



# Clean Heat

European project on private wood burning

## Overview

- What is Clean Heat about?
- Emissions from residential wood burning
- Air quality within the EU
- Policy recommendations
- What have we done so far?
- Conclusions

## What is Clean Heat about? (1)

- Overall objective: Reduction of PM/BC from wood burning/domestic heating
- Information campaign in Germany, Denmark, Hungary, Slovakia and Czech Republic
- Main target groups:
  - Policy makers at all levels (EU, national, local)
  - Existing and potential stove owners/  
people affected by air pollution
- Duration: 01/08/15 - 31/01/19
- Project partner:  
Environmental Action Germany (DUH) (coordinator)  
Danish Ecological Council



# What is Clean Heat about? (2)

Residential wood burning in stoves and boilers produces substantial amounts of health damaging particles.

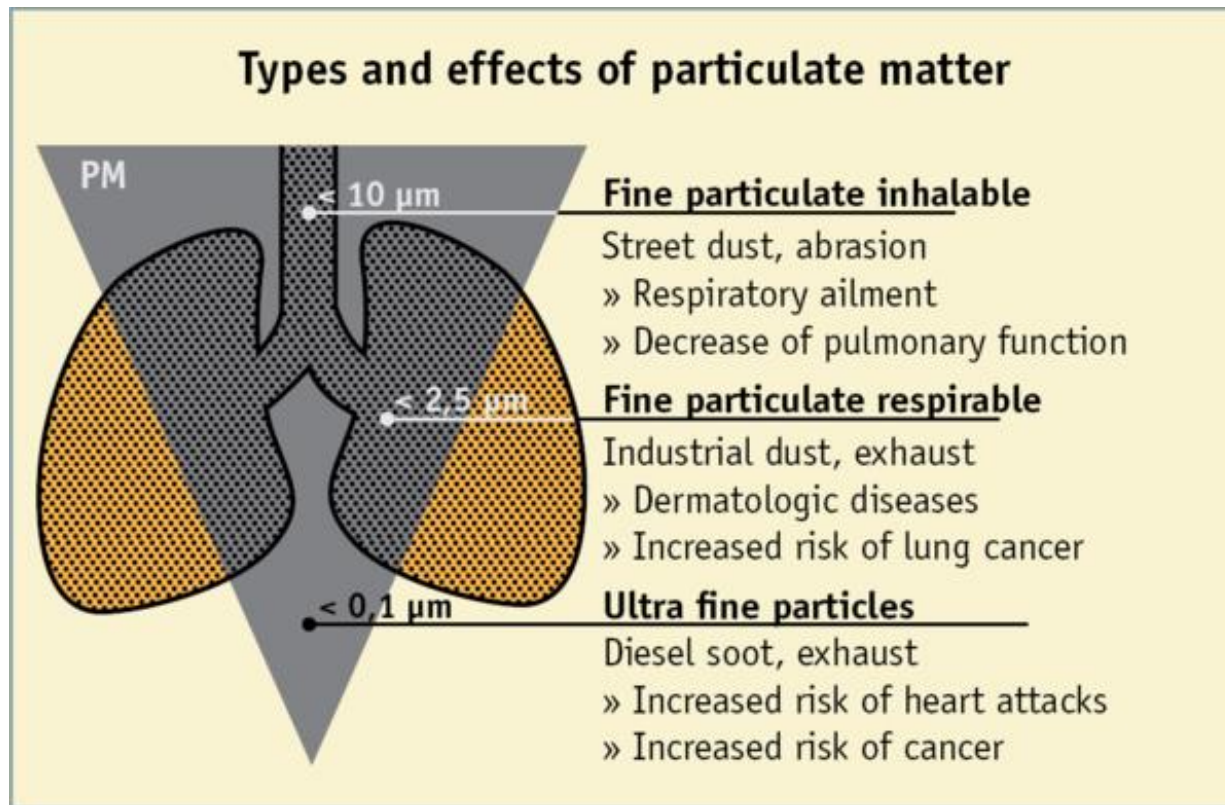
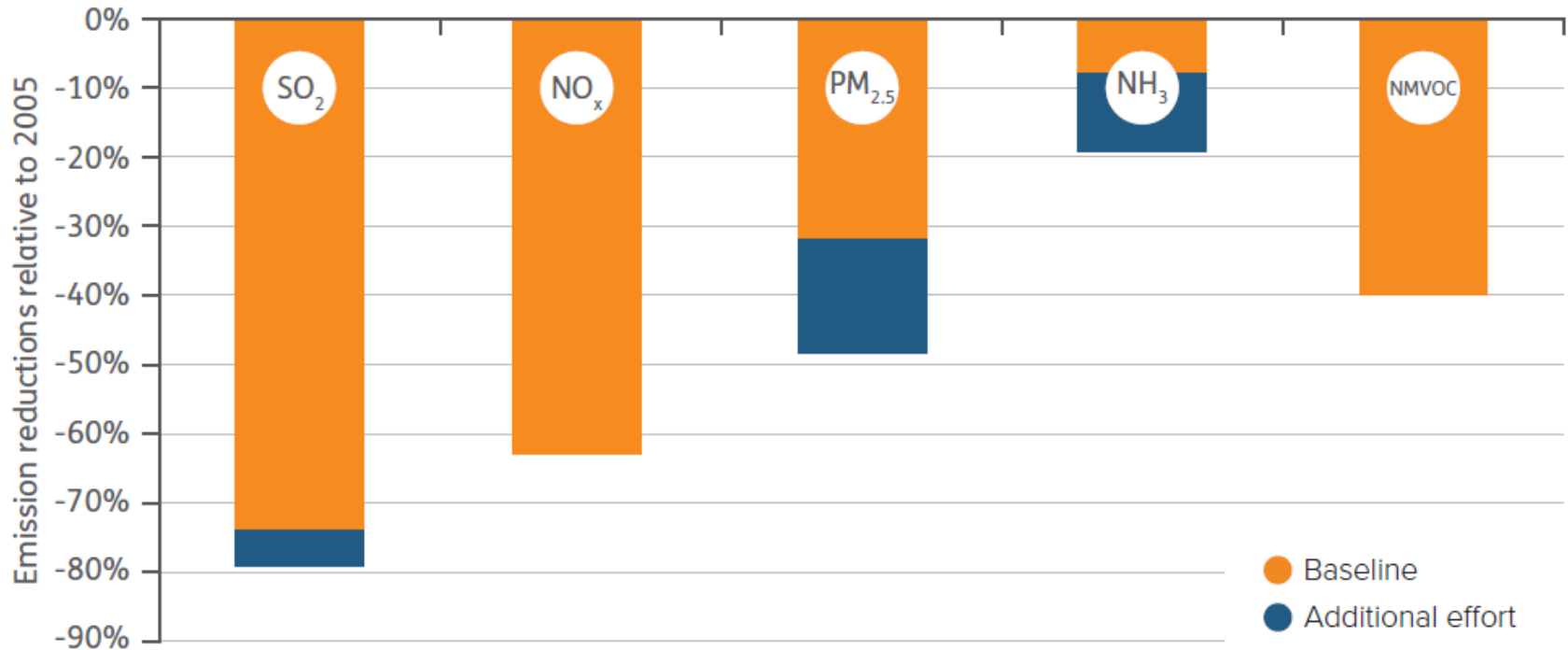


Figure 1: Types and effects of particulate matter | Source: Environmental Action Germany

# NEC Directive

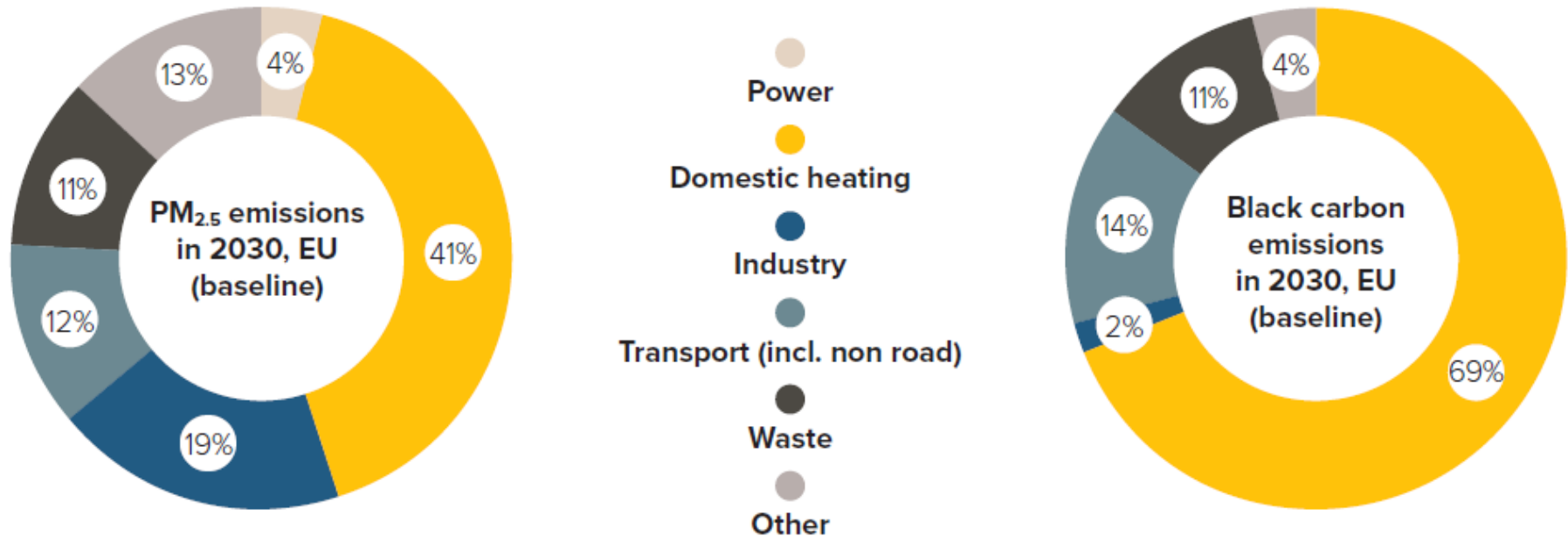


- **Emissions:** National Emission Ceilings (NERCs, 2016/2284/EU)



Reduction targets for 2030; Figure: European Environmental Bureau (EEB), based on Final agreement on the NEC Directive and IIASA TSAP report #16a

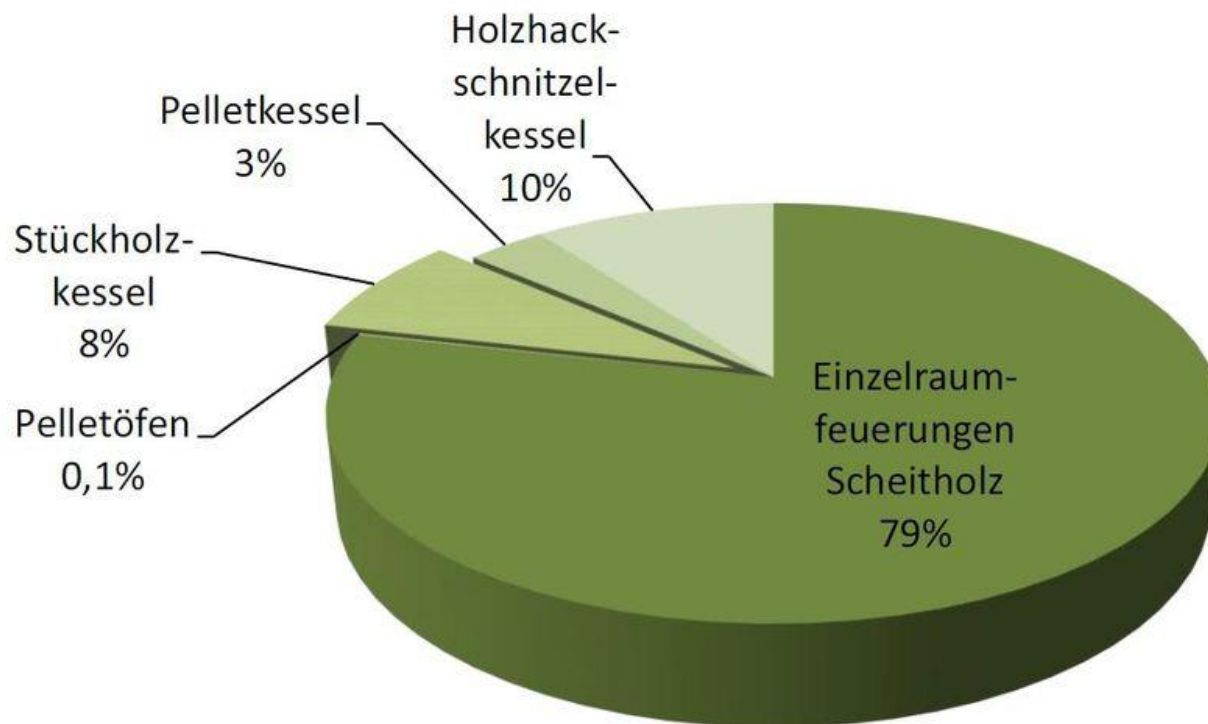
# PM and BC emissions in the EU (2030, expected)



Source: European Environmental Bureau (EEB), based on IIASA GAINS model, 2016

- Given the large share, the domestic heating sector will play an important role in the successful implementation of the Directive.

# Action needed: Small wood burning appliances



Sources of PM due to wood burning; estimate by DBFZ 2014.

# Ambient Air Quality Directive (2008/50/EC)/WHO-recommendations



Schadstoff	Grenzwert	Bezugsdauer	Überschreitungs-tage	WHO-Empfehlungen
PM10	50 µg/m <sup>3</sup>	24h	35	3 Ü-Tage
	40 µg/m <sup>3</sup>	Jahr	n/a	20 µg/m <sup>3</sup>
PM2,5	25 µg/m <sup>3</sup>	Jahr	n/a	10 µg/m <sup>3</sup>
PAK	1 ng/m <sup>3</sup> (Konzentration von Benzo(a)pyren)	Jahr	n/a	0,12 ng/m <sup>3</sup>



# Ecodesign: a problem for forerunners

	Ecodesign requirements (in mg/m <sup>3</sup> )	Legal requirements in Germany (in mg/m <sup>3</sup> )
<b>Local space heaters (firewood stoves), as of 2022</b>	CO 1500 PM 40	CO 1250 PM 40
<b>Local space heaters (pellet stoves), as of 2022</b>	CO 300 PM 20	CO 400 PM 30/20 (with accumulation tank)
<b>Solid fuel boilers, as of 2020</b>	CO ≈360 PM ≈30 (converted to 13% O <sub>2</sub> )	CO 400 PM 20*

*\*in addition: recurring measurements on site (in-service conformity)*

- No slip in standards (boilers): Stricter national emission limits must be possible!

## Policy recommendations (1)

- Better information for consumers: ambitious ecolabels, mandatory proof of origin for firewood and pellets, information campaigns
- Stricter emission limit values for new wood burning appliances, more resources and effective structures for market surveillance
- In highly polluted areas: Ban on installation and on use of solid biomass appliances (with possible exemptions for stoves and boilers with eco-label or comparable low particle emissions like other heat sources)
- Stricter standards for air quality (WHO recommendation)

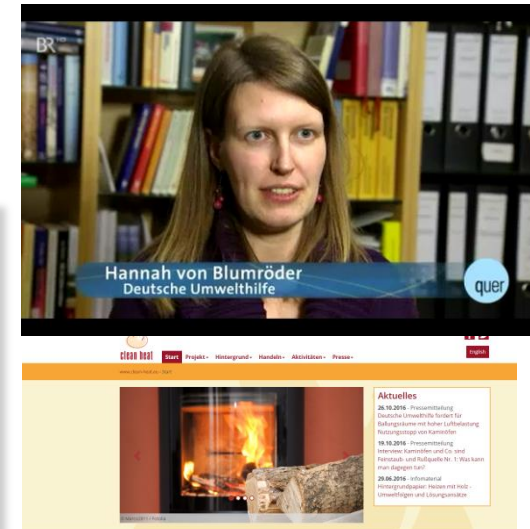
## Policy recommendations (2)

- Harmonized and more realistic measurement procedure in the course of type approval of stoves and boilers
- Requirements and economic incentives for energy renovation and insulation of existing buildings
- Funding programmes for solar heat, geothermal energy and pellet appliances

# What have we done so far?

## Information for policy makers and consumers

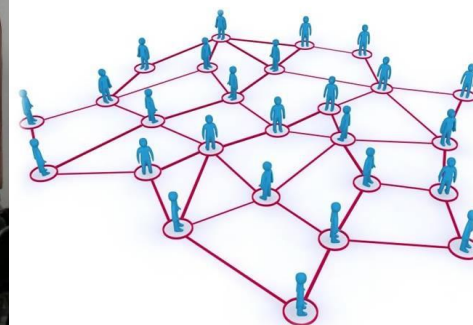
- Different flyer: basic information on emissions and best handling
- More profound: background paper and case study
- Mobile exhibition, short film
- Project Website ([www.clean-heat.eu](http://www.clean-heat.eu))
- Media work



# What have we done so far?

## Particle measurements, expert and external events

- Particle measurements in different Member States
- Expert talks
- Workshops in other Member States together with local NGOs
- European network



## Conclusions

- Just installing new appliances is not the optimal solution (high emissions of stoves in real life)
- Sustainable alternatives to wood/coal burning and better building efficiency have to be promoted
- Biomass is only a viable alternative if emission reduction technology is considered and if it is used efficiently (mainly large-scale)
- Further action is needed to meet air quality guidelines (WHO) and 2030 target for PM<sub>2,5</sub> of the revised NEC → Best practices/solutions for improved domestic heating that are available now.



# Thank you!

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