



Pulp Mill Bio Solutions Monthly Newsletter

March 2026



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Introduction

Pulp mills are increasingly entering center-stage as a source for high value bio-based products. These include traditional byproducts, like crude tall oil (CTO) and turpentine, together with new products entering low-carbon markets, like lignin and carbon offsets.

For pulp mills, these markets could provide valuable incremental revenue – a lifeline in some cases – if they are able to take advantage of market opportunities.

ResourceWise, through its vast data sets in forest value chains and low-carbon feedstocks and products, sits in the intersection of these new market opportunity, and sees its role as helping companies find new opportunities in their marketplaces.



TALL OIL AND TALL OIL DISTILLATES



Tall Oil Distillates

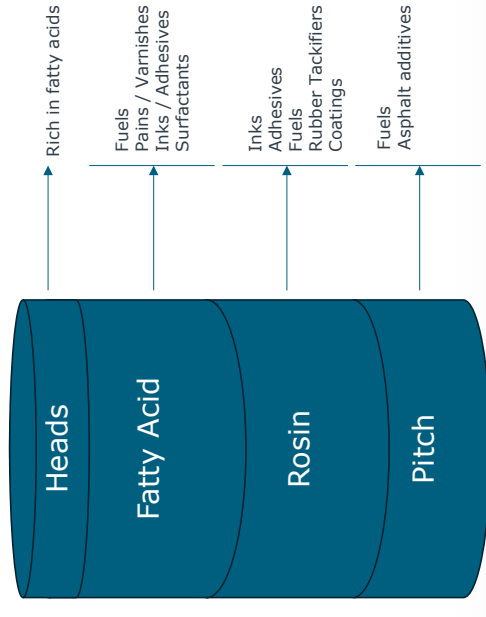
Crude Tall Oil (CTO) is increasingly finding its position as a valued low-carbon waste feedstock into fuel and bio-chemical markets.

CTO is a mixture of three primary components – Tall Oil Fatty Acids (TOFA), Tall Oil Resins (TOR) and Tall Oil Bottoms.

TOFA is already used as a feedstock in renewable diesel supply chains, where its price is closely related to used cooking oil (UCO) the predominant low carbon feed in fuel supply chains.

Tall oil suppliers can therefore look to the used cooking oil market as a barometer for the value of tall oil.

Increasingly, tall oil distillates are also finding their way into bio-chemical applications as well.



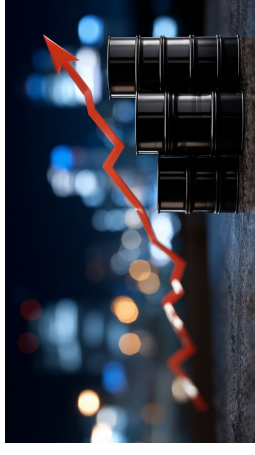
Tall Oil, Used Cooking Oil and US Renewable Diesel Revenue Stack



Tall Oil is considered a waste feedstock in many countries and markets. It is specifically valued as an Annex IX feedstock in the European RED II legislation, which mandates advanced feedstock use in 2030 and beyond.



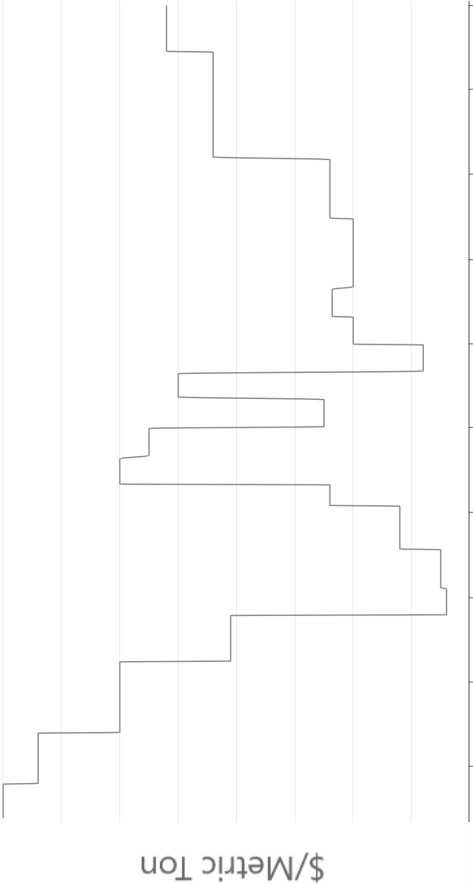
Used Cooking Oil (UCO) is the pre-eminent waste feedstock into low carbon fuel markets, and it can act as a bellwether for low-carbon feedstocks, including crude tall oil.



Renewable Diesel Revenue Stack is a combination of revenue streams and policy incentives that determine the total value renewable diesel producers receive.

Crude Tall Oil

Daily Spot Price



Tall Oil FOB US Gulf

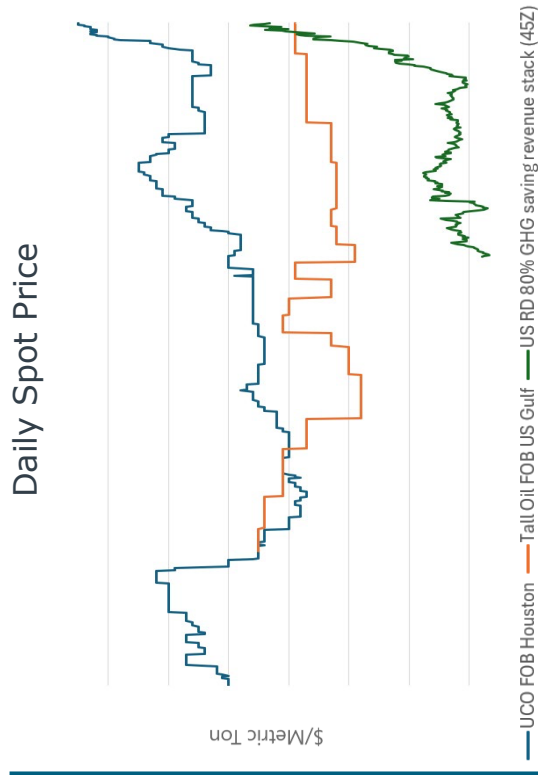
SOURCE: Prima CarbonZero

FEEDSTOCKS AND BIOFUELS



North America: Tall Oil, Used Cooking Oil and Renewable Diesel Revenue Stack

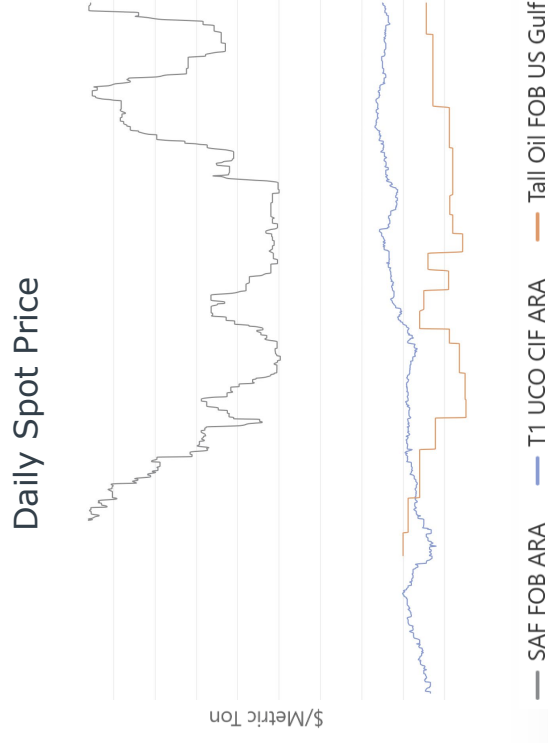
- Grease prices bounce on RVO enthusiasm
- Canada CFR credit price at ceiling amid rising deficit
- US oils industry ponders fallout from extreme bull RVO case
- US biomass-based diesel could balance RIN short at 100% capacity
- US biofuels industry reacts enthusiastically to EPA RFS mandates
- Physical biomass-based diesel demand including waivers hits 6.07bn gal in 2026



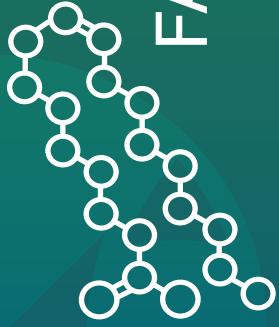
SOURCE: Prima CarbonZero

Europe: Used Cooking Oil, SAF, Marine Biofuel and Tall Oil

- Rising SAF discount pushes producers back to HVO
- Major European biofuel producers aim to double output within 3 years
- EWABA joins call for energy security biofuels
- Waste feedstocks see slow upward trend as biodiesel premiums continue to absorb gasoil shock
- European SAF surge keeps arbitrage open for Chinese exports
- German biofuels sector demands immediate implementation of THG legislation



SOURCE: Prima CarbonZero



FATTY ACIDS



Oleochemical Markets

- **Global shift to higher prices:** The fatty acids market is moving toward stronger pricing overall, mainly driven by rising feedstock and freight costs.
- **North America:** Prices for stearic and oleic acids increased due to higher raw material and logistics costs, improved demand, and trade investigation impacts.
- **Europe:** Market is firming, with Q2 contracts reflecting higher feedstock costs and concerns about supply disruptions from shipping delays, though demand remains moderate.
- **Core drivers:** Feedstock and logistics costs are now the main global pricing drivers, while regional supply-demand conditions influence how quickly and how much prices increase.

Monthly Prices



SOURCE: OrbiChem360

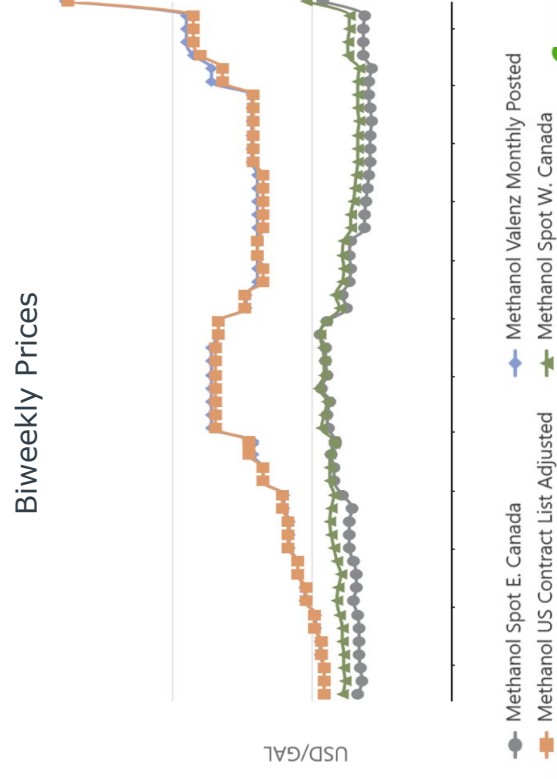


METHANOL



Grey Methanol: North America

- U.S. methanol market is firm but balanced with slight price strength.
- Domestic demand has weakened due to seasonal factors.
- Canada demand steadier; biodiesel demand improving slightly.
- Exports are increasingly important, especially to Asia and Europe.
- Europe outlook stronger due to supply disruptions.
- Higher freight costs support prices but may pressure margins.
- Overall, more supply is shifting toward export markets.



SOURCE: ChemEdge360

Grey Methanol: Europe and Asia

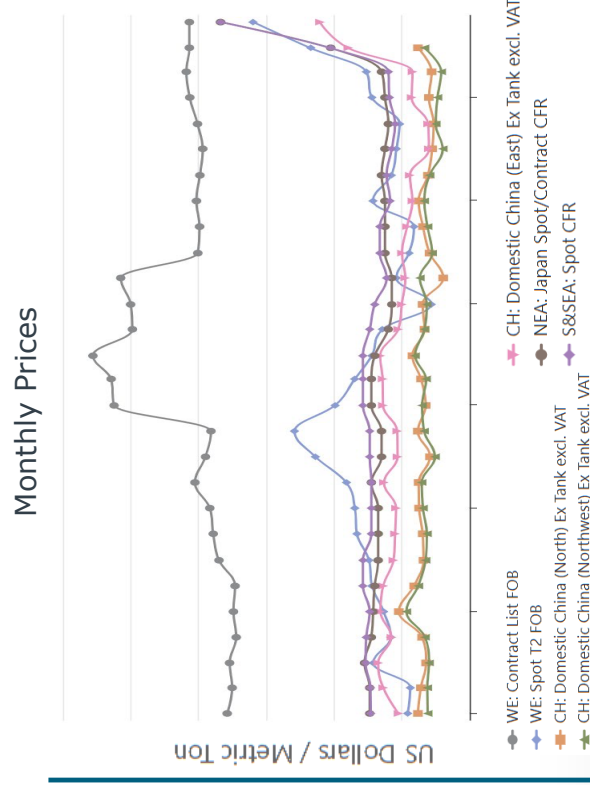
- Market driven by supply disruptions and geopolitical risks
- Continued upward pressure expected if disruptions persist

Europe

- Strong upward pressure due to geopolitical tensions
- Rapid price increases throughout the month
- Further increases expected

China

- Import prices rose sharply
- Significant supply constraints
- Import volumes expected to decline



SOURCE: OrbiChem360/ChemEdge 360



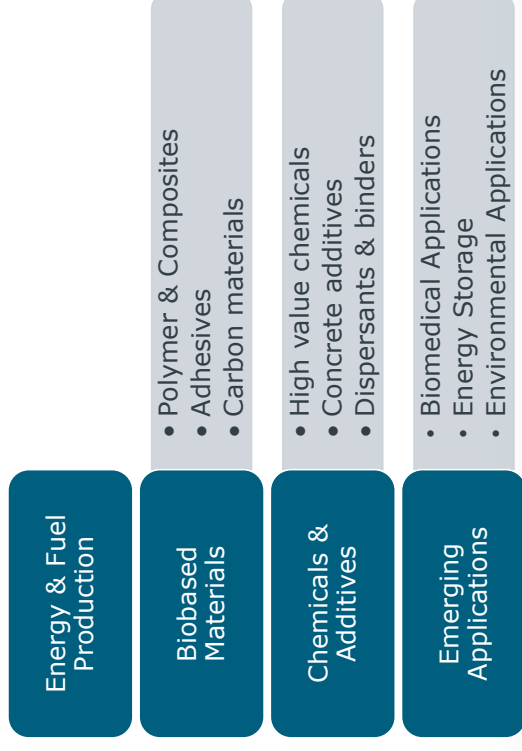
LIGNIN AND ENGINEERING THERMOPLASTICS

- Acrylonitrile Butadiene Styrene (ABS)
- Polyamide resin (Nylon)
- Polypropylene (PP)

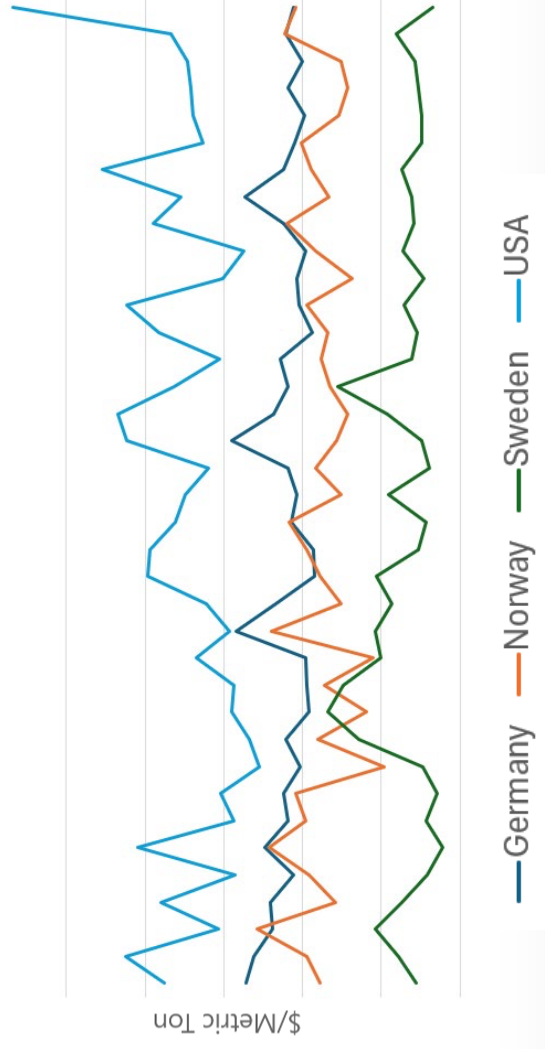
Lignin

- Bio based and circular economy frameworks is a major market fueling lignin valorization initiatives
- Asia Pacific is projected to be the fastest growth region then followed by Europe
- Key market drivers:
 - Sustainability & Regulatory Pressure
 - Industrial Demand
 - Valorization & High-Value Applications
- Challenges:
 - Technical & Processing Barriers
 - Cost Competitiveness vs Petrochemicals
 - Quality & Consistency / Standardization
- Key market sectors:
 - Pulp & paper industry – Valorize lignin into higher-value products
 - Construction and infrastructure
 - Chemicals and materials

Uses and Applications



Lignin – Monthly Import Prices of Top Lignin Exporters



SOURCE: Global Trade Tracker

ABS

Driven by rising feedstock costs; supply constraints across regions; mixed buyer sentiment

North America

- Increased buying activity
- Concerns over reduced imports
- Supply relatively stable

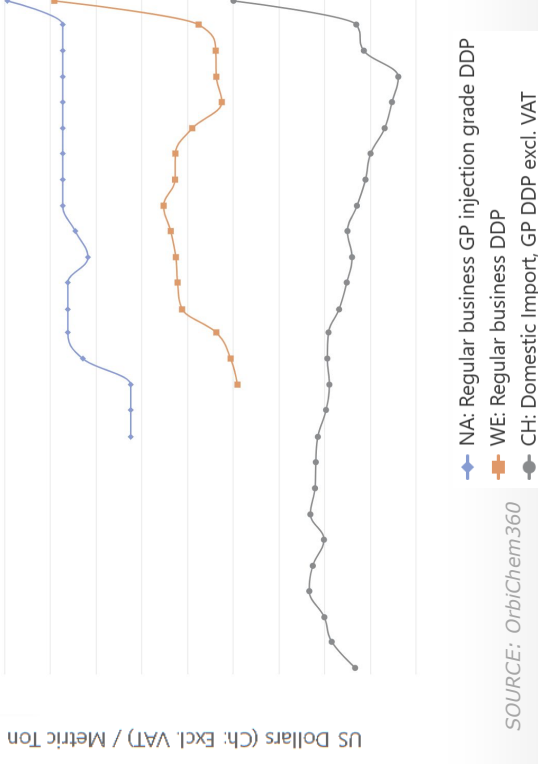
Europe

- Tight supply with production disruptions
- Limited imports
- Strong upward price pressure

Asia

- Volatile market conditions
- Prices increased overall
- Cautious buying

Monthly Prices



Polyamide Polymer

Market is driven by rising costs; demand remains weak globally; volatility persists; higher input costs are not fully translating into sustained price increases

North America

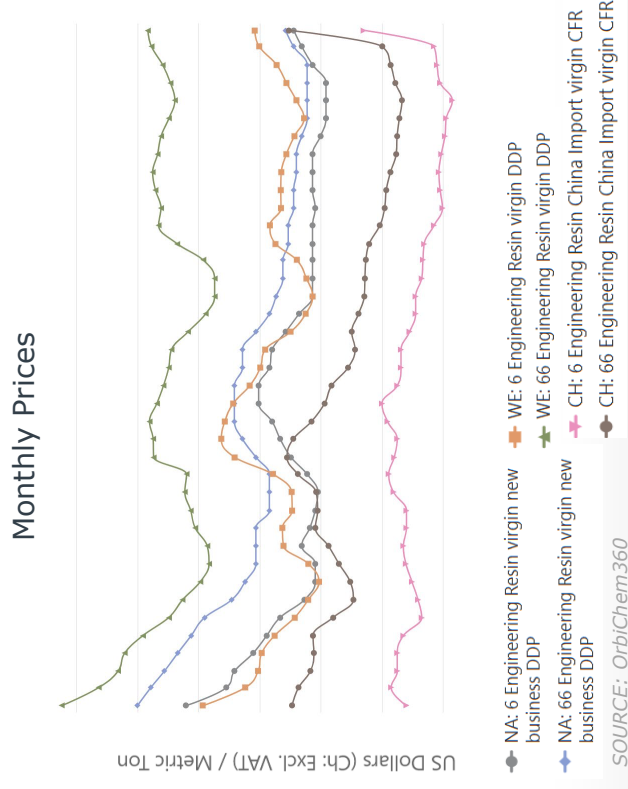
- Market remained balanced; prices increased modestly; producers faced difficulty passing through higher costs; demand was weak, especially from automotive; further increases expected due to rising feedstock pressure

Europe

- Rising costs and supply restructuring impacted the market; logistics disruptions present; moderate price increases observed; demand slightly improved due to low inventories and forward buying; high imports and weak demand continued to pressure margins; larger increases expected ahead

Asia

- Feedstock shortages; prices rising; cautious buying, low activity



Polypropylene

- Driven by higher feedstock costs and supply disruptions
- Trade flows shifted due to Middle East constraints
- Ongoing cost pressure with further increases expected

North America

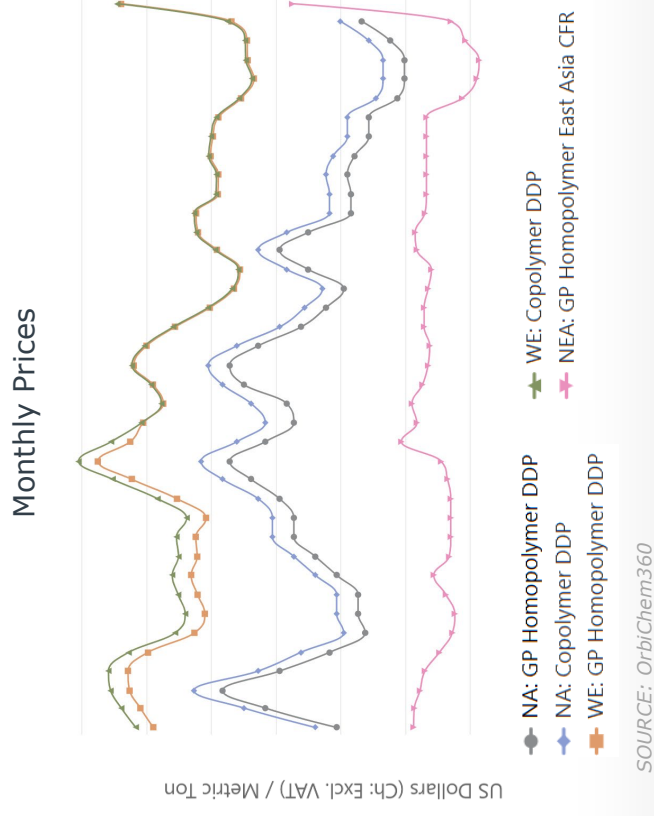
- Sharp price increases
- Strong export activity

Europe

- Prices increased significantly
- Limited imports and operational constraints

Asia

- Highly volatile prices
- Fluctuated but overall upward trend





BIOGENIC CARBON DIOXIDE (BCO₂): 101

Biogenic CO₂: The Basics

Decarbonization migrating to biomass to via two main pathways to unlocking Biogenic CO₂ value as a premium decarbonization commodity

- 1) E-fuel feedstock (eg e-SAF)
- 2) A physical Carbon Dioxide Removal solution through geological sequestration

All markets that evaluate environmental attributes will require sustainability documentation:

- Biogenic CO₂ will need to declare it does not come from deforested sources
- Documenting the purity of the biogenic CO₂ stream through the value chain will be key to realizing full value into carbon intensity counting markets

Biogenic Captured CO₂ will be the largest physical biogenic decarbonization market in the world.

This requires a scalable automated solution to solve for the problem of environmental attribute attestation.

Carbon Dioxide Removal (CDR) Incentive Programs

Name	Description	Purchase method
Swedish BECCS	€3.1bn subsidy from Swedish government for BECCS, targeting biogenic CO ₂ from biomass	Reverse auction
Danish NECCS	€3.9bn subsidy for capture and storage of biogenic and atmospheric CO ₂	Competitive project-based tendering
US DoE CDR pilot prize	\$35m fund for DACCS, BECCS, ERW	Competitive project-based tendering with multiple winners
USA Regional DAC Hubs	\$3.5bn fund for four DAC hubs (removers, transport, storage)	Grants (≥50% private co-financing required)
Canada CCUS ITC	Refundable tax credit (37.5–60% of costs 2022–2030, 18.75–30% 2031–2040)	Tax credit on qualified CCUS expenditures
Canada LCFPP	\$10m committed for carbon removal services by 2030	Fixed unit price with delivery limit (500t)
H2Global	Foundation supporting hydrogen markets (double-auction mechanism)	Double auction
45Q Tax Credit	US IRS performance-based tax credit for DAC sequestration	Flat-rate \$60–180/t tax credit
Global Climate Partnership Fund	Financing instrument offering credit lines for clean energy	Investment facilitation, not direct purchases
GEEREF fund	Invests in private equity funds working with renewable energy/efficiency in emerging markets	Equity investment in sectors
Klik Foundation	Uses fuel surcharge to support CO ₂ mitigation & clean tech	Project-by-project procurement at €80–200/t
Frontier Carbon	Advance market commitment for carbon removals	Project-by-project offtake agreements
NextGen CDR	Advance market commitment for carbon removals	Short-term offtake agreements (\$200/t avg)
European Hydrogen Bank	Financing instrument blending EU + Member State funding for hydrogen production	Auction system (auction-as-a-service)
Innovation Fund	Funding programme for net-zero and innovative technologies (low-carbon, CCU, CCS)	Grants (60% costs) + competitive bidding (100%)



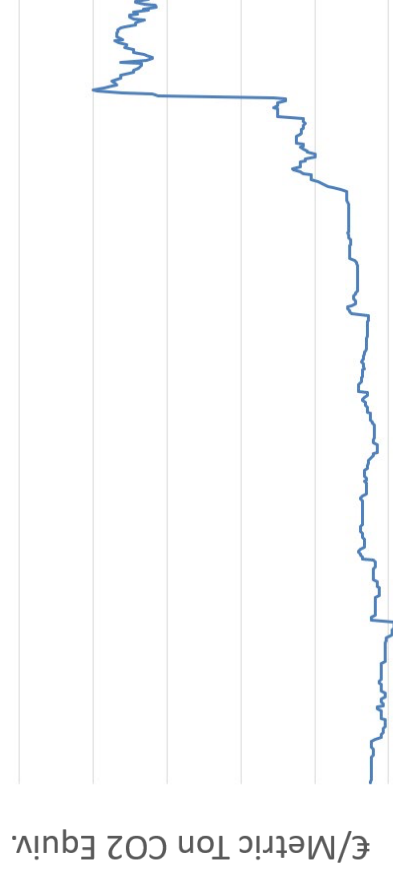
BCO2: JANUARY 2026 REVENUE STACKS

CDR: Headline Events, Prima CarbonZero March 2026

- Microsoft signs second-largest biochar CDR deal in US Midwest
- Biomass CDR gets new industry working group
- Southern Energy Renewables confirms \$1.4bn US Gulf wood-to-fuel plant with CDR
- Boeing strikes Scope 3 carbon removal deal
- California, Quebec and Washington strike out towards single cap and trade carbon standard

German CO2 Values Spike As Govt Nears RED III Final Draft

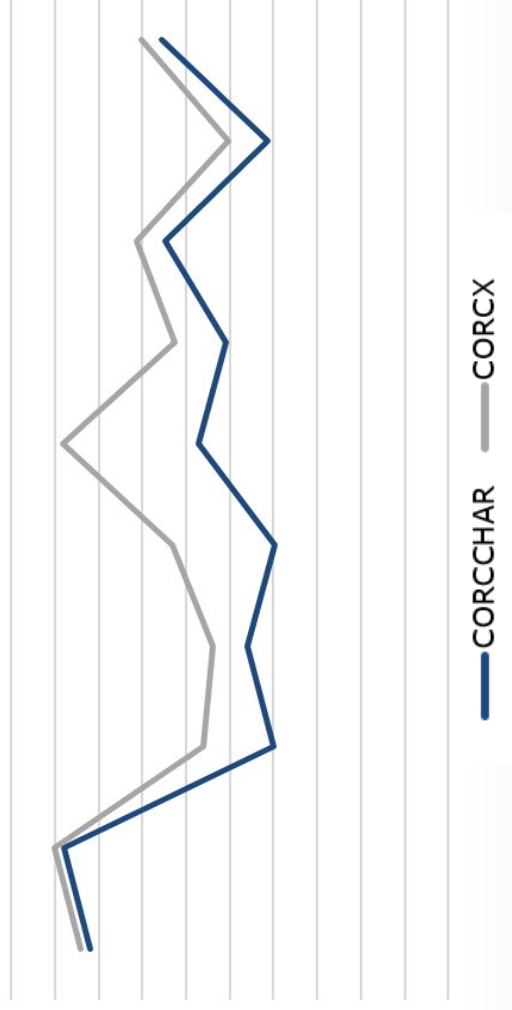
German eFuel CO2 In Transport Value



Value of CO2 in eFuel

SOURCE: Prima CarbonZero

Discretionary CDR Sits Flat <\$150/t CO₂



Source: Puro

Value Drivers



Bullishness has been growing in European biofuels as RED III drafts near completion for 2026 implementation. This raises the price floor for BCO2.



BCO2 hits implied value of EUR600/t into German RFNBO market.



The medium-term outlook for pricing in Europe remains supportive.



US Trailblazer pipeline is spearheading physical CDR from Bioethanol

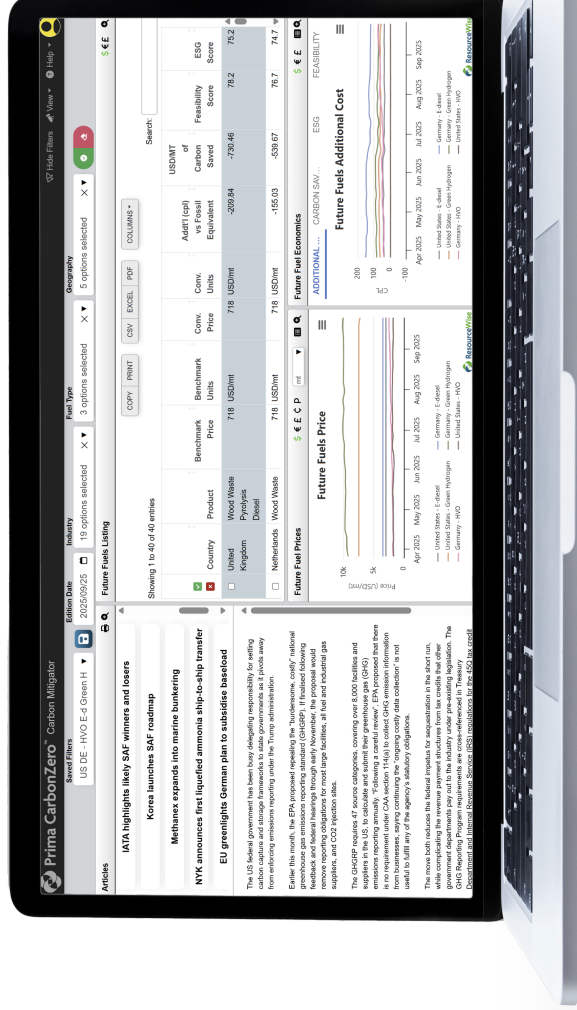


US Pulp and Paper continues to strategize entry into CDR space with capital investment

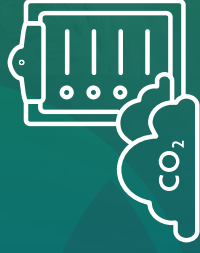


Prima CarbonZero™

MARKET MONITOR: CDR and eFuels Prices and Fundamentals At a Click with Prima CarbonZero



BCO2: TRACEABILITY EUDR





The Foundation for Tracing Forest Environmental Attributes



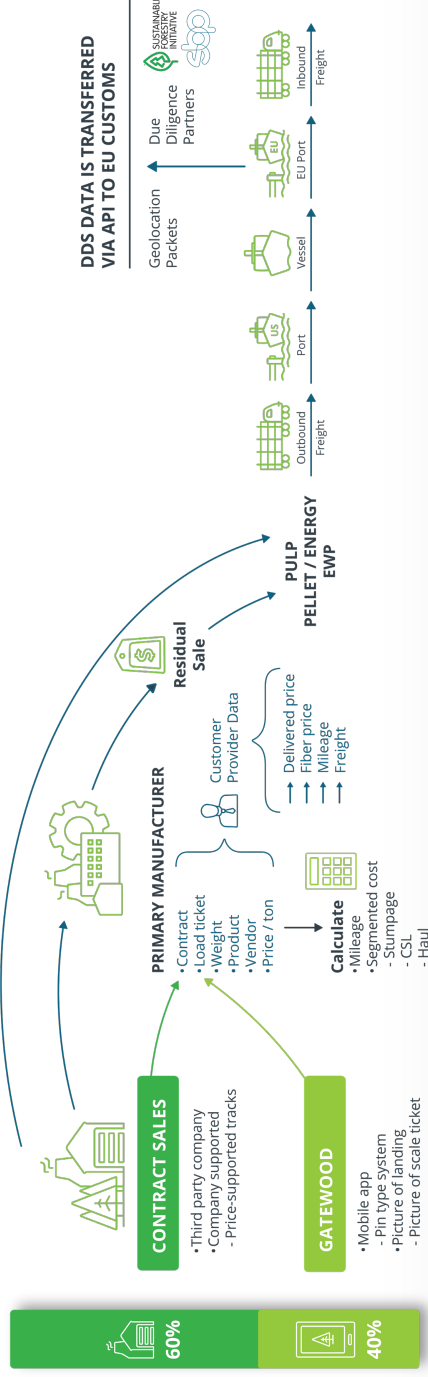
- Over 12mn private forestry holdings in US South alone
- Built for EUDR, Forest Trakt is scaling to support multiple automated environmental attribute traceability use cases
- Forest Trakt allows biogenic carbon pathways to commoditize

Forest Trackt™ and EUDR

- No legislation changes planned for now—only updates to FAQs/guidance
- Annex I may change (coffee, palm oil); decision expected end of April + consultation
- Member state dissatisfaction (notably Germany) - pushing reforms within EU
 - Allowing regional collective reports instead of individual geolocation data
 - Easing requirements for low-risk country imports
 - Limiting legality checks
 - Restricting enforcement (inspections, penalties) to the first market entrant
- US lobbying efforts: US officials engaging EU counterparts
 - A new “no/negligible risk” category (rejected by the EU due to circumvention concerns)
 - Challenge benchmarking methodology
- 31 organizations urged keeping the legislation unchanged, warning that reopening it risks prior investments and regulatory trust.



The Foundation for Tracing Forest Environmental Attributes



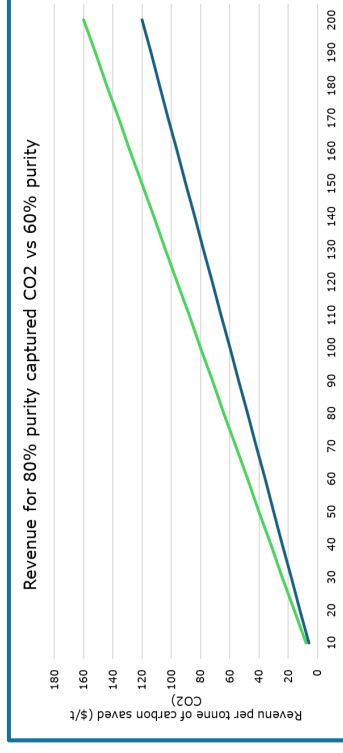
Captured Biogenic CO₂: TAM and Risk Management

Traceability is the entry point into any market paying for the environmental attributes of biogenic carbon.

Traceable carbon allows capture facilities to efficiently monetize investment in value chain emissions reduction.

Same traceability pain applies to BECCs, biochar, DAC as direct substitute.

CDR and eFuel supply and offtake already seeking biogenic CO₂ indexation to manage price risk.



WOOD CHIPS AND PELLETS



Wood Chips and Pellets Uses and Applications

Power and Heat Generation

- Biomass Power Plants
- Combined Heat and Power (CHP)
- Co-firing with fossil fuels

Heating System

- Industrial, District and Residential

Biofuel Production

- Bioenergy e.g. ethanol or biogas through gasification and anaerobic digestion
- Torrefaction and Pyrolysis to produce biochar, bio-oil or syngas

Bioenergy with Carbon Capture and Storage (BECCS)

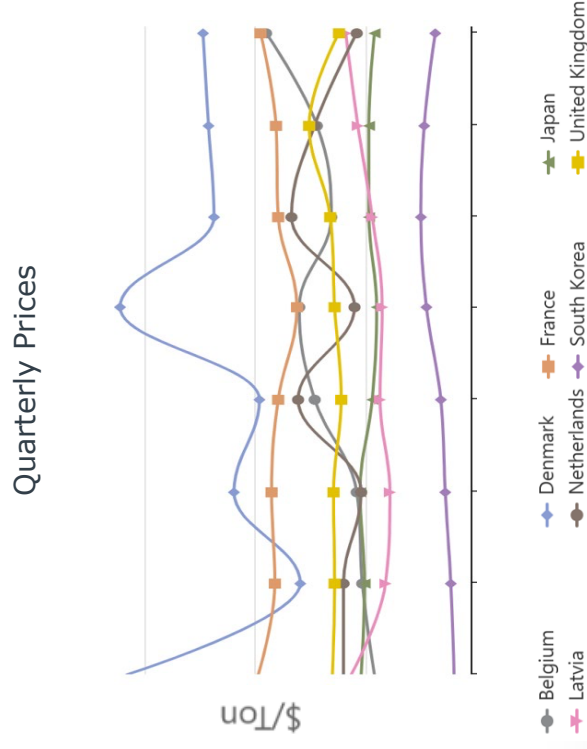
- Biomass power plants integrate carbon capture and permanent storage to achieve 'negative emissions'

Advanced Biofuel

- Sustainable aviation fuel (SAF)

Industrial Pellets

- Global wood pellet exports increased, showing continued market growth.
- The U.S., Vietnam, Canada, and Latvia remain top suppliers, with Vietnam rapidly expanding over the past decade.
- The UK remains the largest importer, with strong demand also from Japan, while South Korea saw a slight decline.
- Upcoming UK policy changes look set to reduce the country's pellet imports substantially in 2027.
- Drax's planned shift away from Canadian pellets could disrupt supply flows.

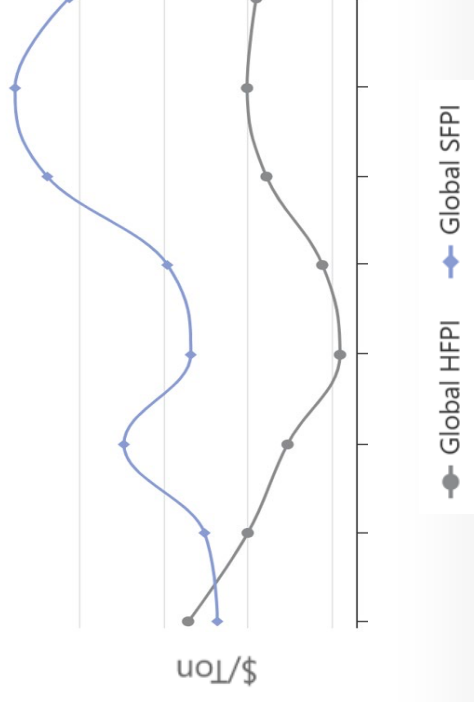


SOURCE: WoodMarket Prices

Wood Fiber

- Hardwood fiber prices slightly declined quarter-on-quarter but increased year-on-year, remaining below earlier peak levels.
- Global hardwood chip exports fell, with China and Japan dominating demand despite overall import declines.
- Vietnam remains the dominant supplier, though exports softened in the latter half of the year.
- Softwood fiber prices declined from the previous quarter but rose year-on-year, with Europe consistently above global averages.
- Cost pressures vary by country, with some European producers facing higher fiber cost burdens than others.

Wood Fiber Quarterly Price Indices
(Hardwood & Softwood)





Market Intelligence

Interactive platforms delivering accurate proprietary market data and analysis



Industry-Specific Expertise

Decades of experience in natural resource markets for rich insights tailored to your sector.



Strategic Consulting

Custom consulting engagements to solve unique challenges and support strategic decisions



Sustainability Solutions

Data and insights to support the transition to a lower-carbon economy



FOREST PRODUCTS



CHEMICALS



LOW-CARBON FUELS



BIOMATERIALS



DECARBONIZATION



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Market Intelligence Platforms

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SilvaStat360
Transaction-level timber pricing and global supply chain benchmarks

WoodMarket Prices
Global wood raw material price indices, historical prices, trade monitoring, and expert market coverage

Forestat Global
Capacity, pricing, and trade data across the forest products value chain

Forest Trackt
Automated EUDR compliance and verifiable supply chain transparency

Recycled Fiber 360
Accurate, transaction-based recycled fiber price benchmarks

FisherSolve
Mill-level production data and environmental & cost analytics for the global pulp and paper industry

Better data. Better intelligence. Better decisions.



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complimentary market
overview for your business.

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