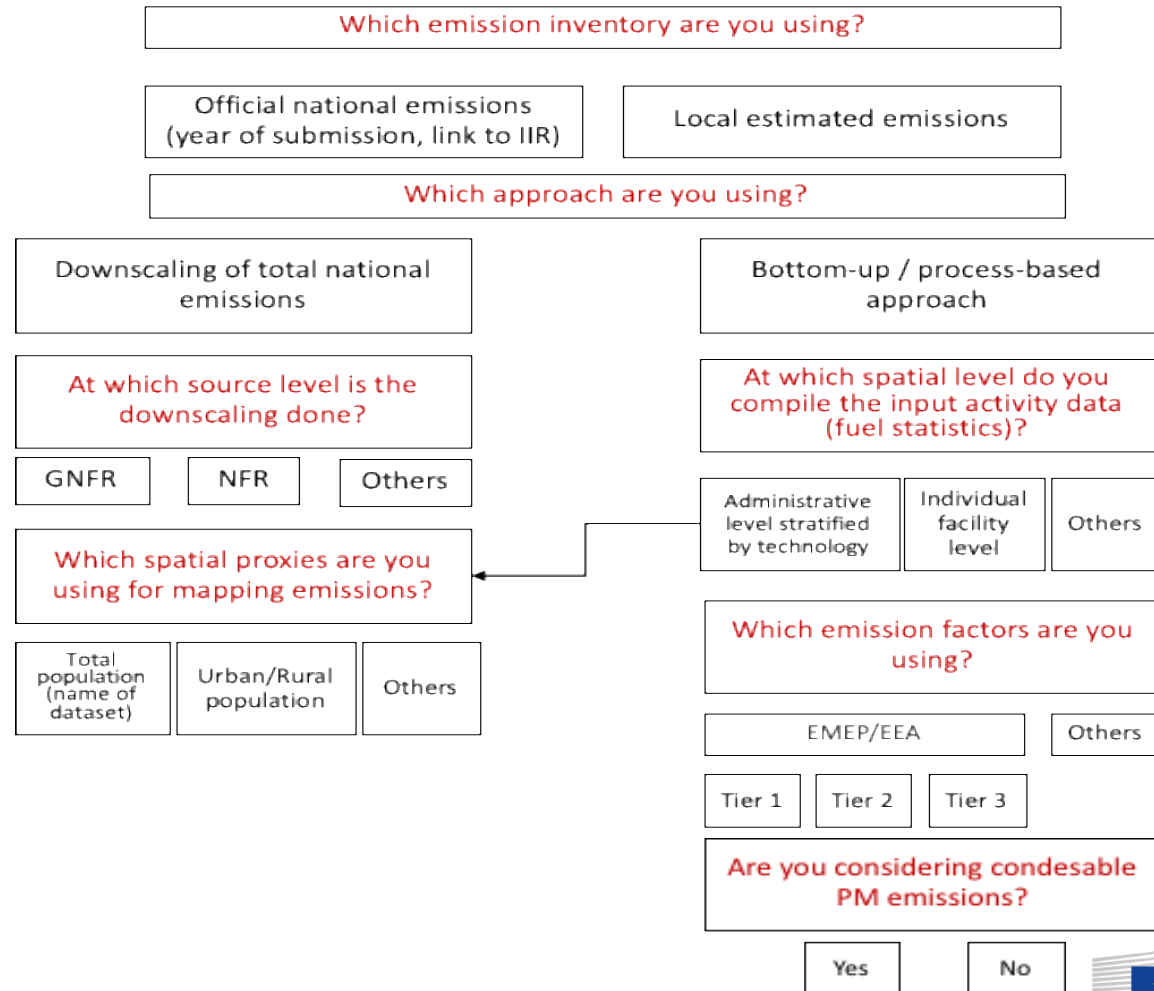
- ❑ Should balance complexity vs expert information
- ❑ Involves intrinsic guidance
- ❑ Provides information for expert review
- ❑ Demands actual knowledge of the emissions to upload them
- ❑ Ideally implemented as part of the ECM website

# Residential Heating - On-line Decision Tree



- ❑ Road traffic best practice document available
- ❑ Best practices document for residential heating beyond EMEP/CORINAIR not available
- ❑ Decision tree as implicit guidance

## Decision tree – Residential/Commercial combustion



# Main topics for discussion

- ❑ Benchmarking activities for emissions can now be best supported by the ECM platform
  - ❖ Evaluation of different downscaling approaches ?
  - ❖ Benchmarking for new sectors (off-road : navigation, construction, agriculture machinery...) ?
- ❑ Progress with metadata requests in ECM
- ❑ Decision Trees
  - ❖ Which decision tree should be implemented first ?
  - ❖ Do we need best practice documentation before implementation of decision trees ?