Reporting and review of emission inventories 2019

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TFEIP meeting, May 2019, Thessaloniki

European Topic Centre on Air Pollution and Climate Change Mitigation

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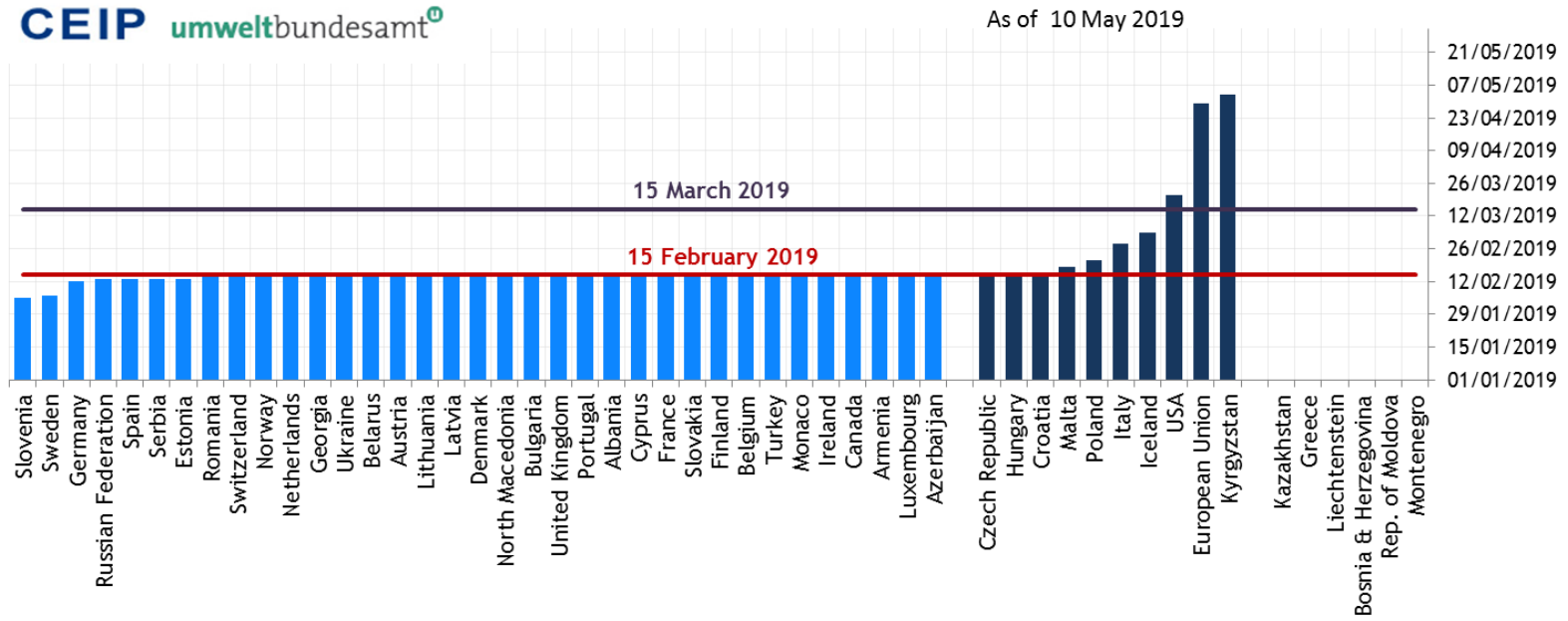
Status of reporting as of 10.5.2019



EU deadline by 1st May

- **45 Annex 1 tables**
- **21 resubmissions**
- **39 Parties provided AD**
- **39 IIRs , 17 included some info on condensable**
- **25 projections**

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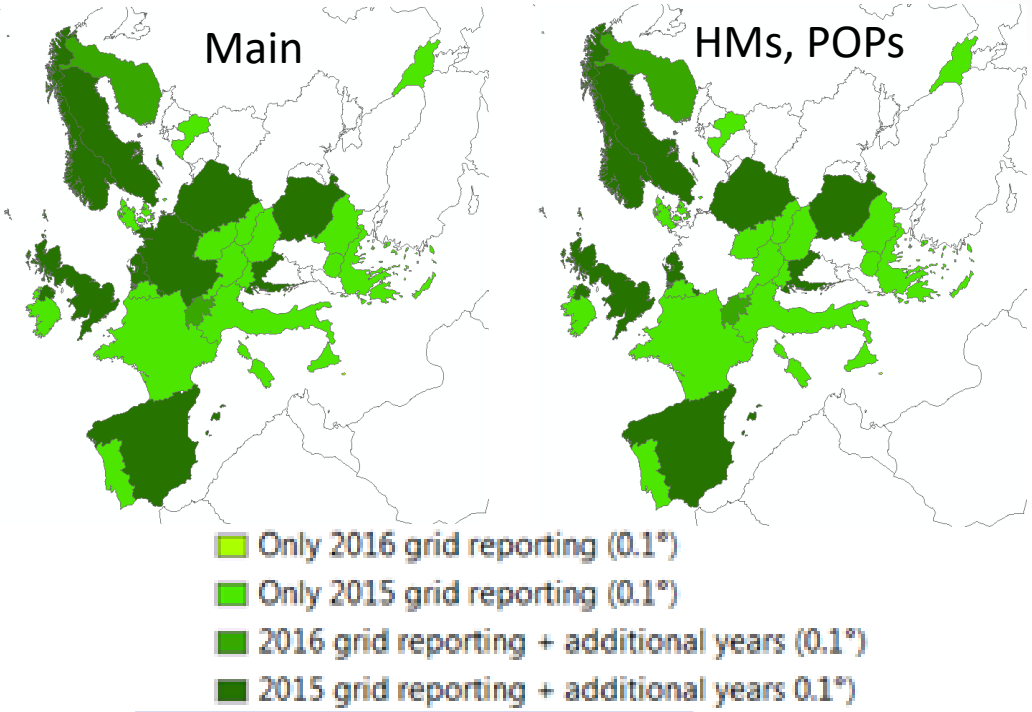
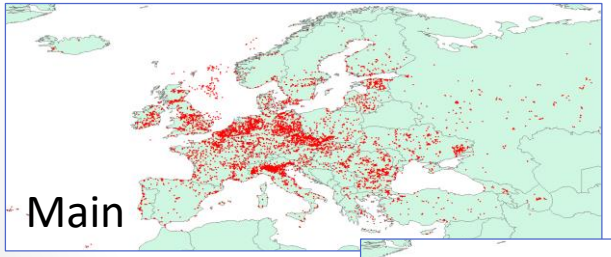
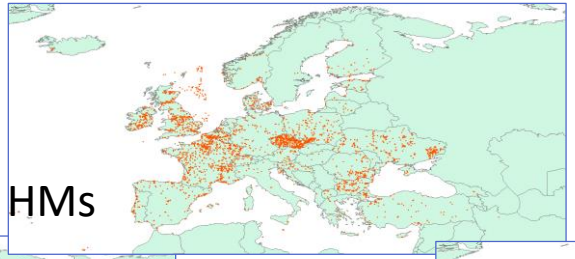
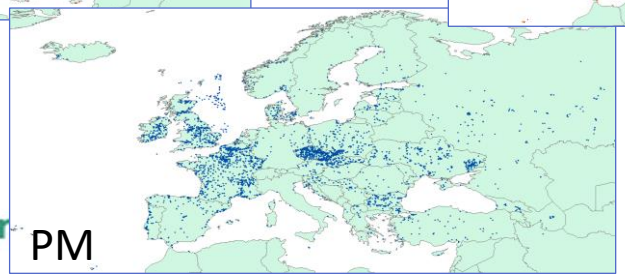
Grid and LPS reporting in 2017 and 2018

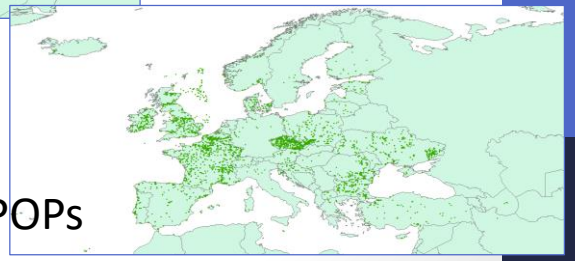
- **31 countries** reported sectoral gridded emissions in **0.1°x0.1° long-lat** resolution in 2017 and/or 2018
- **DK, FI, DE, ES and CH,** re-submitted data in **2019**
- **40 countries** reported sectoral **LPS emissions** in 2017 and/or 2018











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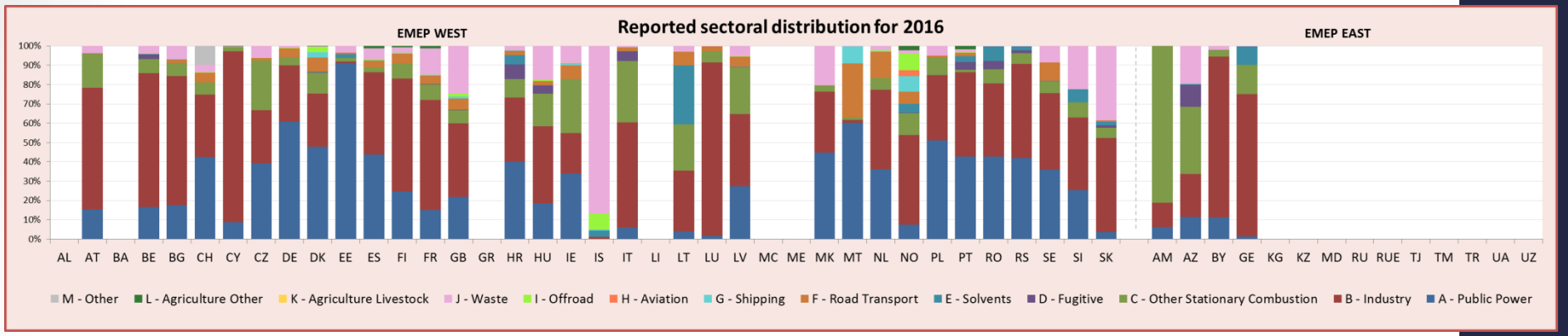
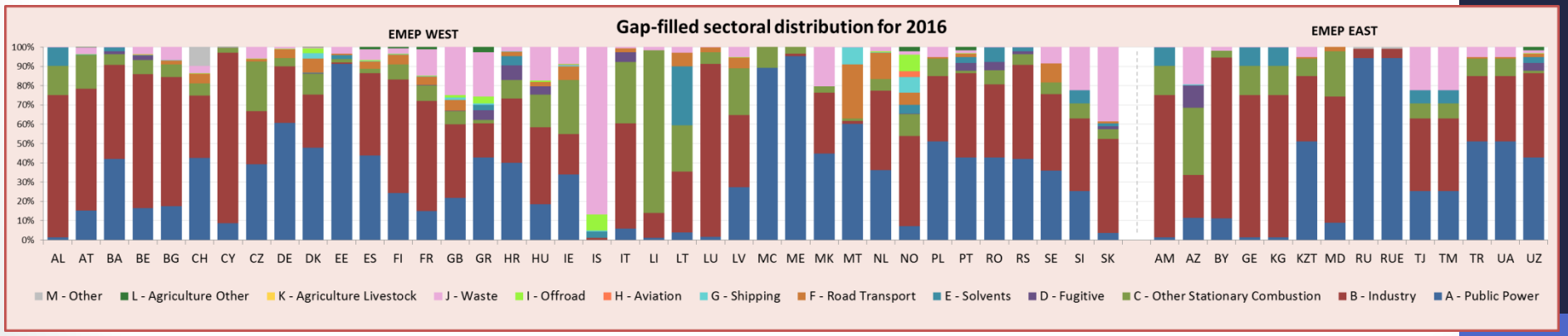
Reported data / Data for gridding





Example: **2018** Mercury

Gridded and LPS emissions – persisting challenges

- Exchanged longitude/latitude coordinates
- LPS placed outside country borders (Also some E-PRTR LPS data used as proxy information were placed outside country borders)
- Missing data: Emissions for more than 50% area have to be gapfilled by expert estimates
- **Short time between grid-reporting and delivering gridded data to modelers**
- Quality checks continously expanded

- See overview of gapfiling at http://www.ceip.at/ceip_reports/
  - Methodologies applied to the CEIP GNFR gap-filling 2018. Part I: Main pollutants and Particulate Matter (NO_x, NMVOCs, SO_x, NH_3, CO, $PM_{2.5}$, PM_{10}, PMcoarse), Technical report CEIP 1/2018,
  - Methodologies applied to the CEIP GNFR gap-filling 2018. Part II: Heavy Metals (Pb, Cd, Hg), Technical report CEIP 2/2018
  - Methodologies applied to the CEIP GNFR gap-filling 2018. Part III: Persistent organic pollutants (Technical report CEIP 3/2018

Technical review of air emission inventories

- Initial checks – formal criteria (timeliness, completeness,..)- all countries
- Extended checks – consistency, comparability, recalculations, KCA, trends, .. (national totals, (GNFR), pollutants)- all countries
- NEW: **Findings** are provided to countries **2 times**, beginning March (before resubmission deadline) and mid April via http://www.ceip.at/review_results/
- Tests are regularly extended
- IIR Awards ….
- **In-depth review** – consistency, comparability, recalculations, KCA, accuracy (NFR sectoral level) -selected countries (up to 10 annually)

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In-depth review - long-term plan 2018 - 2020

Review plan approved by EMEP SB meeting in Sept. 2018, Harmonized with EU/EEA

2018	2019	2020
Moldova	Turkey	Liechtenstein
Armenia	Norway	Switzerland
Finland	Georgia	Iceland
Belarus	Serbia	Kyrgyzstan
Ukraine	Russian Fed	Kazakhstan
Azerbaijan	Albania (IIR 2018 only)	Monaco
		North Macedonia
		EU

Montenegro – no data since 2011
B&H – no data, no communication

http://www.ceip.at/ review_results/stage3_country_reports/

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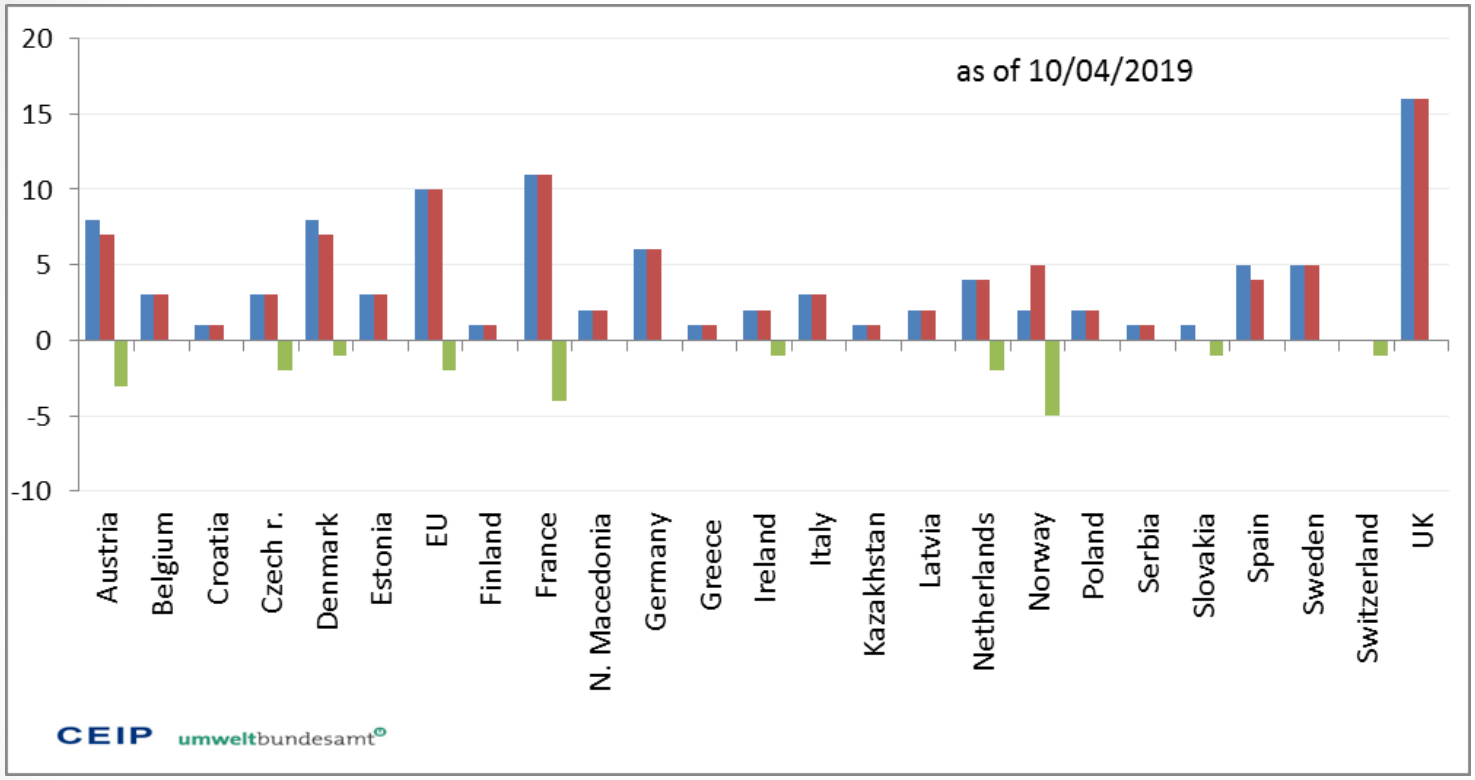
Roster of experts



Roster of experts: 24 countries / **101 experts** (16 left)

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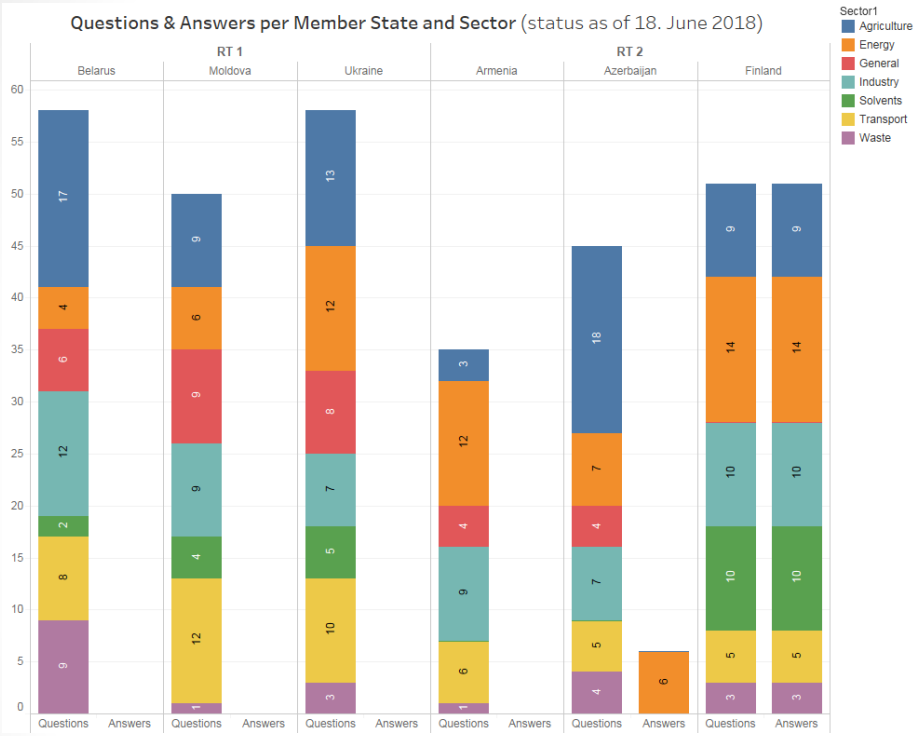
Stage 3 Review 2018 Progress



- **Review of 6 Parties completed**
- Up to **58 questions** for a Party, **11 - 52 issues** identified by reviewer
- **Rather limited/late feedback from most countries**
- Revised review guidelines including calculation of Technical Corrections tested

- Review Report template updated
- Cooperation with review under NECD directive considered useful but overlap in 2018 was limited
- **Country Reports published at** http://www.ceip.at/review_results/stage3_country_reports/

In-depth review 2019/challenges

- *In-Depth review of* ***6 Parties*** *planned in parallel with adjustment review*
- *Two Expert Review Teams completed (with 8-10 reviewers each/5 reviewers adjustment review)*
- *Preparatory phase – first questions to Parties; May - beginning June*
- Meeting **25-28 June 2019** in Copenhagen (EEA facilities)
- *Revised Review Guidelines, calculate technical corrections / NEW for most of Reviewers and Parties*
- *Revised IIR template (info on PM/condensable)*
- *Finalisation of reports during summer and publication before EB meeting*

Adjustment review 2019

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- ✓ 9 countries - approved Adjustments for approx. 32 sector/pollutant cases https://webdab01.umweltbundesamt.at/cgi-bin/adj_GP.pl
- ✓ 1 NEW application: Netherlands, NH_3 and NMVOC in Agriculture

- **Approach and review harmonised with NECD review**
- **Initial checks of submitted adjustment applications,** assessment of formal criteria (CEIP in cooperation with TFEIP and UNECE secretariat)

- **Time schedule:**
  - Desk review: May – mid June
  - Coordinating meeting: 25 – 28 June Copenhagen
  - **Status report to EMEP SB: end June !!!**
  - Finalization of country report (NL) July – August
  - **Adoption of ERT recommendations: Sept (EMEP SB meeting)**

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In depth review after 2020?

- 2019/2020 strategy to be proposed in cooperation with experienced Lead Reviewers, TFEIP
- **New cycle** might start in 2021 or 2022(2023) - revised GP ceilings
- 2021/2022 – e.g. transition period focus on priorities proposed by modelers and or Parties selected by IC - **challenge for CEIP and reviewers**
- 2021 Continue with **in depth review** of selected countries
  - Each Party once in 5 years - up to 10 Parties/year
  - Selection criteria …. More flexibility
- **Review of adjustments** after 2021 ?

…..

Condensable Component of PM

- The condensable component of particulate matter is released as a gas but forms particles when it is diluted and cools down
- LRTAP Convention: plan towards consistent reporting of PM in a sector specific way
- Recommended structure for IIR contains a table with information on the inclusion of the condensable component from PM_{10} and $PM_{2.5}$ emission factors
- 17 Member States provided information in 2019 : **Austria, Belgium, Croatia, Estonia, Germany,** Finland, France, **Latvia,** Netherlands**, Portugal, Romania, Slovakia, Slovenia,** Spain, Sweden, **Switzerland**, United Kingdom
- Eleven Member States provided information in the recommended format
- Small-scale combustion (domestic/residential) 1A4 and Transport (Road transport) 1A3b large source of condensable PM

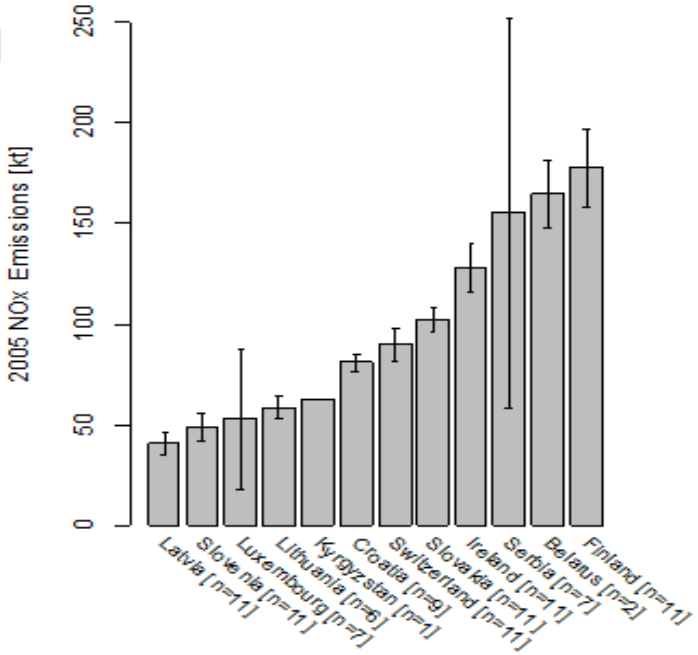
Condensable

Member State	NFR	Source description/definition	condensable component is	
			included	excluded
Austria	1A4bi	Residential: Stationary	p	p
Belgium	1A4bi	Residential: Stationary	p	p
	1A4bi	Residential: Stationary; wood	x	
	1A4bi	Residential: Stationary;natural gas	u	u
	1A4bi	Residential: Stationary; gasoil		x
	1A4bi	Residential: Stationary;coal	u	u
Croatia	1A4bi	Residential: Stationary	u	u
France	1A4bi	Residential: Stationary		x
Germany	1A4b i	Residential: Stationary		x
Latvia	1A4bi	Residential - Stationary	u	u
Romania	1A4bi	Residential	u	u
	1A4bi	Residential	x	
Slovakia	1A4bi	Residential: Stationary	u	u
Slovenia	1A4bi	Residential: Stationary	p	
	1A4bii	Residential: Household and gardening (mobile)		
Spain	1A4bi	Residential: Stationary; Solid biomass (excluding Wood and similar wood waste)	x	
	1A4bi	Residential: Stationary; Wood and similar wood waste	x	
	1A4bi	Residential: Stationary, Steam coal		x
Sweden	1A4bi	Residential: Stationary	no info	no info
Switzerland	1A4bi	Residential: Stationary; Charcoal use Bonfire	x	
United Kingdom	1A4bi	Residential - Stationary plants	x	

x = included/excluded
p = partially included/excluded
u = unknown if condensables are included/excluded

Uncertainty assessment report 2019

- The three main parts of the report will assess:
  - recalculations of NO_x and SO_x emissions reported by selected CLRTAP countries by examining the emissions for the year 2005 reported between 2007 to 2017.
  - the uncertainty estimates for Total NO_x and SO_x emissions as submitted in the Informative Inventory Reports 2017 in comparison to the recalculations for the year 2005
  - differences between the reported data and expert estiamtes (GAINS data, EDGAR data and TNO data) and data reported under the UNFCCC was compared and assessed



Example Graph: Mean NO_x emissions for the year 2015 as reported in the inventory submissions between 2007 and 2017.
The error bars represent the mean value ± 2 standard deviations.

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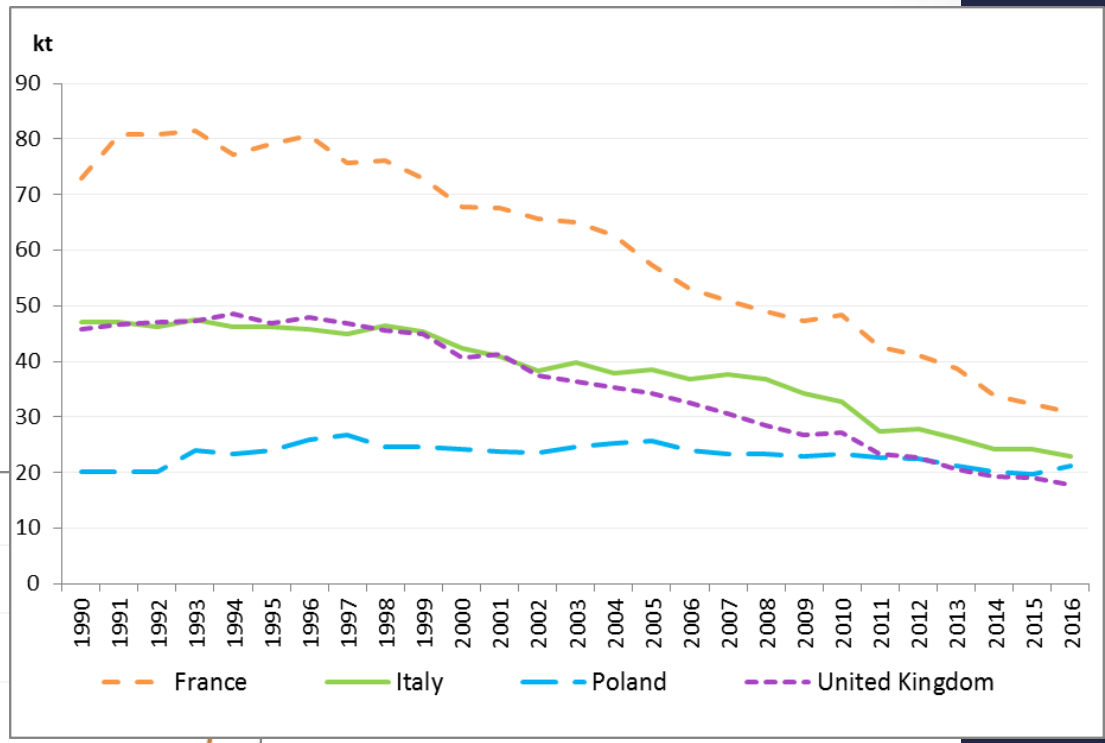
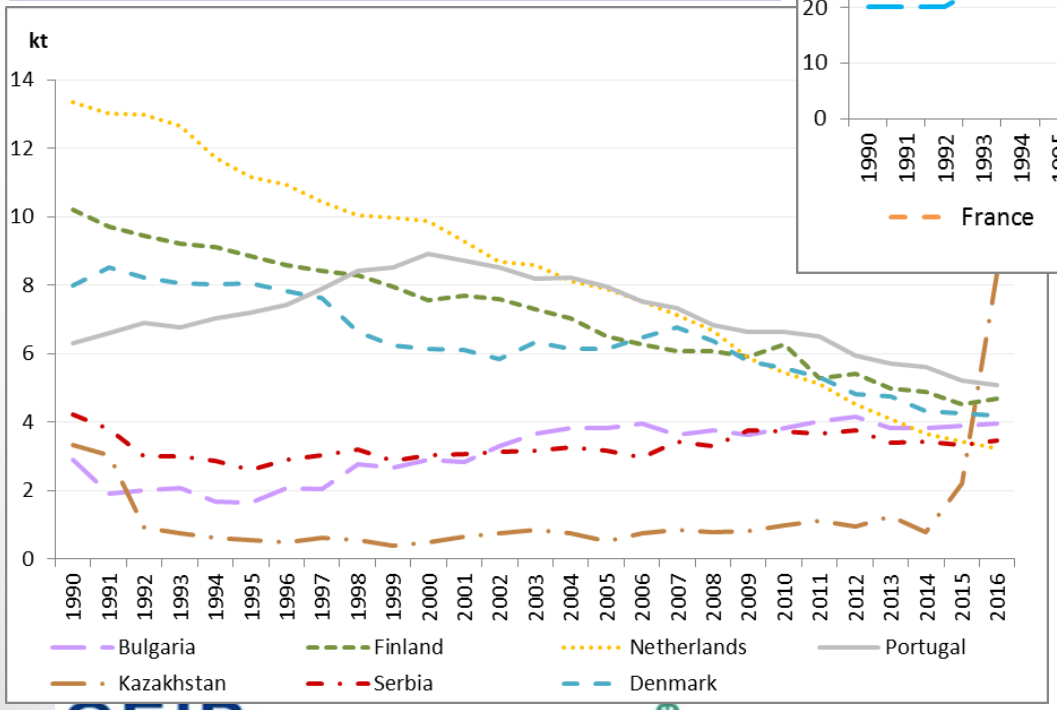
BC reporting 2018

41 Parties (80%) reported BC
(37 in 2019)

32 Parties time series (at least 2000 onwards)





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Black Carbon (BC)/Cooperation with AMAP

- There are currently **3 international fora where official national inventory estimates of BC are reported:**
- UNECE-CLRTAP,
- NEC Directive
- *Arctic Council Framework on Enhanced Black Carbon and Methane Emissions Reductions.*

Review of Reporting Systems for National Black Carbon Emissions Inventories:
EU Action on Black Carbon in the Arctic

https://eua-bca.amap.no/news/2019/eua-bca-technical-report-review-of-reporting-systems-for-national-black-carbon-emissions-inventories

- Recommendations
  - **Improvements in the available black carbon inventory methods**
  - Establishment of **mandatory reporting** under CLRTAP and/or other fora
  - Continued and **enhanced cooperation** between **scientists** developing independent black carbon emissions datasets and the **national inventory experts** compiling official black carbon inventories
  - Enhanced **cooperation** between **CLRTAP** and the **Arctic Council** to expand and harmonise black carbon emissions reporting by countries whose black carbon emissions impact the Arctic

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IIR awards 2010- 2018

2010
France
Germany
Netherlands
Croatia
Cyprus

2011
Finland
Estonia
Austria
Croatia
Switzerland

2012
UK
Germany
Netherlands
FYR
Macedonia
Ireland
Denmark

2013
Finland
Croatia
Estonia
Sweden
Poland
Spain
Turkey

2014
Norway
France
Latvia
Belgium
Denmark
Slovenia
UK

2015
Denmark
Portugal
Canada
Luxembourg
Italy
Turkey
Switzerland

2016
Germany
Sweden
Latvia
Iceland
Macedonia
Lithuania
Croatia

2017
Austria
Spain
Slovakia
Moldova
Azerbaijan
Hungary
Latvia

2018
Switzerland
Germany
Estonia
Slovenia
Bulgaria
UK

2019
?
?
?
?
?
?

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Revised Annex I

- **Extended Annex 1 was tested in 2019**
  - No problems reported by users and during import into DB system
  - Should be approved by SB/EB meetings and used 2020 onwards

- **Reporting information on methods in table (s)**
  - Requirement of EMEP (modelers, reviewers, IC,..)
  - Options
    - Report of aggregated info in current Annex 1 structure (e.g. T1/T2,…
    - Extend current table to allow reporting on the level as calculated (per fuel , SNAP …
    - …

CEIP wishlist

- Report
- Report in time
- Report LPS and gridded data in the right format
- Follow the recommended structure of the IIR
- Report information on condensables
- Nominate Reviewers for the Roster of experts
- Communicate with us (during the Stage 3 Review and throughout the year)

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