

Results of the small combustion survey

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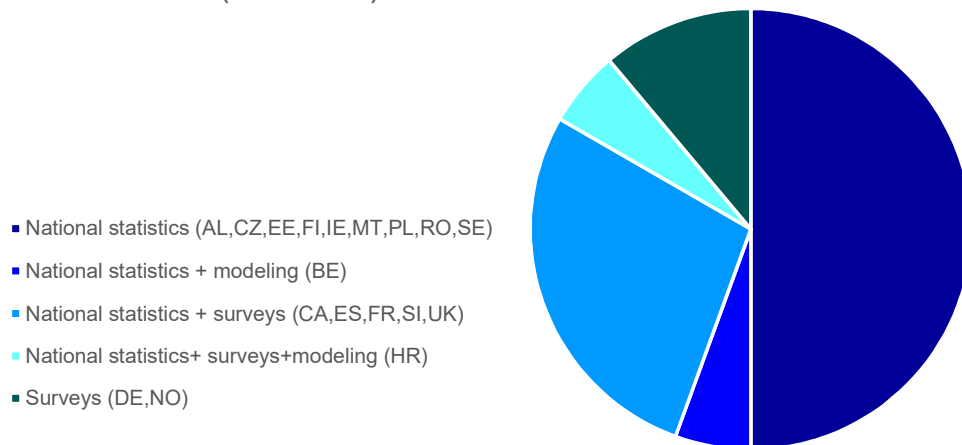
SURVEY TO TFEIP COMBUSTION AND INDUSTRY PANEL ON FURTHER DEVELOPMENT OF THE GUIDEBOOK GUIDANCE ON SMALL SCALE WOOD COMBUSTION

- Activity data sources, combustion technologies, methods/EFs and user impact
- 19 countries responded to the survey
- No proposals for the development of the current guidance were received

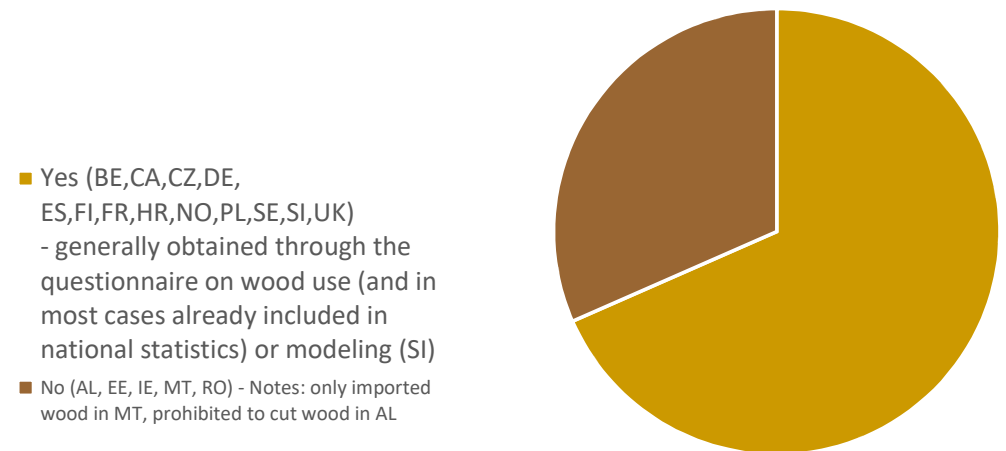
ACTIVITY DATA – data source, inclusion of wood collected directly from the forest

- Wood use data is based on surveys or national statistics, which may be complemented with additional surveys or modeling
- Appr. half of the countries obtained the AD from surveys (or complemented national statistics). In some countries the surveys are sophisticated and frequent (incl. wood use and technologies), in some the surveys are more simple.
- One country uses modeling based on heating need of hot water and secondary heating plus Energy Buildings performance certificate
- 70% of inventories cover wood harvested directly from the forest (in some countries wood from forest is not relevant, only imported)
- Wood from forest is generally part of surveys, one country uses modeling

Source of AD (wood use)



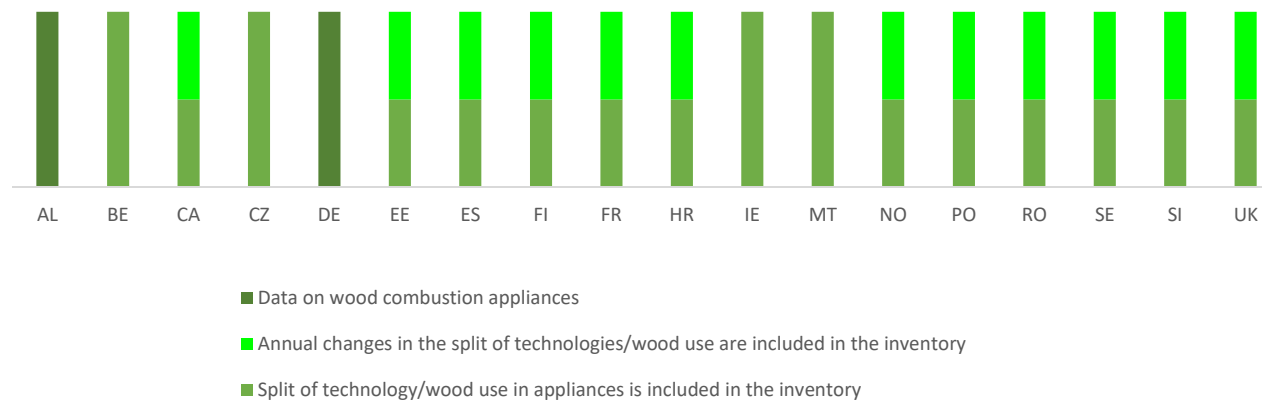
Inventory includes wood collected directly from the forest



ACTIVITY DATA - Combustion technology

- **All countries responded to have data on appliance technologies**
- The information is mainly collected from surveys
- Information in a specific database (1)
- Expert estimates based on e.g. energy balance or studies (3)
- GAINS model (2), TIMES model (1)
- Information from chimney sweepers (2)
- EUROSTAT publication case study from "Manual for statistics on energy consumption in households" (1)
- 16 countries include the split of wood use between appliances in the inventory and 12 countries also include the annual changes in wood use between appliances
- 2 countries do not include information on technologies in the inventory

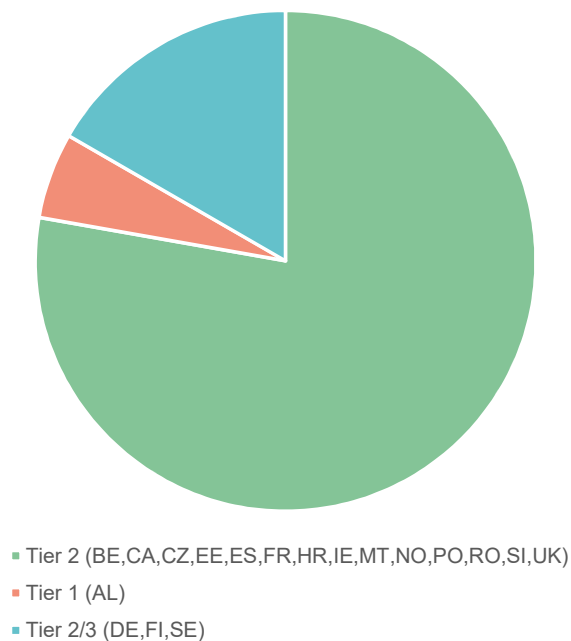
All countries responded to have data on appliance technologies.
The following splits are used in the inventories:



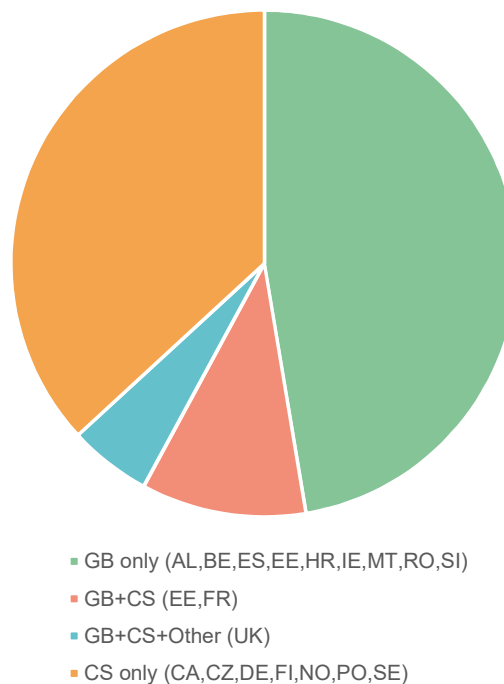
TIER of the Inventory and Source of EFs

- Most inventories are calculated on a Tier 2 or higher level
- Majority of countries use either Guidebook or country-specific EFs only
- In some cases, CS EFs are used except for HMs and POPs

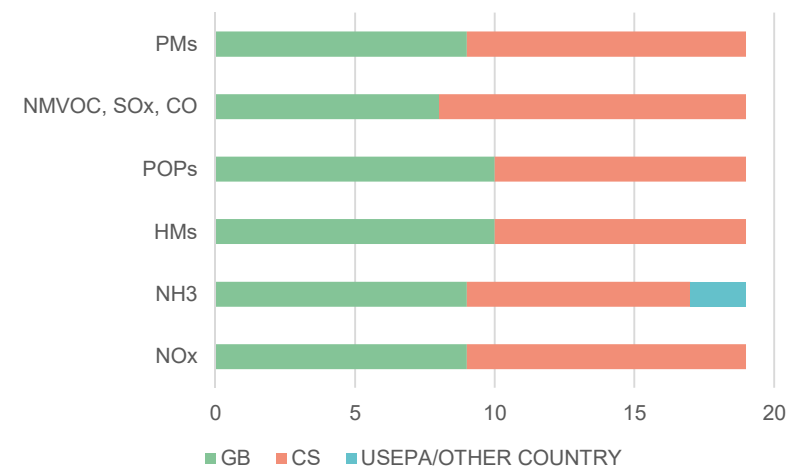
Tier of small-scale wood combustion inventory



Source of EFs



Source of EF by pollutant



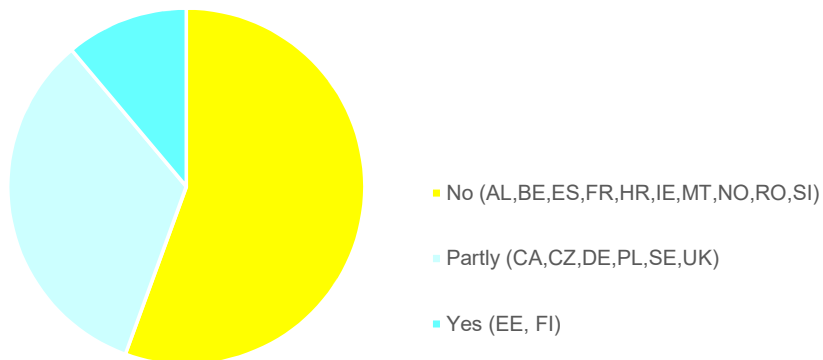
USER IMPACT on emission levels

Some user-dependent factors on emission levels are included in almost half of the inventories, mostly through EFs for different moisture contents of wood

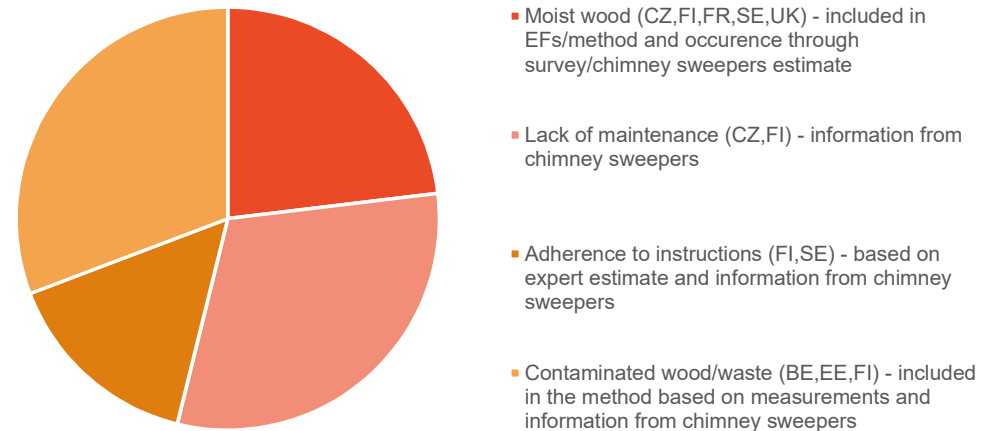
Examples in some inventories

- The extent to which user dependent factors impact emission levels is estimated through information from chimney sweepers on issues in (1) the maintenance of the combustion applications, (2) use of moist or contaminated wood or waste, and (3) how appliance specific instructions are followed
- Emission level changes from "normal combustion*" are estimated using correction factors on EFs based on measurements during "bad combustion**" and are pollutant and appliance specific
- Some countries have EFs separately for moist and dry wood

Inventory includes conditions when higher than normal combustion emission levels occur (e.g. start-up/shut down)



Factors that impact emission levels are included in the methods



* **Normal combustion** = Combustion of clean dry wood in a well-maintained application according to appliance specific instructions.

** **Bad combustion** = Combustion of moist/contaminated wood or waste and/or lack of maintenance and/or non-adherence to appliance-specific instructions. Covers also emissions during start-up/shut-down/malfunction of combustion appliance.

ITEMS FOR FURTHER DEVELOPMENT of the small-scale wood combustion guidance

No proposals for improvement of the guidance were provided in the responses to the survey. The current 2023 EMEP/EEA Emission Inventory Guidebook text could be extended to provide guidance on issues listed below (based on information in the responses to the survey, on questions from individual countries regarding the Annex of the 2023 GB and on earlier observations e.g. during inventory reviews):

WOOD USE

- Guidance on how to estimate wood collected directly from the forest (e.g. to be included in surveys), references to Eurostat guidelines for collection of data
- Examples on surveys by national forest research institutes, wood suppliers/appliance manufacturers, modeling

METHODS/EF

- Explanation on the importance to develop CS EFs in countries where small scale wood combustion is a key category of emissions
- Review of GB EFs on HMs based on national measurement results on HM contents in wood

TECHNOLOGY

- Examples/guidance on (1) how to carry out studies/surveys and develop a technology split and wood use in the different appliances, (2) how to estimate changes of wood use in the different appliances over the time series – because these impact emission levels (moving to less polluting appliances have a significant impact)
- Note that there are differences in the combustion appliances (and especially in their use) although the naming may have resemblance between countries

USER IMPACT – Explanation on differences in the purpose/manners/habits *and thus on the efficiency* of small-scale combustion between countries (e.g. combustion for primary or secondary heating or for leisure or cooking).

Completing the current presentation in the new Annex for small scale wood combustion, with examples on how to develop country-specific values (or provide default values in cases where universal values could be used) for the different user-dependent factors.