Bioenergy – sustainable enabler of the heat transition in Europe

REPLACE Project Final Conference: Keeping the heat on in times of crisis

21st March 2023 | Brussels

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Director Business Development and Membership Department

Bioenergy EUROPE

#bepartofbioenergy

About Us

Common voice of European bioenergy since 1990

Unites **40+ national associations** and **150+ companies**

Hosting the European Pellet Council (EPC)

Quality & Sustainability **Certifications**

Our Services:

- EU Policy Monitoring & Influence
- Market Data
- Visibility
- Networking
- Free & Discounted Events

Our Members

*as of March 2023

Bioenergy EUROPE

Companies

Associations

Academia

Our Working Groups

Members Only

Domestic Heating

Next Date: 27th September 2023

Promotes biomass in the domestic heating sector and discusses building regulations, air emissions and stove & boilers certifications.

Pellets

Next Date: 22nd March 2023

Discusses common issues and opportunities regarding the development of the European pellet market (residential, commercial, industrial) and proposes actions to overcome current barriers.

Agro-biomass

Next Date: 30st May 2023

Promotes underutilized biomass feedstocks (e.g. residues from agriculture, dedicated perennial lignocellulosic crops) through ad hoc policies.

Wood Supply

Next Date: 23rd May 2023

Provides with active exchanges of data, market trends and news in legislation.

Competitiveness

Next Date: 28th March 2023

Provides updates on key existing and emerging policy topics determining the competitiveness of bioenergy sector within the EU (e.g. carbon tax, state aid)

Sustainability

Next Date: 14th June 2023

Monitors climate and energy legislation impacting the European bioenergy sector and advocates for an efficient EU sustainability policy for biomass for heating and electricity production.

Carbon Dioxide Removals

Next Date: 4th April 2023

Establishes an interactive forum to explore policy options for the creation of negative emission certificates and incentives within EU energy and climate policies.

TF National Advocacy

Next Date: 27th March 2023

Provides regular updates for national associations on relevant EU policies and enhances cooperation between EU and national levels.

Our recent EU projects

AgroBioHeat

www.agrobioheat.eu

Project duration: January 2019 – June 2022

Promoting the market uptake of modern, cost-effective, low-emissions agrobiomass heating solutions for rural Europe.

REDI4HEAT

www.linkedin.com/company/redi4heat/

Project duration: October 2022 – September 2025

Support the implementation of key EU legislations on heating and cooling at EU level and for 5 member-states.

RE4INDUSTRY
Renewable energies for industries

www.re4industry.eu

Project duration: September 2020 – August 2023

Increased renewable energy use in the European Energy Intensive Industries (EIIs) sector.

MUSIC
Market Uptake Support for Intermediate Bioenergy Carriers

www.music-h2020.eu

Project duration: September 2019 – February 2023

Market uptake of Intermediate Bioenergy Carriers (IBCs): torrefied biomass, fast pyrolysis bio-oil, microbial oil.

The AgroBioHeat, RE4Industry and MUSIC projects have received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 818369, 952936 and 857806 respectively. The REDI4HEAT project has received funding from the LIFE programme of the European Union under grant agreement No. LIFE27 101077369.

Bioheat in the EU framework

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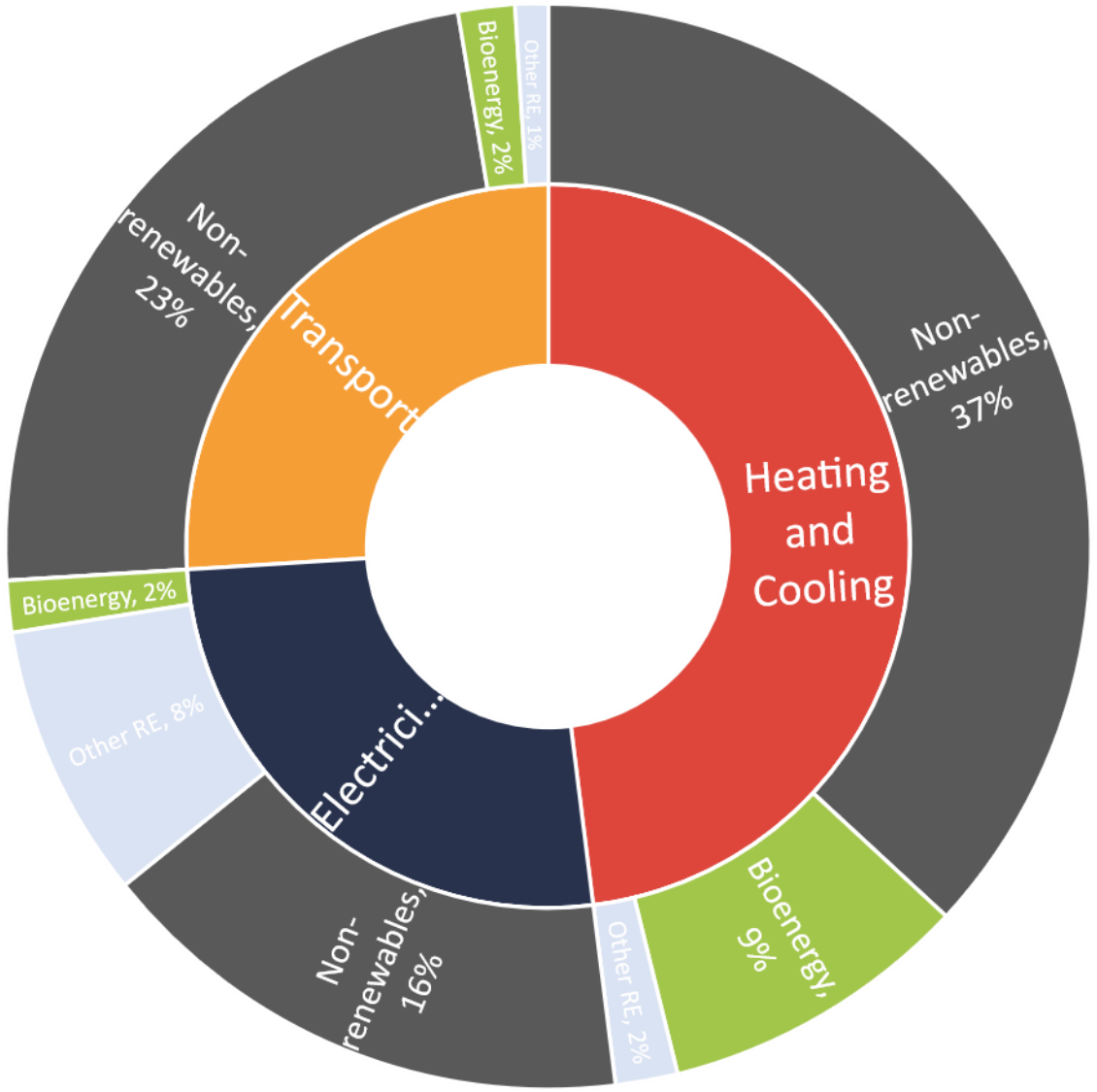
Distribution by energy source of the various final usage in the EU27 in 2020 and their relative importance in total final energy consumption (%)

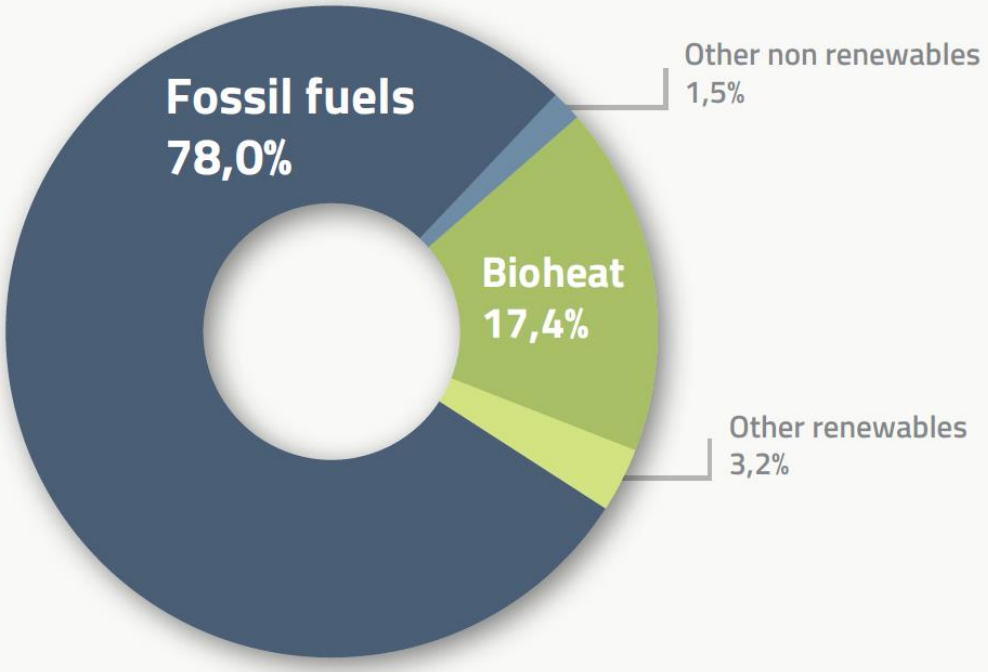


- Heating and cooling → **48%** of the EU's final energy consumption!
- Bioenergy = **85%** of renewable heat

Source: Bioenergy Europe, Eurostat, Shares 2020

Distribution by energy source of the various final usage in the EU27 in 2020 and their relative importance in total final energy consumption (%)

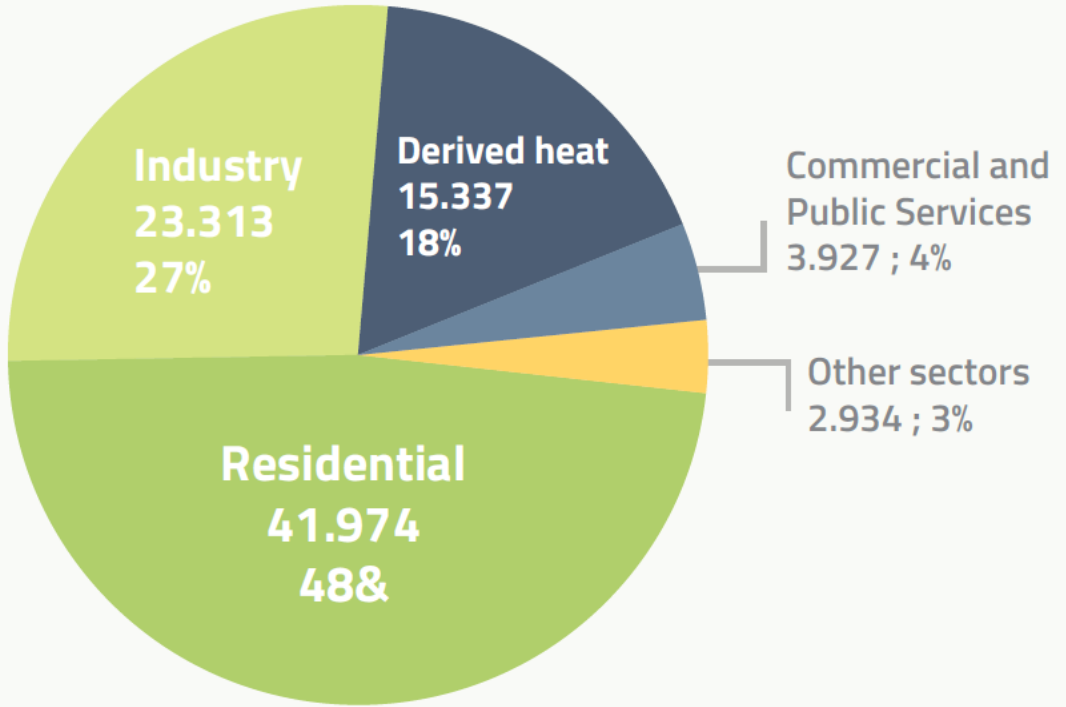
Contribution of the different energy sources in heating and cooling in EU27 in 2020 (in %)*



Note: Other non-renewables are mainly non-renewable waste.
*Article 5 of Directive 2009/28/EC establishes the guidelines for Member States on calculating renewable energy from heat pumps from different heat pump technologies. Only renewable energy from heat pumps with a Seasonal Performance Factor (SPF) greater than 2.5 should be considered towards the target.

Source: Eurostat, SHARES 2020, Bioenergy Europe's calculation

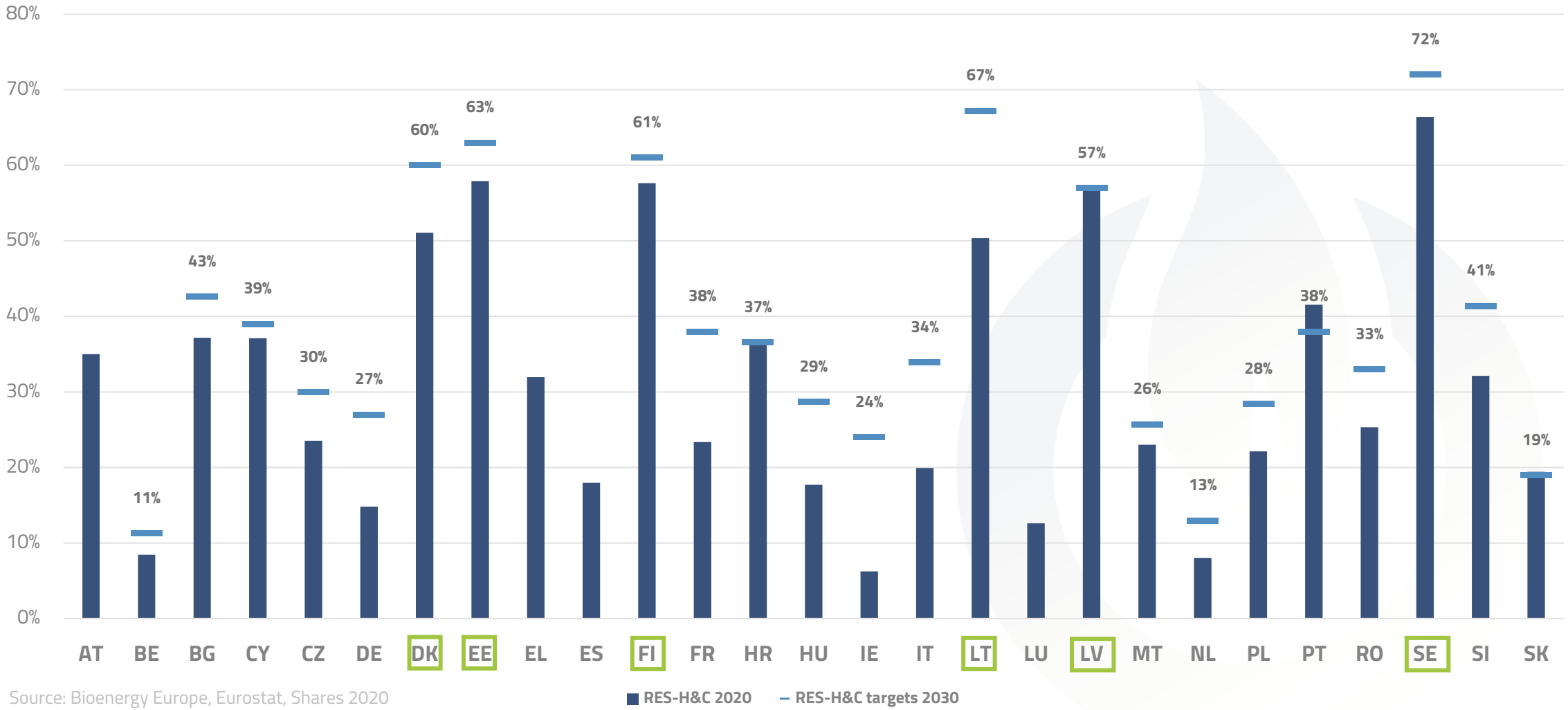
Total bioheat consumption in the different sectors in EU27 in 2020 (in ktoe, %)



Note: Other sectors include agriculture, fishing and not elsewhere specified
Source: Eurostat

Source: Bioenergy Europe, Bioheat Policy Brief 2022

Renewable energy share in the H&C sector in 2020 and 2030 NECP objectives in Member States (%)

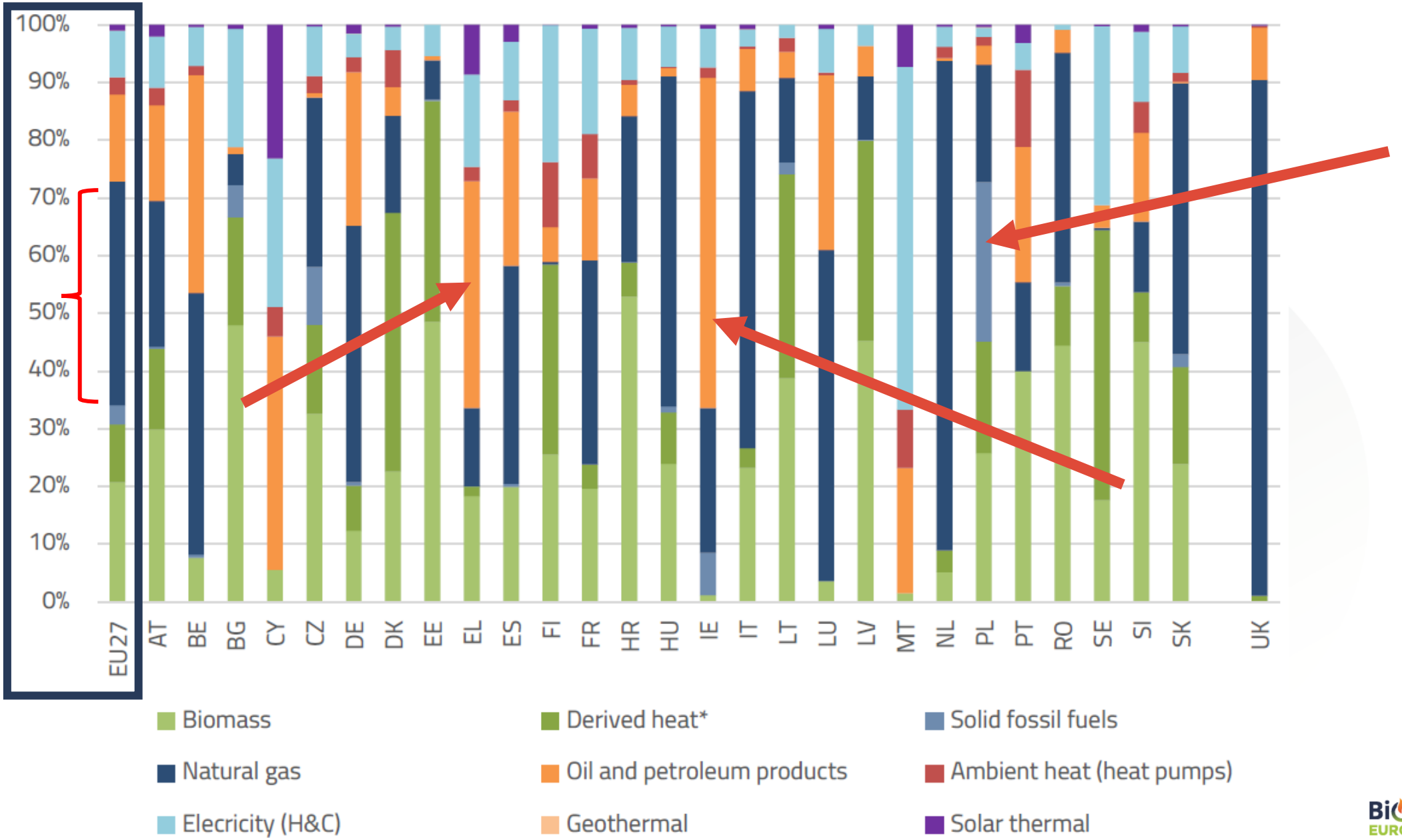


Source: Bioenergy Europe, Eurostat, Shares 2020

Bioheat contribution to renewable H&C in 2020:

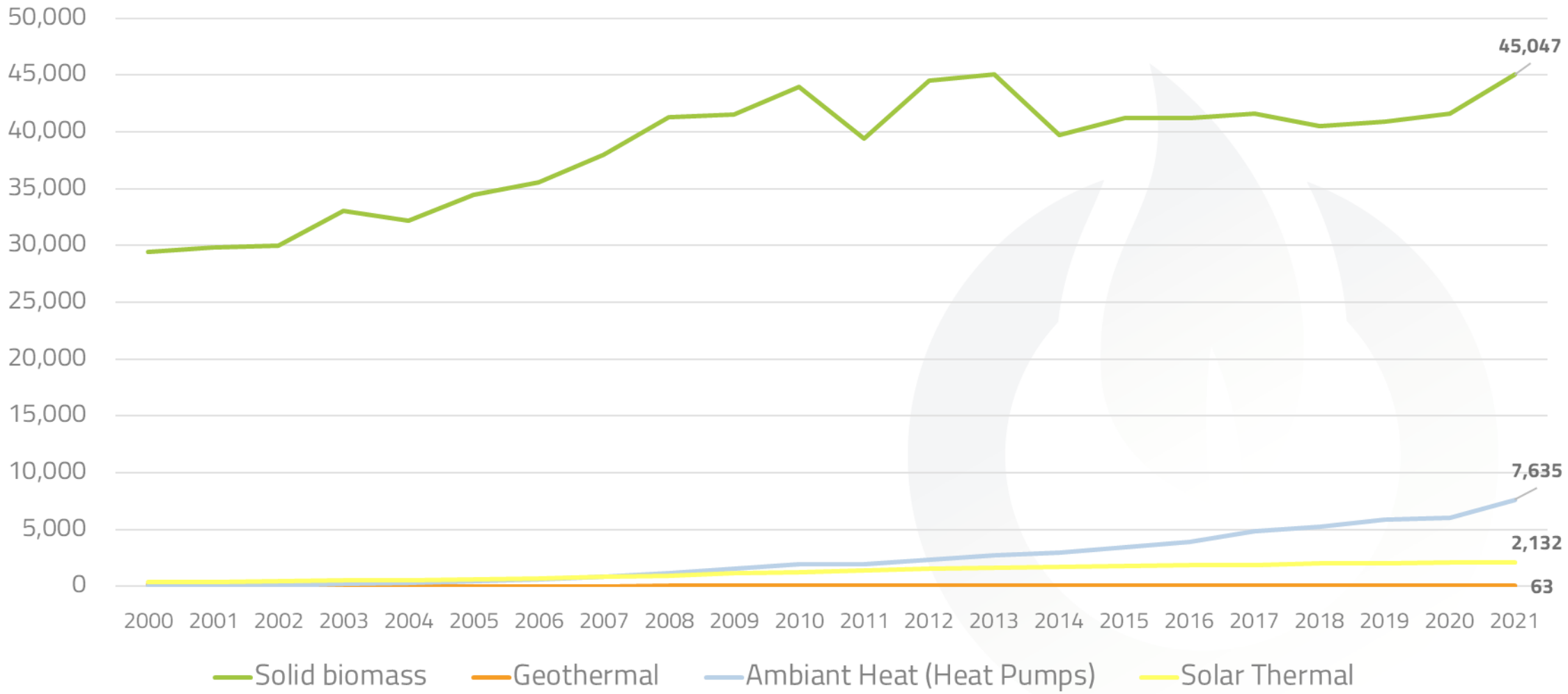
SE : **88%** / LT : **98%** / EE : **90%** / FI : **93%** / DK : **81%** / LV : **100%**

Shares of energy used for H&C in the residential sector in EU27 Member States + UK in 2020 (%)



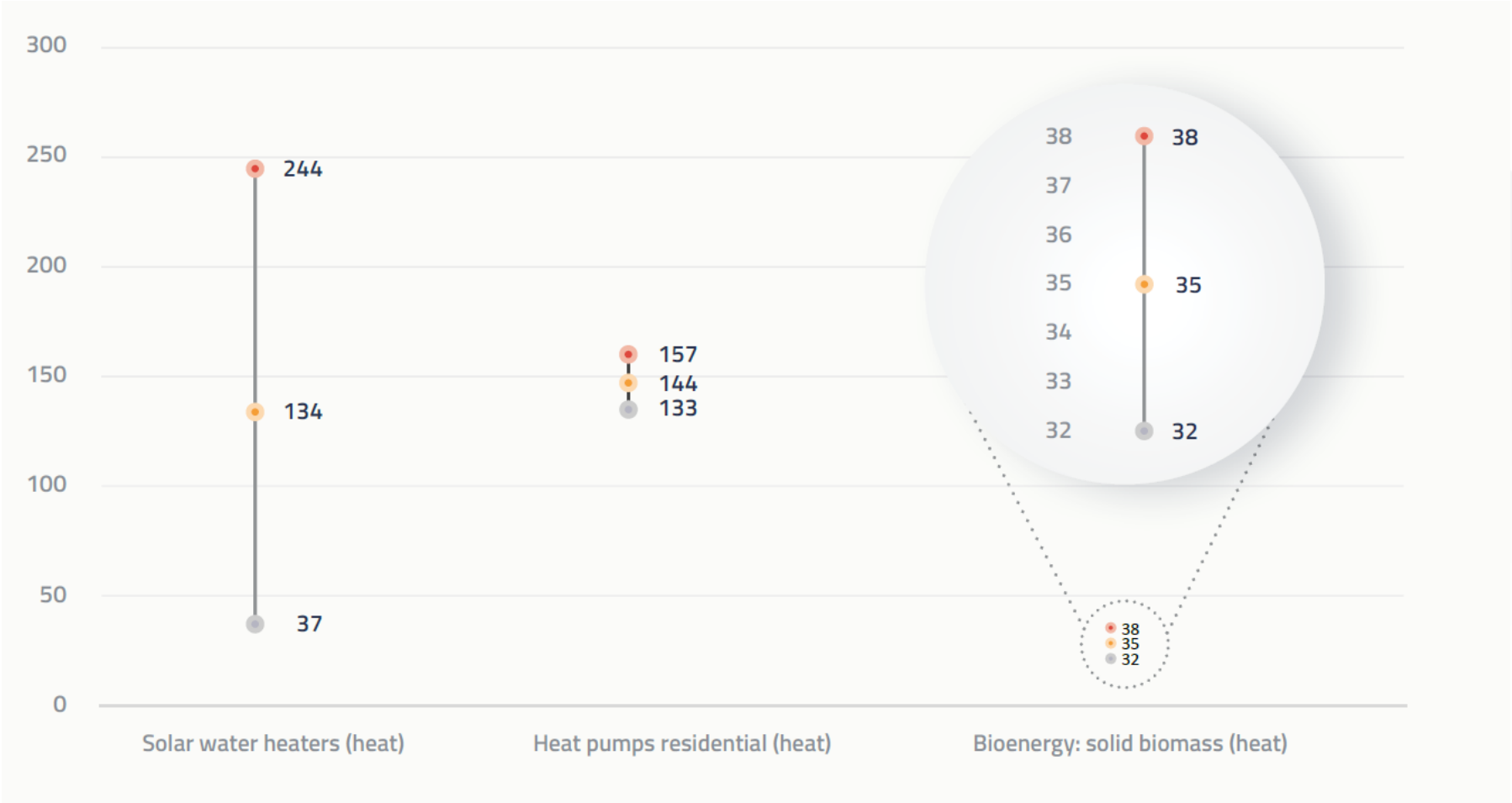
Source: Bioenergy Europe, Eurostat, Shares 2020

Evolution of final energy consumption in households in EU27 (ktoe)



Source: Bioenergy Europe, Eurostat

Levelized cost of heating for different technologies in 2019 in the EU27 (€/MWh)

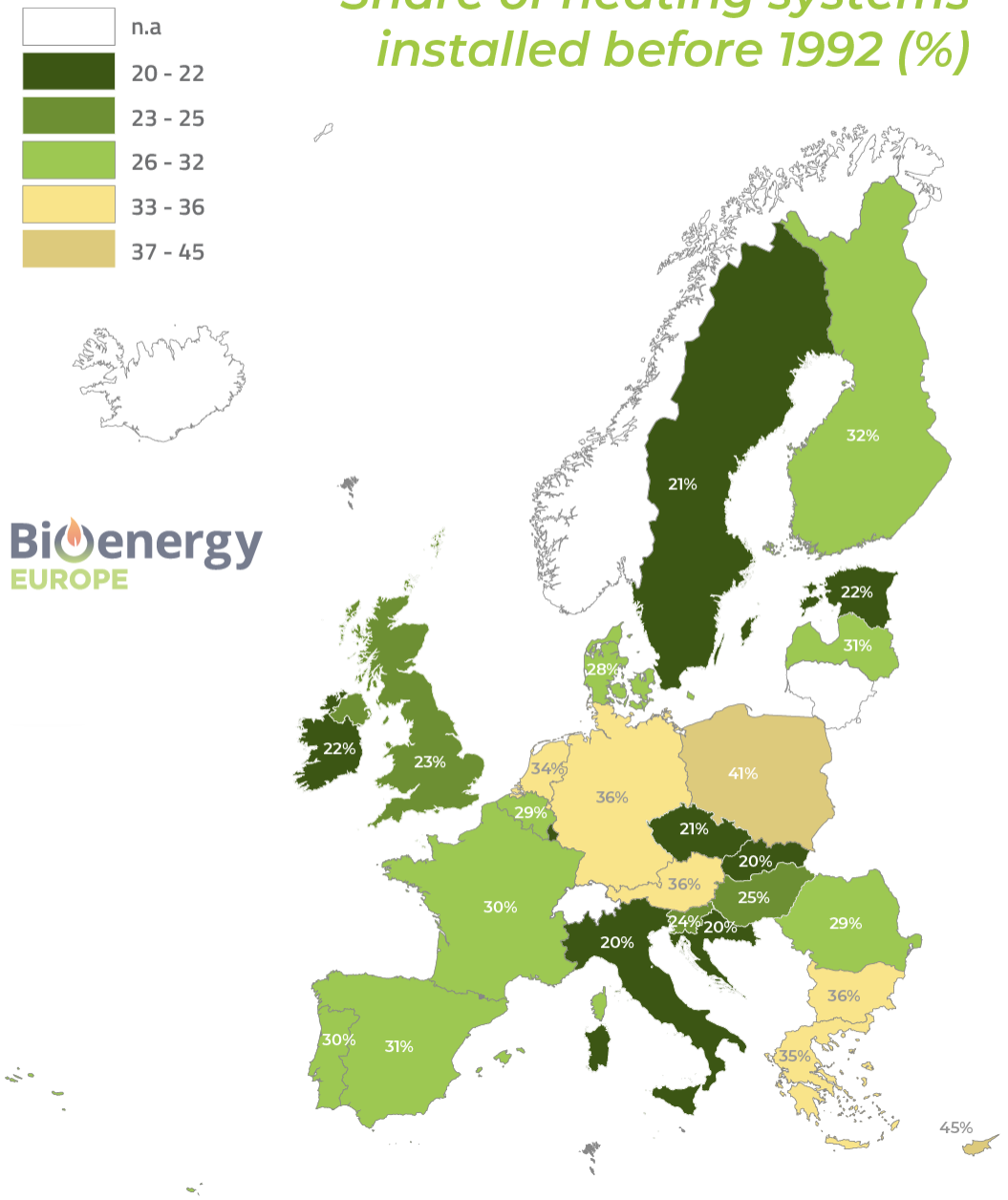


LCoH low
LCoH median
LCoH high

Note: Levelized Cost of Heat (LCoH) is calculated as a full price of heat including the cost of fuel input and the lifetime of the equipment.

Source: Bioenergy Europe, EurObserv'er

Share of heating systems installed before 1992 (%)

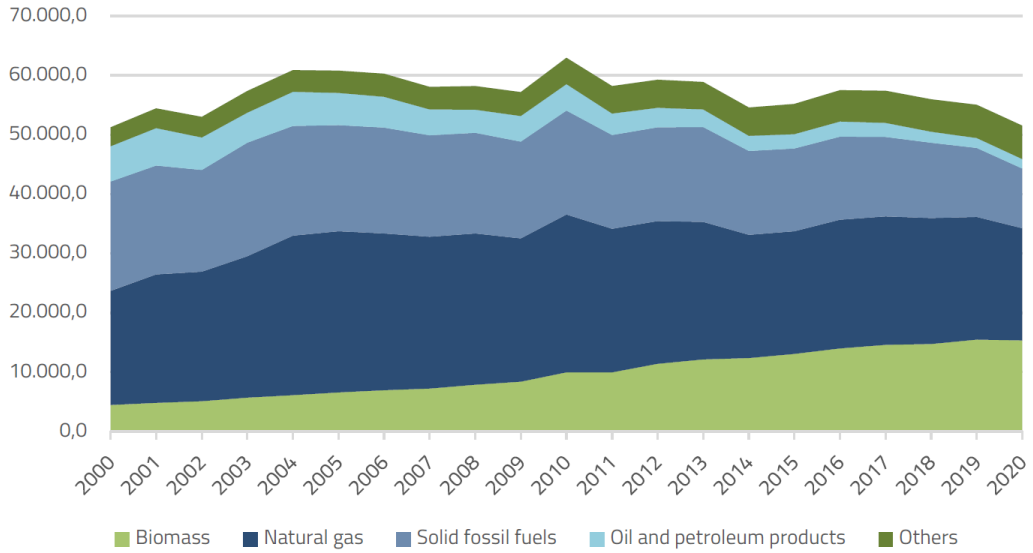


Renewing the stock of heaters :

- **Better efficiency** → lower losses
- **Less material** use for the same output → lower costs!
- **Reduce pollutants** → less danger for human health

Source: European Commission, report N°ENER/C2/2014-641-2016

Bioheat in derived heat / district heating



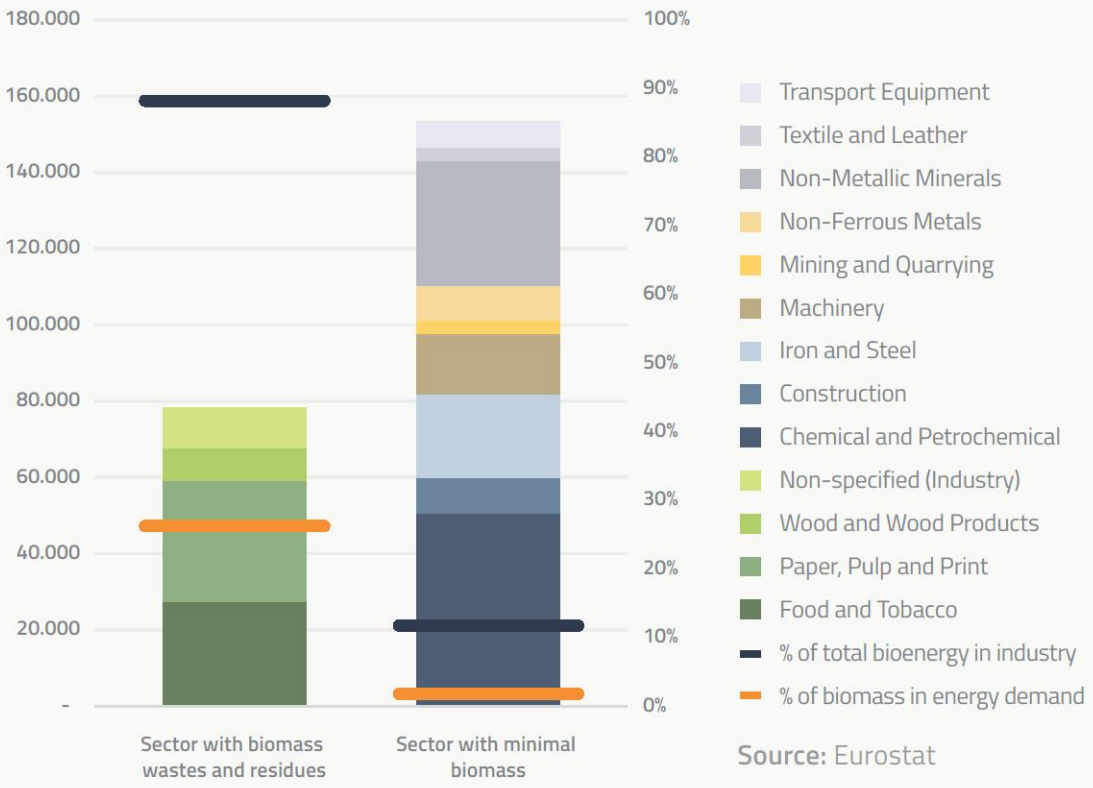
Note: Fuels mean the final derived heat produced from those fuels and not the fuel input for heat production.
Source: Eurostat

- Wood processing & food industries very often use own process biomass residues for heat production
- Bioenergy applications for high-temperature heat production already exist in industries such as cement, lime, magnesia, chemicals… and interest is growing

Source: Bioenergy Europe, Bioheat Statistical Report 2022

Bioheat in industries

Energy demand by industry and share of bioenergy for sectors dealing with biomass wastes and residues and for other sectors in EU27 in 2020 (ktoe and %)



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Source: Bioenergy Europe, Bioheat Statistical Report 2022

Bioheat from pellets

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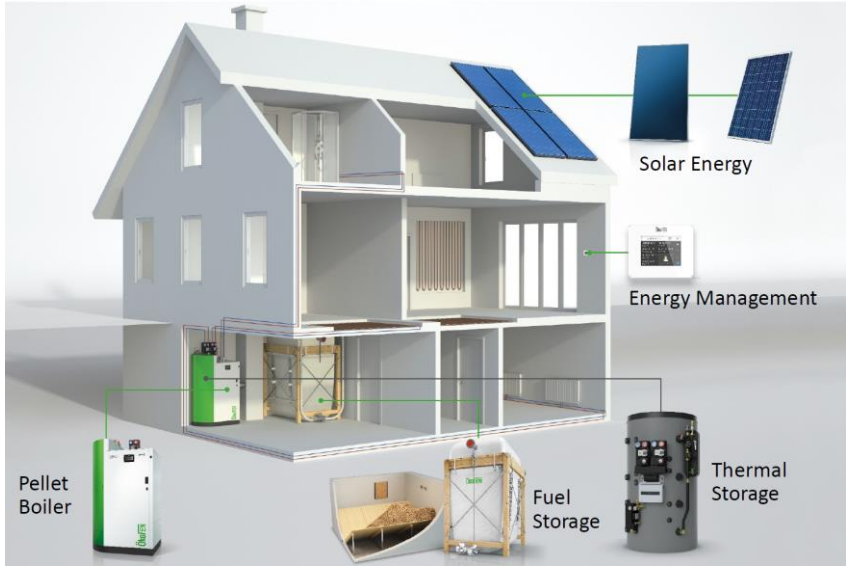
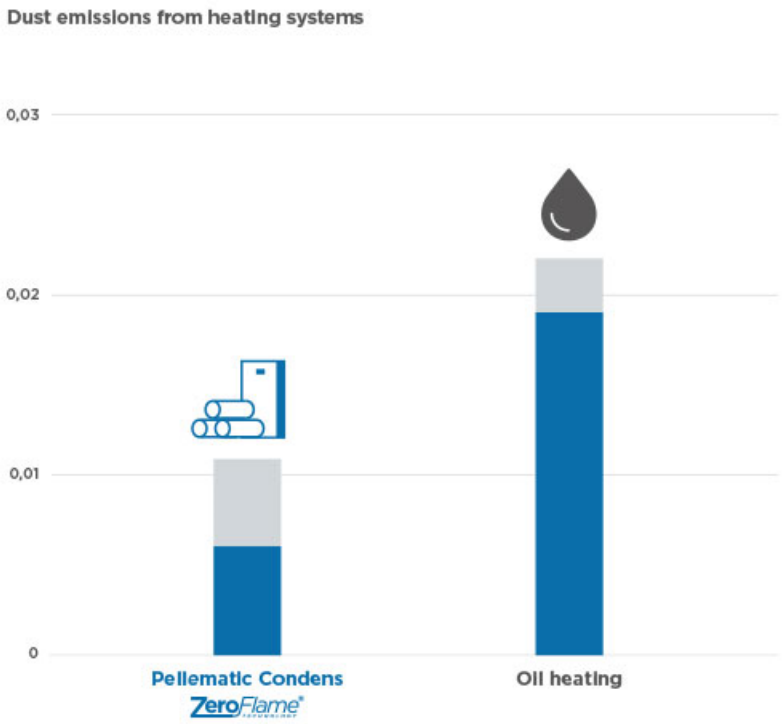
Modern pellet appliances: boilers & stoves

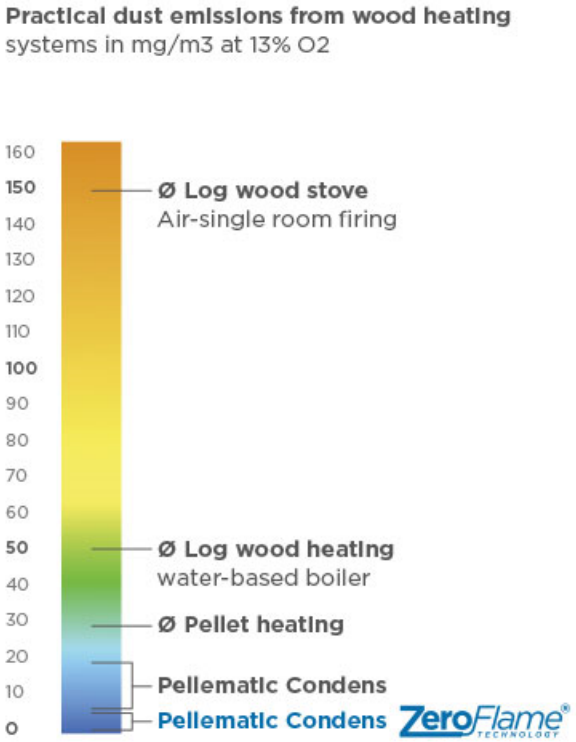


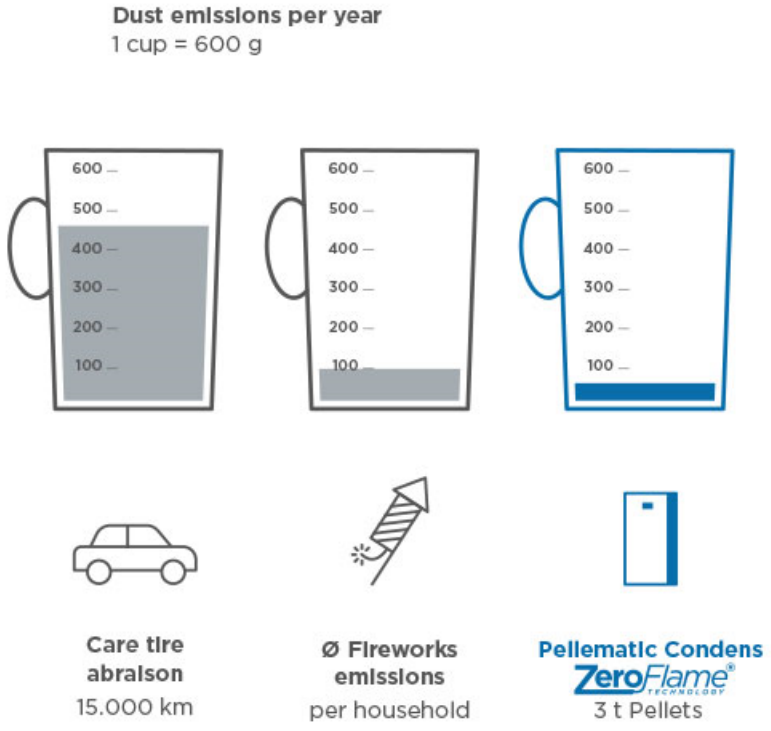
- Improved combustion & emission control with primary & secondary measures
- Smart combination with other renewables & storage solutions
- Remote control options
- Automated feeding and ash cleaning
- High quality aesthetics
- ...and others

Source: Palazzetti, ÖkoFEN, Windhager, Herz

Emissions from pellet appliances – one example

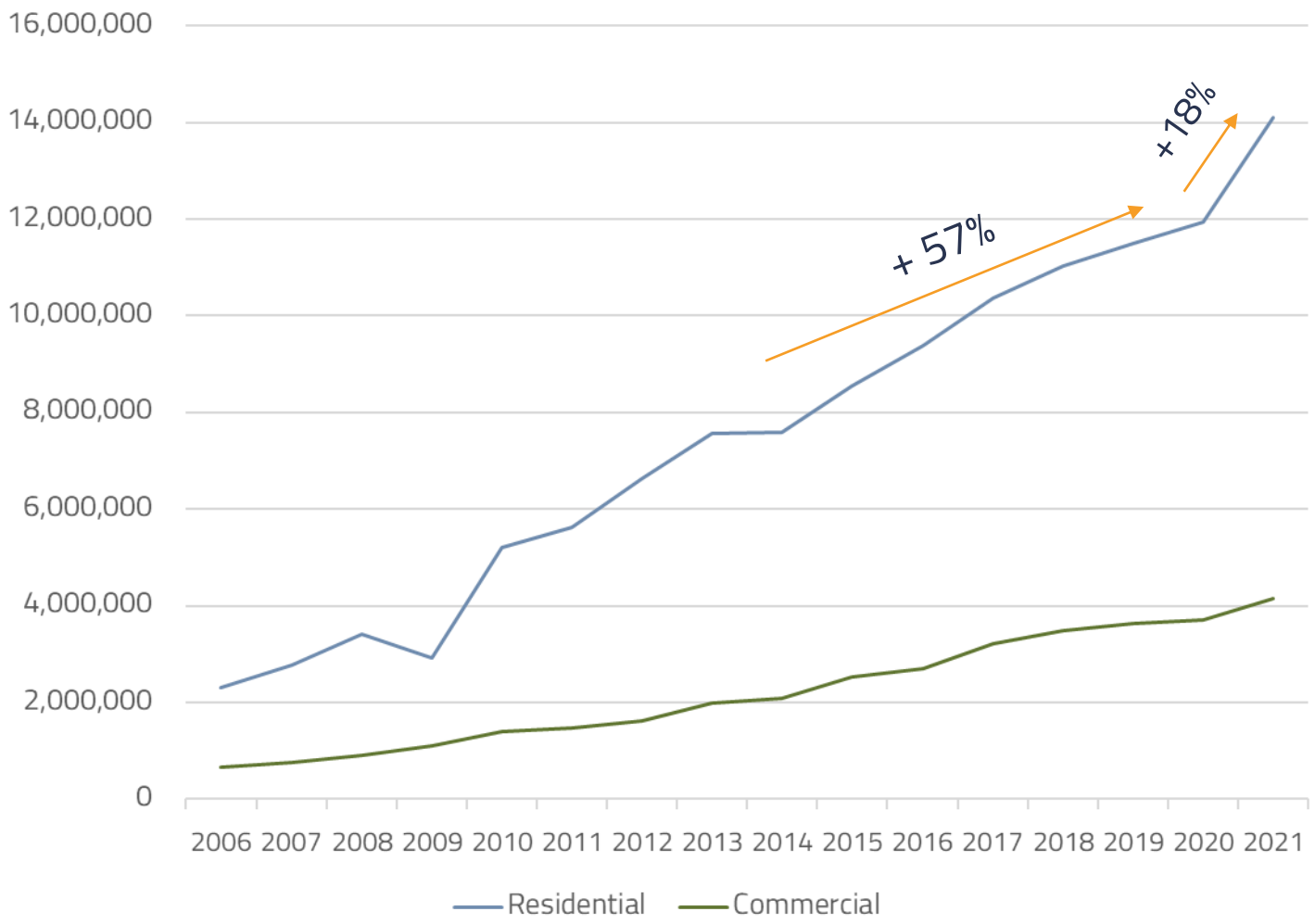






Source:ÖkoFEN, Emission balance of renewable energy sources - determination of avoided emissions in 2018, German Federal Environment Agency

Evolution of European pellet consumption for residential (<50kW) and commercial (>50kW) heat excluding CHP (tonnes)



From **2014** to **2020** :

- +57% consumption over 6 years→ +9,5 pp increase/year

From **2020** to **2021** :

- +18% consumption

From **2014** to **2020** :

- +76% consumption over 6 years→ +12,6 pp increase/year

From **2020** to **2021** :

- +12,5% consumption

Source: Bioenergy Europe

European Wood Pellet Consumption for Heat

(in 2021, tonnes, %) Source: EPC Survey 2022, Hawkins Wright

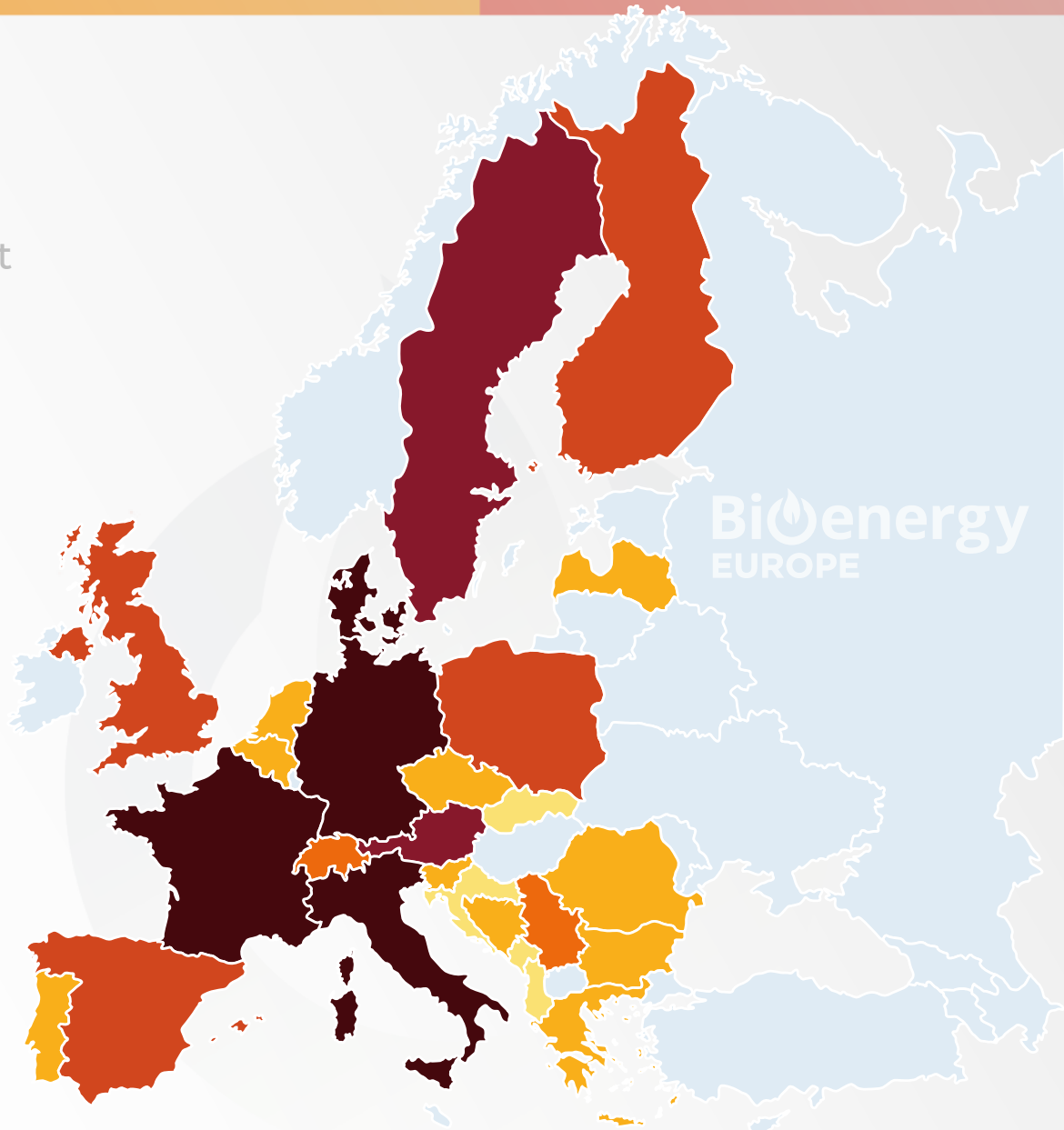
Actual Consumption (tonnes/year)

< 4M	< 500.000
< 2M	< 400.000
< 1M	< 100.000

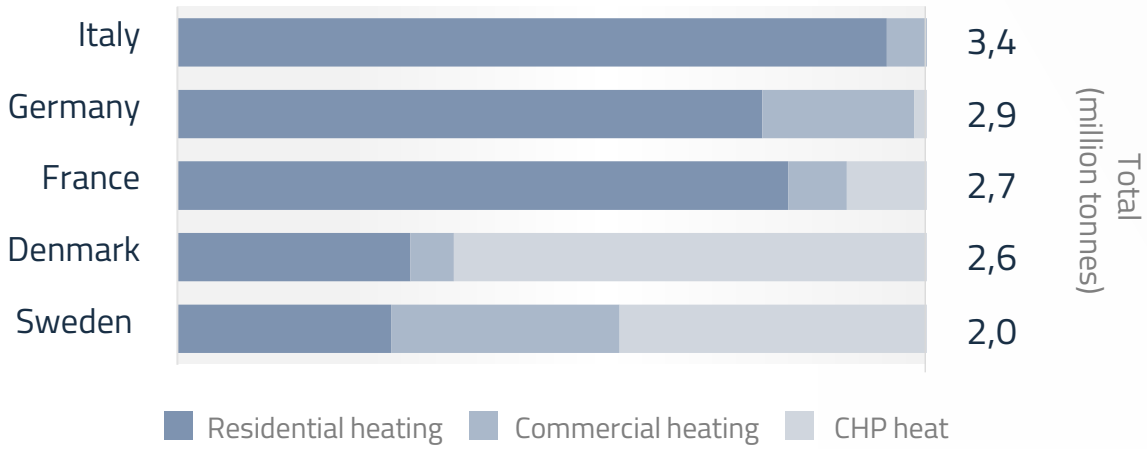
EU-27 consumption for heat increased by 17,4% between 2020 and 2021

2021 European Consumption
21,3
Million tonnes

2021 EU-27 Consumption
19,2
Million tonnes



Consumption in top 5 European countries in 2021



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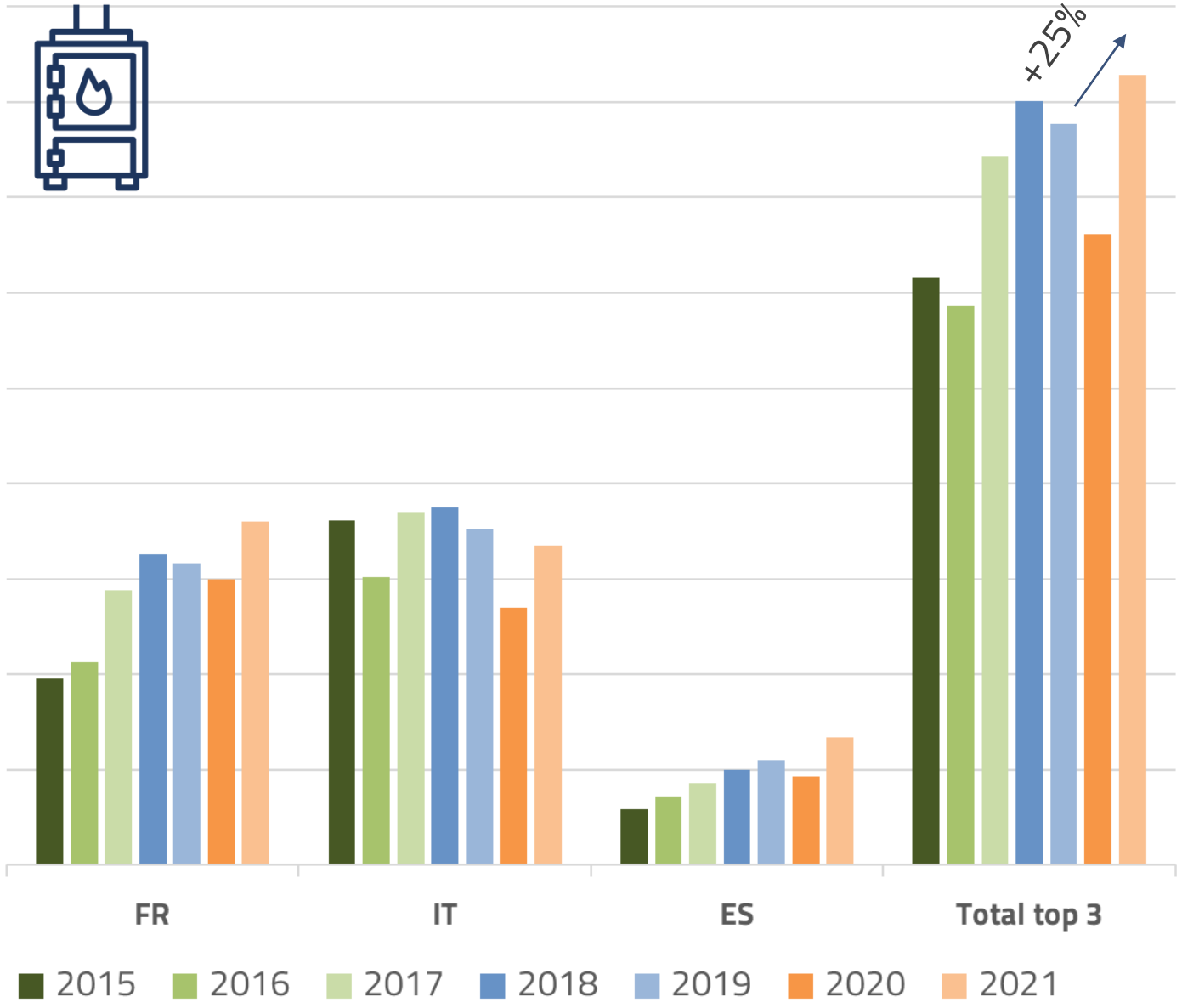
BIOENERGY EUROPE STATISTICAL REPORT 2022

EUROPEAN PELLET COUNCIL

Bioenergy EUROPE A NETWORK OF BIOENERGY EUROPE

Evolution of the annual sales of stoves in the TOP 3 EU27 markets (N° of units)



Post 2020 recovery : increase in sales by **+25%**

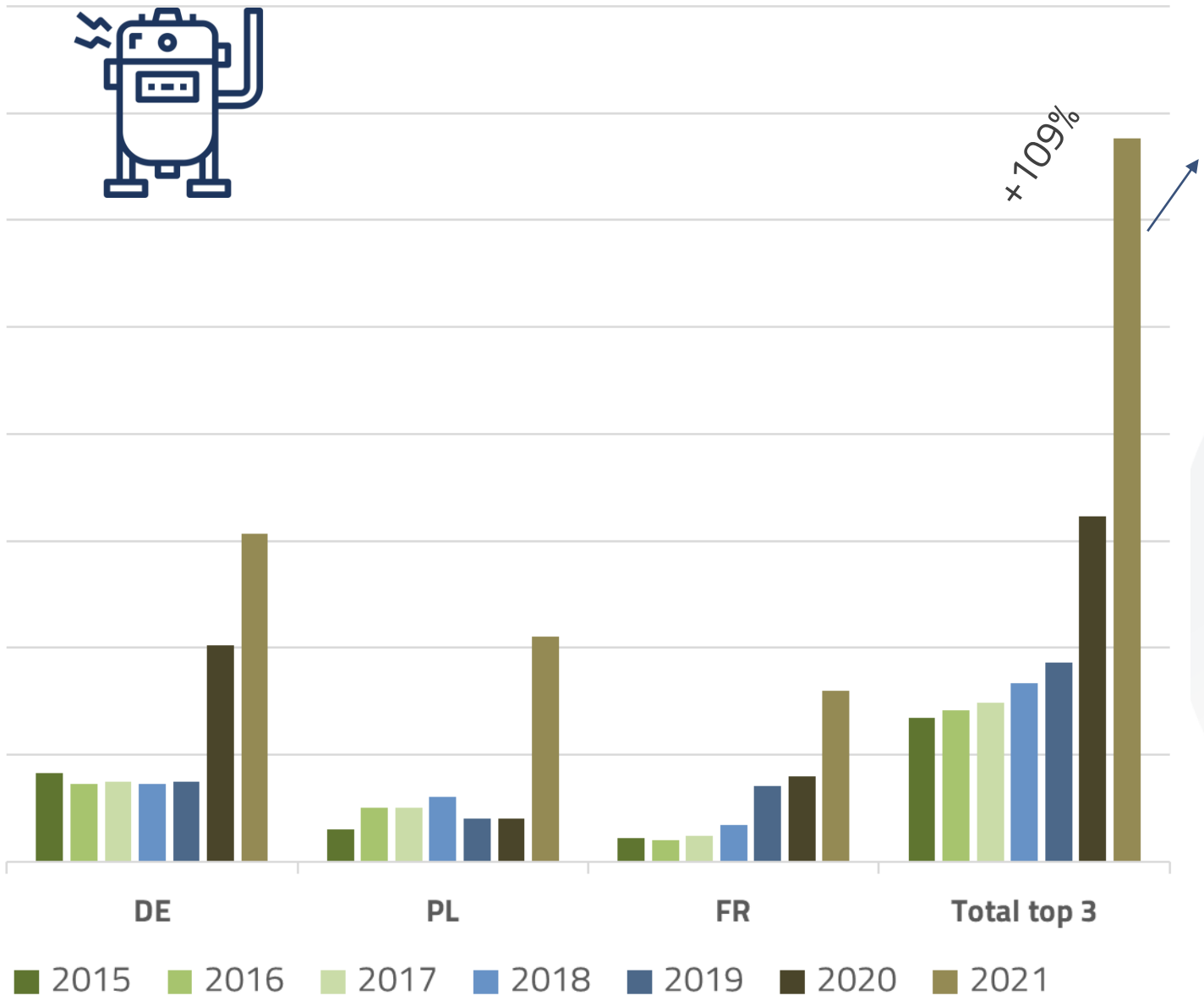
- Booming in sales after drop → **+20%** (+30k units)
- Incentives through governmental support

- Booming in sales after drop → **+24%** (+33k units)
- Incentives through governmental support

- Booming in sales after drop → **+44%** (20k units)

Source: Bioenergy Europe

Evolution of the annual sales of residential boilers in the TOP 3 EU27 markets (N° of units)



Residential Boilers : increase in sales by **+109%**

- Booming in sales in the past 2 years → +51% sales from 2020 to 2021 (20k units)

- Biggest growth ever witnessed → +425% sales (34k units)
- Clean Air Programme (government incentive)

- Steady growth for the past years
- 2021 exceptional → +100% sales (32k units)

Source: Bioenergy Europe

Pellets + Electrification = A virtuous marriage?

Electric Power Project – By Swedish Pellet Association

GOAL

- 200.000 stoves installed in Swedish houses until 2032
- 10% of Swedish houses

POWER

- 5kW X 200.000 installed stoves provides released electrical power equivalent to one nuclear reactor

TARGET

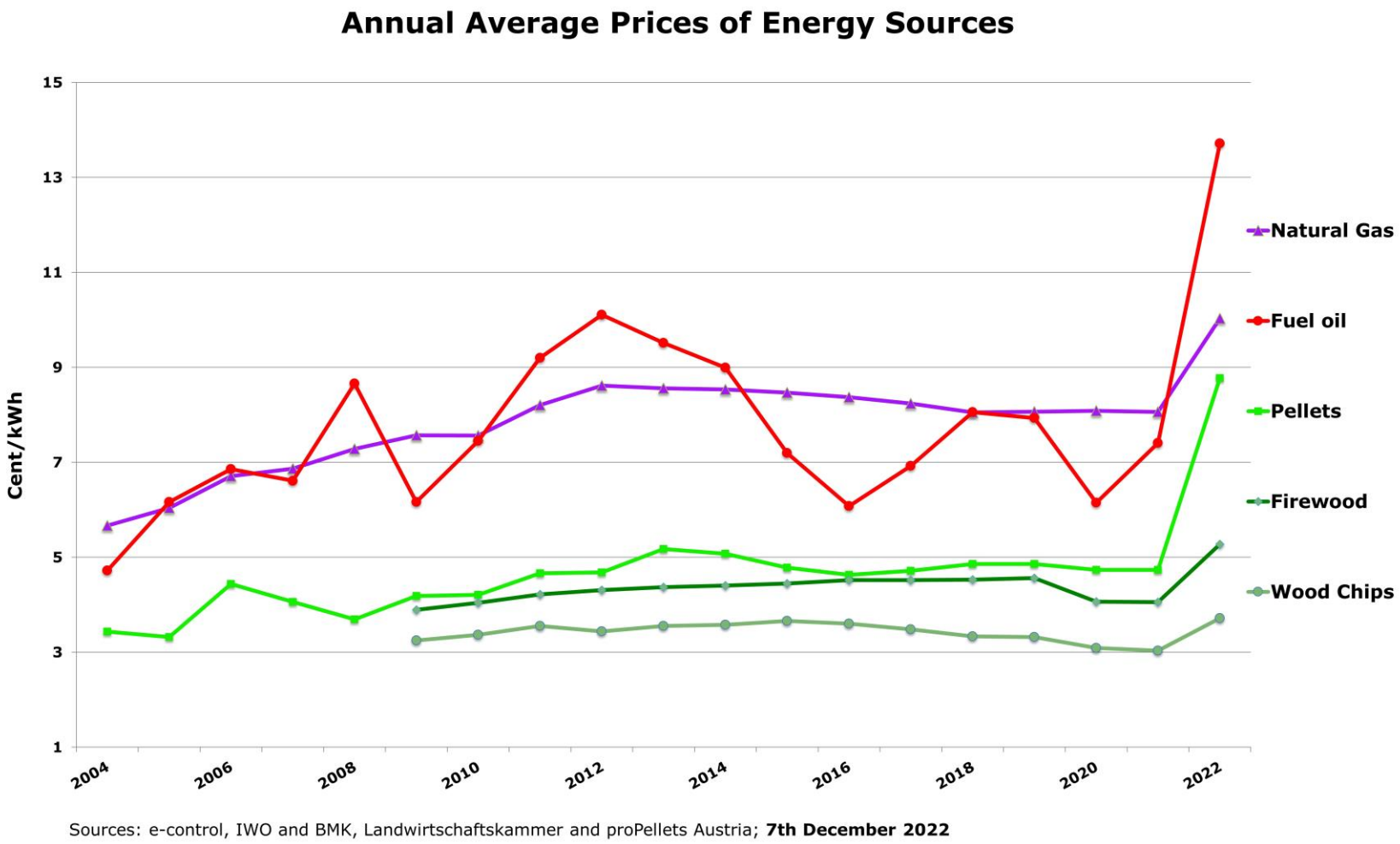
- Politicians
- House owners
- Energy advisors
- House manufacturers

SALES

- 150.000 – 200.000 tonnes annually
- 20.000 stoves annually

Source: Swedish Pellet Association

LONG-TERM COMPARISON OF COSTS OF VARIOUS FUELS



- Price stability vs. fossil fuels was a key selling point for pellets throughout the years
- It took a global energy crisis to challenge this
- Multiple reasons why the pellets markets were hit hard
- Prices have already dropped from the all-time high peaks
- Long term stabilization and impact on the pellet markets remains to be seen

Final messages

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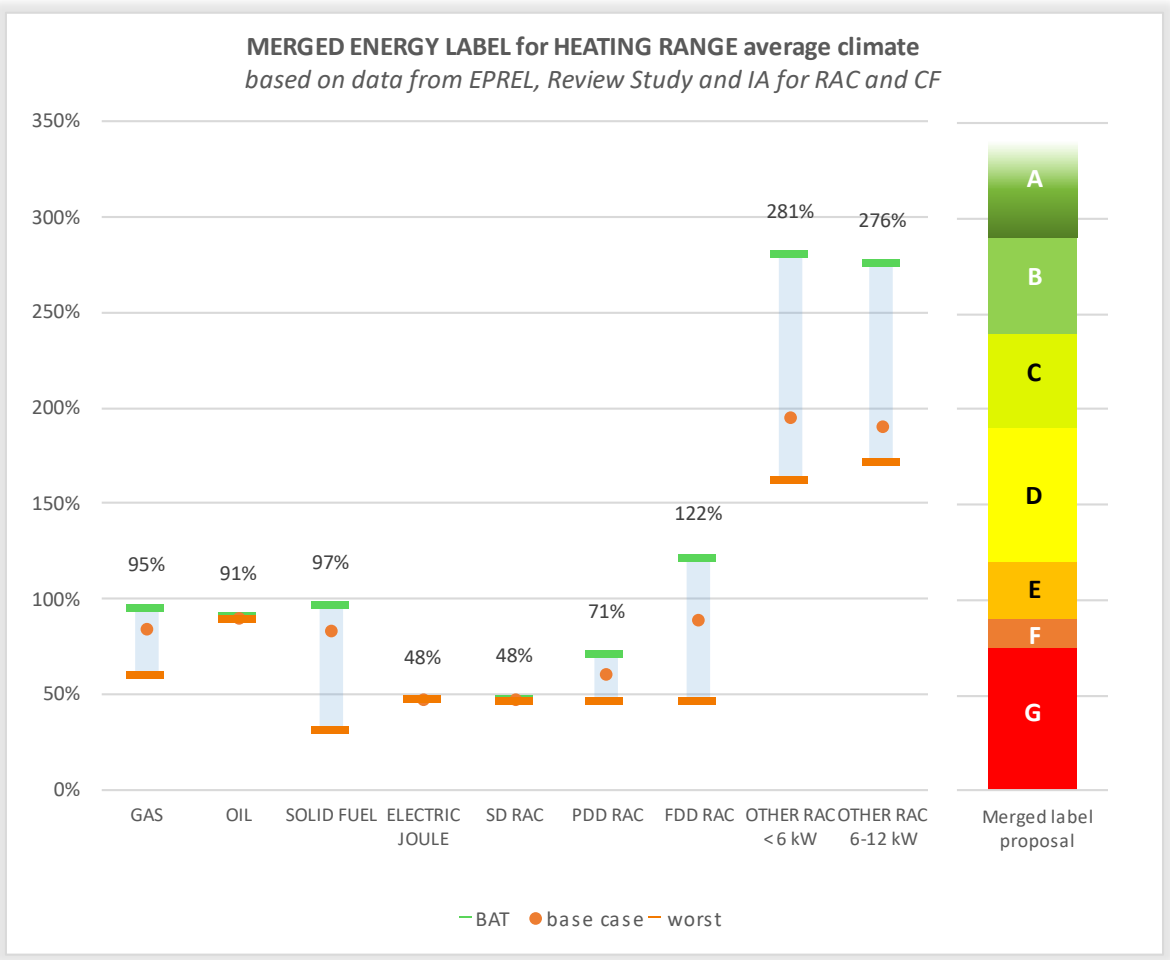
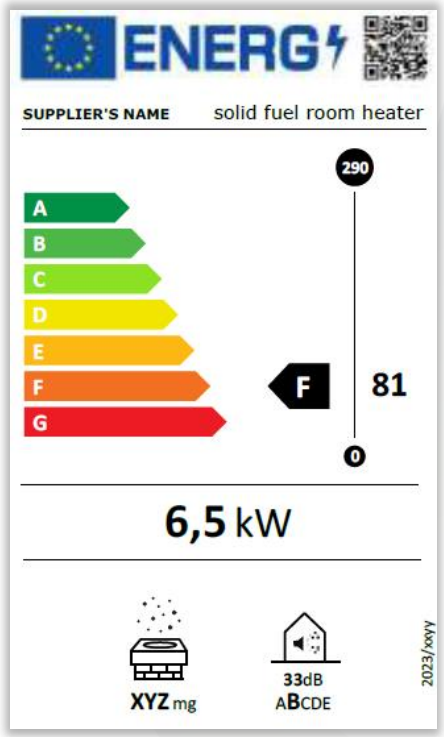
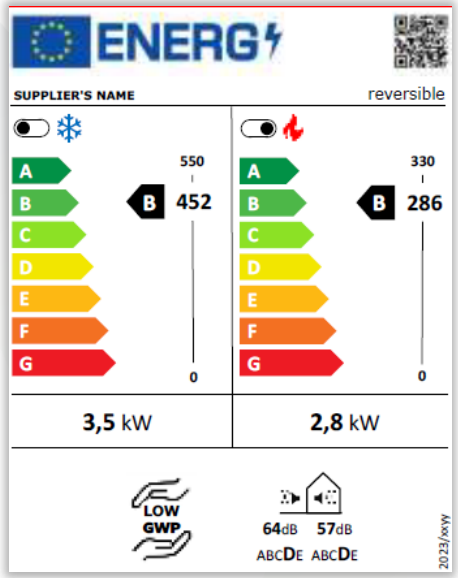
- Bioenergy is the largest contributor to the renewable heat sector in Europe; not only sustainability but also cost-competitiveness is a major reason for this.
- The current stock of residential heaters includes numerous inefficient appliances, both fossil and biomass ones (open fireplaces, old wood stoves, etc.) that need to be **REPLACED.**
- Modern wood pellet appliances have proven environmental performance and numerous other features that are attractive to consumers; they can assist in a smooth energy transition.
- Beyond wood pellets, there are some other assortments (e.g. olive stones for Mediterranean countries) with relevance to specific markets; modern appliances can make effective use of these, achieving results equivalent to the Ecodesign levels of wood fuels (see AgroBioHeat project for more details).
- Clear and consistent policies & governmental support is essential for consumers to switch appliances en masse. Unfortunately, bioenergy is often marginalized or overlooked – even in relation to fossil fuels! – despite its contributions.

Ecolabeling merger proposal: enabling consumers to make the right choice – OR NOT







Thank You!

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