

Estonian Environmental Research Centre

HCB emission revision in Estonia

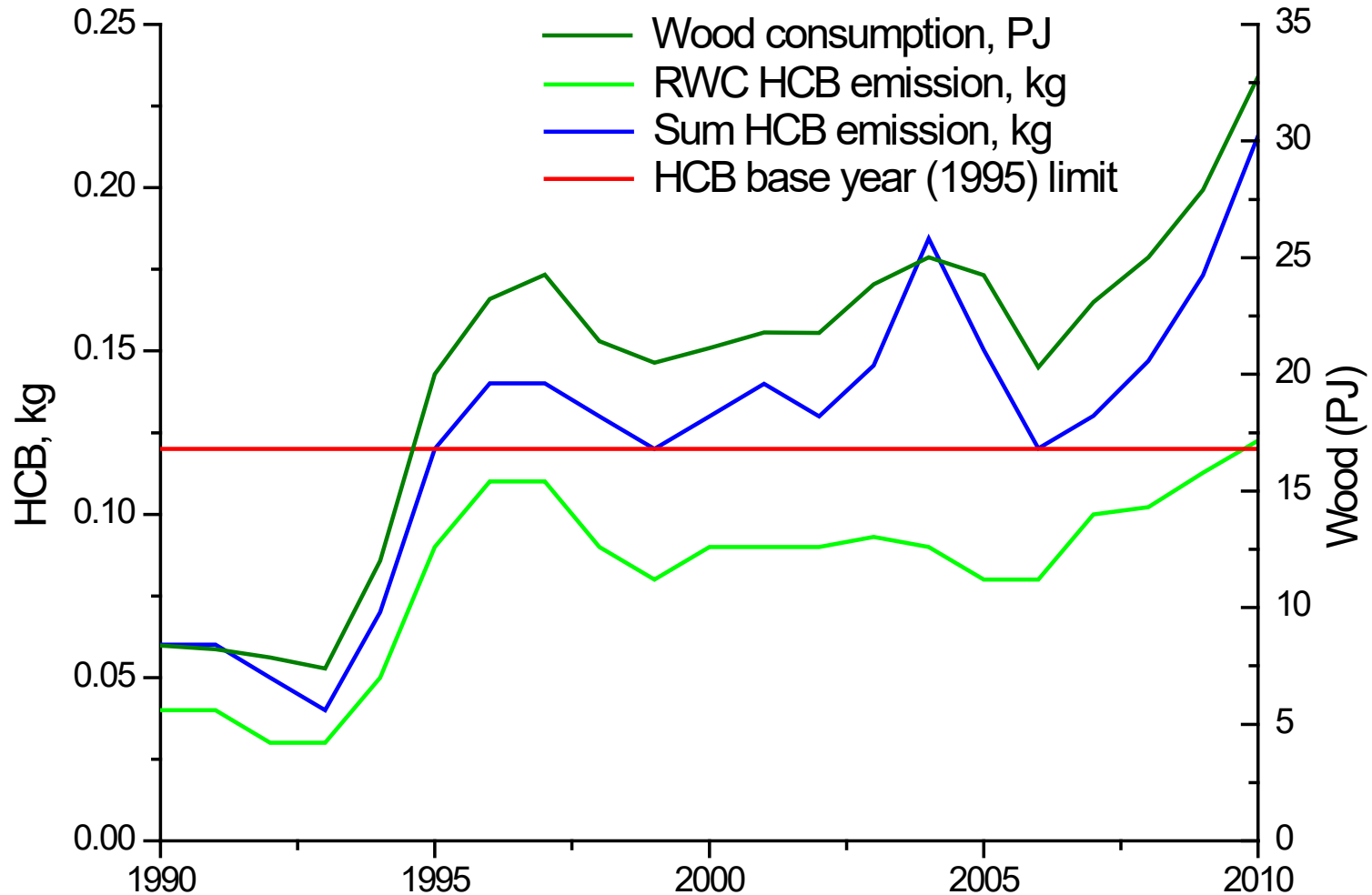
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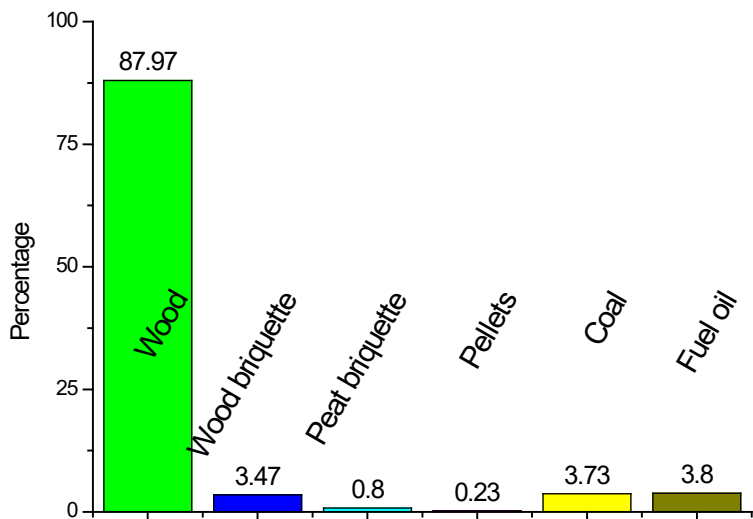
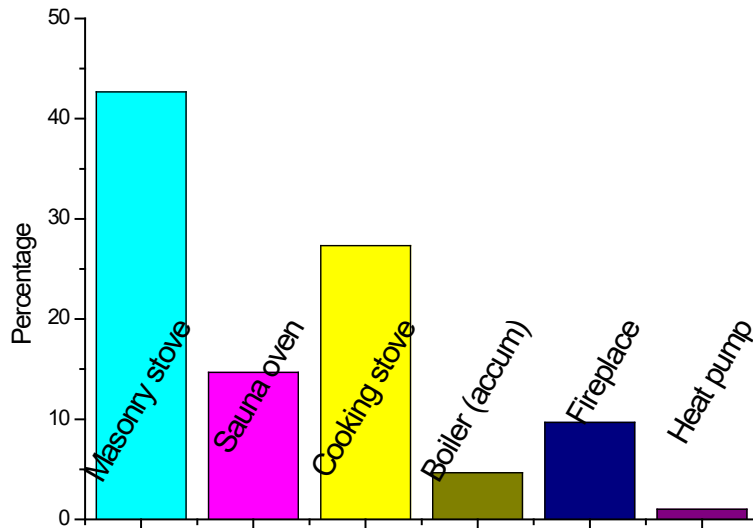


Introduction

- The latest data on HCB emissions from Estonia showed that Estonia's emissions exceeding national emission limit of 0.12 kg (1995).
- About 2/3 of total emission is attributed to residential wood combustion (RWC).
- To reduce GHG emissions the use of biomass in energy production has been favoured
- Use of wood in residential combustion have increased which is affecting directly emission figures for POPs

HCB emissions in Estonia





- Wood is dominant fuel used in residential areas in small cities
- In Estonia wood and wood chips account >90% of the fuel used for residential heating
- Typical masonry stoves are used in >50% of residential households in Estonia
- In majority of houses old type batch fueled masonry stoves are still used
- Typical energy consumption for residential houses is 200-300 kWh/m² Loosaar et al. 2008

Current situation

- HCB emissions are calculated on the basis of the EF-s (same as in Guidebook) proposed by „Technical Report Environmental Cycling of the selected POPs in the Baltic region“, NILU 1999
- According to the Guidebook the EF-s are not dependent from the type of combustion equipment
- Control measures are not proposed

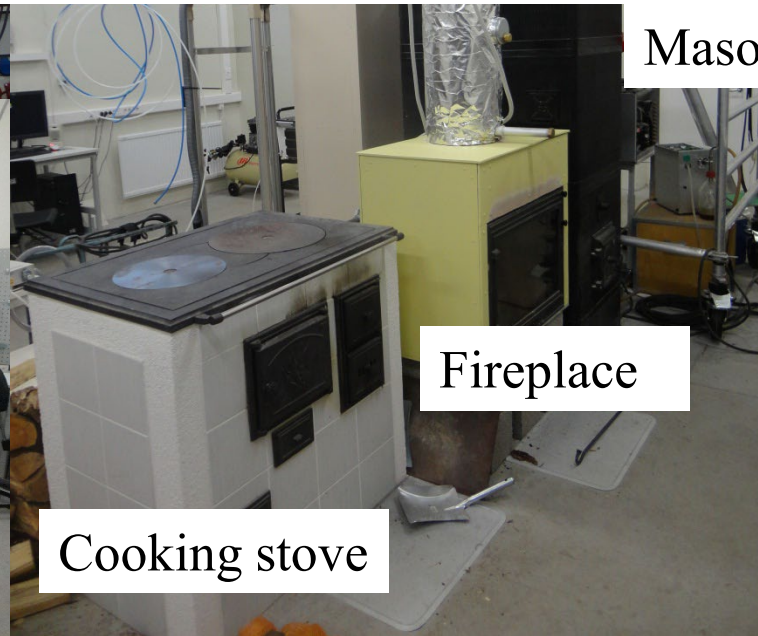
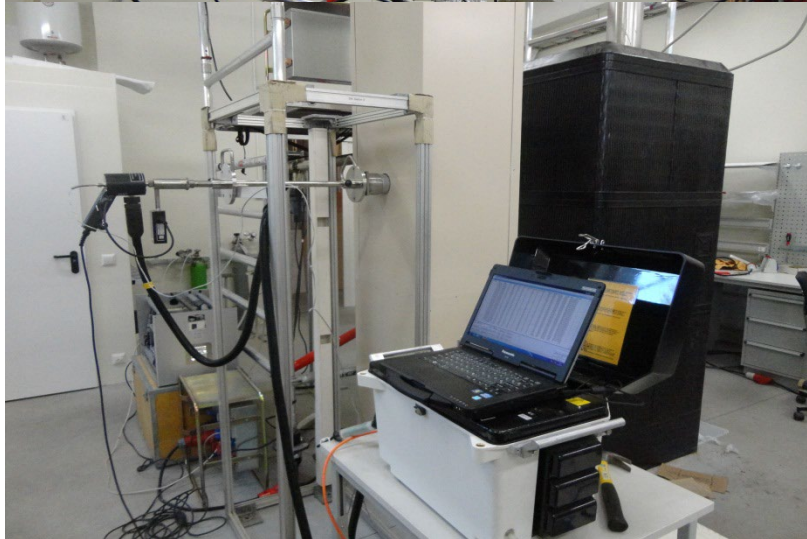
RWC EF-s in Estonia

- Emission measurements at small scale combustion devices are carried out
- Three main typical Estonian stove types have been measured:
 - Masonry stove
 - Cooking stove
 - Fireplace
- Hardwood and conifer wood with different RH was used

Emissions from RWC



- Measurements from hot flue gas (up to 200°C)
- HCB samples were collected with Eva dioxin sampler (Metlab) into filter, XAD adsorbent and pre-afterwash liquid
- Samples were analyzed with the GC/HRMS

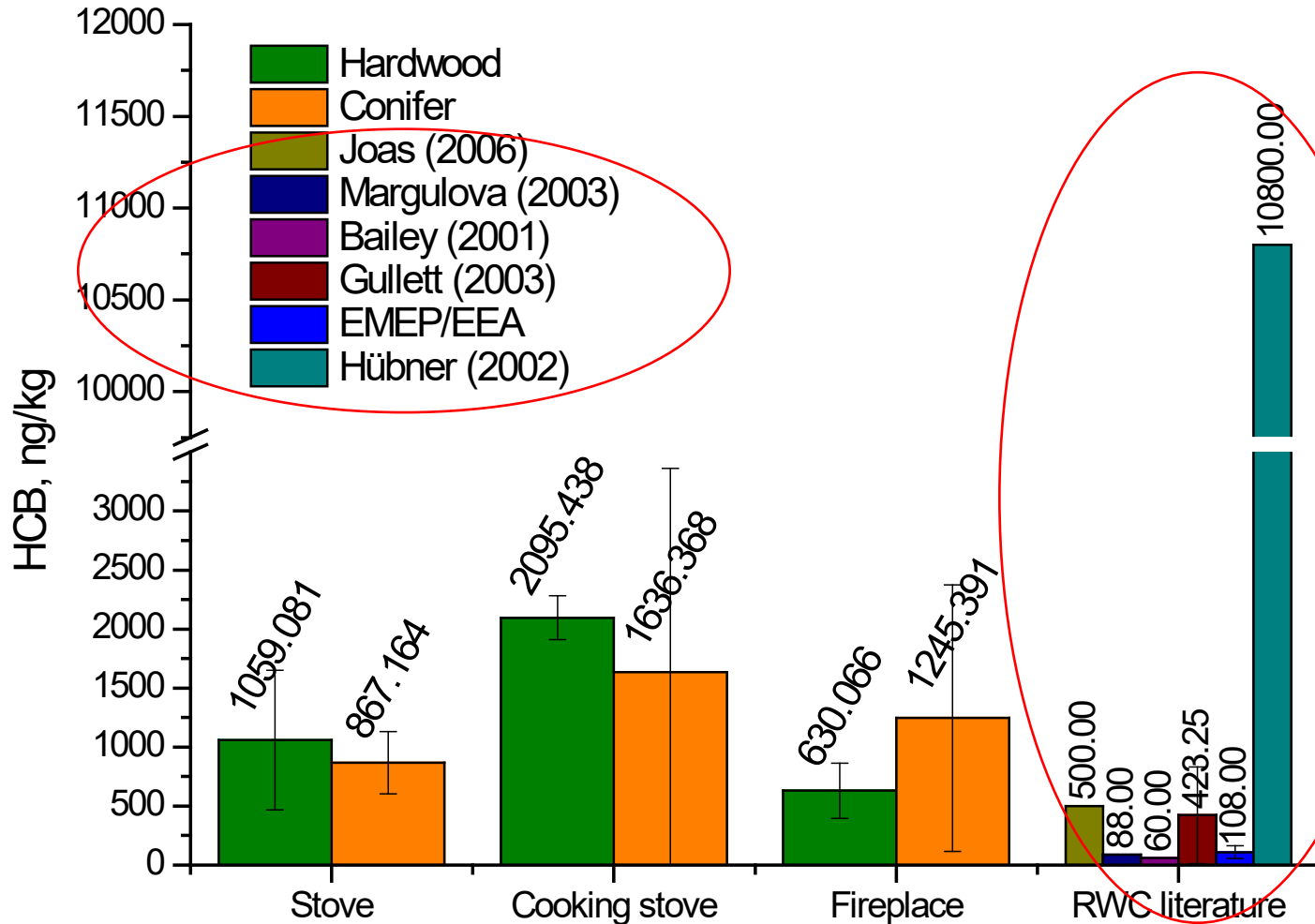


Masonry stove

Fireplace

Cooking stove

EF-s HCB (ng/kg)



Conclusions

- HCB EF-s are higher than in Guidebook
- Revision of the share of different stove types for past two decades is going on
 - Nowadays more advanced stoves are built and used
- Typical energy consumption for residential houses in Estonia is twice compared with other nordic countries
 - Additional measures needed for the household insulation

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Thank You for your attention!

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