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FORWARD



Online meeting
01 - 02 December



WP2 - Knowledge transfer Legal framework of emission limits



ENTRAIN | REGEA | Martina Krizmanić Pećnik

CROATIA - LEGAL FRAMEWORK OF EMISSION LIMITS

- Croatia's Ministry of Environment and Energy defines and monitors implementation of projects that are aimed at reducing national GHG emissions and improving the overall level of sustainability of the Croatian society.
- The Croatian Agency for the Environment and Nature is in charge of organizing the preparation of the inventory of GHG emissions, data collection, development of quality assurance, a quality control plan, and selection of an authorized institution.
- Preceding the Paris Agreement, the country fulfilled its obligations under the Kyoto Protocol, this consisted of lowering GHG emissions by 5% over the period 2008–2012.
- In total the country has 11 climate laws and 4 climate policies.
- Law on energy efficiency (2014) – states strong commitment to GHG emissions reduction.

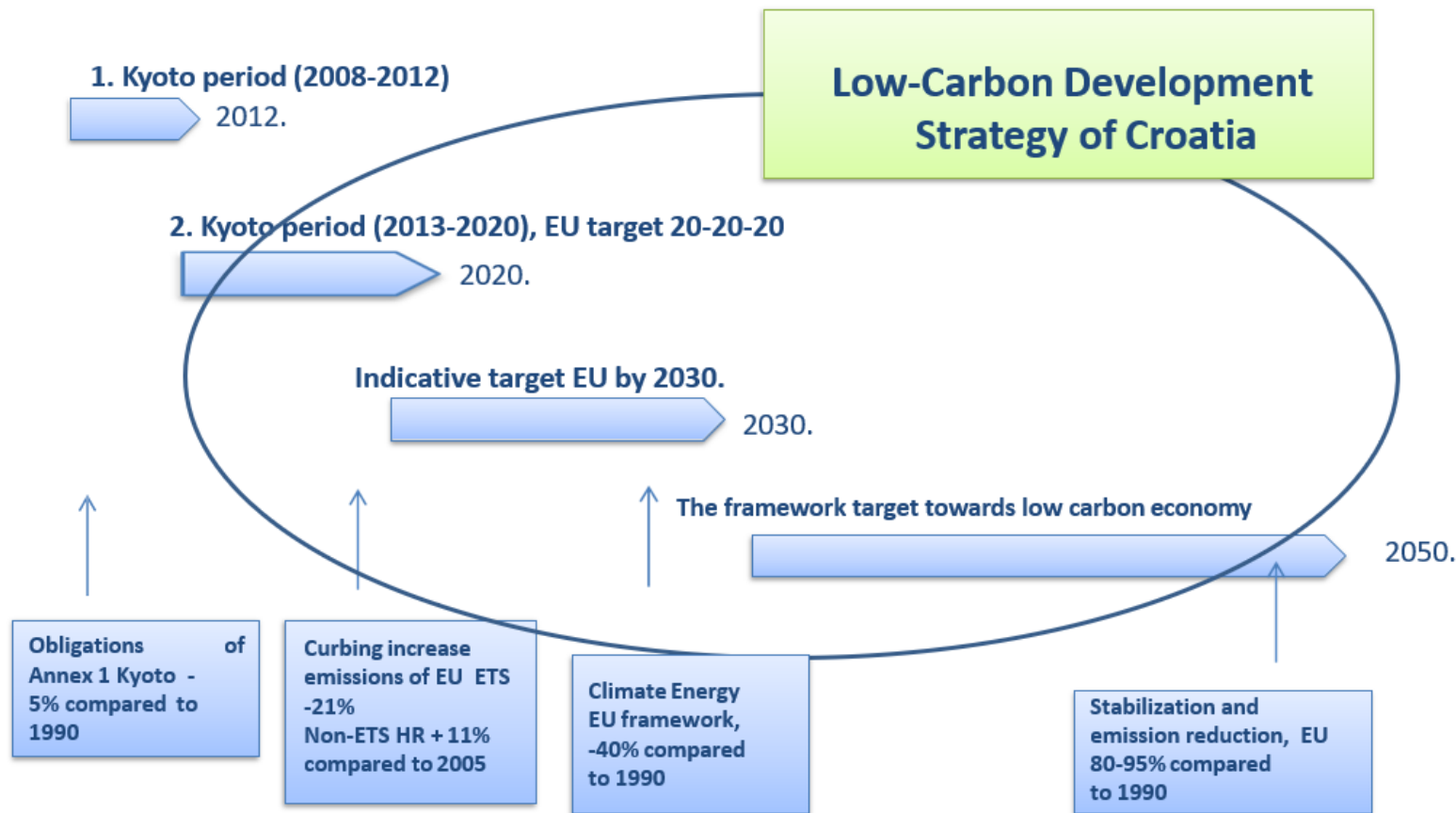


CROATIA - LEGAL FRAMEWORK OF EMISSION LIMITS

- In 2009 Croatia adopted the Sustainable Development Strategy that outlined quantified targets such as 20% renewable energy sources by 2020 and 1–2% annual decrease in energy intensity per unit of GDP.
- When the country became a member of the EU in 2013 it pledged to active involvement in the 2020 Energy Strategy, which aims to reduce member states' GHG emissions by at least 20%, increase the share of renewable energy to at least 20% of consumption and achieve energy savings of 20%.
- Currently, the country is in the process of drafting a Low-carbon Development Strategy by 2030 with a view to 2050 document that is in synchronization with European strategic guidelines and the country's United Nations Framework Convention on Climate commitments.



TIME HORIZON LOW CARBON STRATEGY OF CROATIA



CROATIA - LEGAL FRAMEWORK OF EMISSION LIMITS

- Currently, emission limits are regulated by the EU-ETS (European Union Emission Trading System) for production units with the thermal output higher than 20 MW.
- In Croatia, around 9 big heat and electricity production units are regulated by the EU-ETS.
- In addition, several Acts and Laws are complementary with EU-ETS in order to monitor, verify and report on CO2 emissions in Croatian energy sector.
- There are several approaches of improving the whole EU-ETS in Croatia, but the clear path and concrete measures are yet to be defined.



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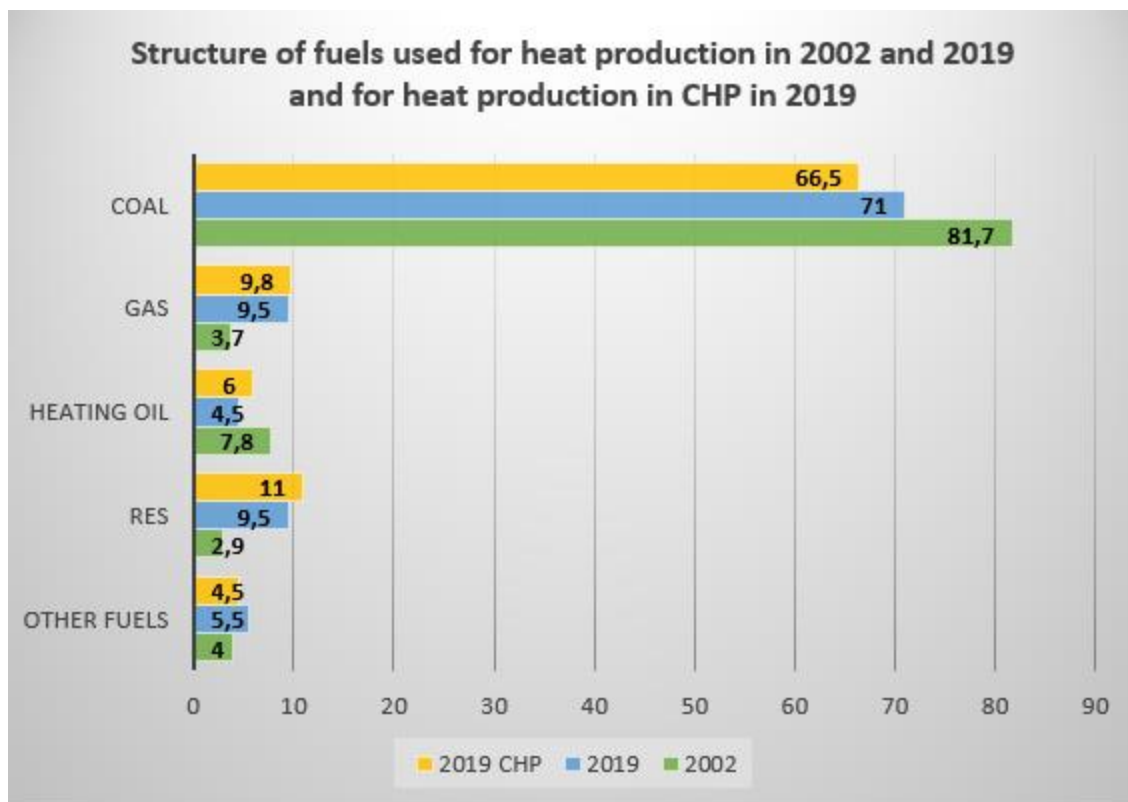
📍 TT3-session, 02.12.2020

💬 Emission limits in Poland

👤 ENTRAIN | The Association of Municipalities Polish Network "Energie Cités" | Anna Lachowicz

FUELS USED FOR HEAT PRODUCTION

- The main fuel used for heat production in Poland is coal.
- A very positive trend is also visible here - its use in the heating sector is constantly decreasing.
- The share of heat from cogeneration in 2019 was 65% of total heat production



POLAND

REGULATION OF THE CLIMATE MINISTER
of 24 September 2020 on emission
standards for certain types of
installations, fuel combustion sources
and waste incineration or co-incineration
equipment

POWER [MW]	POLAND	EUROPE
SO ₂ [mg/m ³]		
< 5	800	200
5 - 50	800	200
50 - 100	200	15-100
100 - 300	200	<10-70
> 300	200	<10-50
NO _x [mg/m ³]		
< 50	400	650
50 - 100	300	70-225
100 - 300	250	50-180
> 300	200	40-150
PARTICULATES [mg/m ³]		
< 5	200	50
5 - 20	100	30
20 - 50	100	30
50 - 100	30	2-15
100 - 300	20	2-12
> 300	20	2-10

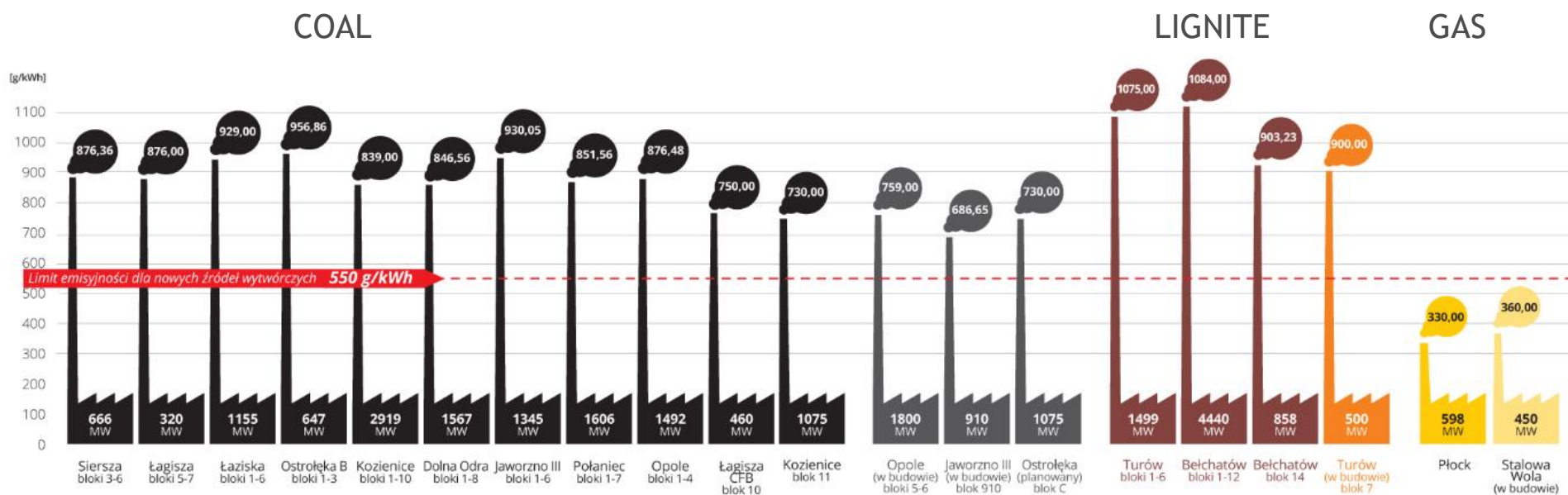


- The European Commission accepted Polish arguments and in February 2018 accepted the capacity market as a form of public help.
- The capacity market in Poland is also an additional support for cogeneration plants - because it adds some facilities for them. This mechanism is based on power auctions mainly on a yearly basis, on which obligations are offered - i.e. availability to deliver a certain amount of power for the whole year.
- The cogeneration plants operate in such a way that other levels of power can offer in winter and other levels of power can offer in summer, with much less heat demand, the production potential decreases.



EMISSION LIMITS

CO₂ emissions from Polish coal-fired power plants in relation to the 550 g/kWh emission limit to be applied for new support programs.



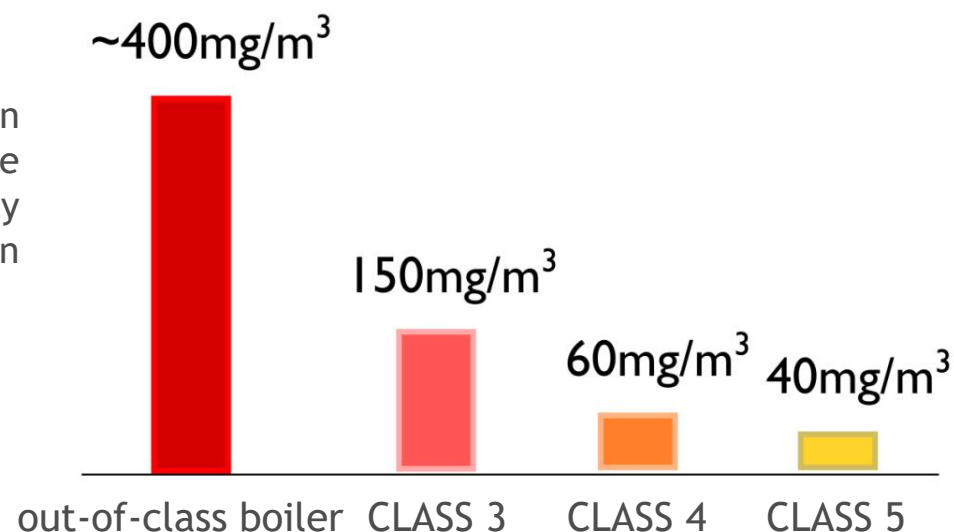
Looking at the emission level of coal units, it is very possible that after 2025 the structure of fuels used in the Polish power industry will be changed - we will start using more RES and less coal.



The main emission standard for domestic boilers is **PN-EN 303-5:2012**, which defines emission classes, with class 5 at the top. Emissions of: carbon monoxide, dust and minimum required efficiency are standardized. Even stricter requirements are introduced by the **Ecodesign Directive**.

Boilers which comply with the emission requirements of the 5th class/Ecodesign are the cleanest coal/wood burning devices currently existing. They produce more than 90% less pollution in comparison with non-standard boilers.

Dust emission from coal-fired boilers



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4th Project meeting - ENTRAIN
Online meeting (GoToMeeting), 1.12.2020



Pilot region - SLOVENIA - TT3 - Emissions limits



ENTRAIN - Partner No. 9 - Zavod KSSENA, Nejc Jurko
ENTRAIN - Partner No. 10 - JAVNE SLUŽBE PTUJ, Franci Voglar

TT3 - EMISSIONS LIMITS

EMISSION LIMITS IN TARGET COUNTRY

NATIONAL AUTHORITY - Ministry of the Environment and Spatial Planning



NATIONAL REGULATOR - Slovenian Environmental Agency



SLOVENIAN ENVIRONMENT AGENCY



The Environment Agency is a body of the Ministry of the Environment and Spatial Planning. Its mission is to monitor, analyse and forecast natural phenomena and processes in the environment, and to reduce natural threats to people and property.

AREAS OF WORK:

- Air
 - Water
 - Environmental protection
 - Nature
 - Climate change
 - Weather
 - Seismology



AIR EMISSIONS - compatible topic with ENTRAIN

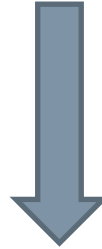
The Environmental Agency of the Republic of Slovenia (EARS) has the following duties in the field of air quality protection:

- Monitoring of outdoor air quality
- Collecting emission data
- Performing administration procedures for air quality protection



NATIONAL LEGISLATION:

ENVIRONMENTAL PROTECTION LAW



REGULATION ON EMISSIONS OF SUBSTANCES INTO THE AIR FROM MEDIUM COMBUSTIONS
PLANTS, GAS TURBINES AND STATIONARY ENGINES



Emissions limits from the Regulation:

- Emission limit values for new combustion plants using solid fuel:

SUBSTANCE	LIMIT	NOTES
Dust	30 mg/m ³	For combustion plants with a thermal input exceeding 5 MW and equal to or less than 20 MW
CO	225 mg/m ³	When using non-coal fuel, briquettes and coal coke
NO _x	375 mg/m ³	For combustion plants with a thermal output exceeding 5 MW
SO ₂	400 mg/m ³	When using exclusively wood biomass and non-biomass fuels
Total organic carbon	15 mg/m ³	

- CO - carbon monoxide
- NO_x - nitrogen oxides
- SO₂ - sulfur dioxide



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Train-the-trainer session 3
Online 2 December 2020



Emission Limits - Target region: FVG



ENTRAIN | APE FVG | Francesco Locatelli

AIR QUALITY AND SMALL/MEDIUM-SIZED BIOMASS POWER PLANTS - FVG

A brief review of current emission regulations and local air quality

Latest regulation 15/11/2017 Decree n.183, adopting EU Directive 2015/2193:

- Regulating emission limits of small and medium-sized combustion plants;
- Defining different levels for solid waste, biomass, liquid, gaseous and combined fuel plants;
- Reporting limits for old refurbished plants and new planned plants;
- Recommends even lower levels than reported limits, especially for PM and NO₂ emissions.

Source: <https://www.gazzettaufficiale.it/eli/id/2017/12/16/17G00197/sg>



AIR QUALITY AND SMALL/MEDIUM-SIZED BIOMASS POWER PLANTS - FVG

A brief review of current emission regulations and local air quality

EXISTING PLANTS

- until 2024 for capacity > 5 MW
- until 2029 for capacity < 5 MW

Capacity [MWth]	0,15 ÷ 3	>3 ÷ 6	>6 ÷ 20	>20
Dust [mg/Nm3]	100	30	30	30
TOC [mg/Nm3]	-	-	30	20
CO [mg/Nm3]	350	300	200	200
NH ₃ [mg/Nm3]	-	-	-	-
NO ₂ [mg/Nm3]	500	500	400	300
SO ₂ [mg/Nm3]	200	200	200	200

Excess O₂ in combustion set to 11% for wooden biomass;

Source: <https://www.gazzettaufficiale.it/eli/id/2017/12/16/17G00197/sg>

EXISTING PLANTS

- from 2025 for capacity > 5 MW
- from 2030 for capacity < 5 MW

0,15 ÷ 1	>1 ÷ 5	>5 ÷ 20	> 20
75	45	45	30
-	-	45	30
525	450	300	300
7,5	7,5	7,5	7,5
650	650	600	450
225	200	200	200

Excess O₂ in combustion set to 6% for wooden biomass;

NEW PLANTS

0,15 ÷ 0,5	>0,5 ÷ 1	>1 ÷ 5	>5 ÷ 20	>20
75	60	45	30	20
75	75	45	30	15
525	375	375	300	225
7,5	7,5	7,5	7,5	7,5
500	500	500	300	300
150	150	150	150	150

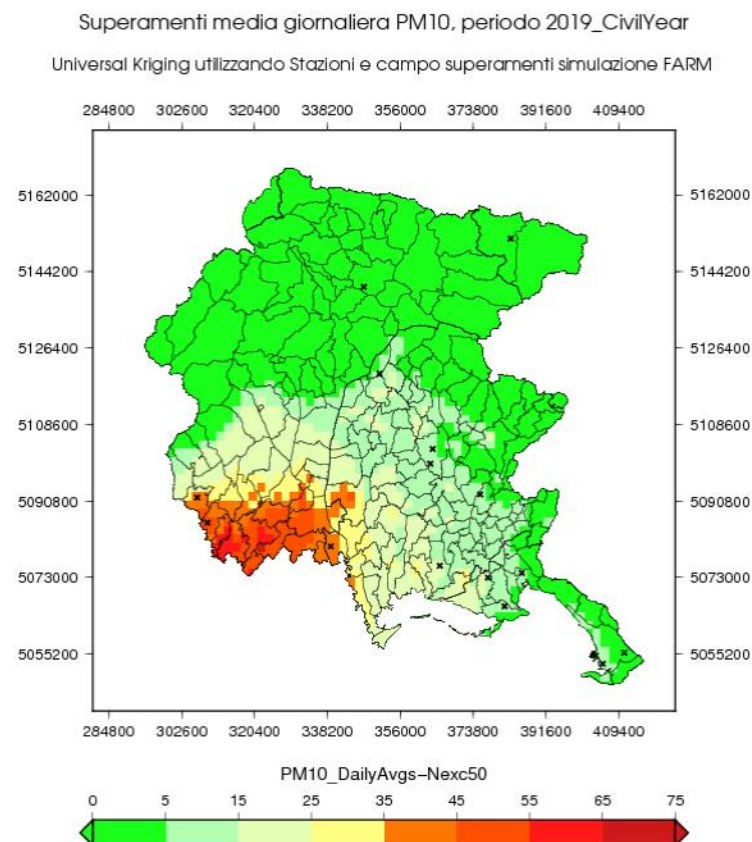
Excess O₂ in combustion set to 6% for wooden biomass;



AIR QUALITY AND SMALL/MEDIUM-SIZED BIOMASS POWER PLANTS - FVG

A brief review of current emission regulations and local air quality

- Wood is a major energy source in residential heating;
- Residential heating accounts for 50% of PM10 emissions;
- Air quality is overall good compared to the Po basin, thanks to lower population density and more frequent wind;
- Some areas are affected by local activities, such as few large iron and steel industries;
- Only few municipalities overshoot the PM limits for more than 35 days/year (maximum threshold, *see figure*)



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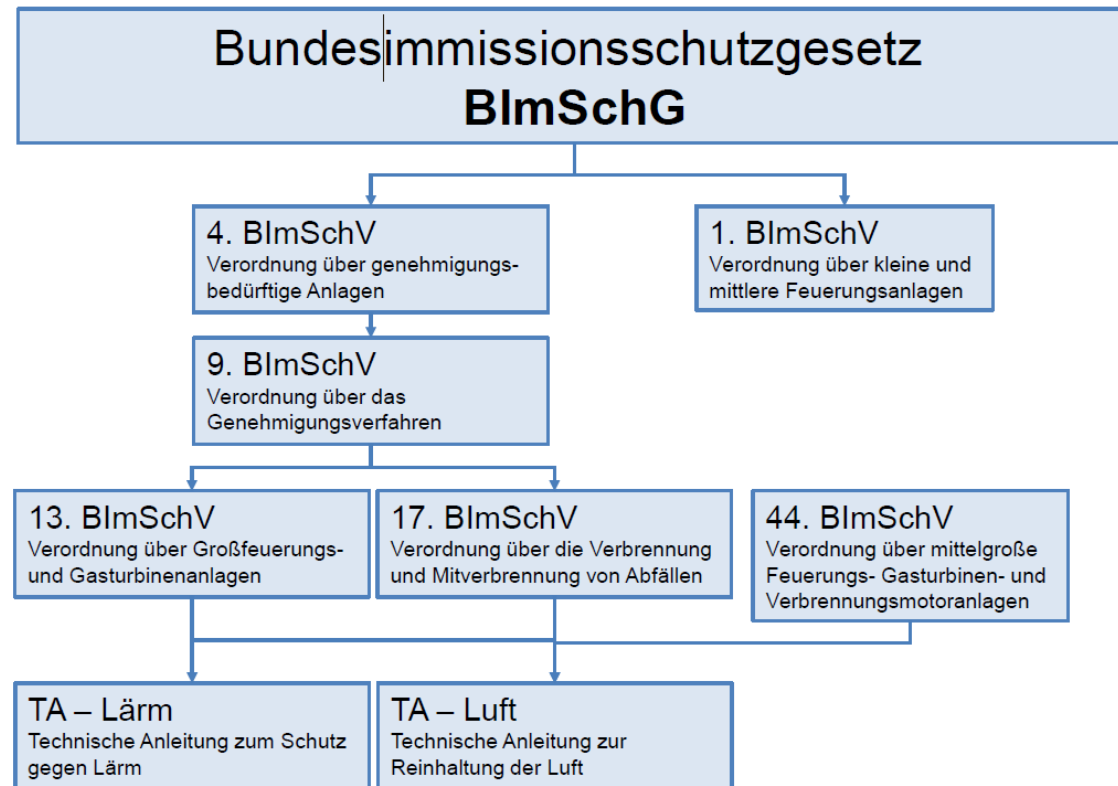
📍 TT3: Emissions, Air Quality, Fuel and Ash Logistic

💬 Emission limits: Legal framework in Germany

👤 ENTRAIN | HEF | Johanna Eichermüller

EMISSION LIMITS IN GERMANY

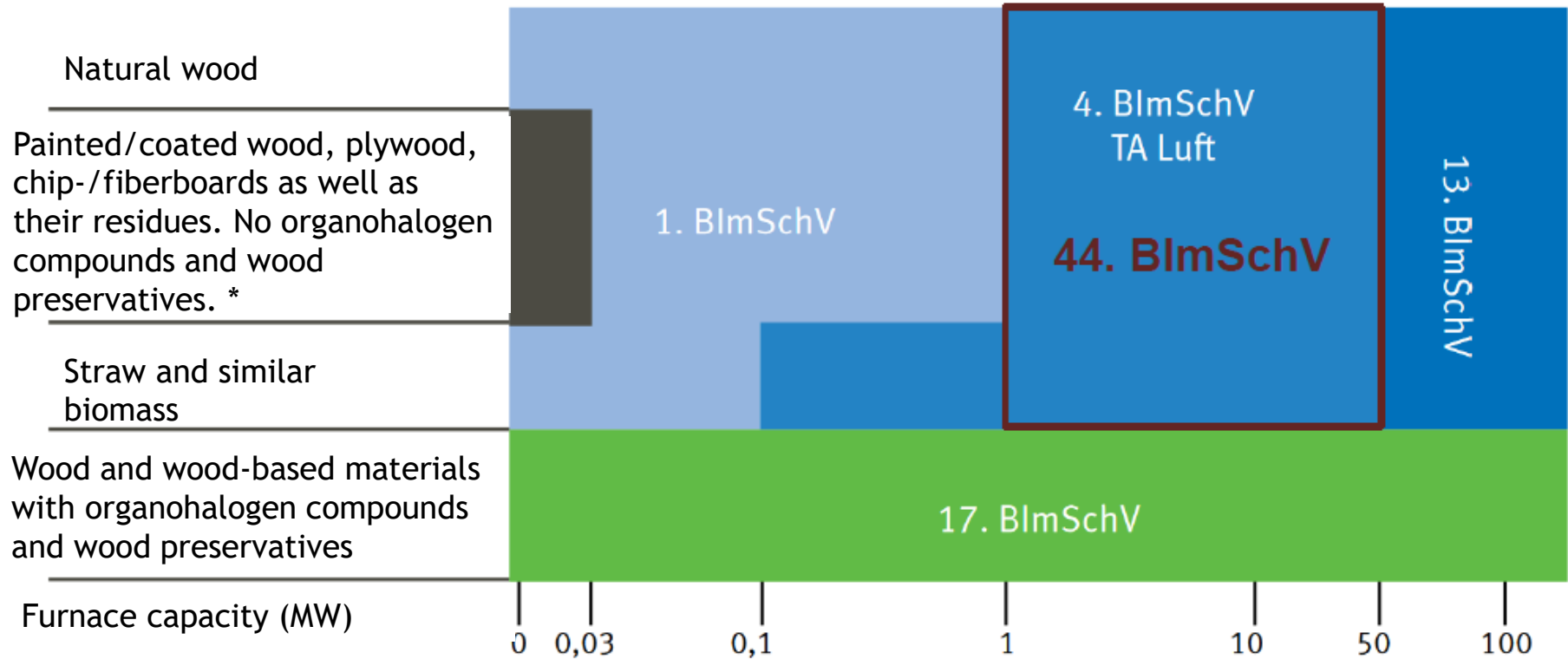
- Wide range of emission sources: Industry, households, waste management, traffic, agriculture, **energy sector**
- Monitoring of various compounds: NO_x, PM₁₀, PM_{2.5}, Black carbon, NH₃, SO₂, VOC, CO
- Legal framework: Federal Emission Control Act (*BImSchG*) - specified by a list of national regulations (*BImSchV*)



Source: H. Thorwarth



EMISSION LIMITS / APPROVAL PROCEDURE DEPEND ON PLANT SIZE AND FUEL



Source: FNR

■ Use not permitted.

* < 1 MW use only permitted within wood industry

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➤ The following limits refer to solid biofuels



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SMALL COMBUSTION PLANTS (< 1 MW)

1. BIMSCHV

	Fuel	Nominal heat output (kW)	Particulate matter (g/m ³)	CO (g/m ³)
Furnace built after 22.03.2010	Untreated wood	4-500	0.1	1.0
		> 500	0.1	0.5
	Pellets	4-500	0.06	0.8
		> 500	0.06	0.5
	Waste wood	30-100	0.1	0.8
		100-500	0.1	0.5
		> 500	0.1	0.3
Furnace built after 31.12.2014	Untreated wood + Pellets	> 4	0.02	0.4
	Waste wood	30-500	0.02	0.4
		> 500	0.02	0.3

Older furnaces: 150 mg/m³ total dust, 4.000 mg/m³ CO

Under certain conditions, they gradually must be retrofitted / closed down if above limits



MEDIUM-SIZED COMBUSTION PLANTS (1 - 50 MW) 44. BIMSCHV

CO (g/m ³)	Parti- culate matter (mg/m ³)	NO ₂ (g/m ³)		C (mg/m ³)	SO ₂ (g/m ³)	HCl (mg/m ³)	Hg (mg/m ³)
0.22 (wood)	20	< 1 MW	0.75	10 / 15 (existing plants)	0.2	45	0.05
		< 5 MW	0.37				
0.37 (straw)		5 - 20 MW	0.3 (0.37)				
		> 20 MW	0.2				



LARGE COMBUSTION PLANTS (> 50 MW)

13. BIMSCHV

CO (mg/m³)		Parti- culate matter (mg/m³)	NO ₂ (mg/m³)		C (mg/m³)	SO ₂ (g/m³)		Hg (mg/m³)		
50- 100 MW	150 (untreated)	10	50-100 MW	250	10	50-300 MW	200	0.03		
	250 (other)		100- 300 MW	200						
> 100 MW	200 (untreated)		> 300 MW	150		> 300 MW	150			
	250 (other)									

