



Global pellet market update

Bulk Terminals 2024, Antwerp

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23 Oct 2024

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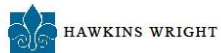


Consultants to the global pulp, paper & biomass industries



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 globally

A multi-client study

Available February 2020

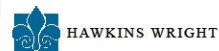


The global market for palm kernel shells (PKS)



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

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Supply constraints force European utilities to reduce biomass power generation

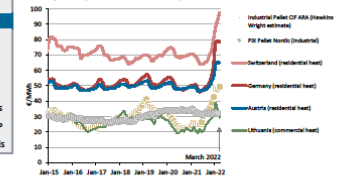
A lack of spot industrial pellet supply was likely the main factor behind widespread downtime at several biomass units in March. A technical issue at Ørsted's Avedøre 2 unit was coupled with rescheduled maintenance at Drax and Lynemouth and reduced capacity at RWE's Eemshaven and Amer plants. Some of 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 CF 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



Sources: See the footnotes beneath the price indications table, page 3.

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BIOMASS FUNDAMENTALS

Biomass types and use

Lignocellulosic biomass



Firewood



Briquettes



Woodchips



Wood Pellets



Agri-biomass

Energy generation

(heat, electricity, heat and electricity)



Residential



Commercial



Industrial

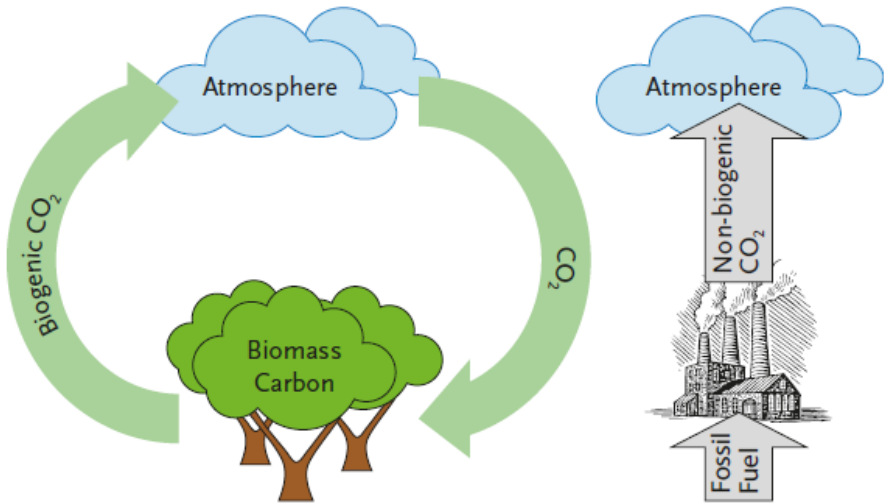


Heavy industry,
transportation

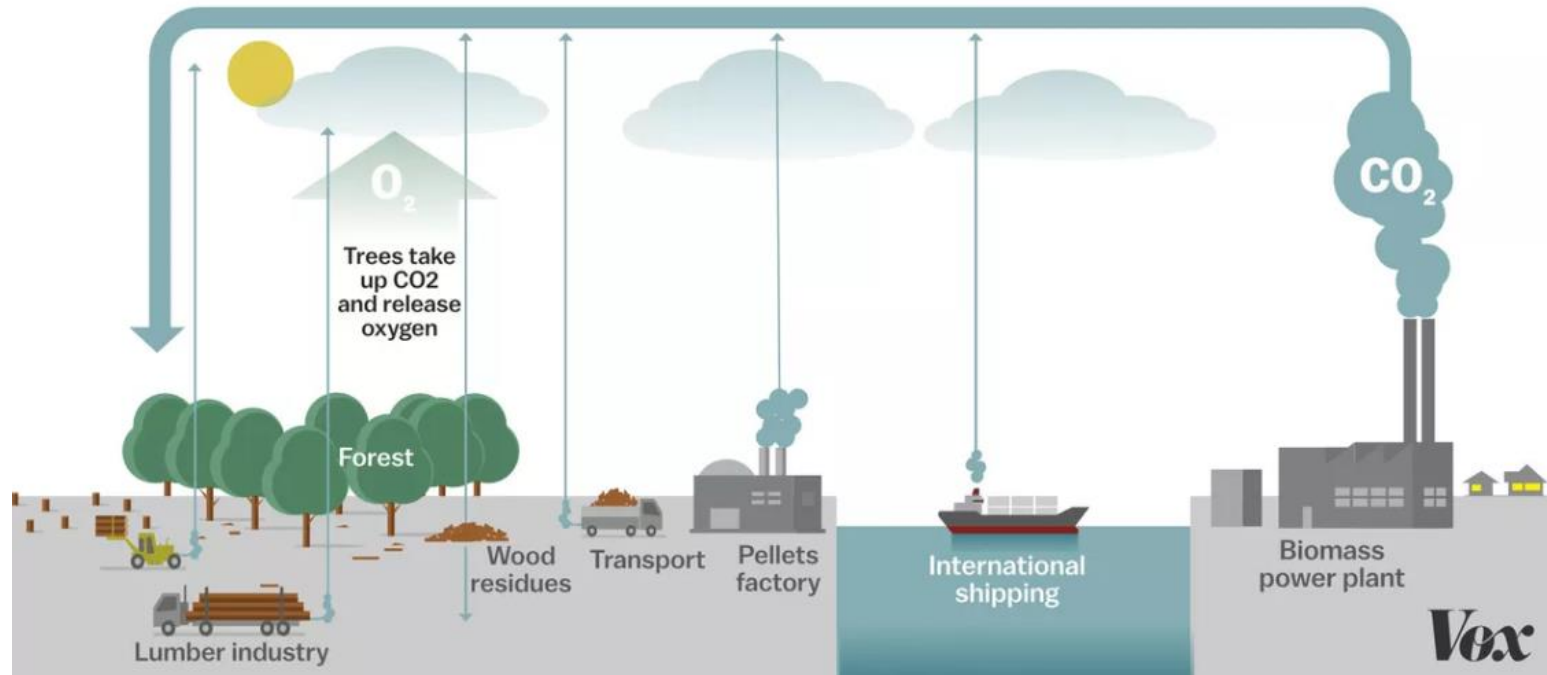


BIOMASS FUNDAMENTALS

Carbon cycle



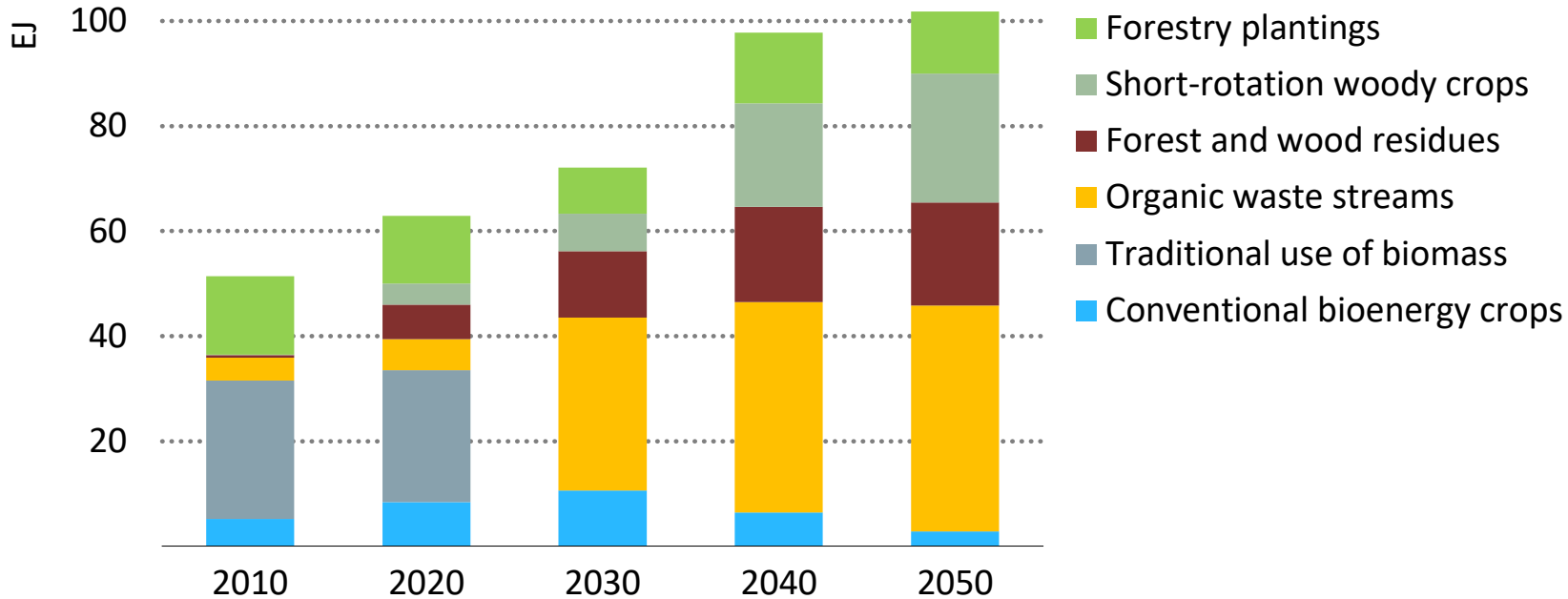
The cycle of biomass energy



BIOMASS FUNDAMENTALS

Carbon cycle

Bioenergy supply by feedstock



Source: IEA, Net Zero by 2050, 2021

- Europe’s 2030 targets cannot be achieved without biomass
Findings from the IEA’s Net Zero by 2050 analysis
- The IEA believes the use of forest and wood residues (globally) will need to double by 2030
- Modern bioenergy in buildings, electricity and industry will need to increase +80% by 2030



BIOMASS FUNDAMENTALS

Biomass types and use

Lignocellulosic biomass



Firewood



Briquettes



Woodchips



Wood Pellets



Agri-biomass

Energy generation

(heat, electricity, heat and electricity)



Residential



Commercial



Industrial



Decarbonisation



Heavy industry, transportation

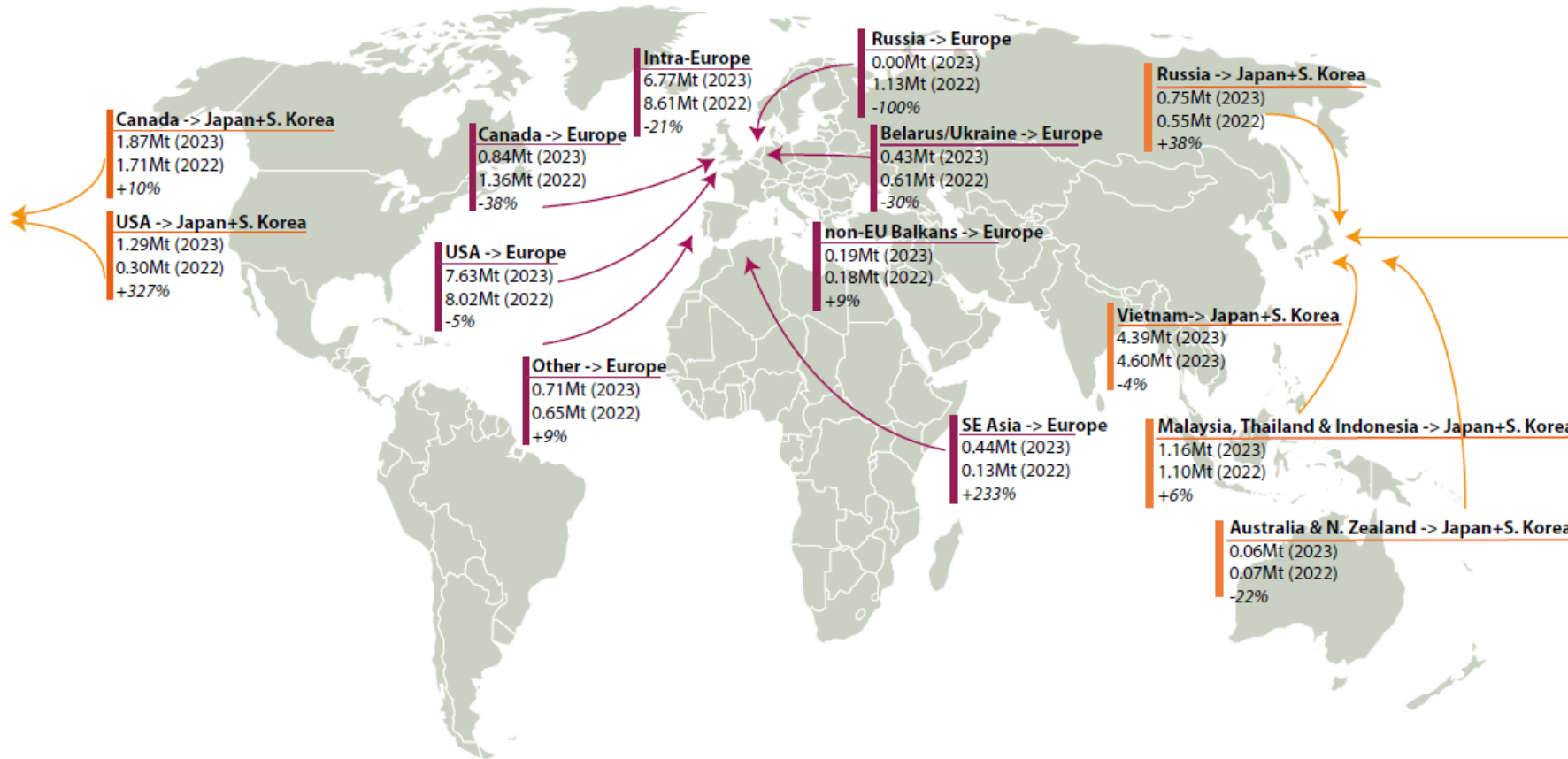


Wood pellet market

GLOBAL WOOD PELLET MARKET

Overview

Global trade of wood pellets, 2023 vs 2022



Source: Global Trade Tracker, based on import data

Wood pellets
= Commodity traded globally

Pellet Use - Leading regions

- Europe
- Asia (Japan + Korea)

Pellet Supply - Leading regions

- Europe
- North America
- SE Asia (Vietnam, Malaysia, Thailand, Indonesia)

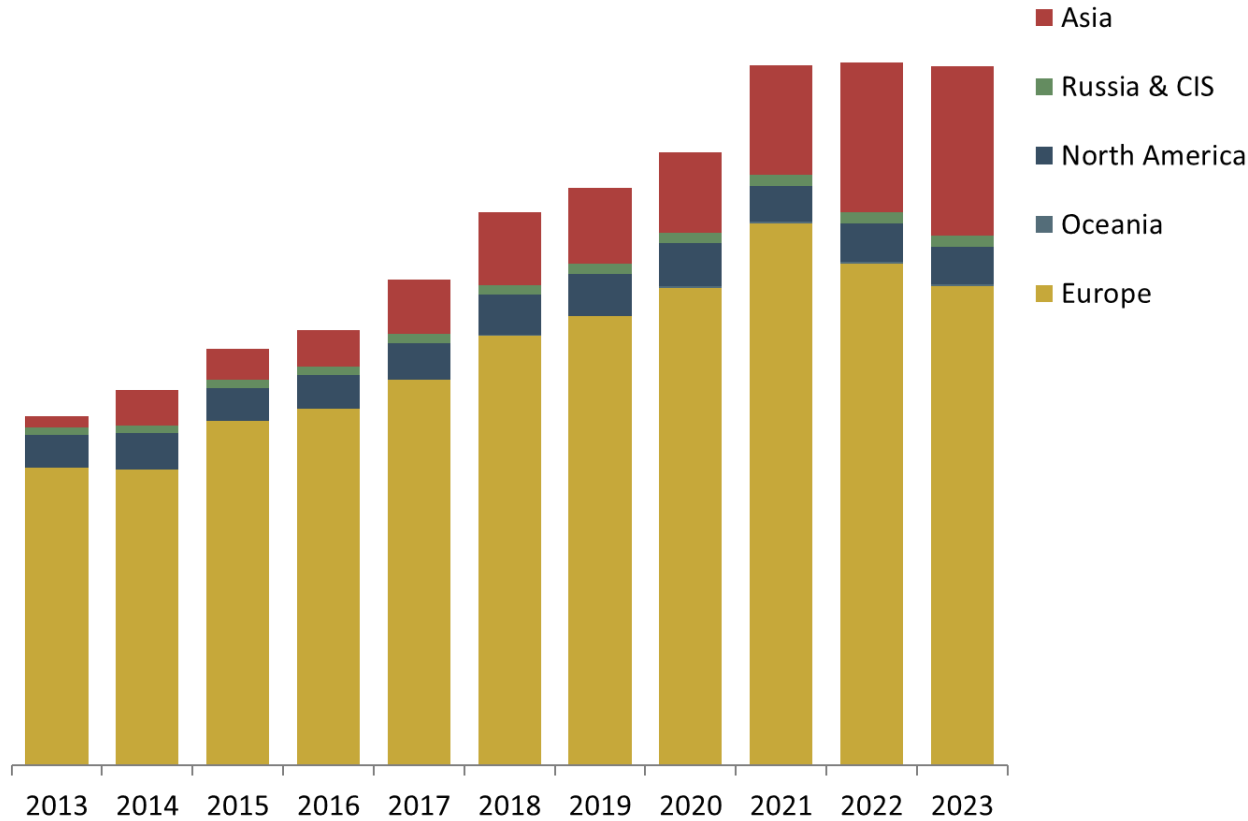


Wood pellet demand



GLOBAL PELLET DEMAND

Global pellet demand, 2013-2023



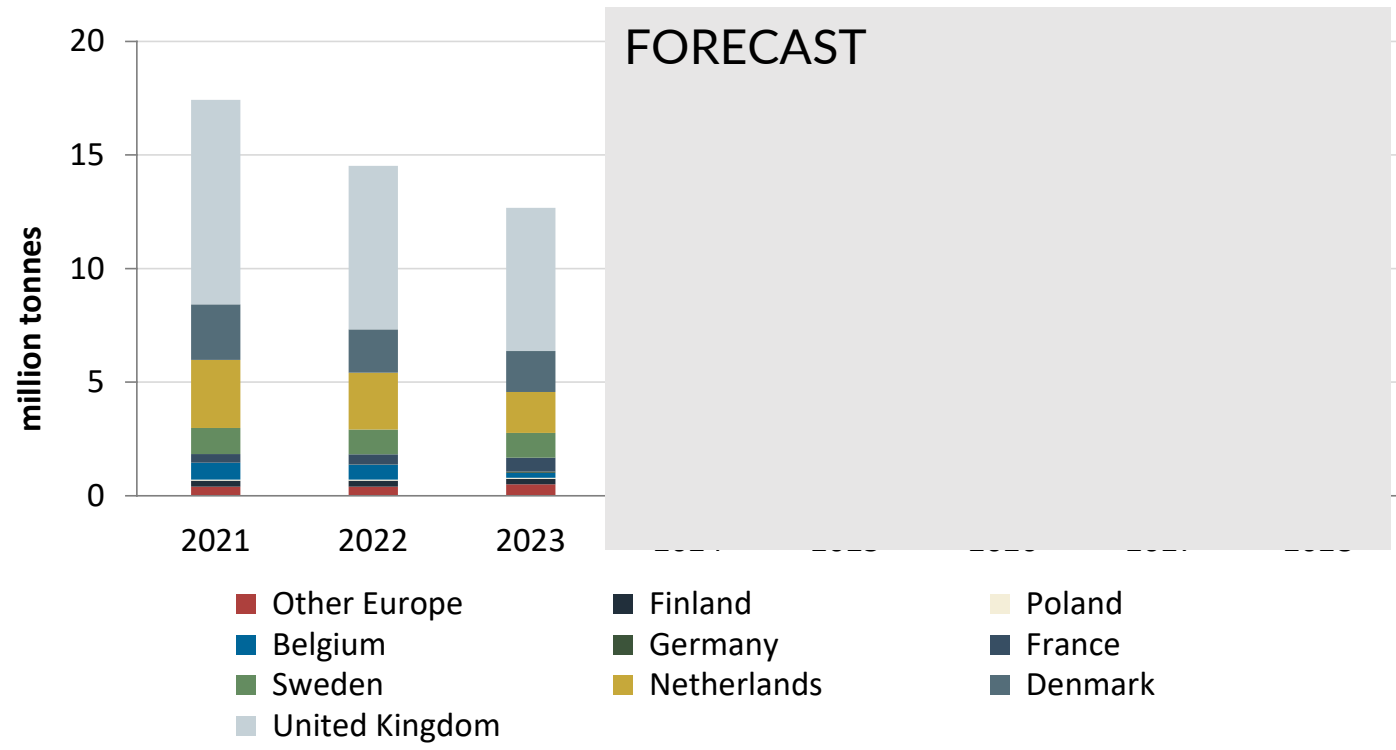
Source: Hawkins Wright, Outlook for Wood Pellets Q2 2024

- Market growth stalled 2021-2023
- Global market of 44.5Mt in 2023 (stable y/y)
- In 2023:
 - Europe -4% y/y
 - Asia +13% y/y
- 2nd annual contraction in Europe

EUROPEAN INDUSTRIAL PELLET DEMAND

Current situation

Industrial pellet demand in Europe, 2021-2028



Source: Hawkins Wright, Outlook for Wood Pellets Q3 2024

- Seasonally low industrial demand in Europe (UK, NL, DK)
- CfD is economic again, generation is back to normal levels (except for 1 unit of Lynemouth and MGT operating at lower load factor)

EUROPEAN INDUSTRIAL PELLET DEMAND

Outlook

ESO

Developing a system plan for clean power by 2030



Source: The Guardian

UK

- Labour has pledged 100% clean power by 2030
- NESO* started the work on the plan (95% renewable electricity production)
- Biomass decisions will be weighed carefully, but very difficult not to support BECCS

*National Energy System Operator

France (mainland and overseas)

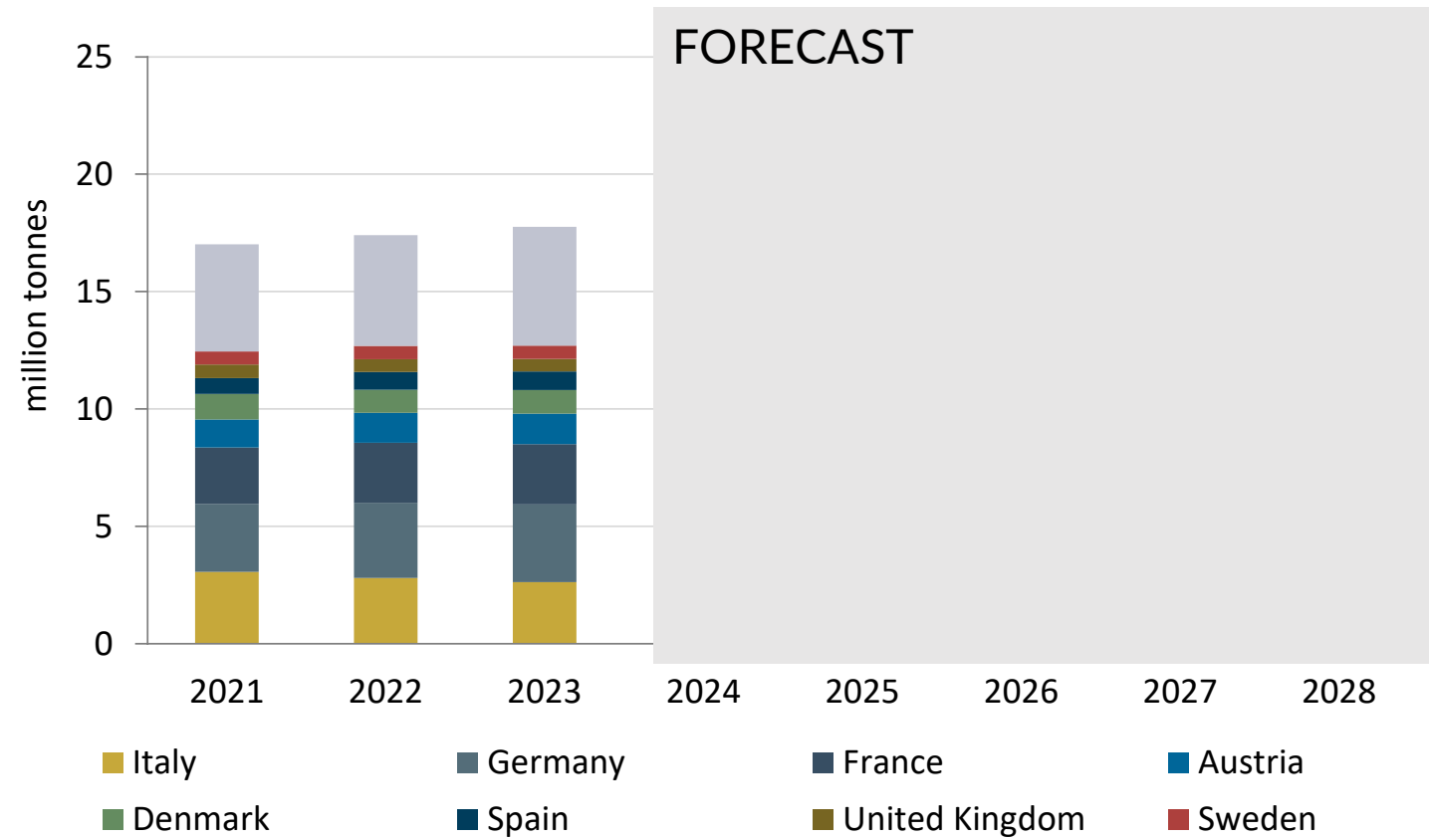
- Cordemais abandoned
- Albioma Le Moule conversion confirmed



EUROPEAN HEATING PELLET DEMAND

Current situation

Heating pellet demand in Europe, 2021-2028



Source: Hawkins Wright, Outlook for Wood Pellets Q3 2024

Very mild 23-24 heating season (El Niño)

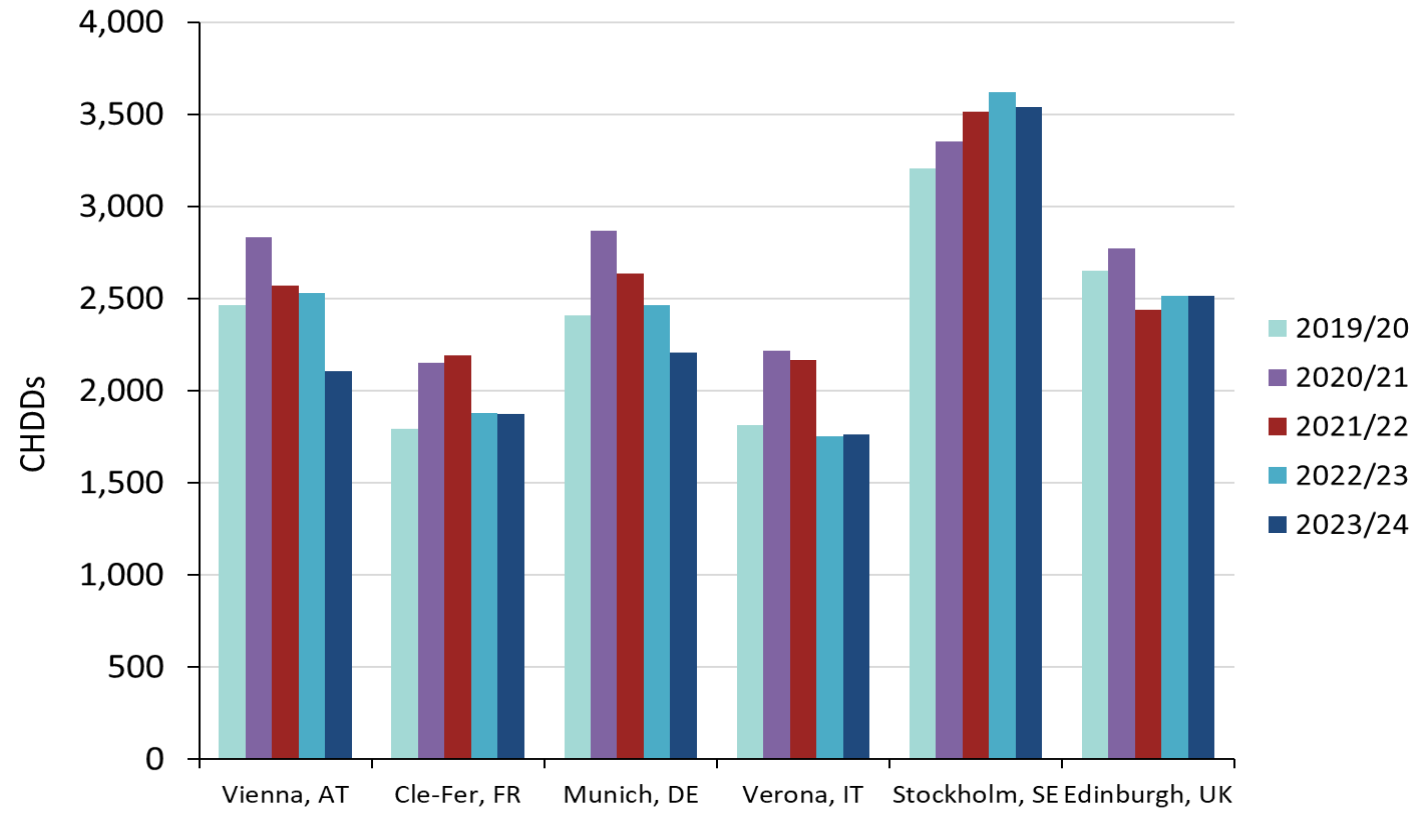
23-24 vs 5 preceding years average

- Austria: -19%
- France: -7%
- Germany: -15%
- Italy: -9%
- Sweden: +4%
- UK: -2%

EUROPEAN HEATING PELLET DEMAND

Main drivers & outlook

Cumulative heating degree days (cHDDs) in the current season v. previous years



Source: MDA EarthSat

Heating demand

Very mild 23-24 heating season (El Niño)

23-24 vs 5 preceding years average

- Austria: -19%
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Sales of heating appliances

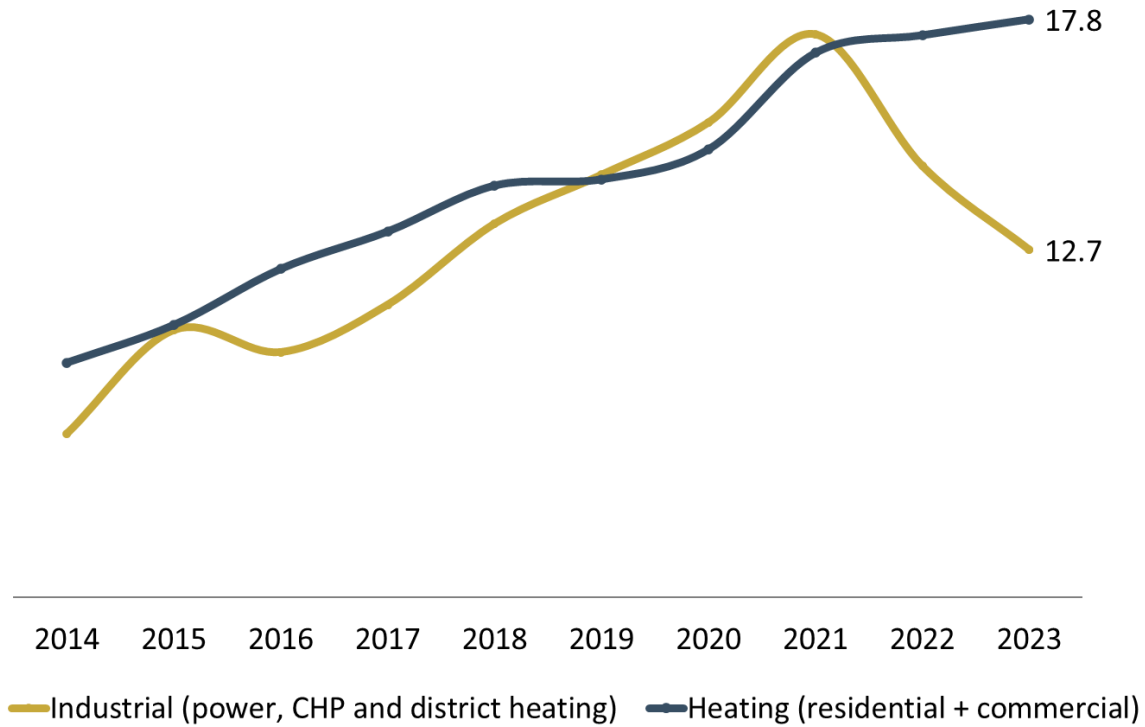
Low sales of pellets heating appliances (2023 on 2022)
2024 sales still depressed except for Austria and likely Poland



EUROPEAN PELLET DEMAND

Current situation - overview

European pellet demand, 2014-2023 (million tonnes)

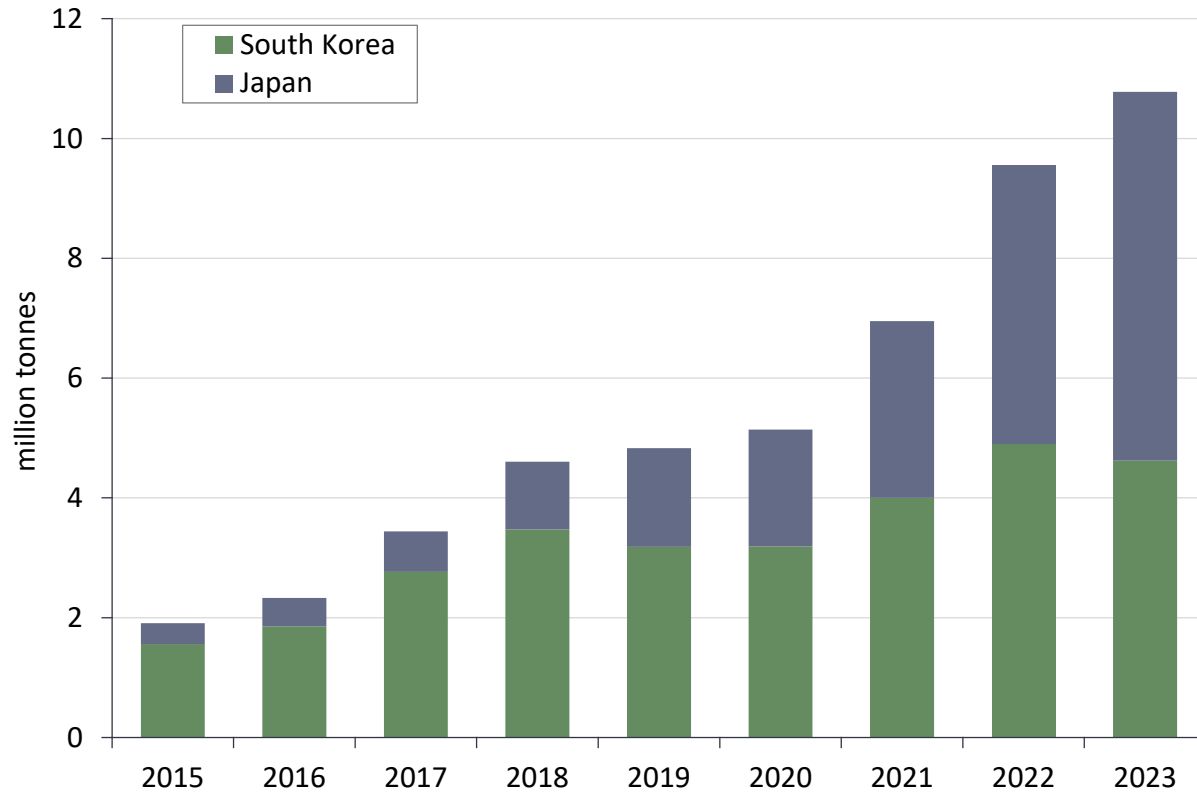


Europe industrial demand has fallen -4.8Mt since 2021, partly offset by growth of +0.7Mt in heating

Source: Hawkins Wright

ASIAN INDUSTRIAL PELLET DEMAND

Total pellet demand in Asia (million tonnes), 2015-2023



Source: Hawkins Wright, Outlook for Wood Pellets Q3 2024

- Total Korean pellet demand was 4.6Mt in 2023, down -6% on 2022
- Total Japanese pellet demand was 6.2Mt, up +32% on 2022



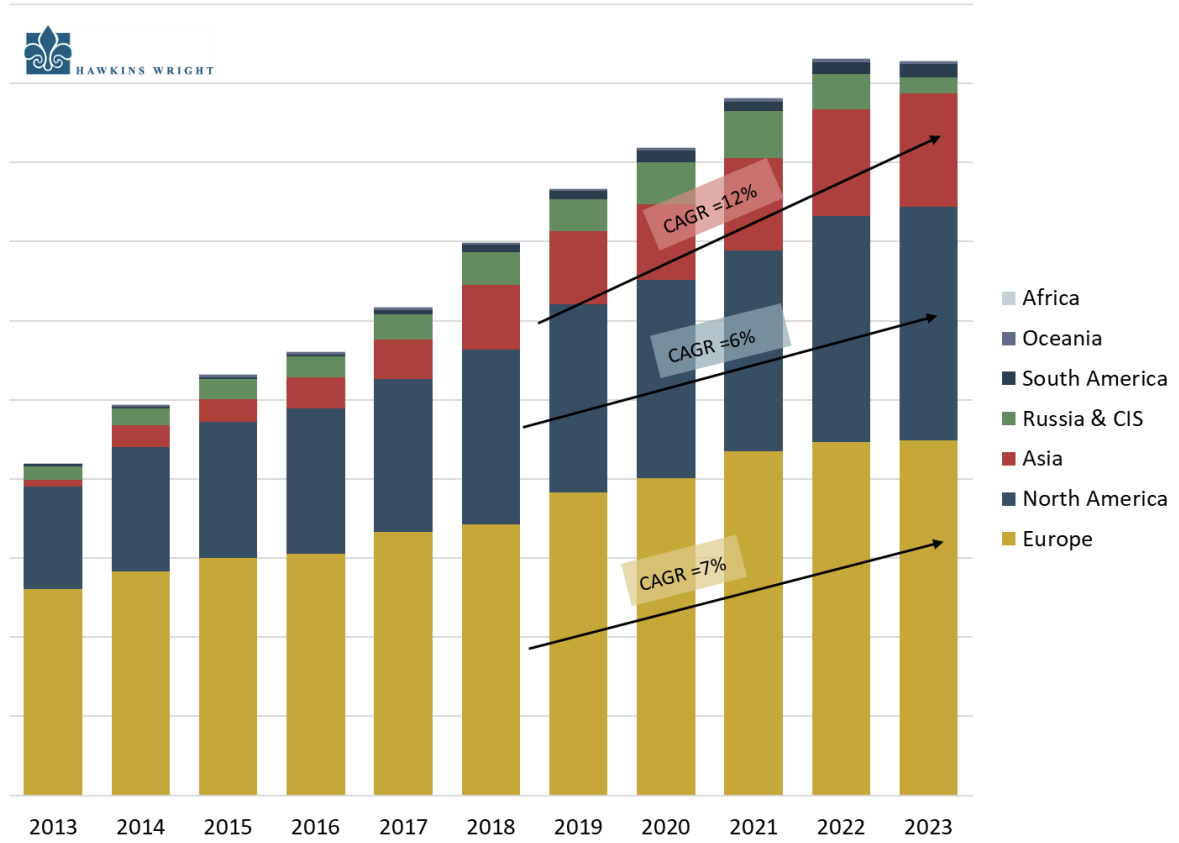
Wood pellet supply



GLOBAL PELLET SUPPLY

Evolution of global pellet production

Global wood pellet production 2013-2023



Source: Hawkins Wright, Outlook for wood pellets Q2 2024

In 2023

- Europe: +0.5% y/y
- North America: +3.5% y/y
- South America: +10.3% y/y
- Asia: +6.3% y/y

North America

- ENVIVA restructuring plan
- US: hurricane impacting supply
- CA: feedstock supply challenges in BC

Asia

- Vietnam: punctual reduced wood supply

Europe

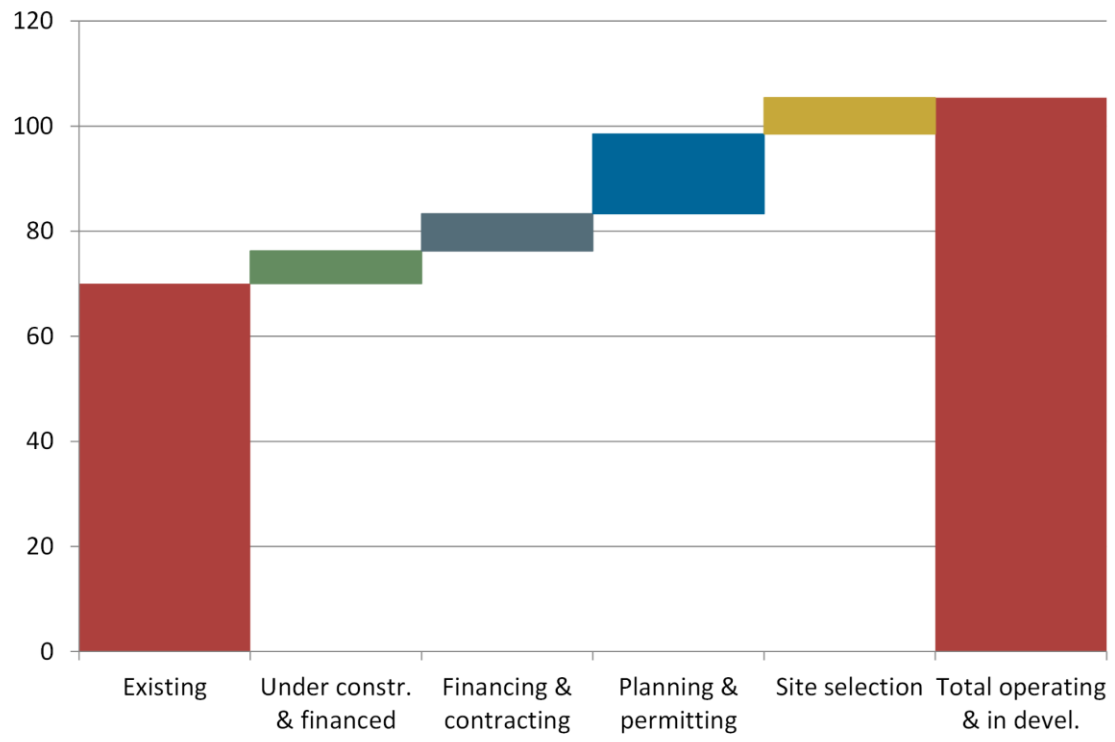
- Reduced production rates in several countries



GLOBAL PELLET SUPPLY

Recent trends in supply

Existing and under development pellet capacity, by status, Q3 2024



Source: Hawkins Wright, Outlook for Wood Pellets Q2 2024

- Little change in planned capacity
- Lack of new long-term contracts continued to stall project progression
- New UK government deciding on future of BECCS projects, which could support new contracts

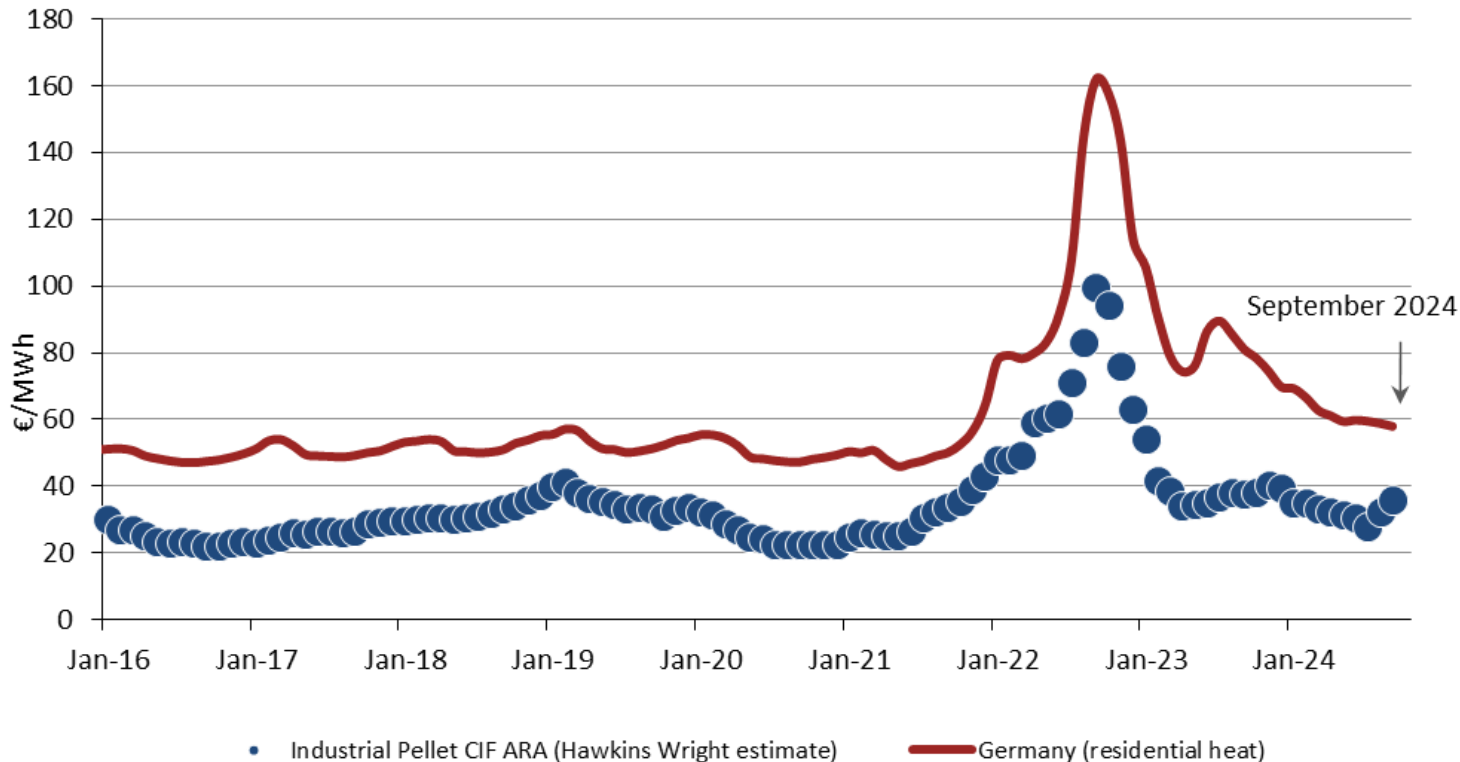


Wood pellet prices

PELLET PRICE

Residential and industrial pellet price

Residential pellet price in Germany and industrial spot price



Source: Hawkins Wright, DEPI Note: Germany (residential heat)- delivered price (VAT incl) for 6t heating bulk pellets

Industrial pellets

Spot prices continued their downward trend in Q2 2024 before significant increase in August and September.

Heating pellets

Continuous downward trends since July 2023 in Germany.

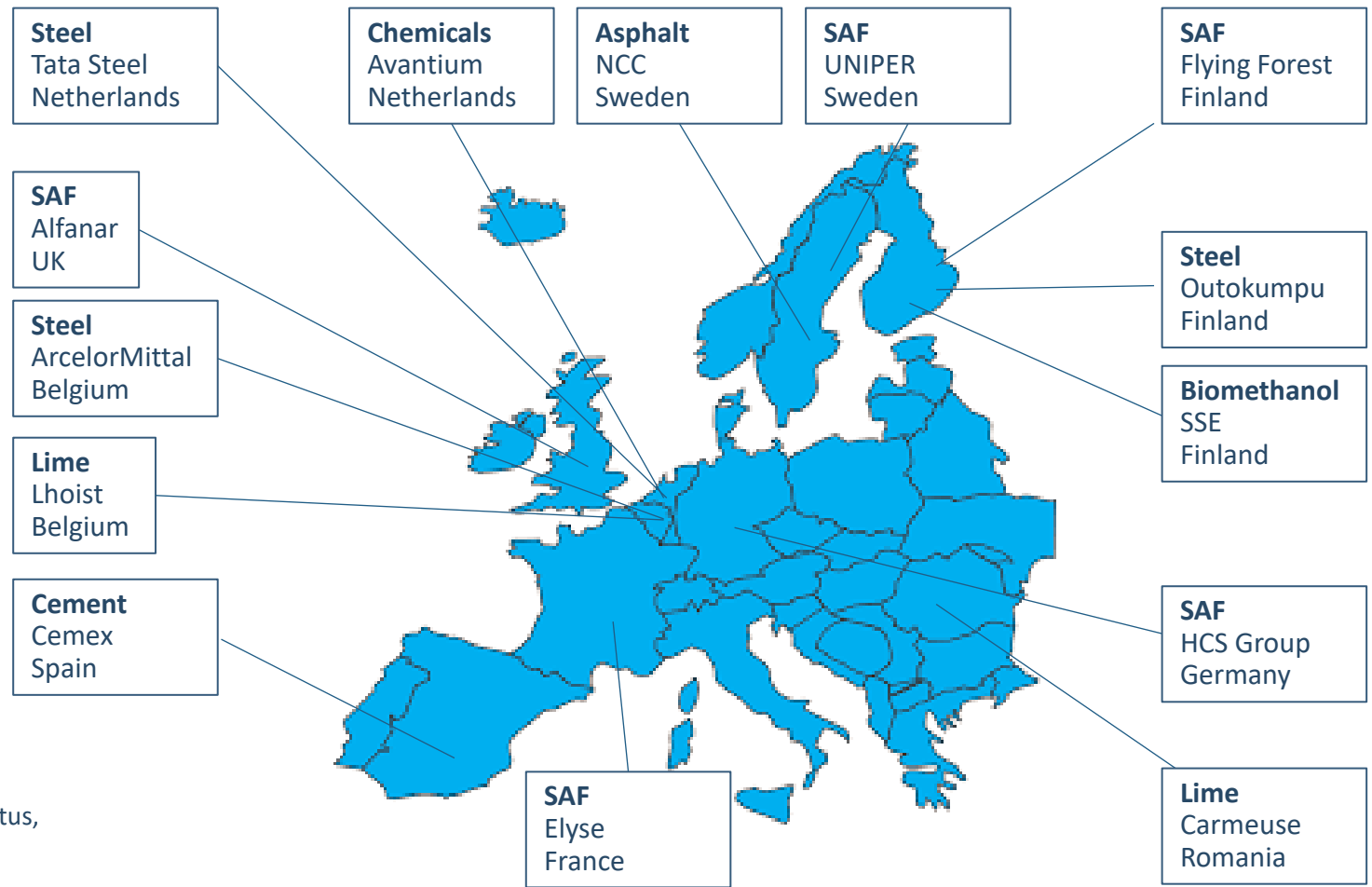


Beyond heat and power



BEYOND HEAT AND POWER

Selection of decarbonisation projects using lignocellulosic biomass*



* Non-exhaustive list of projects, independently from size and progress status, locations limited to one per company

STUDY TOUR: TATA STEEL IJMUIDEN
3 December 2024

TATA STEEL



« *Helping heavy industry and transportation to decarbonise with lignocellulosic biomass* »

180+ delegates

BIOMASS TYPES COVERED

- Wood chips
- Wood pellets
- Agribiomass
- Biocoal
- Biocarbon

WHY ATTEND?

- Biomass Procurement Planning
- Impact of New Biomass Users
- Identifying New Biomass Users

2 INSIGHTFUL DAYS

- Study tour (Tata Steel)
- Insightful conference
- Networking



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Thank you for listening

Any questions?