



HAWKINS WRIGHT

PFI 2023 Annual Conference

08 June 2023

Gilles Gauthier, Manager



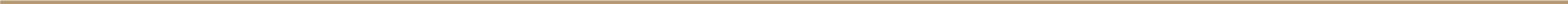
**PFI 2023 Annual
Conference**

June 6 - 8, 2023

Austin, Texas



Hawkins Wright



Consultants to the global pulp, paper & biomass industries



The global market for palm kernel shells (PKS)

An overview of the trade of PKS used for energy generation

August 2019



The Outlook for Wood Pellets – Demand, Supply, Costs and Prices

Number 29 – Fourth Quarter 2021

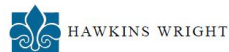


The black pellet market outlook

An overview of the status of black/advanced pellet markets glob

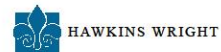
A multi-client study

Available February 2020



Biomass demand in Japan and South Korea

Market update - October 2021



HAWKINS WRIGHT Issue 132 – March 2022

Forest Energy monitor

BIOMASS & PELLETS — MARKETS — INVESTMENTS — LEGISLATION

Market analysis

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Supply constraints force European utilities to reduce biomass power generation

A lack of spot industrial pellet supply was likely the main factor behind widespread downtime at several biomass units in March. A technical issue at first-of-its-kind Avedøre 2 unit was coupled with rescheduled maintenance at Drax and Lynemouth and reduced capacity at RWE's Eemshaven and Amer plants. Some of the utilities' downtime was said to be attributed to delays in receiving contracted shipments. Certain North American producers have struggled to fulfil their obligations on time, citing COVID-related labour and logistics disruptions. However schedules appear to have caught up compared to the 4-week lag in deliveries reported last month.

With very limited offers and no reported spot trades in the month, the industrial spot pellet price was almost entirely theoretical. In the absence of representative deals to test the market we have held our price estimate at \$250-260/t CIF ARA, unchanged from February.

Although the effective termination of trade from Russia, Belarus and Ukraine (see p.7) has had immediate impacts for certain buyers with direct or indirect contracts, the short term impact of delayed contract shipments seems to have been more widely felt.

The situation has undoubtedly been compounded by production issues in the Baltic region (see p.4), where producers have been unable to secure sufficient fibre to satisfy contract commitments. Significantly higher fibre and

Prices of wood pellets in selected European countries

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Bioenergy Team

60+ years (cumulated) of experience at your service

European wood pellet demand

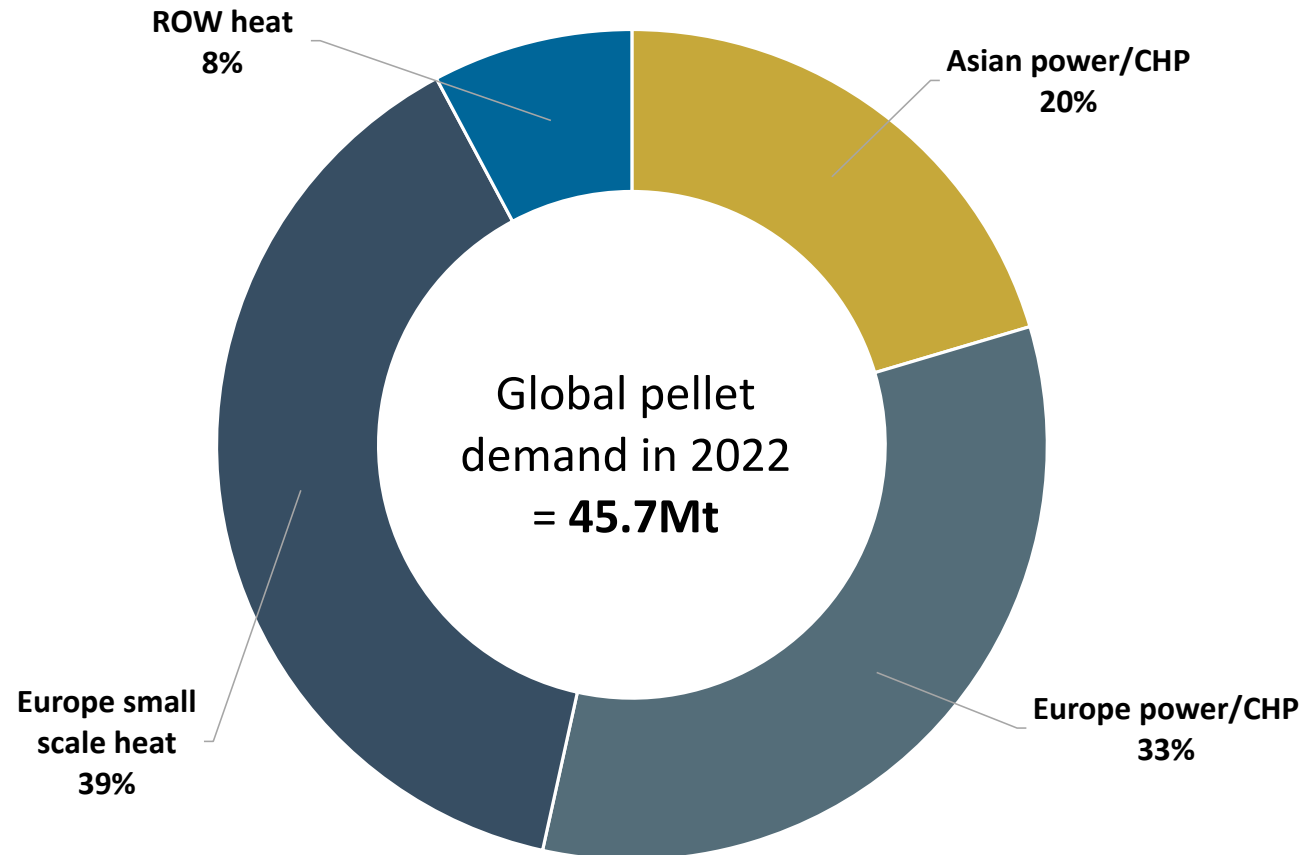


GLOBAL PELLET DEMAND

Europe heating demand exceeded industrial demand



Global demand breakdown in 2022



Source: Hawkins Wright

2022

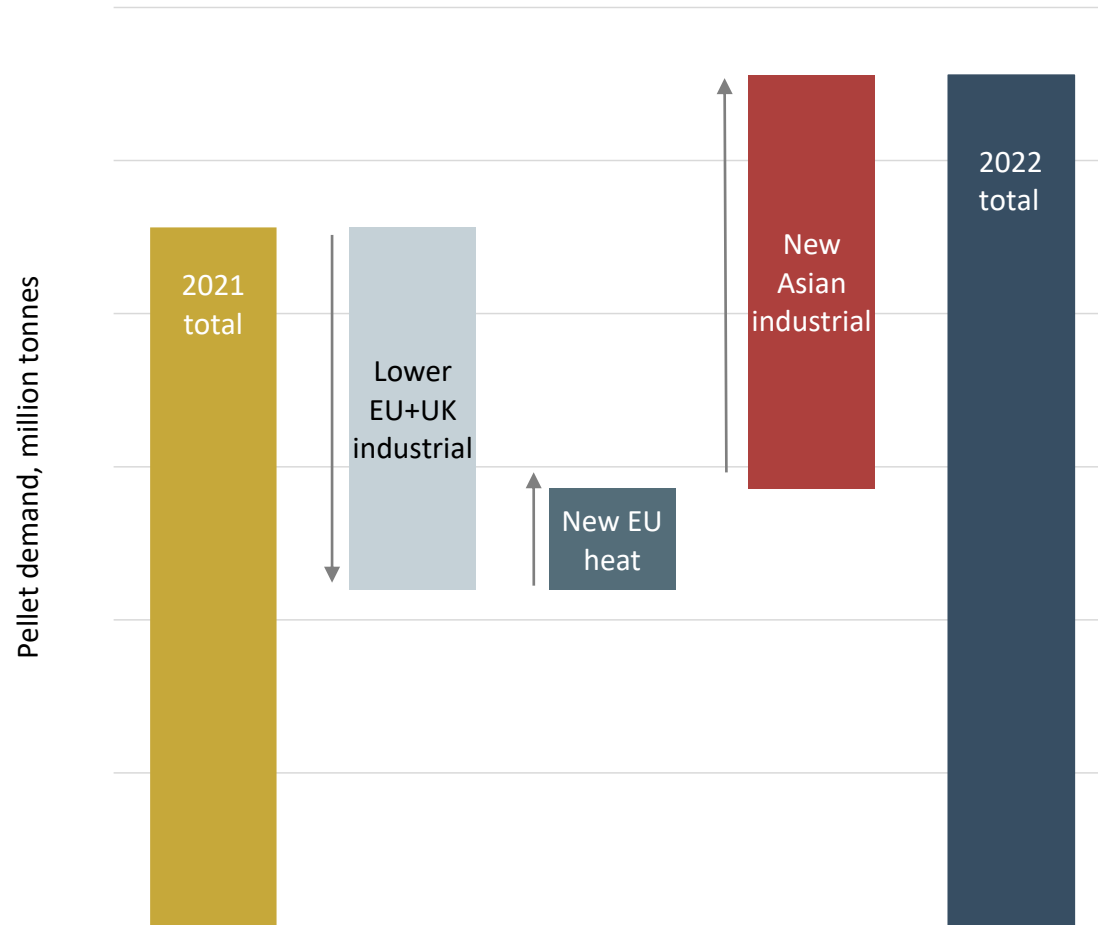
- European heating sector accounts for nearly 40% of global pellet use
- European heating pellet demand exceeded industrial pellet demand for the first time since 2018

GLOBAL PELLET DEMAND

Changes in global demand in 2022 and 2023



Summary of global pellet demand changes in 2022



Source: Hawkins Wright

2022

- European industrial pellets demand 2022: significant demand destruction
- European heating pellets demand 2022: increase but lower than anticipated
- Asian industrial pellets demand 2022: strong increase
- Global wood pellets demand growth (22 vs 21): +4%

(lowest rate since Hawkins Wright records began)

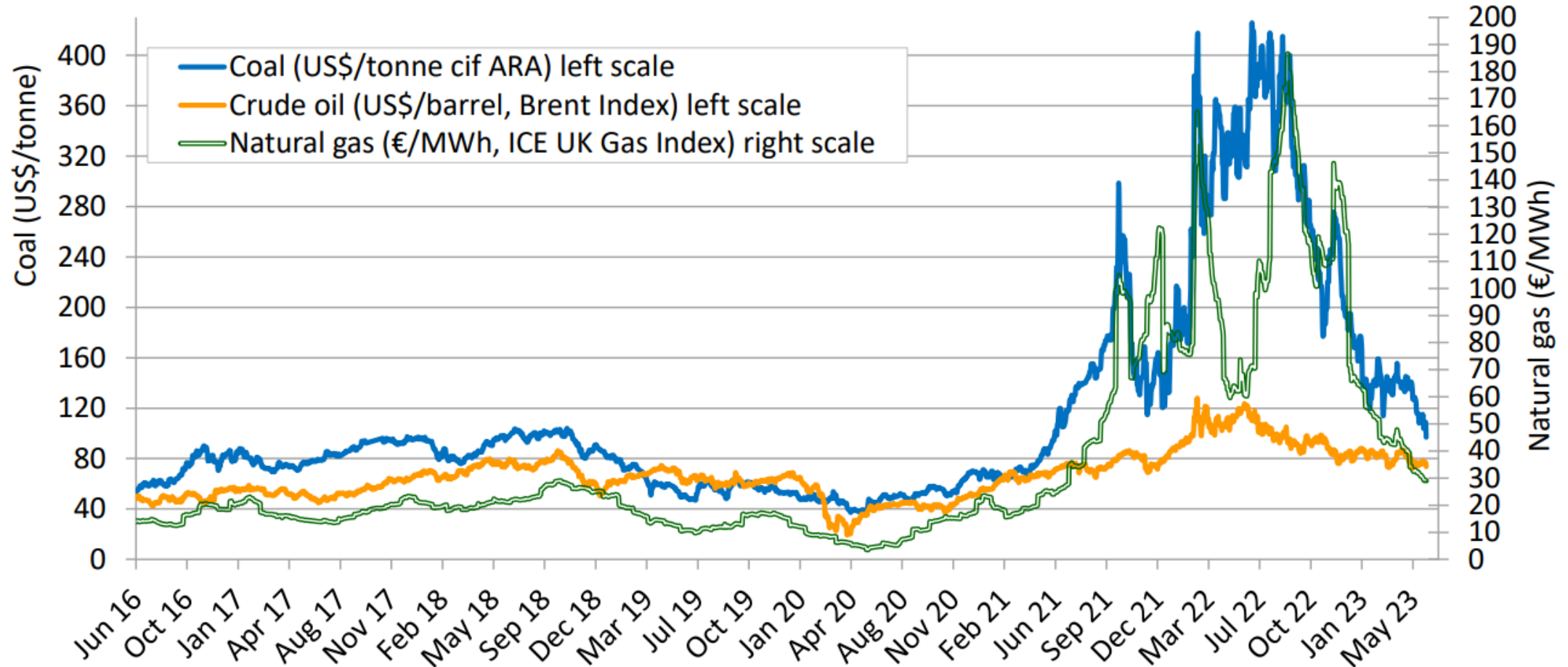
2023

- Important reduction of industrial and moderate reduction heating demand forecast for 2023

ENERGY MARKET CONTEXT



European commodity prices - oil, coal and natural gas

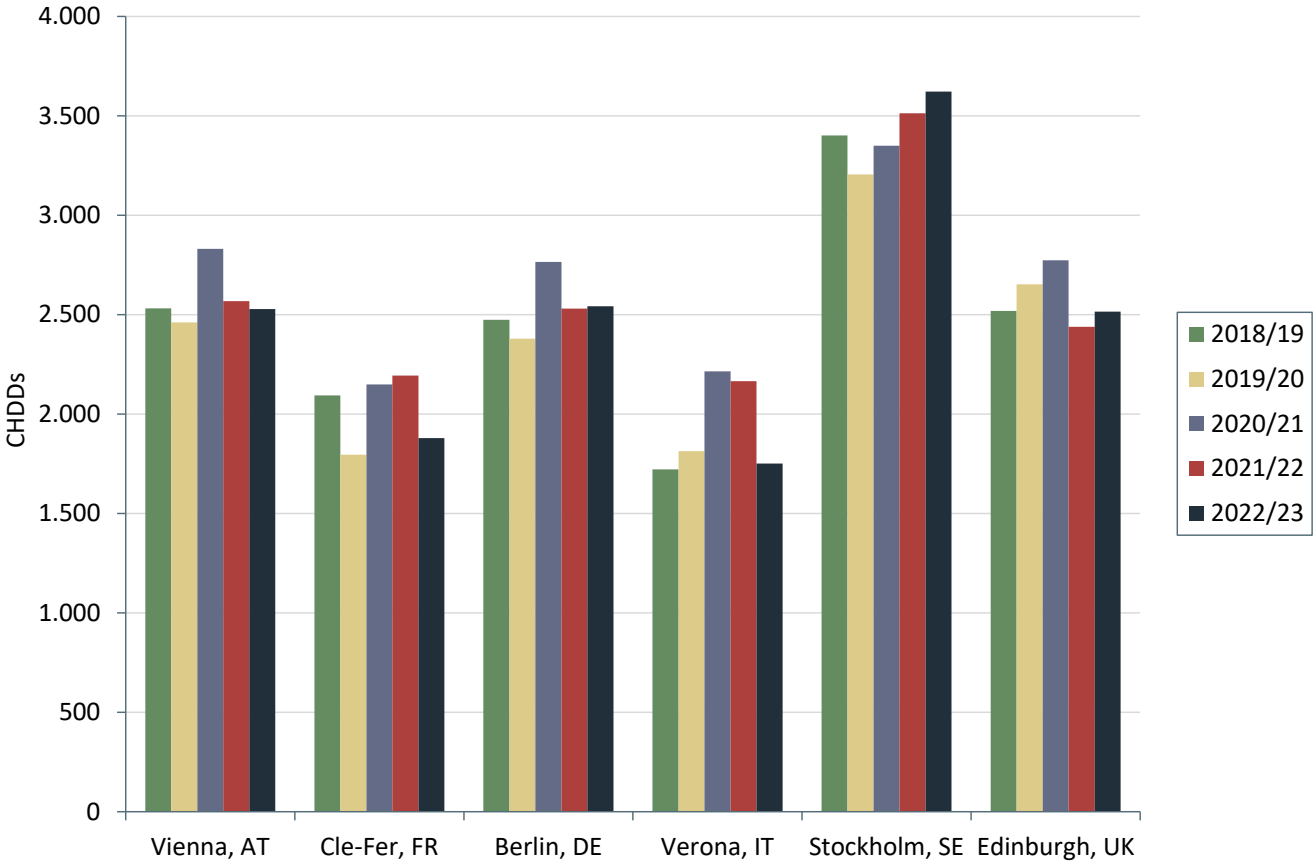


Source: EEX, IHS and ICE

HEAT DEMAND



Cumulative heating degree days in Oct-May 2018-2023



- Abnormal mild weather
- October was the warmest on record
- Cold snaps at the end of the heating season

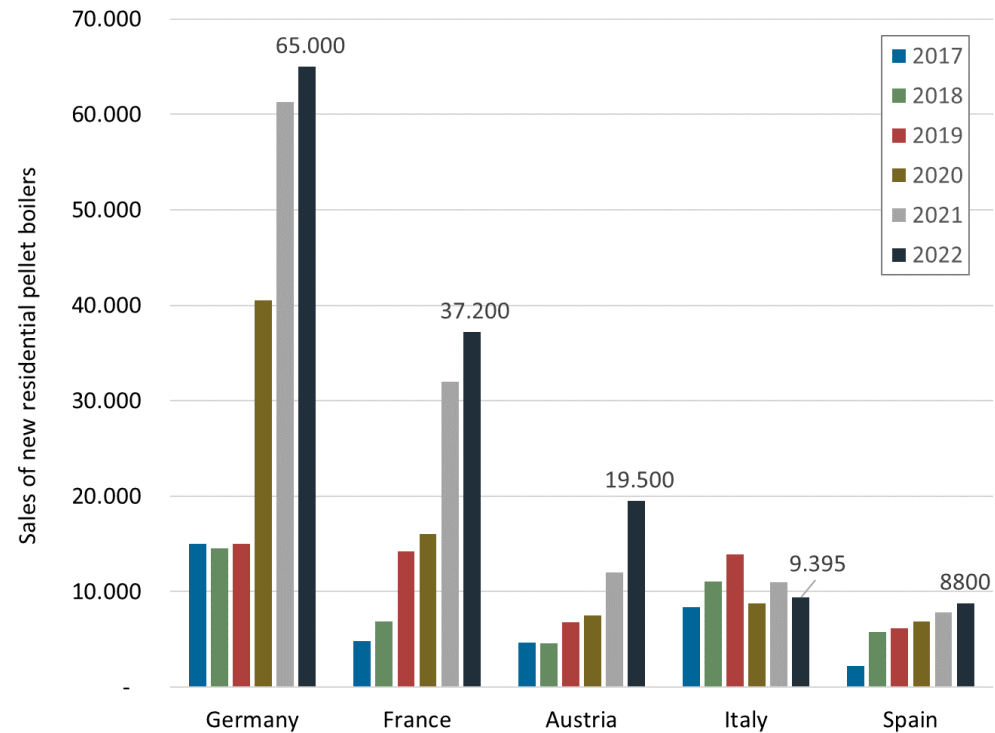
Source: MDA EarthSat

EUROPEAN RESIDENTIAL DEMAND

Heating appliances sales

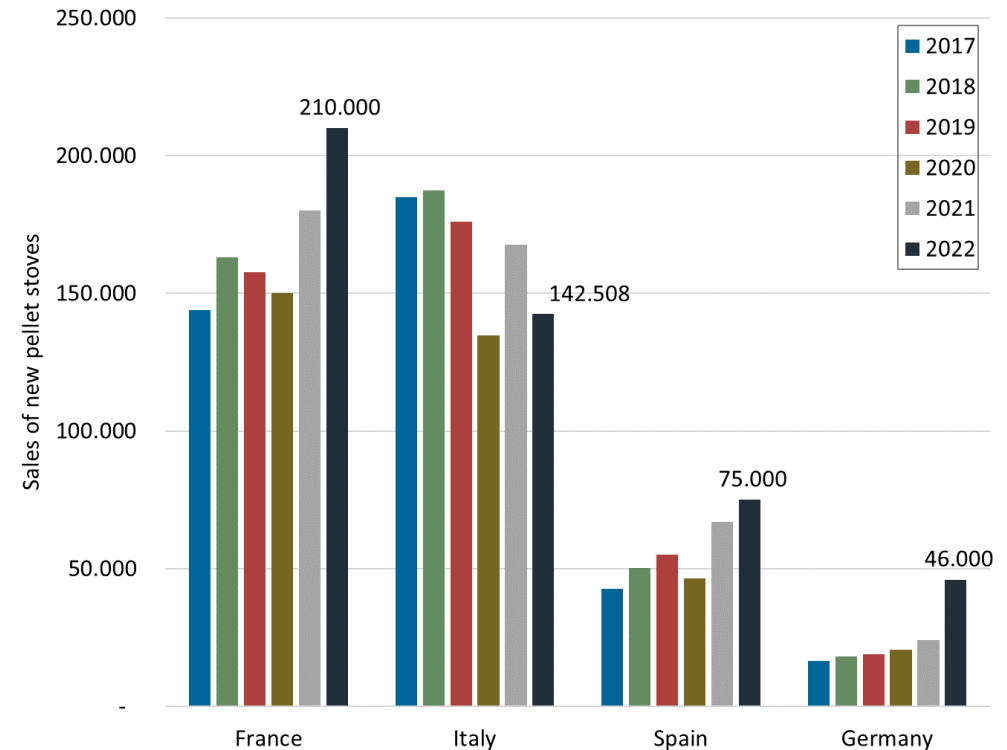


Sales of residential pellet boilers in leading countries



Source: Bioenergy Europe, Hawkins Wright

Sales of residential pellet boilers in leading countries



Source: Bioenergy Europe, Hawkins Wright

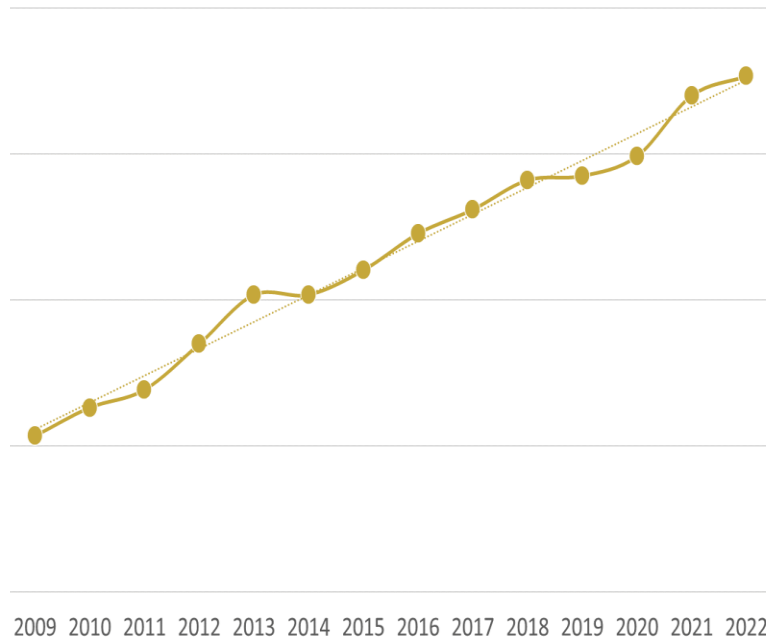
Sales of pellet stoves/boilers in Europe

- 2022 H1 records sales
- 2022 H2 sales strong decrease (even more for stoves)

EUROPEAN RESIDENTIAL DEMAND



European heating pellet demand 2009-2022



Source: Hawkins Wright

2022-2023 heating season

- First, low demand (low HDD, high pellet price, etc.)
-> 2022 demand for heating revised downward

Then, rebound in heating sales in late Q1 2023 (cold waves, lower price, low stock, etc.)

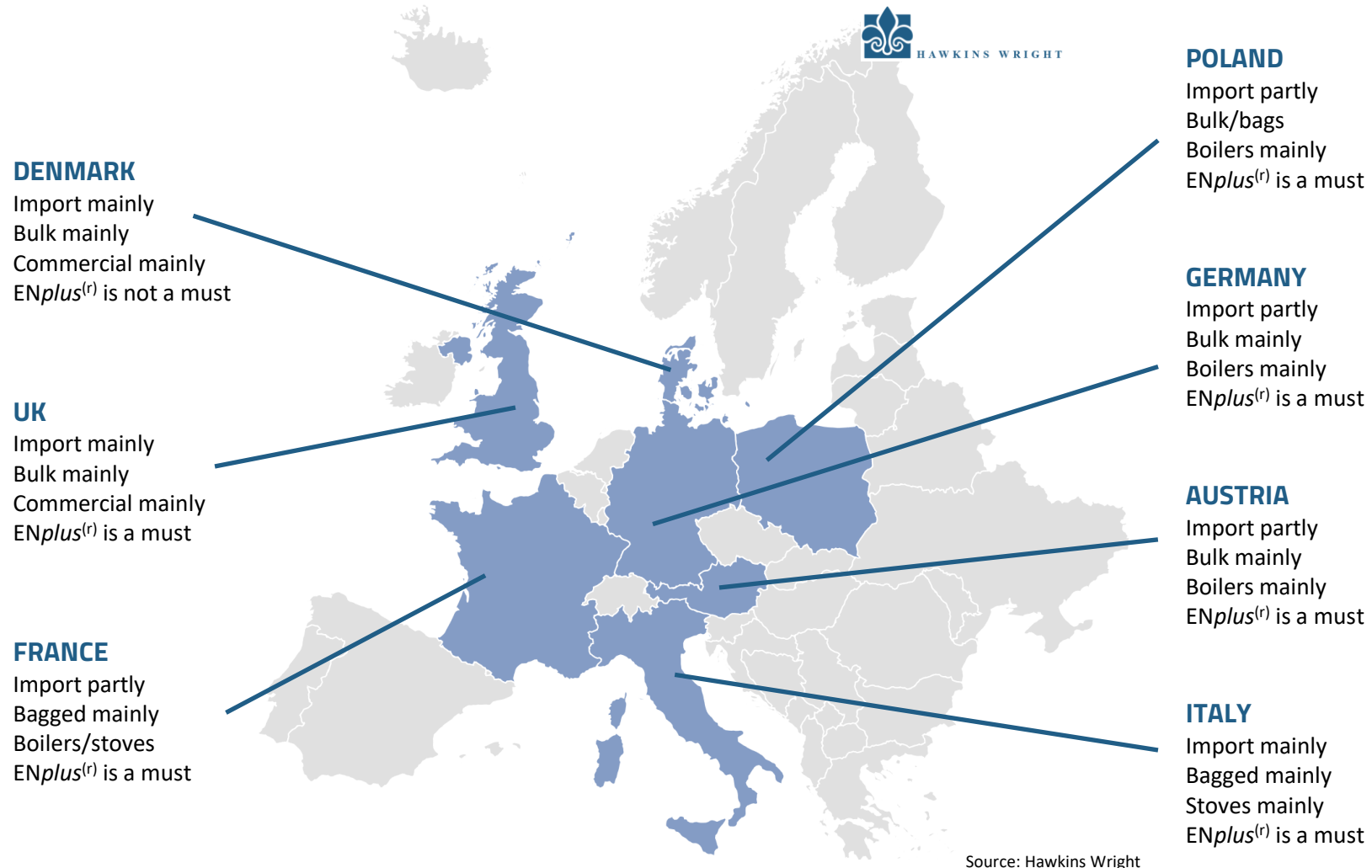
2023-2024 heating season

- Unusual sales pattern
- Moderate pellet sales because of stronger price sensitivity/less panic buying
- Heating appliances sales recovery is unsure
- End users' trust in pellet is unsure

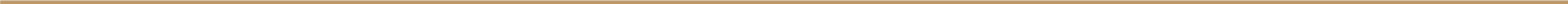
BIGGEST HEATING IMPORTING COUNTRIES



Top European heating importing countries Europe January-December 2022



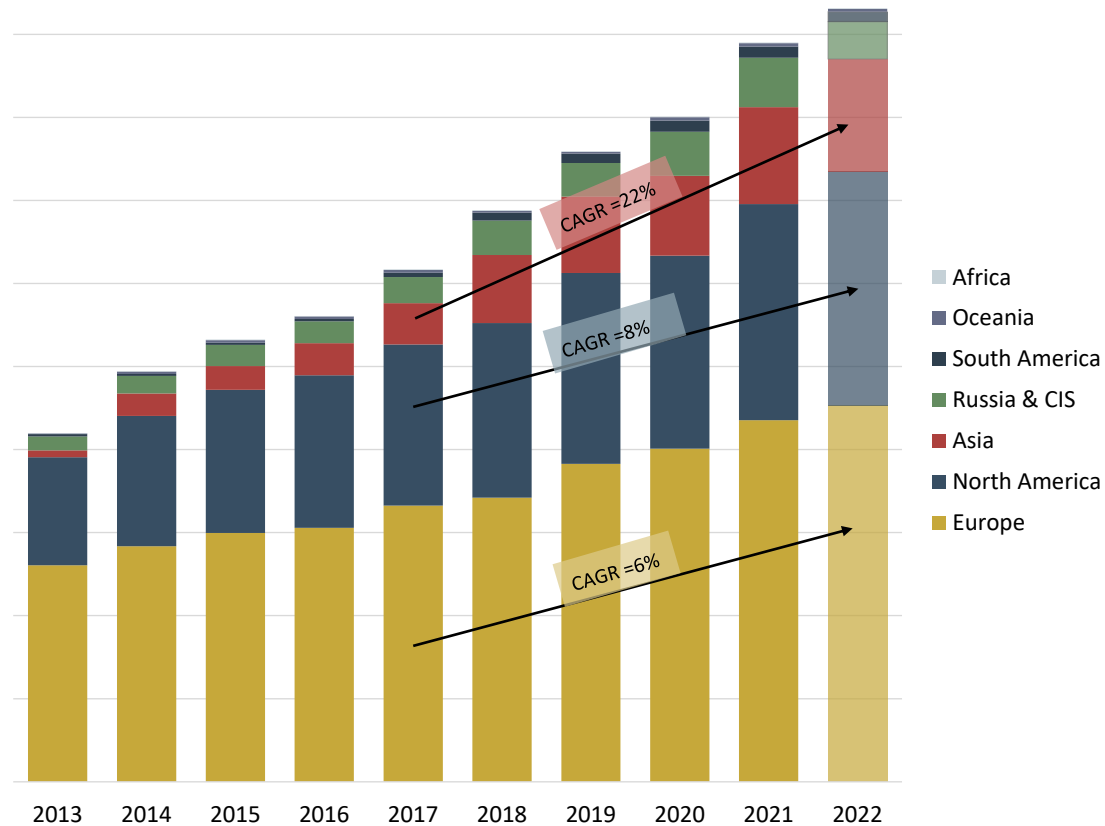
Pellet supply



GLOBAL PELLET PRODUCTION



Global wood pellet production 2013-2022



Source: Outlook for wood pellets Q1 2023, Hawkins Wright

2022 Production (vs 2021)

- Europe: contraction in the Baltics and uncertainty for Russia
- Asia: +16% mostly due to Vietnam
- N. America: +13%, mostly due to US

2023 Production

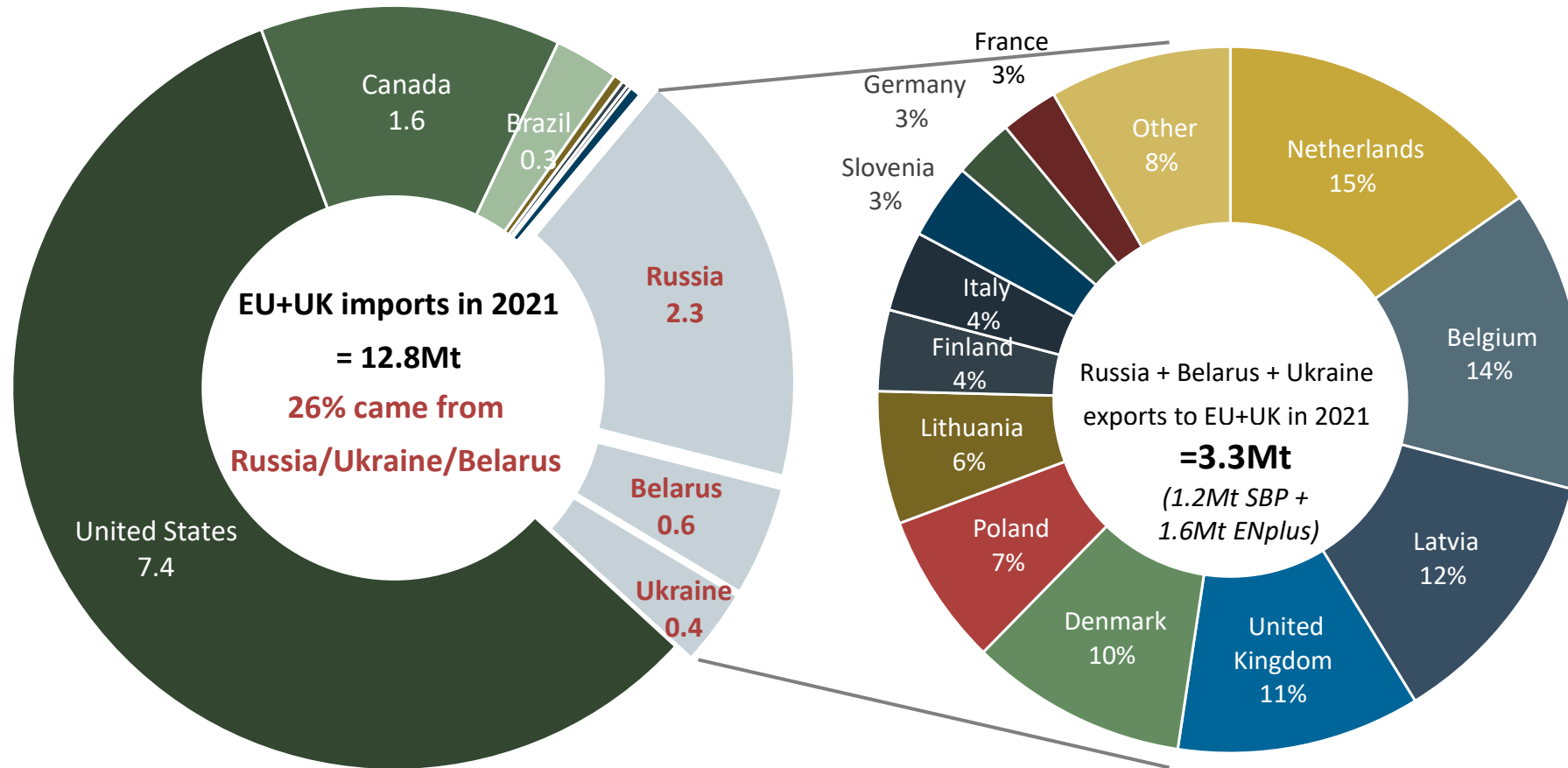
- Europe:
 - Early 2023: producers curbed production early 2023 due to low demand
 - Now: inability of many (heating pellets) producers to build stock due to unusual demand
 - Some Baltic producers attempt to partly switch to heating pellets



PELLET SUPPLY TO EUROPE

Russia and Belarus sanctions

EU + UK imports in 2021 (intra-EU trade excluded)



- Strong dependence on extra-European import (even more since Russian, Belarussian, Ukrainian supply stop)
- Attempts to export Russian pellets via Turkey and elsewhere
- An additional 4.3Mt came from the Baltic States, some of which used Russian/Belarussian fibre.

Sources: Eurostat, Global Trade Tracker, SBP, Enplus
Note: Data excludes intra-EU trade

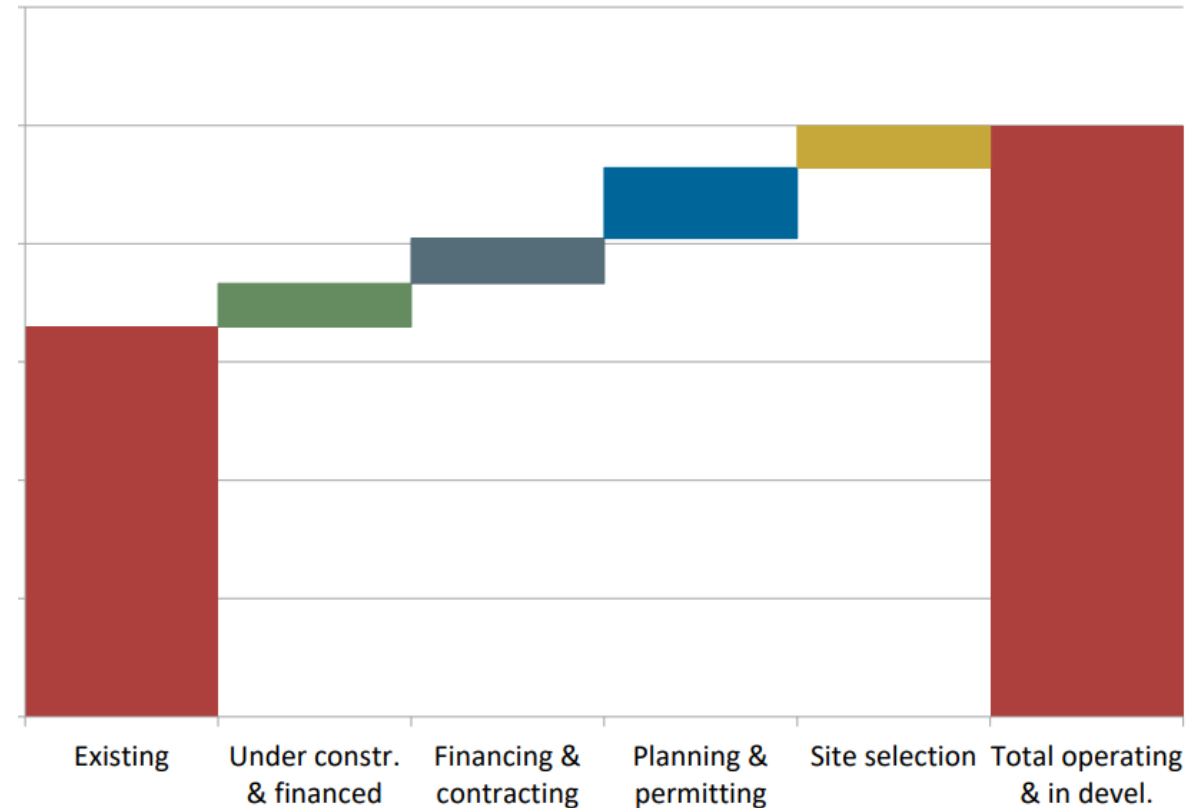
GLOBAL PELLET SUPPLY EXPANSION



Growth in pellet supply has not kept pace with demand

- Industrial wood pellet projects: slowdown in progression due to lack of off-take contracts (Europe and Asia)
- Heating wood pellet projects: less reliant on off-take contracts, growth to expect both from Europe and possibly South America.

Operational and under development pellet capacity by status, Q1 2023



Source: Outlook for wood pellets Q1 2023, Hawkins Wright

EUROPEAN HEATING PELLET SUPPLY

Characteristics



European heating pellet producers

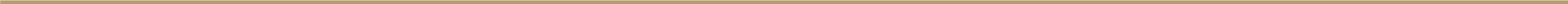
- Total number of European pellet mills (Russia and CIS excl.): 497
- Average capacity: 43.5kt (great heterogeneity in size)
- Raw material: mostly sawmilling residues
- Integration in a sawmill: not always
- Certification: ENplus is strong
- Production costs: raw material and production costs can be challenging
- Contracts: less reliant on long-term offtake contracts than industrial producer
- Many similar characteristics with US heating pellet producers

German sawdust price



Source: EUWID

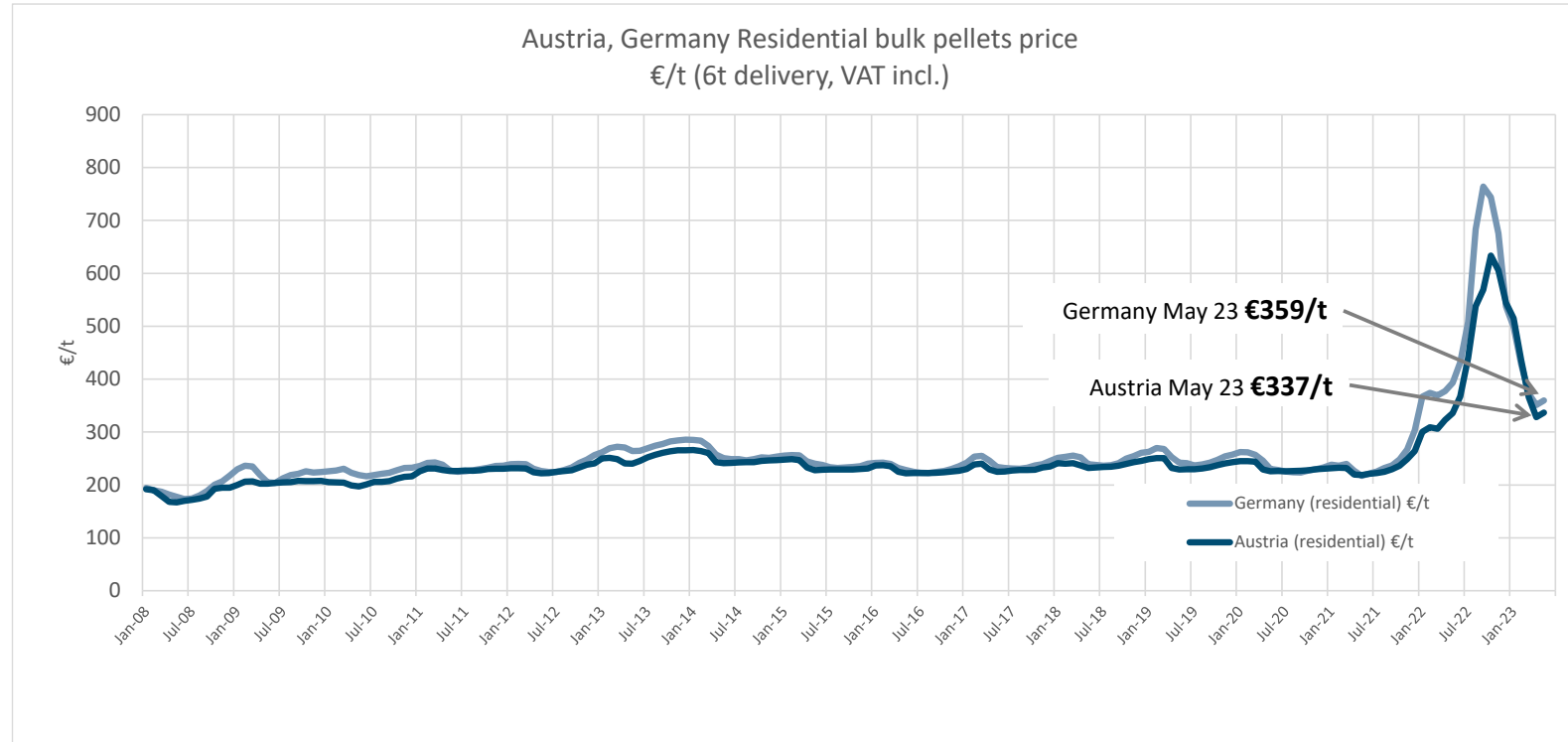
Pellet prices



HEATING SPOT PRICE



Heating pellet retail prices, EUR/t



Source: DEPI, ProPellets

- The mild winter and reduced consumption from end-users dried up buying appetite in Q1 2023.
- In March low offers from some central European producers triggered some buying interest.
- Offers raised since March.
- Buyers' interest remains rather high despite the heating season having ended



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