EnergyProSafe – Improving energy production and safety in biocarbon value chains

Newsletter 2-2025

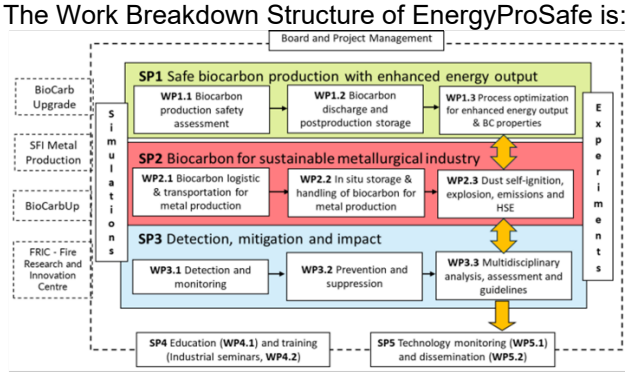
Introduction

The overall objective of EnergyProSafe is improving and enhancing energy production and safety in biocarbon value chains.

The sub-objectives are:

- Optimization of biocarbon production processes to maximize energy output and produce biocarbon with minimised hazardous properties
- Identifying and evaluating safety-related vulnerabilities and risks during biocarbon production, transportation, handling and storage for metal production
- Increasing fundamental knowledge through experimental and simulation studies on the safety-related issues to identify and investigate root causes and influential factors under industrial relevant conditions
- Developing, testing and assessing the effectiveness of measures to predict, detect and prevent safety-related issues throughout the biocarbon value chains considering different conditions and scenarios
- Proposing and developing guidelines and recommendations for assessing and evaluating technical, HSE, economic and environmental consequences and impacts of the main safety issues identified
- Increasing expertise on safe production, logistics and storage throughout the biocarbon value chains from biocarbon production to metal production processes
- Education of highly skilled candidates and training of industrial partners
- Monitoring of activities and state-of-the-art within this area and dissemination of results to the industry partners, and other relevant parties when applicable

The Work Breakdown Structure of EnergyProSafe is:



EnergyProSafe management and work break down structure and information flow. Project links (biocarbon production, upgrading and application focused projects):
BioCarbUpgrade (2023-26): Upgrading biocarbon for sustainable metallurgical industries,
BioCarbUp (2019-22): Optimising the biocarbon value chain for sustainable metallurgical industry,
BioCarb+ (2013-17): Enabling the biocarbon value chain,
SFI Metal Production (2015-22),
KPN Reduced CO_2 (2018-22) emissions from metal production.

EnergyProSafe will run for four years (2025-2028) and has a total cash budget of 16.8 million NOK. This is a Collaborative and Knowledge-building Project (KSP) funded by The Research Council of Norway and industry.

The EnergyProSafe consortium

SINTEF Energy Research (SINTEF ER), with a solid BC and bioenergy track record, leads the project and focuses on BC production and process optimization, safety issues through BC value chains to metal production, and dissemination to industry, authorities and the public. Luleå University of Technology (LTU) in Sweden will share knowledge and a model for studying self-heating/ignition of BC.

EnergyProSafe https://www.sintef.no/en/projects/2025/energyprosafe/

- a Knowledge-building Project for Industry (KSP-K) co-funded by the Research Council of Norway.
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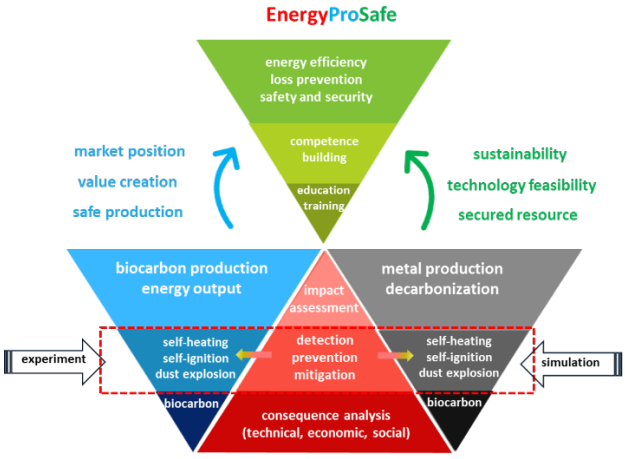
SINTEF

Mälardalens University (MDU) in Sweden will contribute with strong knowledge and experience on process and system modelling and integration. RISE Fire Research (RFR) will contribute with comprehensive expertise and strong competence on fire research and safety engineering, testing and certification, and assessment and suppressing of fire incidents. The Department of Civil and Environmental Engineering, Norwegian University of Science and Technology (NTNU), will supervise the PhD and master candidates. The industry partners include large and central metallurgical industries in Norway (Elkem, Eramet Norway, Wacker, Finnfjord, Hydro), BC production industry (WAI Environmental Solutions) and a vendor of detection technologies (Onsite Technologies). The industrial partners will contribute with their extensive industrial knowledge and experience on safety issues from BC production to end use for metal production.

Project background

Bioenergy is important in Norway, while the metallurgical industry in Norway seeks to substitute large amounts of biobased materials for fossil reductants and materials (packing coke and coal tar pitch) in their processes. An accelerated utilization of Norwegian biomass resources that would reduce the CO_2 footprint of the metallurgical industry is required.

To boost contributions to the reduction of greenhouse gas (GHG) emissions and decarbonization of industries, the biocarbon (BC) value chains must be improved and tuned to remove technical and economic constraints, secure safe and efficient production, satisfy quality and quantity demands and ensure predictable and controlled long term BC supplement. The EnergyProSafe project responds to the national strategies on transition into a low-carbon-emission society and goals of the metallurgical industry by improving energy production and safety in BC value chains, securing safe and sustainable supply of BC of needed quality and in sufficient quantity. In addition, this project addresses safe and responsible production by identifying vulnerabilities and risks, developing detection and prevention measures and providing guidelines and recommendations to prevent accidents. Outputs from the project are valuable for industries carrying out proactive and systematic work in relation to health, safety and the environment (HSE) and making the working environment and safety level appropriate and satisfactory, see project concept below.



BC production processes need to be improved for maximizing mass yields and energy output, which are critical for techno-economics and profitability of BC production. During BC production, a significant fraction of by-products (i.e., gases and volatiles) are generated, which have a high temperature and contain combustible constituents. There is generally limited understanding about compositions and properties of these by-products, especially from continuous pilot and/or industrial scale BC production processes. It hinders identification and implementation of efficient measures to release the energy potential of the by-products, and overall energy output and efficiency of the BC production process. BC production generally covers several stages, including generation of BC at high temperature, cooling down of the produced BC, and discharging of the BC to containers. The BC discharged and loaded in containers will be further stored for days or even months in confined spaces. During both production and storage, there are risks related to self-heating and self-ignition of the BCs as they experience changing surrounding conditions (i.e., ambient temperature, humidity and availability of oxygen). The investigation of the safety-related risks during production and postproduction storage of BC is still at a very early stage. Systematic studies are needed to obtain fundamental understanding of root causes and triggering factors to promote safety. In addition, for producing a large quantity of BC, non-conventional biomass sources will be exploited to produce BC having properties that promote occurrences of self-heating and self-ignition. Further investigations are required to assess propensity and understand detailed mechanisms of the safety risks during postproduction storage of the BC derived from such non-conventional biomasses.

Metal production demands substantial amounts of energy and materials, particularly carbon as reductants. Large quantities of BC must be available for continuous metal production. Before reaching the

furnace, the BC will experience short or long-distance transportation, unloading/reloading, and handling and storage at the metal production plants. Vulnerabilities and safety risks along this process must be identified and assessed. The mechanisms arising safety related risks during logistics are complex and are sensitive to material properties and surrounding conditions. The available knowledge is mainly derived from previous studies on solid fuels (i.e., coal and biomass). Nevertheless, the BC has significantly different physiochemical properties than these solid fuels. Detailed and systematic research and tests designed for BC should be conducted to obtain new understanding and insights into the root causes of safety related risks. Efficient strategies and measures are imperative to detect, prevent and mitigate the safety risks during transportation, storage and handling of BC for metal production, which are tailored to use BC for each specific metal production process. The effectiveness of these measures and impact on industrial operation and the surrounding environment should also be carefully evaluated. Furthermore, recommendations and guidelines for improving health and safety are needed.

Research, development and industrial practices aimed at production and utilization of BC have been addressed in the previous BioCarbUp and the ongoing BioCarbUpgrade project.

The EnergyProSafe project will fill the knowledge gap and build up knowledge and competence towards improving energy production and safety in BC value chains. Enhanced understanding and novel solutions to safety issues will improve adaptability and application of BC for metallurgical processes. For this to happen, research and development are needed across the span of the BC value chains through cooperation between R&D institutes and industries. The EnergyProSafe project consortium covers all key aspects, from production to end-use, and includes central industry players in the metallurgical and bioenergy areas in Norway.

Project overview

The project is divided into 5 subprojects (SP), each subproject is itself divided into several work packages (WP).

- Safe biocarbon production with enhanced energy output - SP1
- Biocarbon for sustainable metallurgical industry - SP2
- Detection, mitigation and impact - SP3
- Education and training - SP4
- Technology monitoring and dissemination - SP5

Safe biocarbon production with enhanced energy output - SP1

The main objective of SP1 is to identify risks related to smouldering, self-ignition, dust explosion and other HSE issues during production and postproduction of BC.

SP1 leader: Chief Scientist Øyvind Skreiberg, SINTEF Energy Research

Biocarbon for sustainable metallurgical industry - SP2

The main objective of SP2 is to improve understanding of property change and self-ignition during logistics and transportation of biocarbon.

SP2 leader: Research Scientist Liang Wang, SINTEF Energy Research, who also is the EnergyProSafe project leader

Detection, mitigation and impact - SP3

The main objective of SP3 is identification and development of detection and monitoring and measures for safe biocarbon value chains.

SP3 leader: Reidar Stølen, RISE Fire Research

Education and training - SP4

The major objective of SP4 is education of highly skilled candidates and training of industrial partners.

SP4 leader: Professor Anne Elise Steen-Hansen, NTNU

Technology monitoring and dissemination - SP5

The major objective of SP5 is monitoring of activities and state-of-the-art within this area and dissemination of results to the industry partners, and other relevant parties when applicable.

SP5 leader: Chief Scientist Øyvind Skreiberg, SINTEF Energy Research

Progress in 2025

I 2025 the focus has been on start-up of the project, studies connected to 1) risk identification during production and upgrading, logistics and storage of biocarbon, 2) influence of production conditions on energy output and BC properties, 3) planning and starting up experimental studies, 4) recruitment of the PhD candidate and 5) dissemination from the project.

EnergyProSafe workshop and SC meeting at Kyrksæterøra

The first EnergyProSafe workshop and SC meeting was arranged at Kyrksæterøra 26-27 November 2025. In the meeting, the project and its activities were presented and discussed. During the meeting a tour of the Wacker Holla plant was arranged.

Workshop participants visiting the Wacker Holla plant

EnergyProSafe and BioCarbUpgrade visit to Hydro Årdal

Liang Wang and Øyvind Skreiberg from SINTEF and Reidar Stølen from RISE Fire Research visited the labs and the anode production facilities of Hydro at Årdal 3 September. Research activities within both EnergyProSafe and BioCarbUpgrade were discussed as well as collaboration possibilities.


Participants at the EnergyProSafe and BioCarbUpgrade visit to Hydro Årdal

EnergyProSafe kick-off meeting in Trondheim

The EnergyProSafe official kick-off meeting was arranged in Trondheim on 5 June 2025. In the meeting, the project and its activities were presented and discussed, and the project steering committee was established. Each year annual work plans will be proposed and agreed on, based on the project description while also taking into account industries' needs along the path towards project completion in 2028.


Participants at the EnergyProSafe kick-off meeting in Trondheim

PhD work

The EnergyProSafe PhD position on improving safe handling and storage safety of biocarbon that were announced is now filled. The candidate has accepted the offer and will start working in 2026 at the department of Civil and Environmental Engineering, NTNU, with Professor Anne Elise Steen-Hansen as the main supervisor.

EnergyProSafe website established

A SINTEF website has been established for the EnergyProSafe project, including a publications page which will be kept updated.

EnergyProSafe in EERA Bioenergy Newsletter

An article entitled "EnergyProSafe – Improving energy production and safety in biocarbon value chains, and BioCarbUpgrade" presents EnergyProSafe and also provides a small update from the BioCarbUpgrade project in the July 2025 EERA (European Energy Research Alliance) Bioenergy newsletter.

EnergyProSafe blog

A SINTEF blog presenting the EnergyProSafe project has been published.

EnergyProSafe publications

Liang Wang, Øyvind Skreiberg. Improving energy production and safety in biocarbon value chains. SINTEF blog 27 June 2025.

Liang Wang, Øyvind Skreiberg (2025). EnergyProSafe – Improving energy production and safety in biocarbon value chains, and BioCarbUpgrade. EERA Bioenergy News 23, p. 8, July 2025.

News briefs from the last year

Production, Upgrading & Industry News

January 2025

Vow Green Metals & Outokumpu Supply Agreement. Vow Green Metals signed a definitive 3-year supply agreement with stainless steel giant Outokumpu. This contract secures the offtake for a significant portion of the production from the Hønefoss plant, validating the commercial demand for Norwegian biocarbon in the European high-end steel market. Read more

Elkem Carbon Fiskaa Refurbishment Completed. Elkem completed the major refurbishment of its baking furnace at the Fiskaa plant in Kristiansand. The upgrade includes new handling systems specifically designed for biocarbon blends, allowing the plant to increase its bio-share in electrode paste production without compromising mechanical stability. Read more

February 2025

Eramet Launches "eraLow" Manganese Alloys. Eramet officially branded its low-carbon manganese alloys as "eraLow," aimed at the premium green steel market. The product line heavily relies on the "bio-reduction" strategy (substituting fossil coke with biocarbon) currently being piloted at their Norwegian plants in Sauda and Kvinesdal. Read more

Vow Green Metals Accelerates Viken Park Pre-Study. Following successful feasibility studies, Vow Green Metals entered the final pre-study phase for its large-scale plant at Viken Park. The facility targets a production capacity of 30,000 tons and is designed to act in industrial symbiosis with other tenants, utilizing excess heat and bio-oil byproducts. Read more

March 2025

Wacker Chemicals Norway Signs Import Deal. To meet immediate decarbonization goals while domestic production scales up, Wacker Chemicals Norway signed a long-term agreement to import high-grade biocarbon. This move highlights the current "volume gap" where demand for green reductants in the silicon industry exceeds local Norwegian supply. Read more

Fesil Rana Increases Bio-Share. The Fesil ferroalloy plant in Mo i Rana reported reaching a new milestone of 25% biocarbon substitution in two of its furnaces. The achievement was attributed to a new sourcing strategy for locally densified charcoal that better withstands the physical pressure of the burden. Read more

April 2025

Elkem Launches Recycled Silicones for Label Industry. Elkem introduced a new range of recycled silicone products, demonstrating circularity in the downstream value chain. This reduces the total carbon footprint of their products, complementing upstream efforts to use biocarbon in the initial smelting process to meet customer "Scope 3" reduction targets. Read more

Washington Mills Advanced Biocarbon Trials. The silicon carbide producer Washington Mills, located in Orkanger, reported advanced trials replacing petroleum coke with biocarbon. This substitution is critical for reducing the high SOx emissions associated with traditional petcoke, addressing both local air quality and global climate goals. Read more

May 2025

Elkem AGM Reaffirms 50% Biocarbon Goal. At its Annual General Meeting, Elkem's shareholders approved the continued strategic focus on the "Climate Roadmap." This includes the ambitious target of reaching 50% biocarbon in the raw material mix globally by 2030, despite the short-term financial headwinds caused by high Norwegian energy prices. Read more

Tizir Titanium & Iron Biocarbon Tests. The Tizir smelter in Tyssedal announced positive results from its latest campaign using biocarbon in the pre-reduction process of ilmenite. The trials confirmed that biocarbon could replace coal without negatively affecting the quality of the titanium slag or the high-purity iron byproduct.

June 2025

Hydro Tests Green Hydrogen in Casthouse. Norsk Hydro successfully tested green hydrogen in a melting furnace at its Høyanger recycling plant. This pilot proves that hydrogen can replace natural gas in the casthouse, offering a fossil-free heat source that complements the decarbonization of the electrolysis process itself. Read more

Arbaflame Expands Transatlantic Pellet Trade. Arbaflame celebrated increased export volumes of its steam-treated "black pellets" to North America. The success of these logistics proves the viability of Arbaflame's pellets as a global commodity, relevant for Norwegian smelters looking to import high-quality, water-resistant biocarbon that can be stored outside. Read more

July 2025

HitecVision Acquires Majority of Vow Green Metals. Private equity firm HitecVision completed the acquisition of a majority stake in Vow Green Metals. This injection of capital and industrial expertise is intended to move Vow's project portfolio from "planning" to "construction," significantly de-risking the supply chain for major customers like Elkem. Read more

August 2025

Eramet Launches Sauda CCS Pilot. Eramet Norway commissioned its carbon capture pilot plant at the Sauda manganese smelter. The unit is designed to capture 70% of flue gas emissions, a critical percentage that allows the plant to reach net-zero when combined with a ~30% switch to biocarbon reductants. Read more

Norwegian Hydrogen & GreenIron Partnership. Norwegian Hydrogen and GreenIron signed an agreement to co-locate hydrogen production and direct reduction iron (DRI) plants. This partnership aims to produce fossil-free iron using hydrogen instead of coal, representing a radical technological alternative to biocarbon-based reduction for the steel industry. Read more

September 2025

Siva Invests in Hønefoss Infrastructure. State enterprise Siva invested NOK 152 million to acquire the factory buildings for Vow Green Metals' Hønefoss plant. This leaseback model reduces Vow's capital expenditure, allowing them to focus funds on the pyrolysis technology itself rather than real estate, accelerating the plant's completion. Read more

Elkem Unlocks Silicone Recycling Pathway. Elkem announced a breakthrough in mechanical recycling for silicone rubber. This innovation reinforces their circular economy strategy, reducing the volume of new silicon metal (and thus biocarbon/coal reductants) required to meet market demand, effectively lowering the biocarbon intensity per unit of utility. Read more

October 2025

Elkem Curtails Production Due to Power Prices. Citing high power prices and weak market demand, Elkem temporarily curtailed ferrosilicon production at its Norwegian plants. This event underscores the economic fragility of the transition: high operating costs currently limit the financial headroom needed to pay "green premiums" for biocarbon. Read more

Finnfjord & Carbon Recycling International Update. Finnfjord AS reported continued progress on integrating the world's largest commercial CO_2-to-methanol plant. The facility uses furnace gas and biocarbon synergies to lower the carbon footprint of ferrosilicon, serving as a flagship example of CCU (Carbon Capture and Utilization) in the Nordics. Read more

November 2025

Hydro Roadmap: Biomethane at Sunndal. Norsk Hydro updated its net-zero roadmap, revealing that it has replaced 70% of natural gas with biomethane in the casthouse at Sunndal. This demonstrates that biocarbon (in gas form) is effectively decarbonizing the heating processes downstream of the electrolysis cells. Read more

Standard Bio AS High-Density Briquettes. Standard Bio AS reported significant progress in their densification technology, producing biocarbon briquettes with higher mechanical strength. This breakthrough addresses the "fines" issue, where biocarbon typically crumbles in large furnaces, and is a key enabler for higher substitution rates. Read more

December 2025

Vow Green Metals Hønefoss Hot Commissioning. By year-end 2025, Vow Green Metals reported that its Hønefoss Phase 1 plant was in the final stages of "hot commissioning." The plant represents the first industrial-scale proof of the concept in Norway, setting the stage for the larger Viken Park facility to follow in 2026/27. Read more

Vow Green Metals becomes Arbion Industries. Vow Green Metals changes its name to Arbion Industries, marking a new chapter that reflects the company's ambition of scaling operations and becoming a leading European producer of biocarbon, building an integrated industrial platform for biocarbon production. Read more

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Implementation, Research & Innovations & Funding

January 2025

FME ZeMe Official Kick-Off (Jan 15). The "Zero Emission Metal Production" (ZeMe) research centre held its official opening in Trondheim. With a budget spanning eight years, the centre coordinates over 30 partners to solve specific technical barriers in substituting coal with biocarbon and integrating hydrogen in metal production processes. Read more

Enova's New 2025-2028 Mandate Starts. The Norwegian Ministry of Climate and Environment implemented a new four-year steering agreement for Enova. The revised mandate pivots funding criteria more aggressively toward "market development" for immature value chains, directly benefitting high-capex biocarbon projects that previously struggled to meet energy-efficiency metrics. Read more

Hafslund Celsio CCS Project Resumed. After cost-related delays, the full-scale CCS project at the Klemetsrud waste-to-energy plant was fully resumed. This revitalizes the "Longship" value chain, ensuring that the Northern Lights storage infrastructure—critical for future metallurgical CCS projects—will be operational on schedule. Read more

February 2025

Northern Lights "Ship 2" Arrives. The second CO_2 transport ship for the Northern Lights project, *Northern Pathfinder*, arrived for bunkering trials. This logistical milestone confirms the readiness of the transport value chain that Norwegian smelters will rely on for offloading captured process emissions that biocarbon alone cannot eliminate. Read more

IFE Launches "Bio-Battery" Project. The Institute for Energy Technology (IFE) launched a new research project exploring the use of hard carbon derived from Norwegian spruce in sodium-ion batteries. This innovation could create a high-value secondary market for biocarbon producers, improving the overall economics of the sector. Read more

March 2025

SINTEF "EnergyProSafe" Project Launch. SINTEF launched the "EnergyProSafe" project (2025–2028) to address safety risks such as self-heating and explosion in biocarbon storage and transport. Solving these safety hurdles is a prerequisite for insurance and large-scale logistics of "new fuels" in the industry. Read more

NTNU Doctoral Defense on Biocarbon Reactivity. A pivotal PhD defense at NTNU provided new models for predicting how different biocarbon types react in submerged arc furnaces. The research offers a "selection tool" for metallurgists to match specific wood species to specific alloy production requirements, reducing trial-and-error costs. Read more

April 2025

Biocarbon in Metallurgy Conference (Apr 8-9). Held in Poland with strong Norwegian leadership from SINTEF/NTNU, this conference concluded that "Volume, not Technology" is now the primary barrier to 2030 adoption. The event served as a key forum for aligning European research agendas with industrial reality. Read more

Green Platform "Circ-Bio" Interim Results. The ongoing Green Platform project "Circ-Bio" released interim results showing that pre-treatment of demolition wood can reduce contaminants to levels acceptable for ferrosilicon production. This opens up a vast, low-cost feedstock reserve that avoids competition with the pulp and paper industry. Read more

May 2025

Eyde Cluster Visits Returkraft CCU Pilot. The Eyde Cluster organized industry visits to the Returkraft waste-to-energy Carbon Capture and Utilization (CCU) pilot. The transfer of knowledge from waste incineration to the metallurgical process industry is crucial for plants like Glencore Nikkelverk and Elkem Carbon to implement similar capture technologies. Read more

June 2025

BioCarbUpgrade Project Results. SINTEF's "BioCarbUpgrade" project released findings on using "bio-binders" to improve the mechanical strength of biocarbon pellets. This research directly tackles the "fines generation" issue in furnaces, which has historically limited biocarbon substitution to lower percentages. Read more

NIBIO Report on Biochar Stability. NIBIO published critical research urging a "100-year stability" framework rather than "eternal" storage for biochar. This scientific input impacts how biocarbon credits are calculated and verified for the metallurgical industry's carbon accounting. Read more

July 2025

European Innovation Scoreboard 2025. The 2025 Scoreboard classified Norway as a "Strong Innovator," highlighting effective public-private partnerships like FME ZeMe. However, it noted a gap in scaling up hardware innovations, validating the need for instruments like the EU Innovation Fund to bridge the "valley of death" for biocarbon plants. Read more

Elkem Wins EU ETS Free Allowance Appeal. The Norwegian Ministry of Climate and Environment ruled in favor of Elkem regarding a complaint on the allocation of free EU ETS quotas. This regulatory win secures millions in value for Elkem, preserving capital

that can be reinvested in decarbonization projects. Read more

August 2025

Elkem Awarded NOK 33M for Recycled Products. Innovation Norway awarded Elkem NOK 33 million to develop low-emission products for the automotive and construction industries. The project focuses on using recycled silicon and biocarbon to lower the embedded carbon, meeting stricter procurement standards. Read more

Research Council "Blue Carbon" Call. A new transnational call opened focusing on "Blue Carbon Ecosystems," funding research into algae and marine biomass. This represents a long-term strategic pivot to find alternative biomass sources for industry, relieving pressure on forestry. Read more

September 2025

SMA Mineral Receives Enova Support. SMA Mineral received significant funding to build a new lime plant in Mo Industrial Park. The plant utilizes new technology that allows for biocarbon integration and electrification, showcasing Enova's support for industrial pilots. Read more

Alcoa Mosjøen Biocarbon Pilot Update. Alcoa continued testing biocarbon anodes at its Mosjøen smelter, reporting mixed results on mechanical stability. The ongoing research highlights the difficulty of replacing calcined petroleum coke in the electrolysis part of aluminium production compared to the reduction part of silicon production. Read more

October 2025

Beyonder Battery Anode Research. Beyonder progressed in using biocarbon from sawdust for battery anodes. While not metallurgical reduction, this innovation creates high-value off-take competition for the same sawdust resources that smelters rely on for biocarbon production. Read more

Norwegian Catapult Centre Tests. New biocarbon pelletizing technologies were verified at the Sustainable Energy Catapult Centre. The centre provides a testing ground for small-scale biocarbon producers to prove their product quality before engaging with major smelters like Elkem or Hydro. Read more

November 2025

Vow Green Metals Wins €26.2M EU Grant. Vow Green Metals was awarded EUR 26.2 million from the EU Innovation Fund to finance its second large-scale biocarbon plant at Viken Park. This grant is a critical validation of the technology and provides the non-dilutive equity needed to trigger final investment decisions. Read more

LanzaTech & Eramet Win €40M EU Grant. The EU Innovation Fund awarded €40 million to LanzaTech for a facility in Porsgrunn that will convert Eramet's furnace off-gases into ethanol. This CCU breakthrough turns pollution into a valuable product, offering a second revenue stream for the smelter. Read more

December 2025

Enova Launches Floating Wind Call. Enova launched a NOK 2 billion call for floating wind projects. This is critical for the long-term "electrification + biocarbon" strategy of coastal smelters, which require vast amounts of new renewable power to replace fossil energy in heating processes. Read more

Green Platform Awards Announced. The Research Council of Norway announced the 2025 winners of the "Green Platform" funding. Several projects focused on "circular bioeconomy" were awarded grants, specifically targeting the logistics cost reduction of transporting forest residues to industrial hubs. Read more

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Policy, Regulations & Market Framework

January 2025

EU ETS Maritime Full Effect (Jan 1). Shipping officially entered the EU ETS, raising logistics costs for imported biomass and biocarbon. This policy shift significantly improves the relative competitiveness of locally sourced Norwegian biocarbon compared to imports from the Americas or Asia that require deep-sea transport. Read more

FuelEU Maritime Regulation Starts. This regulation mandates lower GHG intensity in shipping fuels, creating a new market for biocarbon by-products (bio-oils) as maritime fuel. This regulatory pull improves the overall project economics for biocarbon producers by valorizing the liquid fraction of pyrolysis. Read more

February 2025

EU "Clean Industrial Deal" Launched. The European Commission launched the "Clean Industrial Deal" to accelerate industrial decarbonization. For Norway, this strengthens the framework for Carbon Contracts for Difference (CCfDs) and provides new

funding avenues for projects combining biocarbon and CCS. Read more

March 2025

National Inventory Document Released. The Norwegian Environment Agency's annual GHG inventory report identified the metallurgical industry as the primary remaining source of land-based emissions. The report explicitly pointed to biocarbon substitution as the most "technology-ready" lever for immediate emission cuts before 2030. Read more

April 2025

IMO Net-Zero Framework Approved The. IMO approved new net-zero regulations effective from 2027. This signals future cost increases for international shipping, further encouraging Norwegian industry to shorten their supply chains and rely on domestic or regional biomass sources. Read more

May 2025

Nordic Council Bioeconomy Report. A report from the Nordic Council highlighted a "biomass deficit" in the region, urging cross-border cooperation on forestry. The report warned that competition between energy (heating) and industry (reduction) for wood fibre is intensifying, requiring clearer prioritization policies. Read more

June 2025

Revised Waste Regulations for Wood. Norwegian authorities updated waste regulations to clarify the definition of "waste wood." This regulatory easing facilitates the use of demolition wood as a raw material for biocarbon production without requiring complex waste processing permits, unlocking new feedstock volumes. Read more

July 2025

Bioenergy Europe Calls for EUDR Simplification. A coalition including Bioenergy Europe called for urgent simplification of the EU Deforestation Regulation (EUDR). Norwegian industry supported this, as complex tracing requirements for wood chips threaten to bottle-neck the supply of biomass for biocarbon production. Read more

Norway's "Climate Action Plan" Status. The government's updated status report confirmed that biocarbon remains the single largest "technology-ready" lever for reducing process emissions in the metallurgical sector by 2030, reinforcing its central place in national climate strategy. Read more

August 2025

Norsk Industri CBAM Position Paper. The Federation of Norwegian Industries published a position paper demanding that the EU CBAM (Carbon Border Adjustment Mechanism) include "downstream products." Without this, Norwegian alloy producers fear their low-carbon metal will be undercut by cheap, high-carbon finished goods imported from Asia. Read more

September 2025

Statskog Biomass Strategy. State-owned Statskog released a strategy to prioritize industrial wood access over raw export. This policy shift aims to ensure that Norwegian forest resources contribute to domestic value creation (biocarbon/industry) rather than being exported as raw logs. Read more

Standard Norway Biocarbon Standards Drafted. New national standards for "Industrial Biocarbon" were drafted to unify trading specifications. These standards provide a common language for moisture, fixed carbon, and density, facilitating smoother trade between producers (forestry) and consumers (metallurgy). Read more

October 2025

National Budget 2026: CO_2 Tax Hike. The proposed 2026 budget included a sharp increase in the CO_2 tax for non-ETS sectors. This impacts the transport and forestry sectors, potentially increasing the cost of biomass logistics but also incentivizing the switch to zero-emission transport solutions. Read more

November 2025

EU Safeguard Measures Exempt Norway. The EU Commission announced new safeguard measures on ferroalloy imports but explicitly exempted Norway (EEA). This decision protects market access for Norwegian producers, ensuring their low-carbon products do not face the same tariffs as high-carbon Asian competitors. Read more

Other news

Historical agreement in Denmark

10 billion Danish kroner will towards 2045 be made available for global warming abatement efforts in the Danish agricultural sector, which includes a CO_2 tax from 2030 on greenhouse gas emissions from livestock and a significant focus on biocarbon production and the utilization of biocarbon for different global warming abatement purposes. Read more here.

Carbon Removal Certification Framework (CRCF)

"On 10 April 2024, the European Parliament adopted the provisional agreement on the Carbon Removals and Carbon Farming (CRCF) Regulation, which created the first EU-wide voluntary framework for certifying carbon removals, carbon farming and carbon storage in products across Europe. By establishing EU quality criteria and laying down monitoring and reporting processes, the CRCF Regulation will facilitate investment in innovative carbon removal technologies, as well as sustainable carbon farming solutions, while addressing greenwashing." Read more here.

Norsk Biokullnettverk

The "Norwegian Biochar Network" was founded in 2019. Its purpose is to gather actors from the biochar value chains in Norway. The network aims to promote biochar as an important part of the circular economy, and works towards Norwegian leadership in value creation connected to production and utilization of biochar. SINTEF Energy Research is a member in the network, and Øyvind Skreiberg is a member of its board. Also the BioCarbUpgrade industry partners Elkem, Norsk Hydro and OBIO are members in the network. The network has attracted great interest and many members and has after being in operation as a project within the Norwegian Bioenergy Association (NoBio) for several years, now become a standalone organisation. As a part of the network activities, seminars, workshops and webinars have been arranged on different biochar topics and for different industries (e.g. the metallurgical industry), and the network is also active in making the biochar voice heard in the society and towards authorities. All in all, the foundation of the network has been a timely one, serving its purpose. For more info about the network, see here, where you can find many interesting news from the biochar area, including regarding a recent report on the possibilities for sustainable production and the markets for use of biochar in Norway.

Nordic Biochar Network

The Nordic Biochar Network was founded in 2019. It is a joint initiative of researchers in the Nordic countries to increase and spread knowledge about biochar. Research Scientist Kathrin Weber from SINTEF Energy Research is the president of the Nordic Biochar Network. As a part of the network activities, conferences and webinars have been arranged, e.g. a Biochar Summit in 2024, which was arranged again 10-11 June 2025: Biochar Summit, in collaboration with Biochar Europe. The next Biochar Summit will be arranged 10-11 June 2026 in Vienna. For more info about the network: https://www.nordicbiochar.org/

International Biochar Initiative

In addition to the Norwegian Biochar Network and the Nordic Biochar Network, the International Biochar Initiative (IBI) is a source of extensive information connected to the biochar field. Its mission is to provide a platform for fostering stakeholder collaboration, good industry practices, and environmental and ethical standards to support biochar systems that are safe and economically viable. IBI news are available here.

European Biochar Industry Consortium (EBI) has become Biochar Europe

Biochar Europe (the earlier EBI) is supporting the development of biochar applications and is a network of many industrial actors connected to biocarbon production and utilisation. Earlier Norsk Biokullnettverk had an active link to the International Biochar Initiative, but this changed to EBI (now Biochar Europe), i.e. with an increased industrial and European focus. A recent white paper on Biochar as the Key to a Climate-Neutral, Competitive & Resilient European Economy is available here. Interesting resources/news are available here.

Prosess21

Prosess21 is a forum established to strengthen the coordination between the competence environments in and connected to the process industry and the public actors. Prosess21 shall give strategic advices and recommendations on how to minimize emissions from the process industry while achieving sustainable growth. The metallurgical industry is a very important part of the Norwegian process industry. An interesting report, with respect to possible future use and priorities regarding biomass based materials in the Norwegian process industry is Biobasert Prosessindustri, as well as Ny prosessteknologi med redusert karbonavtrykk inkl. CCU. The Prosess21 main report, summarises the Prosess21 work.
A new Prosess21 chapter has now started, with a new mandate and a new steering group, see here.
For more info about Prosess21:
https://www.prosess21.no/

FME ZeMe

FME ZeMe (Zero Emissions Metal Production) is a Centre for Environment-friendly Energy Research (FME) targeted at the metallurgical industry, which received funding from the RCN in 2024.
FME ZeMe has now been established and the kick-off meeting was arranged January 14.
A conference co-organised by ZeMe, Biocarbon in metallurgy, was arranged in Wisła in Poland 8-9 April, with the BioCarbUpgrade project as one of the contributors. A new conference is planned 22-23 April 2026, in Kraków, Poland.

Recent events

INFACON 2024, 18-22 September, Beijing, China. https://www.infacon17.net/ (triennial)

Biochar IV, 18-23 May 2025, Santa Marta, Colombia. https://engconf.us/conferences/materials-science-including-nanotechnology/bio-char-iv/ (biennial)

EUBCE 2025, 9-12 June 2025, Valencia, Spain. https://www.eubce.com/

The Biochar Summit 2025, June 10-11, 2025, Brussels, Belgium. https://www.biochar-industry.com/2024/save-the-date-the-biochar-summit-2025/

ICHEAP17, 17th International Conference on Chemical and Process Engineering 29 June - 2 July 2025, Florence, Italy. https://www.aidic.it/icheap17/ (biennial)

E2DT, Palermo, Italy, 12-15 October, 2025. https://www.aidic.it/e2dt2025/ (biennial)

ICSOBA 2025, 26 - 31 October 2025, Nanning, China. https://icsoba.org/2025/

Upcoming events

TMS 2026 Annual Meeting & Exhibit, 15-19 March 2026, San Diego, USA. https://www.tms.org/TMS2026

Biocarbon in Metallurgy 2026, 22-23 April 2026, Kraków, Poland.

EUBCE 2026, 19-22 May 2026, The Hague, The Netherlands. https://www.eubce.com/

IConBM2026, International Conference on BIOMASS 24-27 May 2026 Bologna, Italy. https://www.aidic.it/iconbm2026/ (biennial)

25th International Symposium on Analytical and Applied Pyrolysis, 7-11 June 2026, Pisa, Italy. https://pyro26.dcci.unipi.it/ (biennial)

The Biochar Summit 2026, 10-11 June 2026, Vienna, Austria. https://www.biochareurope.eu/summit

12th Conference on Safety & Environment in Process & Power Industry and Fire Explosion,14-17 June 2026, Turin, Italy. https://www.aidic.it/cisap12fex26/index.php (biennial)

The 41st International Symposium of the Combustion Institute, 26-31 July 2026, Kyoto, Japan. https://www.combustionsymposia.org/ (biennial)

The 65th Annual Conference of Metallurgy and Materials, August 17-20, 2026, Calgary, Alberta, Canada. https://com.metsoc.org/

Silicon for the chemical and solar industry XVIII, Kristiansand, 7-10 September 2026. https://www.ntnu.edu/si-conference (biennial)

Impacts of Fuel Quality 2026, 20-25 September 2026, Aspen, Utah, USA. https://fuelqualityimpact.org/news (biennial)

Links (click on the links or logos to get there)

BioCarbUpgrade
BioCarbUp
BioCarb+
KPN reduced CO_2
Prosess21
SKOG22
Energi21
Norsk Biokullnettverk
Nordic Biochar Network

SINTEF

NTNU

RI. SE

Ferrolegeringsindustriens Forskningsforening

Elkem
A Bluestar Company

ERAMET NORWAY

WACKER


FINNFJORD


Hydro


LULEÅ
UNIVERSITY
OF TECHNOLOGY


Mälardalen
University


Environmental
Solutions


OnsiteTechnologies


The Research Council
of Norway