clean heat

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THE ECOLOGICAL COUNCIL

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EEB European Environmental Bureau

National Air Pollution Control Programs (NAPCPs)

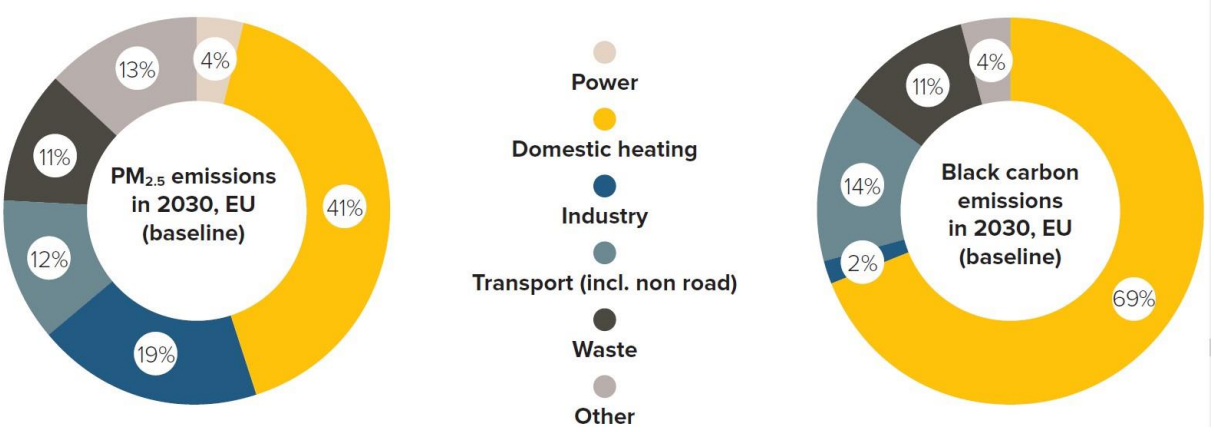
in the context of the NEC Directive

Recommendations for action in the field of residential burning

Small-scale combustion in fireplaces, wood and coal-fired stoves as well as boilers are significant contributors to air pollution. In particular, they emit fine particulate matter ($PM_{2.5}$), poly-aromatic hydrocarbons (PAHs) and dioxins. These pollutants damage human health and cause premature deaths. Wood and coal burning also emits black carbon (BC), known as soot, which contributes to climate change by absorbing heat from the sun.

In 2030, residential burning (or sometimes referred as domestic heating) is expected to cause 41% of all $PM_{2.5}$ emissions and nearly 70% of EU black carbon emissions (see below). With the entry into force of the updated National Emission Ceilings (NEC) Directive, $PM_{2.5}$ emissions have to be cut by 49% by 2030, relative to 2005 levels. In order to comply with the new rules, Member States must detail the measures they will put in place to reduce emissions in National Air Pollution Control Programmes (NAPCPs). Existing legislation will only deliver limited reductions, meaning that Member States and/or the EU will have to come up with additional policies to cut $PM_{2.5}$ emissions further and will have to prioritize measures addressing black carbon, in particular.

Given the large share of residential burning in the $PM_{2.5}$ emissions in 2030, the sector will play an important role in the successful implementation of the NEC Directive. Addressing $PM_{2.5}$ emissions from residential burning would also help achieve lower concentrations in inhabited areas, as levels of air quality are the worst in these places. Most European cities, towns and villages are still far from reaching the $PM_{2.5}$ levels set in WHO guidelines. Many of them are even in breach of the PM_{10} limit values. The potential for cutting emissions from burning of solid fuels in small-scale combustion appliances is huge. There is an urgent need for action – effective measures and existing examples are summarized on the following pages.



Source: EEB, based on IIASA GAINS model, 2016

Ambitious framework for residential burning in the Member States

Measures	Examples
Administrative and legislative measures	
• Stricter national emission rules for stoves and boilers (complementary to pan-European Ecodesign requirements for stoves/boilers): ▪ Emission limits for old appliances (retrofitting with particle separator or shutdown) ▪ Determine real-world emissions: On-site emission tests before putting stove into operation and recurring measurements on site	Emission limits for old stoves and boilers in Germany (1. BImSchV). Recurring measurements in Germany (for boilers, also 1. BImSchV) and Switzerland (boilers above 70kW).
• Member states need to push for stricter emission limit values and a more realistic measurement procedure in the course of type approval of new stoves and boilers on EU level. In addition, a particle number (PN) limit value needs to be introduced and emission reduction technology has to be obligatory (to reduce PN emissions by factor 10).	Overview of best available technology (BAT) given by IIASA (p. 16-22). BeReal project on more realistic test cycle for stoves.
• Stricter air quality standards on national/local level to promote further measures on residential burning (following the WHO Air Quality Guidelines).	Switzerland: limit values in accordance with WHO AQG (e.g. only three days of exceedance of PM_{10} daily limit).
• Legal framework to regulate residential burning on regional/local level: in particular, temporary or permanent bans/restrictions for the operation of specific appliances or usage of fuels like lignite/coal. • Concrete, obligatory measures with regard to residential burning and strict deadlines in air quality plans.	Temporary ban for specific appliances in Stuttgart (Germany)/Graz (Austria); permanent bans in Krakow (Poland)/Berlin (Germany; only solid fuel boilers in new construction plans); minimum requirements for wood burning based on labelling (France/Flamme verte and Lombardy region in Italy).
• Effective structures for market surveillance: ▪ Random conformity of production checks of appliances (in order to verify the manufacturer's specifications) ▪ In-service-conformity checks by measurements on site (see above)	
• Ban on coal/lignite burning. • Tougher requirements for fuel sold or used (e.g. max. humidity for wood, content of ashes, sulfur and heavy metals). • Standardization of fuels: Certification scheme and quality control for fuels.	Max. of 25% of humidity for firewood used (Germany/1. BImSchV). Norms for pellets and woodchips in Germany (ENplus, Blue Angel).

Measures	Examples
Economic incentives and financial resources to support the shift to clean heat	
• Increased financial support (and stricter requirements) for building efficiency/renovation.	
• Promotion of clean alternatives (in particular: heat pumps, solar heat, district heating based on renewables or excess heat from industry) and exchange of old appliances.	Market incentive program (MAP) in Germany with funding for solar/geo-thermal heat as well as specific biomass appliances.
• Financial support for emission reduction technology.	German market incentive program with extra funding for particle separators.
• Support for households living in serious energy poverty to switch to clean and efficient heating systems.	
• Taxes on fuel and on use of certain appliances (i.a. stoves that are used as supplementary heat source).	
• Support for research and development to push innovations and enable further studies on the climate and health impacts as well as the real costs of biomass burning.	For instance, calculations of Clean Air Action Group.
Measures with regard to citizens/operators of stoves and boilers	
• Ambitious eco-labels for stoves and boilers to guide purchasing decision and to promote appliances with fewer emissions.	Blue Angel eco-label for wood burning stoves in Germany (under development): based on more realistic test cycle and emission reduction technology.
• Awareness raising on the health/environmental impact and social costs of residential burning as well as burn right campaigns (including evaluation of the results). • Public information about exceedances of air quality limits.	'Heat wisely campaign of the Hungarian government'. Clean Heat campaign i.a. in Germany, Denmark and Hungary.
• Registration of combustion facilities, regular inspections as well as provisions for proper installation and better maintenance. • Sufficient resources/better financing of authorities checking the heating appliances and authorities responsible for emission control from household burning.	
• Effective controls and sanctions to avoid illegal (waste) burning and misuse of fuel/appliances: ▪ Clear responsibilities and effective structures on local level ▪ Ash testing to detect burning of forbidden materials ▪ High fines in case of violations	Ash testing in Switzerland based on x-ray fluorescence (about 3000 tests annually). Monitoring of illegal burning in Poland with measuring devices mounted on drones.

Further information

LIFE information campaign Clean Heat: www.clean-heat.eu/en/home

IIASA study 'Measures to address air pollution from small combustion sources' (2018): http://ec.europa.eu/environment/air/pdf/clean_air_outlook_combustion_sources_report.pdf

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