Informing you on ambient air quality in the Belgian Regions

Air quality in Belgium

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Belgian national debate on carbon pricing – Brussels, 24/11/2017

AIR QUALITY IN BELGIUM

Averaging time	1-hour		Max 8-hour		24-hour		Year	
	EU	WHO	EU	WHO	EU	WHO	EU	WHO
SO_2	☺	☺			☺	☹		
NO_2	☺						☹	☹
PM_{10}					☺	☹	☺	☹
$PM_{2.5}$						☹	☺	☹
O3			😐	☹		☹		

- Most concentrations of air pollutants in Belgium are below EU limits.
- WHO targets are generally not met in Belgium.
- In a long-term perspective, the EU aims to respect air pollution values set by the WHO.

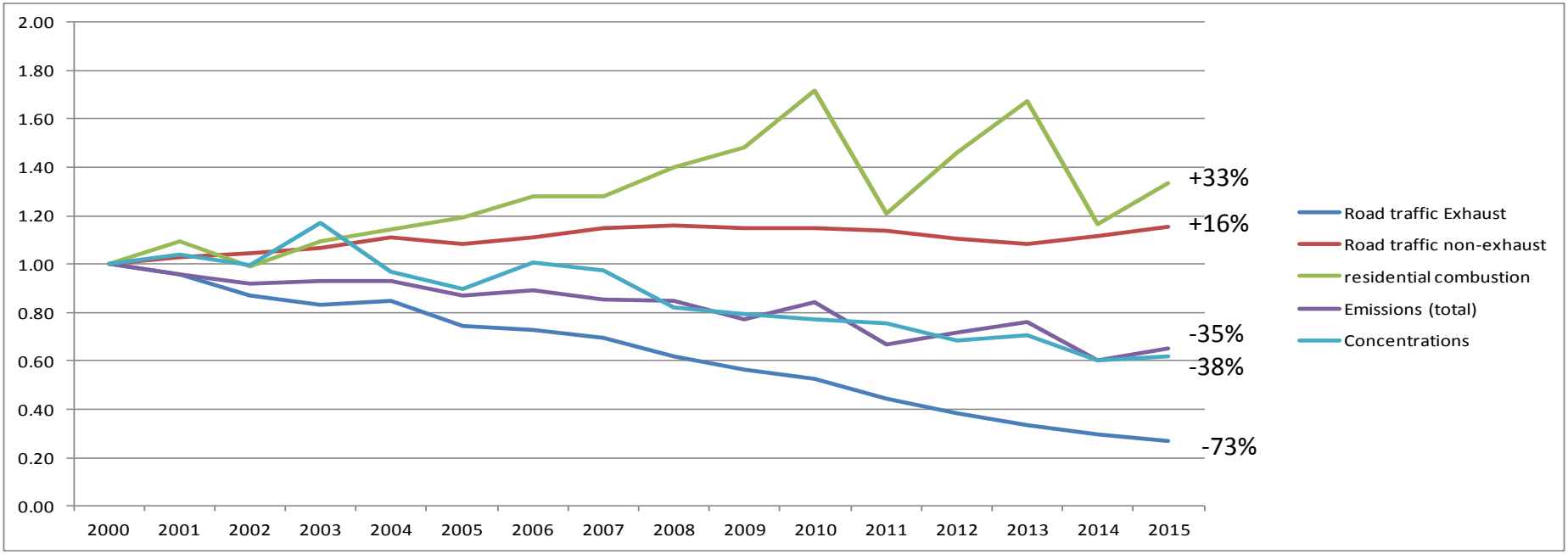
  -> The concentrations of PM2.5 and NO2 in Belgium were respectively responsible for more than 8000 and more than 1800 premature deaths in Belgium in 2014 (EEA, 2017).

  -> The health costs of air pollution (i.a. the loss of 2.5 mio workdays/year) amount every year to 8 billion euro in Belgium (European Commission, 2017).

→ Air quality has improved over the last years, but concentrations of air pollutants still have a **significant health and economic impact** in Belgium.

AIR QUALITY IN BELGIUM

Emission and concentration trend of PM10 (relative from 2000)

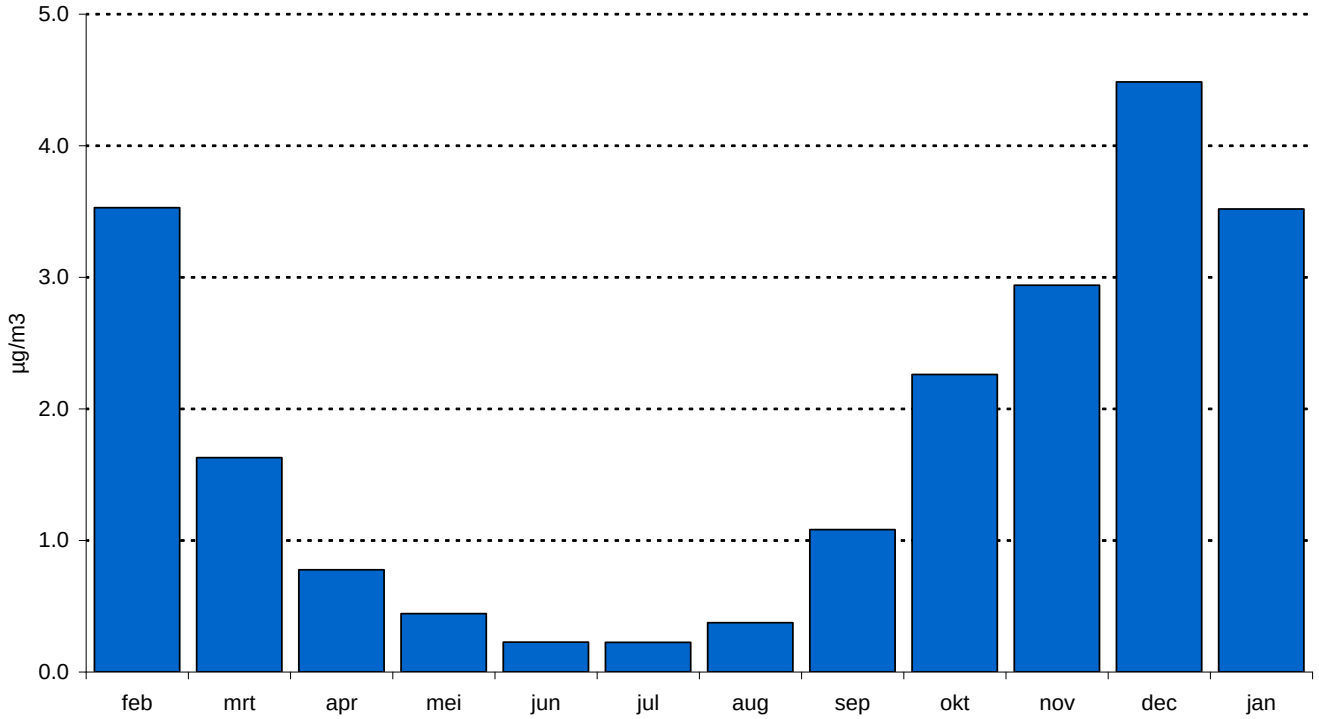


Concentrations do not necessarily follow emission trend:

- emissions are (mostly) calculated (<> measured)
- *primary – secundary PM10*
- Transboundary air pollution
- *Equal e*missions does not lead to equal concentrations (meteo)

AIR QUALITY IN BELGIUM

Share of wood burning in PM10 concentrations in Flanders (tracer = levoglucosan)



Source: Chemkar PM10, VMM (2011)

- Annual average: 2 µg/m³ or 7% of PM10
- Winter: 10% (6x summer)
- Locally up to 30%!!

(source: Inschatting van de bijdrage van houtverbranding door burgers aan luchtverontreiniging in Vlaanderen, VMM 2017)

50 gram *primair* PM10 =

4 kg hout
(open haard)

13 kg hout
(moderne houtstoof)

40 kg pellets
(pelletketel)

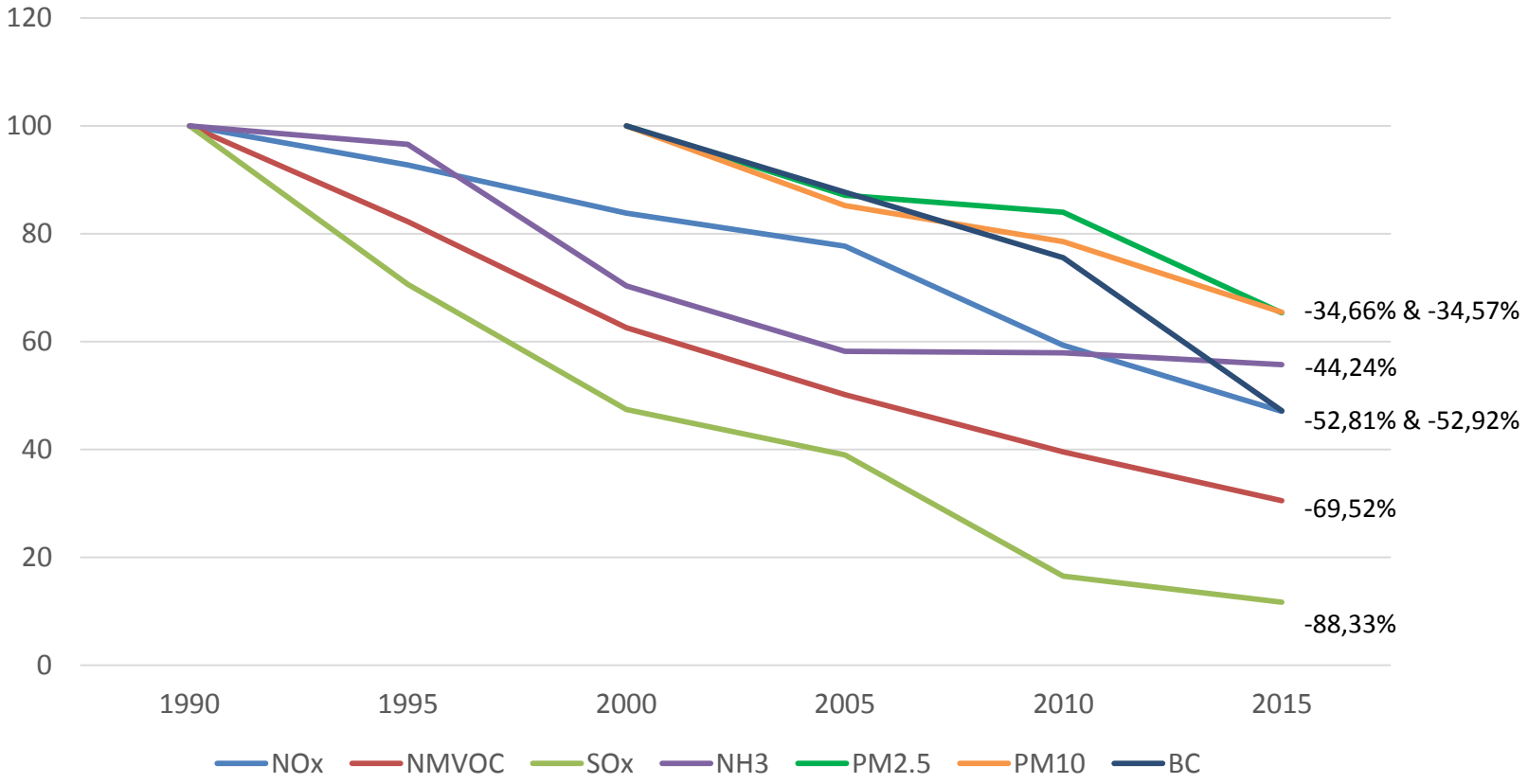
300 km
(vrachtwagen)

600 km
(bestelwagen)

1100 km
(diesel auto)

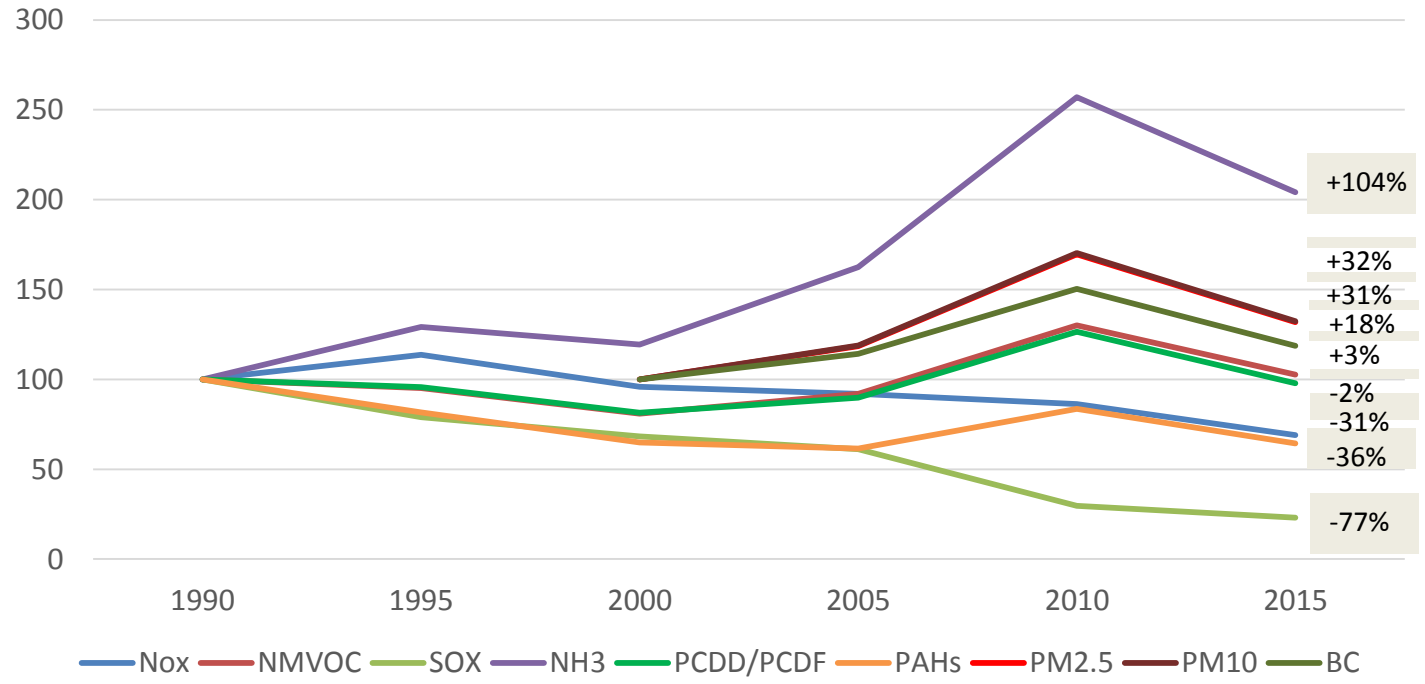
EMISSIONS IN BELGIUM

Evolution of the emissions of air pollutants in Belgium (from 1990, in % - Source: NEC 2017)



EMISSIONS IN BELGIUM

Evolution of the emissions from residential combustion (from 1990, in % - Source: NEC 2017)



- While emissions from domestic heating in Belgium follow a downward trend for some pollutants (SO2), other pollutants are stable or show an increasing trend (PM2.5, PM10, BC).

- Emissions of air pollutants from domestic heating are closely related to the weather conditions.

Revised NEC Directive

2016/2284/EG (14/12/2016)

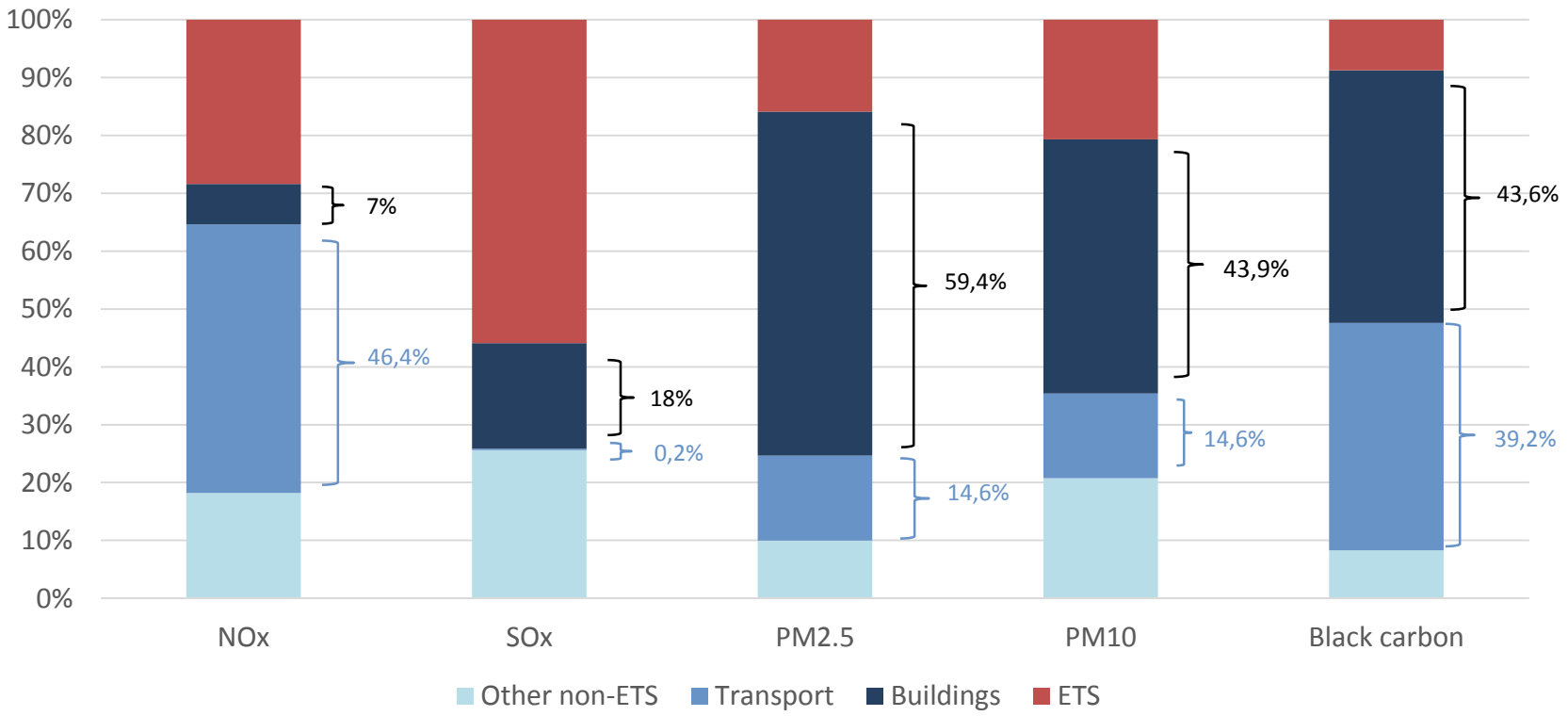
- Reduction targets Belgium 2020 and 2030
  - % to 2005
  - 2020: Göteborgprotocol
  - PM2,5 added
- 2025: trajectory 2020-2030

Emissions in kt/year

	2005	2010 NEC	2015	2020	2030
NOx	305	176 (-45%)	185 (-39%)	-41%	-59%
SO2	142	99 (-30%)	43 (-70%)	-43%	-66%
PM2,5	36		27 (-25%)	-20%	-39%
VOC	148	139 (-22%)	90 (-39%)	-21%	-35%
NH3	68	74 (+9%)	66 (-4%)	-2%	-13%

Relevance of the issue for the carbon pricing debate (1/3)

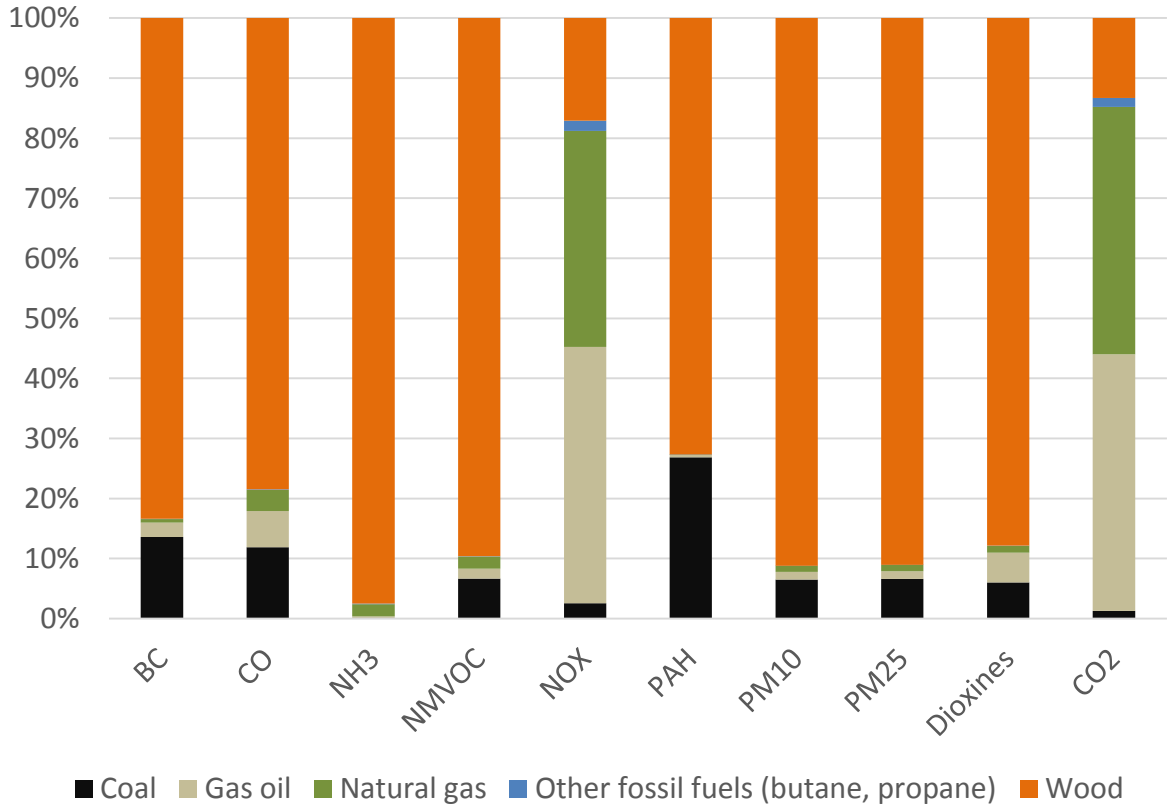
Origin of the Belgian emissions of air pollutants (Source: NEC 2017)



- In Belgium, the non-ETS sectors are significant contributors to the emissions of air pollutants.
- Except for SOx, the transport and the residential sectors are two major sources of air pollution (+ 50%).

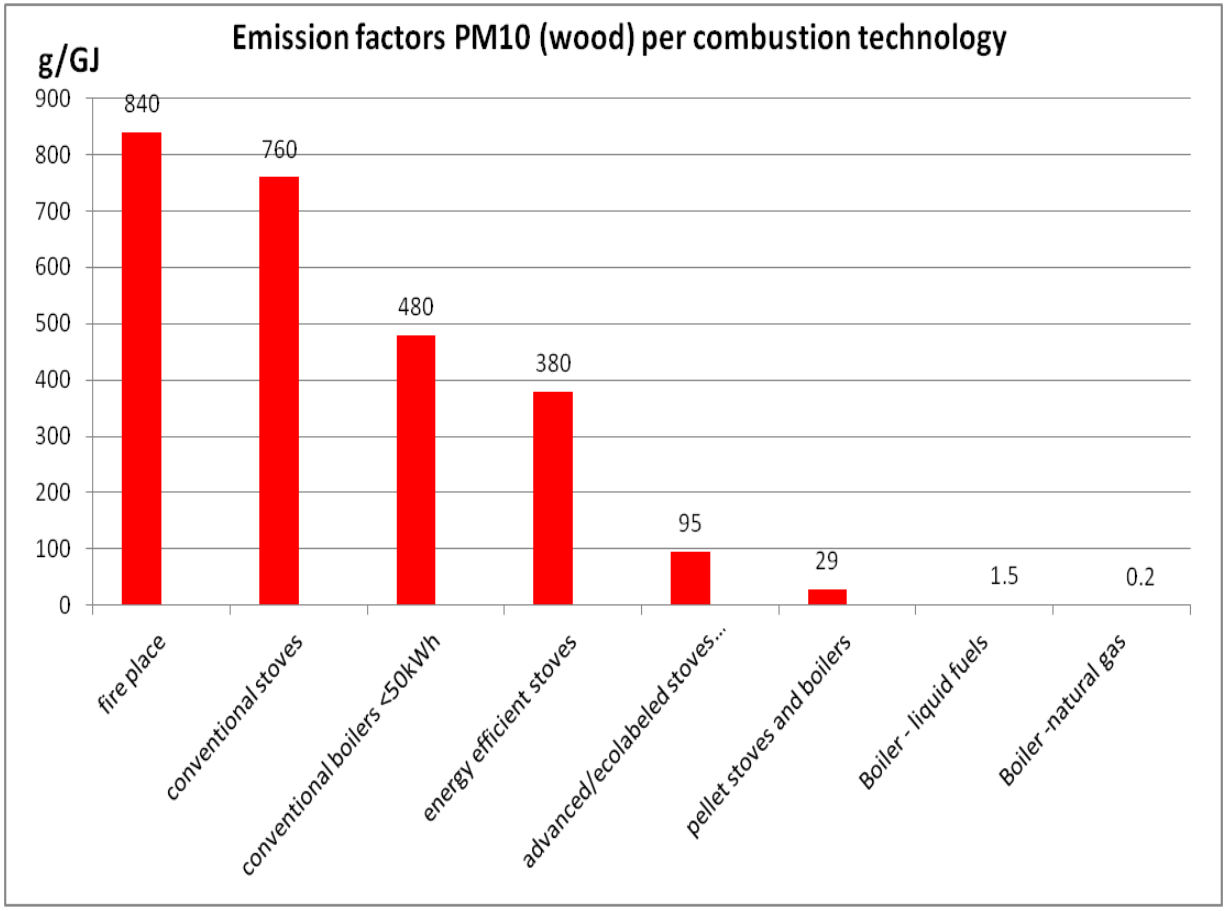
Relevance of the issue for the carbon pricing debate (2/3)

Share of fuels in residential combustion emissions in Belgium (Source: NEC 2017)



- The use of biomass for domestic heating is for most pollutants the major source of emissions in the residentail combustion sector in Belgium.
- If it leads to an increase of biomass for domestic heating, the implementation of a carbon price could have a negative impact on the emissions of air pollutants from the Belgian residential combustion sector.

Relevance of the issue for the carbon pricing debate (3/3)



Source: EMEP/EEA air pollutant emission inventory guidebook (2016)

Emissions of air pollutants from domestic heating depend on the combustion technology:

- Pellet stove = ~30x less polluting than open fireplace
- Gas boiler = ~150x less polluting than pellet stove
- Large biomass plants emit less air pollution per amount of energy produced (1g/GJ PM10) than residential pellet stoves (29g/GJ PM10).

KEY MESSAGES

- Even though air quality has improved over the past years, the concentration of air pollutants still has a significant health and economic impact in Belgium.
- A large share of the air pollutants emitted in our country originate from non-ETS sectors.
- Put together, transport and domestic heating represent more than half of the emissions for most air pollutants.
- The use of biomass is a major source of most air pollutants in de residential combustion sector, especially for particulate matter, PAH's and dioxins.
- An emission reduction of air pollutants in Belgium through a carbon tax will not have the same impact on the concentrations of all pollutants.
- Air pollution and climate change objectives are not always aligned.
- If a carbon price leads to an increased use of biomass in the residential sector, this could increase emissions of particulate matter and other pollutants in Belgium.