ARGUS CONFERENCE REPORT

APRIL 2025

WOOD PELLET ASSOCIATION OF CANADA

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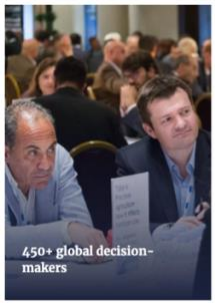
BACKGROUND

The Wood Pellet Association of Canada (WPAC) attended the annual Argus Biomass Conference in London, UK from April 1 to 3, 2025, at the Queen Elizabeth II Centre in London where leaders explored new innovations, industrial applications including biochar and biocarbon in the steel, cement and aluminum industries, SAF and agriobiomass, and new procurement opportunities. With over 450 attendees, this is the largest international gathering of traders, wood pellet and wood chip producers and utilities.



About Argus

Argus is the leading independent provider of market intelligence to the global energy and commodity markets. They provide essential price assessments, news, analytics, consulting services, data science tools and industry conferences to illuminate complex and opaque commodity markets. Headquartered in London, Argus is an independent media organization with 30 offices in the world's principal commodity trading hubs. Companies, trading firms, and governments in 160 countries worldwide leverage Argus data to make decisions, analyze situations, manage risk, and facilitate trading and long-term planning. Argus prices are used as trusted benchmarks around the world for pricing transportation, commodities and energy.

WPAC / CANADA OBJECTIVES

Gordon Murray, Executive Director and Fahimeh Yazdan Panah, Director of Research and Technical Development with the Wood Pellet Association of Canada (WPAC) attended the event and led a delegation of Canadian producers to:

1. Learn more about innovations in the pellet market and industrial applications of biomass.
2. Pursue new procurement opportunities.
3. Meet with key companies and senior executives to discuss opportunities to expand trade and support mutual goals around bioenergy and decarbonization.
4. Expand our network beyond the traditional heat and electricity market segments to include steel, cement and sustainable aviation fuel market segments.
5. Reaffirm Canada's strong position as a leading and reliable supplier of wood pellets.

ACTIVITIES, DELIVERABLES & OUTCOMES

Activities

1. Attended and led Canadian delegation of 11 people (10 of which are SMEs) at conference who met with minimum of 3 foreign companies/customers (total of 33 meetings).
2. Fahimeh Yazdan Panah spoke on a panel: *How can you fireproof your feedstocks in biomass storage and handling: A guide*
3. Met with existing and prospective customers and regulators to discuss Canada as a reliable source of low-GHG, sustainably produced wood pellets.
4. Met with Arcelor-Mittal.

Deliverables & Outcomes

Note: a breakdown of these deliverables and outcomes is further down in this report.

- Produced a report summarizing activities and recommendations.
- Generated five leads.
- Identified 10 potential foreign partners (agents, distributors, service contractors).
- Supported five Canadian companies in their efforts to expand their international business development efforts.
- Interacted with 34 foreign participants in the sector.
- Informed at least 200 Canadian industry personnel with a market intelligence / trip report; providing an important insight and summary from the conference for them to use to expand their business opportunities.

KEY OBSERVATIONS

- The biomass sector must evolve from a commodity exporter to a provider of decarbonization solutions.
- Investment in R&D, partnerships with end-users (steelmakers, chemical plants), and public education efforts are critical.
- Bioenergy with Carbon Capture and Storage (BECCS) has the potential to be a commercial game-changer by the early 2030s. Success depends on fast-tracking project development and financing mechanisms in 2025–2027, building flexible biomass sourcing strategies based on traceability and cascading principles, tying BECCS to new value chains—carbon removals, green steel, data center energy supply —beyond just power generation and securing a supportive regulatory framework that recognizes BECCS as a premium carbon removal pathway.

- Biocarbon could become the bridge between fossil-intensive heavy industries and a net-zero world, but scaling requires:
    - Clear standards (especially around sustainability and certification).
    - Investment in supply chain infrastructure (densification, logistics).
    - Industrial partnerships for testing and adoption.
    - Regulatory support (carbon markets, cascading use recognition).
    - Patient capital willing to support multi-year testing and ramp-up.

RECOMMENDATIONS

- Recreate the *How Can You Fireproof Your Feedstocks in Biomass Storage and Handling: A Guide* at the 2025 WPAC Conference in Halifax, Nova Scotia.
- Strengthen supply chain readiness for European Union Deforestation Regulation (EUDR) compliance. Expand the uptake of the Sustainable Biomass Program's (SBP's) EUDR module and provide training on new EU requirements.
- Expand engagement with hard-to-abate industries and proactively engage steelmakers and cement producers to position Canadian wood pellets as a viable, low-carbon feedstock.
- Engage with policymakers in Canada and key markets to ensure BECCS is recognized in compliance carbon markets and actively supports its commercialization.
- Reinforce domestic market development and heat applications. Advocate for federal and provincial support to scale bioheat adoption in Canada, particularly in the face of high heating oil and electricity prices.

MARKET UPDATE & OPPORTUNITIES FOR CANADIAN EXPORTERS

Global Market Outlook

- Global biomass markets are entering a period of significant transition.
- In the near term, both Europe and Asia are experiencing stronger demand and tighter markets. Spot prices for industrial wood pellets have rebounded from summer 2024 lows, driven by renewed winter power generation needs, restocking ahead of delayed EUDR requirements, and supply disruptions such as floods and port congestion in Asia. European imports rose in 2024, particularly from the US and Southeast Asia, while Asian markets (especially Japan and Korea) saw a post-outage resurgence in demand.

- Medium- and long-term outlook is more complex. By 2026, with subsidies phasing out in key markets like Japan and Korea and utilities expected to meet higher thermal efficiency targets, biomass will face tougher competition from renewables.
- Beyond 2026, growth opportunities are shifting. Industrial sectors, particularly hard-to-abate industries like steel, chemicals, and aviation, are expected to drive new demand for bioenergy, particularly for biocarbon and biochar products. Carbon pricing, BECCS projects, and voluntary carbon markets are emerging as critical enablers for future biomass value chains. Several major BECCS announcements, including projects in Sweden, the UK, and the Netherlands, highlight the sector's pivot toward carbon removal.
- Agricultural biomass and new suppliers like Vietnam and Indonesia are gaining prominence, but challenges around sustainability verification, raw material costs, and policy uncertainty remain. Although risks such as US tariffs, European sustainability regulations—Renewable Energy Directive III (RED III), EUDR - and global trade disruptions persist, the sector is evolving to meet a future where biomass will support grid flexibility and industrial decarbonization.

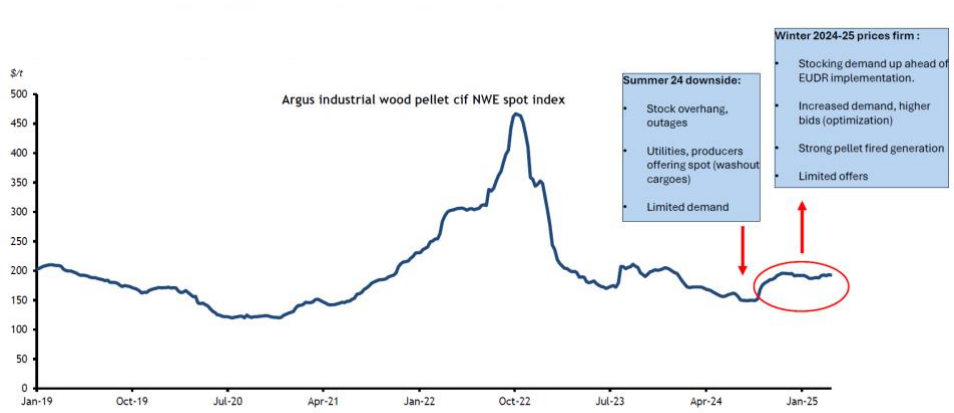


Figure 1. Spot wood pellet prices (Source: Argus Media)

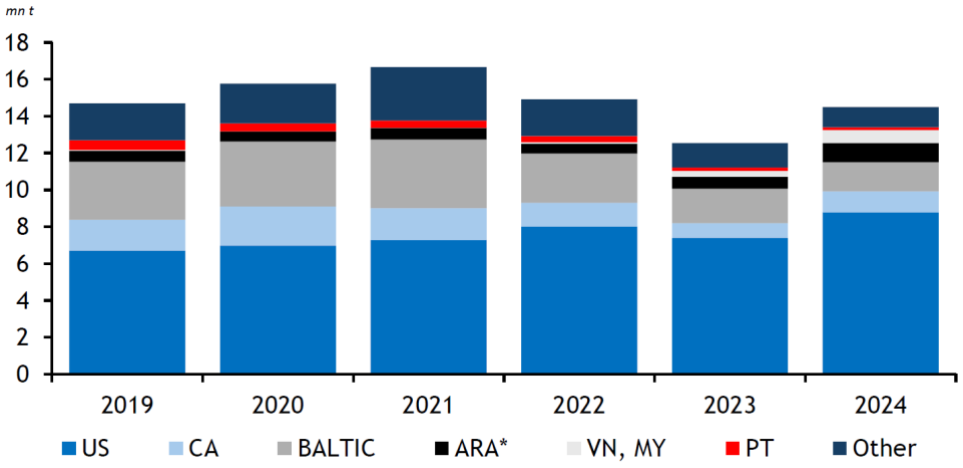


Figure 2. Europe pellet import (Source: Argus Media)

**Note: ARA incl. NL&BE. NWE incl. UK, DK, NL, BE, FR*

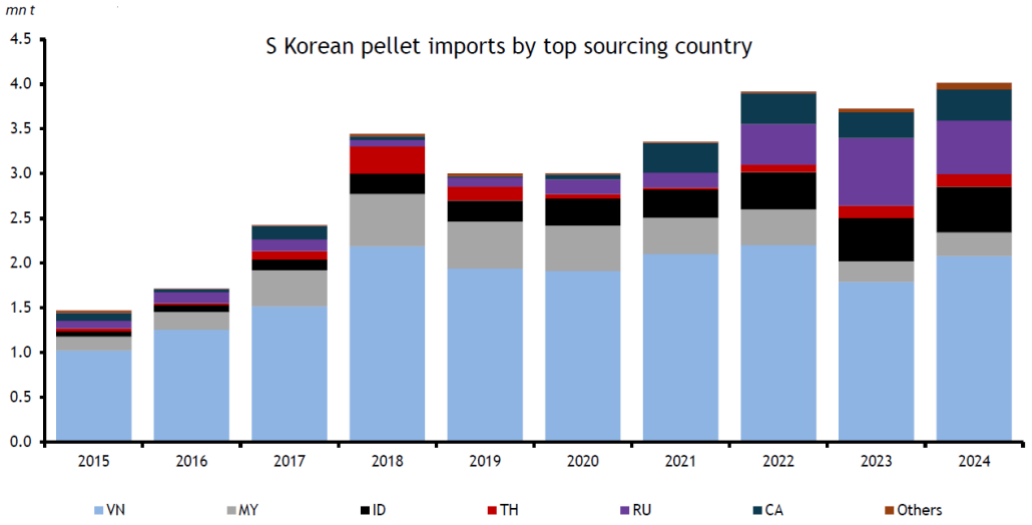


Figure 3. South Korea pellet import (Source: Argus Media)

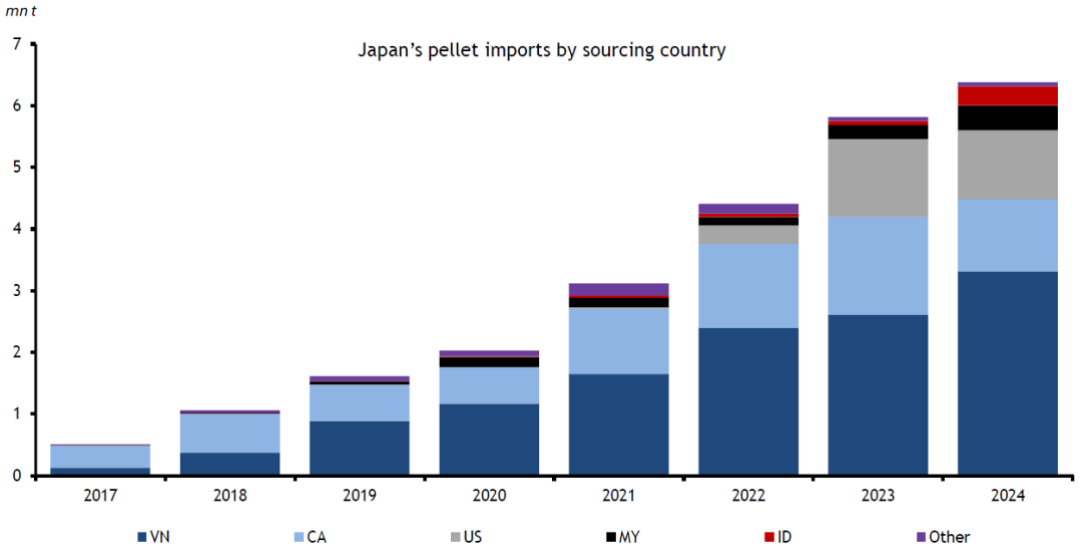


Figure 4. Japan pellet import (Source: Argus Media)

How Biocarbon Production Can Bridge the Gap and Sustain the Supply Chain for Hard-to-Abate Industries

Steel, Aluminum, Cement and Other Decarbonizing Sectors are Looking for Compliance Carbon Markets

Heavy industries want biocarbon solutions, but they need regulatory certainty, traceability, and standardized carbon credit recognition to scale it.

- Steelmakers (like ArcelorMittal), aluminum, and cement producers increasingly seek carbon credit systems to offset hard-to-abate emissions.
- Companies want to access compliance markets (like the EU Emissions Trading System (ETS)) or credible voluntary carbon markets, but they stress that:
    - Standardization of biocarbon certification and traceability is critical.
    - Regulators must recognize the unique role of biocarbon compared to other decarbonization solutions (like hydrogen or CCS).
- Uncertainty around regulatory frameworks (e.g., cascading use principles in the RED III) and lack of clear carbon accounting are concerns, slowing investment and adoption.

Green Steel: Ensuring Process and Result Are Sustainable

To succeed, green steel must be backed by robust biocarbon supply chains, clear sustainability certification, and scaling-up initiatives to reduce costs.

- The demand for green steel is driven by:
    - Consumer expectations (especially automotive and construction sectors).
    - Government net-zero targets.
- Challenges to fully sustainable green steel:
    - Feedstock traceability: Biocarbon must be sustainably sourced (preferably with SBP or similar certifications).
    - Supply chain logistics: Biocarbon must be densified (e.g., via briquettes) to allow for efficient transport and injection into steelmaking furnaces.
    - Long qualification cycles: Testing new biocarbon materials in industrial processes can take 2–3 years, slowing down adoption.
    - Cost parity: Green steel (and the biocarbon that supports it) must approach cost competitiveness with conventional steel and fossil reductants over time.

Efficiency and Feasibility of Biocarbon and Biochar Compared to Other Sources of Energy

Biocarbon offers a more immediate and technically feasible decarbonization pathway for steel, cement, and aluminum than many alternatives, but only if supply chains can scale and standardize. Compared to alternatives:

- Biocarbon vs. hydrogen: Biocarbon is currently more scalable and requires fewer infrastructure changes, but hydrogen may be preferred long-term for some processes.
- Biocarbon vs. CCS: Biocarbon provides energy and intrinsic carbon removal without requiring complex CCS infrastructure.
- Biochar: Useful for agriculture, carbon sequestration, and some industrial uses, but generally lower energy density than densified biocarbon (e.g., torrefied briquettes).

Key advantages of biocarbon:

- Compatibility with existing blast furnaces (especially for partial injection).
- Ability to leverage residual biomass and waste streams.
- Significant carbon intensity reductions compared to fossil coal.

Key disadvantages of biocarbon:

- Variability of feedstock (especially agro-residues).
- Densification and transport costs.

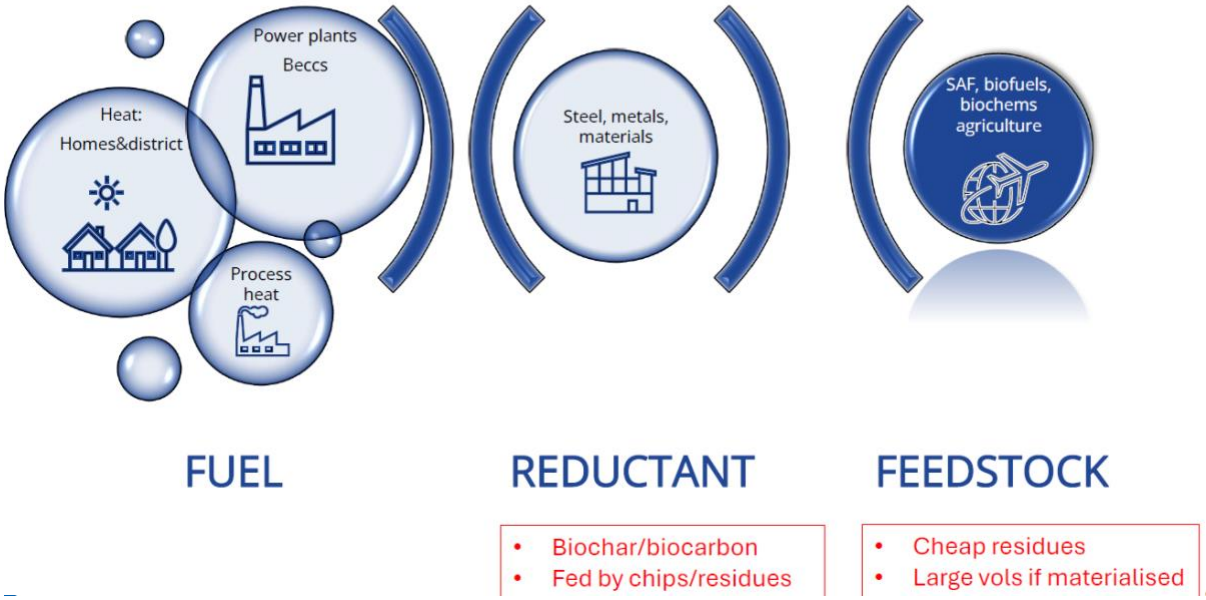


Figure 5. Hard to abate industries demand (Source: Argus Media)

Heat Outlook: Trends, Cost Implications and Growth Potential

- Sweden and Norway have well-established district heating systems, heavily supported by domestic biomass, long-term carbon taxation policies, and municipal partnerships. In Sweden, carbon taxes introduced in the 1990s helped accelerate a major shift from fossil fuels to bioenergy.
- Key drivers for bioheat growth include energy security concerns, electrification limits, and the need for carbon-neutral solutions. However, the sector faces growing challenges: tightening sustainability regulations (e.g., RED III, EUDR), rising feedstock costs, administrative burdens on small producers, and competition for biomass from other sectors like biofuels, bioplastics, etc.
- Bioheat will be crucial in regions with colder climates and legacy infrastructure. If cost and regulatory uncertainties are addressed, new technologies like small-scale BECCS could significantly impact the market by 2030 and beyond.

Biomass Helping Meet Electricity Needs Across Europe

- The European biomass power sector faces a rapidly evolving landscape as it transitions toward a more volatile, subsidy-free market. With traditional long-term feedstock contracts ending, there is a growing expectation of a shift toward more flexible, spot-market trading by 2025–2026. Operators are preparing for a more market-driven environment, where baseload biomass power will increasingly act as a dispatchable backup to intermittent renewables like wind and solar.
- Regulatory frameworks, while critical for demonstrating sustainability, are becoming increasingly complex and burdensome. New rules like EUDR create challenges for biomass supply chains, particularly in regions like the US Southeast and Western Canada. Although these regulations validate the sector's sustainability credentials, compliance costs and bureaucratic hurdles are high, potentially impacting feedstock availability and project economics.
- Looking ahead, new demand will emerge from industries like data centres, aviation, and chemicals, driven by their need for firm, low-carbon power and pressure to achieve climate targets. Carbon pricing will also play a key role in shaping biomass competitiveness. Additionally, technologies like BECCS could enhance the sector’s value proposition.
- Black pellets and agricultural residues (e.g., rice husks, straws) remain under development but have yet to achieve the necessary scale and cost-effectiveness to replace traditional woody biomass broadly.
- The sector’s biggest challenges between 2026 and 2030 will be surviving subsidies expiration, adapting to new supply and regulatory risks, and repositioning biomass power as a flexible, dispatchable, and sustainable solution for Europe’s future low-carbon grid.

Heat-treated vs White Pellets

There is no one-size-fits-all solution—both white and black pellets will find growing but distinct markets. As industries seek to replace fossil carbon, tailored products using steam explosion, torrefaction, and other treatments will help meet different end-user demands across power generation, heavy industry, and emerging carbon removal sectors.

Technologies and Processes

- Torrefaction and steam explosion (steam-treated) are leading processes for upgrading biomass, creating "black" or "brown" pellets with higher energy density, better grindability, and improved water resistance compared to traditional white pellets.
- Hydrothermal carbonization is another method, but it is currently less commercialized for fuel applications.

Market Drivers and Applications

- Power sector: Steam-exploded or torrefied pellets can be valuable for seasonal biomass power generation where outdoor storage is necessary.
- Heavy industry: Black pellets or biocarbon are crucial for steel production and industrial heat processes, which aim to substitute metallurgical coal (coke).
- Emerging markets: Niche opportunities are growing for carbon-negative concrete, biofuels, and carbon dioxide removal credits (CDRs).

Cost and Technical Challenges

- White pellets remain the lowest-cost option for many applications.
- Black pellets have higher production costs due to greater wood input and complex processing, though energy recovered during the process can offset some losses.
- Logistics (density, durability, self-heating risks) remain critical for black pellets. Steam explosion processes tend to produce more stable, transportable pellets compared to direct torrefaction of pre-made white pellets.

End-User Specifications

- Different sectors have different needs:
    - Power utilities prioritize durability and water resistance.
    - Steelmakers prioritize high carbon content and low impurities.
- Ideal solutions vary by application, cost sensitivity, and regional supply chains.

Technology Readiness and Adoption

- After over a decade of development, technologies for producing heat-treated pellets are now reaching reliable, commercial scales.

- Financing remains a challenge due to historical technology risks and market uncertainty.
- Policy signals (carbon pricing, industrial decarbonization incentives) are expected to accelerate uptake.

EUDR and other Sustainability Regulations Impact on Consumer Markets

- Although EUDR's implementation has been delayed by one year to the end of 2025, the industry faces a major compliance challenge, particularly around providing geolocation data, tracing supply chains without mixing compliant and non-compliant material, and maintaining full segregation.
- Compliance costs, while modest relative to consumer prices (~0.07 per cent), are substantial operationally, especially for producers in regions lacking established traceability infrastructure. Smaller suppliers and emerging markets (e.g., parts of Southeast Asia) are expected to struggle the most, potentially altering global trade flows and forcing some producers to exit EU markets.
- SBP and other certifications offer tools to help companies transfer compliance data efficiently through the supply chain. Still, uptake needs to accelerate to avoid last-minute disruptions.
- Concerns were raised about risks from broader geopolitical shifts (e.g., US climate policy changes, EU biodiversity regulations) and how they could impact biomass eligibility under emissions trading schemes (ETS) and future carbon markets. The consensus was that while larger biomass suppliers (e.g., in North America) are likely to be ready, vulnerabilities exist among smaller producers and certain supply chains, requiring urgent action to avoid disruption.
- The industry should act proactively, map supply chains early, test compliance tools like SBP's EUDR module, and engage with policymakers to ensure practical implementation of cascading and sustainability rules.

The Nordics: Balancing Production Costs and Sustainability Goals

Current State of Bioenergy in Sweden and the Nordics

- Bioenergy, including solid biomass, is Sweden's largest domestic energy source today.
- Industrial byproducts (especially from pulp and paper mills), primary forest residues (e.g., roundwood, tops, and branches), and recycled wood are supply sources.
- Production of unrefined biomass fuels slightly declined in 2023, largely due to lower industrial byproduct availability.

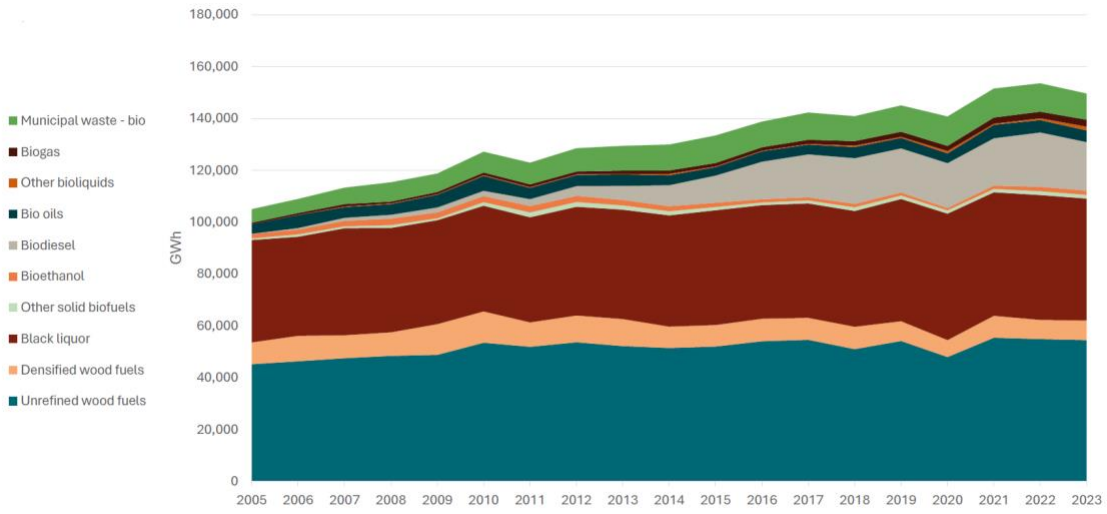


Figure 6. Use of biomass in SE by fuel category (Source: Swedish Energy Agency, 2025)

Raw Material Pressures and Pricing Trends

- Competition for woody raw materials is increasing, with growing demand from chemical and biofuel industries (e.g., biomethanol, biomethane).
- Geopolitical factors, notably the war in Ukraine and sanctions on Russian and Belarusian wood imports, disrupted markets and significantly drove up wood fuel prices in 2022–2023.
- In the short term, prices are stabilizing; however, long-term forecasts remain uncertain, influenced by electrification trends and biomass demand dynamics.

Hydropower vs. Solid Biomass in Energy Transition

- Nordic countries heavily rely on hydropower, but electricity demand is expected to double by 2050 (especially in Norway and Sweden), driven by industrial decarbonization projects (e.g., green steel).
- Solid biomass remains critical for district heating and a flexible backup for electricity systems, but competition with electrification is intensifying.

Sourcing, Deforestation Risks, and Sustainability

- Responsible sourcing of biomass is essential. Forest residues are emphasized over primary roundwood harvesting to avoid deforestation risks.
- Nordic forestry practices include replanting and sustainable management, but increasing international scrutiny (e.g., from EU regulators) demands continual transparency and proof of sustainability.

Challenges and Market Uncertainties

- Energy-intensive industries face challenges with high electricity and biomass prices, which could impact biomass demand if not managed.
- Tariffs and trade barriers (especially US tariffs) could shift biomass trade patterns and pricing, adding uncertainty.
- New regulations (e.g., EUDR revisions) can help or hinder investment in biomass depending on stability and clarity.

Industry Strategies Moving Forward

- Nordic producers invest in carbon capture and storage, bio-refining (e.g., making more high-value products from forest biomass), and greater energy efficiency.
- Shift from expanding raw material supply toward doing more with less: higher material yields, refining residues, and improving utilization.

Commercial Viability of BECCS

Commercial viability is still developing and remains tied heavily to government support in the near term.

- Projects like Drax (UK), Ørsted (Denmark), and RWEST (Netherlands) are progressing, but most are dependent on financial subsidies; regulatory clarity on long-term carbon pricing and carbon removal credits; and infrastructure readiness for carbon dioxide transport and storage.
- Earliest timelines for major BECCS deployments (like Drax's) are aiming for 2027–2030, but large-scale viability depends on finalizing business models within the next 1–2 years.
- Risk factors include political uncertainty (especially with upcoming elections in the US and Europe), project financing hurdles, and uncertainties about long-term carbon credit demand.

Bridge Alternatives Until BECCS Matures

- Extending biomass plant lifespans through partial conversions.
- Selling negative CDRs through voluntary markets.
- Partnering with sectors like data centers to supply dispatchable low-carbon power.

Understanding and Tracking Future Biomass Procurement Strategies

- Traceability and certification are becoming critical—customers and regulators increasingly demand landscape-level risk assessments, not just mill-by-mill sourcing.
- Sustainable biomass procurement is no longer "optional"— central to BECCS credibility, financing, and carbon credit eligibility.
- New standards like SBTi (Science Based Targets initiative) and emerging European frameworks (CRCF – Carbon Removal Certification Framework) are raising the bar.

BECCS: Creating Value Through Carbon Credits and Impact on Traditional Biomass Operations

- Carbon credits from BECCS could become a major revenue stream if:
    - Governments integrate BECCS removals into compliance carbon markets.
    - Voluntary markets mature, with higher-quality standards and buyer willingness to pay premium prices.
- Today's voluntary carbon credit prices are still too low to independently finance large BECCS plants.
- Future profitability will likely require a hybrid model:
    - Revenue from power sales (to grids or data centres).
    - Revenue from carbon credits (sold to corporate buyers or governments).
- Impact on traditional biomass operations:
    - Operators must adapt or upgrade their assets (e.g., add CCS retrofits or shift into higher-value bio-carbon markets).
    - Traditional biomass-for-power generation without carbon capture will struggle to remain competitive under tightening carbon regulations post-2030.

LEAD GENERATION

Fahimeh Yazdan Panah met numerous existing and potential customers and important contacts interested in Canada's pellet sector. The following individuals were seeking Canadian wood pellets.

1. **Steve Sirdey, European Buyer Alternative Reductants & Biomass, Arcelor Mittal.** ArcelorMittal is a Luxembourg-based multinational steel manufacturing corporation and a leading global steel and mining company. ArcelorMittal is actively integrating wood-derived biofuels into its steel production processes to reduce reliance on fossil fuels and lower carbon emissions.
2. **Soren Alsing, Head of Fuel, Bioenergy and Thermal Power and Kathrine Johansen, BECCS Project Director, Orsted**

   Orsted is a Denmark's largest power company and a major consumer of wood pellets from global sources, including from Canada .
3. **Michel Reijerson, Head of biofuels Logistics, RWE Supply and Trading**

   RWE Supply & Trading is the arm of RWE Power and RWE Generation that is responsible for biomass procurement and trading.
4. **Thomas Meth, Head of Biomass, Javelin Global Commodities**

   Javelin provides a one-stop shop for marketing, trading, hedging, transporting, financing, advising, and investing in commodities, including biomass, biocarbon, biochar, and Solid Recovered Fuel (SRF).

5. **Juha Hyvärinen, Managing Director, Taaleri Biocoal Canada Development Ltd**

   Taaleri Bioindustry is one of the world's first companies to develop a commercial-scale torrefied biomass production plant.

Additional Meetings with Potential Offshore Partners / Influencers

1. Uniper
2. Engie Energy Management
3. Vattenfall Energy Trading
4. Arcelor Mital
5. Terval

Networking / Relationship Building

1. Alfons Van Weereld, Director biomass sourcing and trading- Uniper SE
2. Alison Snider, GM/VP, Lignetics Inc
3. Amparo Arellano, Director Standards and Certification, The Roundtable on Sustainable Biomaterials (RSB)
4. Mait Kaup, Chief Executive Officer, Warmeston
5. Helena Carpintero Mansilla, ESG Hub EMEA EUDR CoE Lead, Peterson Solutions
6. Søren Alsing, Head of Fuel, Bioenergy and Thermal Power, Ørsted
7. Henrietta Moon, Co-Founder and CEO, Carbo Culture
8. Irener di Padua, Policy Director, Bioenergy Europe
9. Johan Vinterbäck, Program Manager, Swedish Energy Agency
10. Thomas Meth, Head of Biomass, Javelin Commodities
11. Samantha Smith, Head of Heat and Biomass UK, Renewable Energy Association
12. Juan Camilo Sanz, CEO, BIOENA
13. Steve Sirdey, European Buyer Alternative Reductants & Biomass, Arcelor Mittal
14. Erisa Senerdem, Editor, Biomass, Argus
15. Fiona Matthews, Associate Director, Hawkings Right
16. Hannah Adler, Senior Reporter, Argus
17. Håkon Knappskog, CEO, Arbaflame
18. Bill Strauss, President, Future Metrics
19. Didzis Palejs, Biomass Business Development, Verdo
20. John Swaan, Partner, Future Metrics
21. Kathrine Johansen, BECCS Project Director, Orsted
22. Juha Hyvärinen, Managing Director, Taaleri Biocoal Canada Development Ltd
23. Michel Reijerson, Head of biofuels Logistics, RWE Supply and Trading
24. Carsten Huljus, CEO, SBP

25. Gilles Gauthier, Business Development Manager, Hawkins Right
26. Doris Thamer, Sales Director, Andritz
27. Mohammad Shabbir, Vice President, Mitsubishi Canada Ltd
28. Brock Harrington, Global Alternative Fuels and Industrial Sales Director, CPM
29. Sarah Cotton, Director of sales and fulfillment, Enviva Management UK Ltd
30. Manolis Karampinis, Director-Business Development & Membership, Bioenergy Europe
31. Mait Kaup, Chief Executive Officer, Warmeston
32. Michael Wild, President, International Biomass Torrefaction and Carbonization Council IBTC
33. Freddie Staermose, Vice President, Generating Fuels and Dry Bulks, Argus
34. Håkan Johansson, Division Manager – Asia, Firefly

EXPANDING BUSINESS OPPORTUNITIES

Five Canadian companies, including Drax Canada, Airex Energy, JD Irving, SGS, and Peterson Control Union, used the opportunity to expand their international business.

Canadian Participants

1. Vaughan Bassett, General Manager, Drax Canada
2. Patrick Lapointe, CCO, Airex Energy
3. Genevieve Chartrand, Chief of Staff, Airex Energy
4. Luut Brink, Branch Manager, BC and Biofuels Manager, North America-SGS Canada
5. Michel Gagnon, CEO, Airex Energy
6. Manuel Bustinduy, Commercial Manager, Control Union Canada
7. Andre Bedard, Quebec Wood Export Bureau (QWEB)
8. Nicholas MacGougan, General Manager, Grand River Pellets
9. Reg Wood, General Manager, Grand River Pellets
10. Fahimeh Yazdan Panah, Director of Research and Technical Development, Wood Pellet Association of Canada
11. Gordon Murray, Executive Director, Wood Pellet Association of Canada

SHARING INFORMATION WITH CANADIAN PELLET SECTOR

WPAC has shared this report and its observations and recommendations with more than 60 companies, including WPAC members. It is anticipated that the report has reached more than 500 key Canadian industry leaders.