An aerial photograph of a winding asphalt road through a lush green valley. The road curves through the landscape, and a significant traffic jam is visible in the middle section, with several vehicles, including a large white truck, stopped. The surrounding terrain is covered in dense green vegetation and some rocky patches.

GEMINOR®

2024

# Sustainability Report

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This report presents Geminor's sustainability performance across environmental, social, and governance dimensions, showcasing our commitment to circular waste management and responsible business practices across Europe.

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## Letter from the Founder



Writing this at the end of 2025, the year 2024 already seems like a long time ago. Yet, our team has been incredibly busy ensuring we are ready for what lies ahead for Geminor and our sustainability strategy.

2024 was, without doubt, a year of two halves for our work in sustainability. At the start of the year, we were making good progress toward being ready for CSRD reporting requirements; however, to be truly ready, we would have had to scale up our reporting team significantly. While reporting is an important part of what we do, and a vital way to communicate our impact to our stakeholders, our priority as an asset-light B2B is to deliver on expertise and the knowledge we gain from operating across European markets. This expertise must be evidence-driven and we strive to grow in a way that enables us to accurately assess our impact and work strategically with the challenges we face.

This report is lean, centered around the SDGs familiar to our stakeholders. We have focused on the most useful elements of the CSRD, applying an ESRS mindset internally and a "double materiality" approach to our strategy. Our climate impact and our role in the circular economy remain, as ever, a critical part of our assessment. Improving the accuracy of these

determinations is a key focus; while our hub impacts remain relatively small, it is the precision of our wider operations—transport emissions and recovery options, where we are focusing our efforts.

2024 represented a year in which we handled our largest volumes and saw some of the biggest changes in the Geminor family. It seems timely, then, that this was also the year we celebrated our 20th anniversary. While it's been good to look back, looking forward is what Geminor does best. Throughout the year, we saw continued growth in quality-centered fractions such as SRF, hazardous waste, bio and increasingly, RDF. Our hubs have grown with us, and investments here have improved both our service flexibility and our environmental performance through better baling, handling technology, and more efficient transport.

Crucially, we have invested in our most important part; our people. Through new appointments and a reorganization of our team, we have focused on developing expertise internally and ensuring we have the right structure to meet the demands of a changing market. Alongside this, we strengthened our logistics through new port solutions and alternative transport modes, allowing us to stay resilient when markets were disrupted and keep recovery facilities supplied without interruption.

Geminor's future must be centered around our values - Genuine, Encourage, Momentum and Integrity. These values underpin our mission to drive the waste industry toward more sustainable waste management, both in principle and in practice.

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A handwritten signature in black ink, appearing to be 'Kjetil Vikingstad'.

**Kjetil Vikingstad**

Founder and Chief Commercial Officer

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## Reporting Scope for 2024

## Period

This report covers the fiscal year from January 1, 2024 to December 31, 2024, including all wholly-owned subsidiaries and operations where we maintain operational control.

## Structure

Our reporting continues to use elements of the European Sustainability Reporting Standards (ESRS), including E1 (Climate), and E5 (Circular Economy). We now use a simpler E, S and G structure, showing how each area supports the relevant UN Sustainable Development Goals (SDGs).

## Emissions

This report includes Scope 1 and Scope 2 emissions based on verified data from our own operations, calculated in line with the GHG Protocol. As we continue to develop more robust approaches to Scope 3 emissions in line with RED III requirements, these figures are not included in this year's report.

## Reporting Scope

This report covers [Geminor Trading](#) and its trading companies across nine countries, including environmental impacts from our hubs. It focuses on 2024 data, with comparisons to 2022–2023 where available, and reflects our current data maturity while highlighting ongoing improvements in data collection, system coverage and reporting practices.

## Expand for Reporting Methods

### Temporal Scope:

Covers 2024 impacts, with comparisons to 2020–2023 data where available.

### Carbon Emissions:

This report covers emissions data from 2024 only. Our methodological approach to defining scopes and calculating emissions remains consistent with previous years to ensure

comparability over time.

Following the February 2024 omnibus changes, Geminor is exempt from reporting under the CSRD until 2025. As a result, our 2024 reporting is aligned with the UN Sustainable Development Goals (SDGs), shifting the focus from formal compliance requirements toward data-driven and measurable environmental performance.

### Entity Coverage:

Includes Geminor Trading AS across nine countries and covers environmental impacts related to hub operations.

## Scope 1 Emissions – Direct Emissions from Operations

Scope 1 emissions are defined as direct greenhouse gas emissions from Geminor's own activities. The following sources were assessed:

### Hub Machinery

- **Previous method (2021):**  
Calculations were based on recorded operational hours and manufacturers' estimates of hourly fuel consumption.
- **Current method (2022 and 2023):**  
Diesel consumption is calculated using fuel invoices from the ERP system. This method ensures a consistent and verifiable approach to measuring fuel use.
- **Future approach (from 2024):**  
In 2024, Geminor launched a Sustainable Hub Management Program to directly measure fuel consumption per machine and process. This enables more granular analysis and supports targeted improvements in the carbon intensity of individual operational processes.

### Calculation method:

Annual diesel consumption was determined based on ERP fuel invoices and scaled to reflect an annual average. Emissions were calculated using DEFRA GHG conversion factors for both *Tank-to-Wheel (TTW)* and *Well-to-Tank (WTT)* emissions. TTW emissions are reported under Scope 1, while WTT emissions are reported under Scope 3.

### Geminor Freighting

Emissions from Geminor's truck operations in Finland were calculated using total fuel consumption data. Fuel usage was multiplied by DEFRA GHG conversion factors for diesel, with TTW emissions reported under Scope 1 and WTT emissions under Scope 3.

## Company Cars

### Fuel-based method:

ERP records fuel purchases, and the total cost of forecourt bio-blended fuel is converted to litres using average fuel prices.



## Highlights of the Year

[More news from Geminor here →](#)

## Diversion of waste from Icelandic landfill to WtE and recycling

Geminor and Islenska Gamafélagid expanded the partnership to export waste streams for recycling and energy recovery, diverting waste from Icelandic landfills to energy recovery and recycling in the nordics.

[Read more →](#)

## Phasing out fossil fuels at our Storøy hub

Geminor invested in electric machinery at its oldest hub, Storøy, including an electric shredder and conveyors, estimated to save 170 tonnes CO<sub>2</sub>e a year.

[Read more →](#)

## Improved efficiencies and environmental impact of Hull Hub

Investment in new high-density baling technology, enabling larger, denser RDF bales. This reduced the number of transport movements and increased the use of sea transport, delivering estimated CO<sub>2</sub> savings through more efficient logistics.

[Read more →](#)

## Sustainable solutions for hard-to-recycle plastics

Long-term agreement signed with Renew ELP to divert hard-to-recycle plastics into circular hydrocarbon feedstock, enabling advanced recycling and fossil substitution.

[Read more →](#)

## Key Numbers

Diverted from Landfill

2.28 Million Tonnes

Down from 2.25 M in 2023

Tonnage 2024

2.33 Million Tonnes

-2.8%

Turnover

2.9 Billion NOK

Permanent Staff

136

+29.5%

Scope 1 and 2

1.2 KT CO<sub>2</sub>e

New method in 2024

Emissions Intensity

0.42 TCO<sub>2</sub>e/MNOK

New method 2024



# Environment

Our climate impact work focuses on the emissions we can measure and influence most directly. We use verified data to track changes in Scope 1 and Scope 2 emissions, while developing systems to expand our insight into Scope 3.

## Strategy Goals

### → Emissions Reduction

Enable lower-carbon waste treatment and transport through data-driven decisions and sustainable options across the value chain.

### → Waste Reduction & Circularity

Work with partners to reduce waste, improve sorting, and promote circular resource use guided by the polluter pays principle.

### → Operational Impact

Monitor and manage the environmental footprint of our operations and investments, focusing on areas with the greatest potential for improvement.

## UN Sustainable Development Goals



7. Affordable and Clean Energy

Read more



9. Industry, Innovation and Infrastructure

Read more



12. Responsible Consumption and Production

Read more



13. Climate Action

Read more

## Climate Impact

Following changes to CSRD requirements, our focus has shifted from broad reporting to measuring what we can influence most directly and credibly. At Geminor, we prioritise robust metrics for our own operations, especially hubs and machinery, where improvements deliver the greatest real-world climate impact.

### Methodology

Our emissions data is compiled annually using verified internal records.

Scope 1 includes fuel use from fleet and on-site operations; Scope 2 reflects electricity consumption reported on a location-based basis, with market-based adjustments where REGOs are held. Scope 3 is being developed through Gemisoft Green, our internal tool calculating emissions from waste freighting on a project-by-project basis.

### Reduction Goals

The most emission-intensive process was loading and unloading, responsible for around 56% of Scope 1 emissions, followed by sorting (22%) and shredding (16%). The hub with the highest emissions was Hull, and the most emission-intensive month was October, reflecting peak operational activity.

Our reduction focus is therefore on improving efficiency and electrification of loading, handling, and shredding equipment at high-activity hubs.

## 📍 Strategic Objectives

To strengthen data-driven emissions management through the development of Gemisoft Green and hub-level dashboards, enabling informed, sustainable decisions across Geminor's operations and partnerships.

Measured by:

- Verified Scope 1 and Scope 2 coverage at all hubs
- Hub-level emissions dashboards in Gemisoft Green
- Year-on-year reduction in emissions intensity per tonne processed

## Emissions Trends

The chart below summarizes our **Scope 1 and 2 emissions**, including:

- Direct emissions from our hubs (see **Direct Emissions**).
- Electricity usage (see **Electricity Emissions**).

*Note: Scope 3 emissions are not included here due to ongoing methodological improvements.*

FIGURE 1

## Scope 1 and 2 Emissions Comparison (2022–2024)

TCO<sub>2</sub>e



## Trends

- **Scope 1 emissions** decreased from **1,511 tCO<sub>2</sub>e (2022) to 642 tCO<sub>2</sub>e (2024)**. This reduction is **primarily due to a change in calculation methodology** in 2024, which shifted from invoice-based fuel estimates to **direct diesel consumption tracking**. While this improves data accuracy, it limits direct comparability with previous years. Operational efficiencies may also have contributed, but their specific impact cannot be isolated from the methodological change.
- **Scope 2 (Market-Based) emissions** increased by **32% in 2024**, rising from 456.5 tCO<sub>2</sub>e (2023) to 603.4 tCO<sub>2</sub>e. This reflects **expanded operations**, particularly at our Hull hub, and higher electricity demand. The increase aligns with our growth in tonnage handled and operational scale.
- **Emissions intensity** (tCO<sub>2</sub>e/MNOK) improved from **1.07 (2022) to 0.42 (2024)**, a **61% reduction**. This improvement is influenced by:
  - The **methodological change in Scope 1 calculations**, which reduced the reported emissions baseline.
  - **Increased revenue** (3,000 MNOK in 2024 vs. 1,942 MNOK in 2022), which dilutes emissions per unit of economic output.
  - **Investments in hub infrastructure** (e.g., electric machinery at Storøy, high-density baling at Hull), which may have contributed to operational efficiencies.

## Direct Emissions

Our Scope 1 emissions include fuel used in assets we own or control:

- Our own trucks in Finland (Geminor Finland)
- Machinery at our hubs in Aalborg, Hull, Landskrona and Storøy used during processing, shredding, loading and baling.

### Scope 1 Breakdown - tCO<sub>2</sub>e (2024)

# 642.4

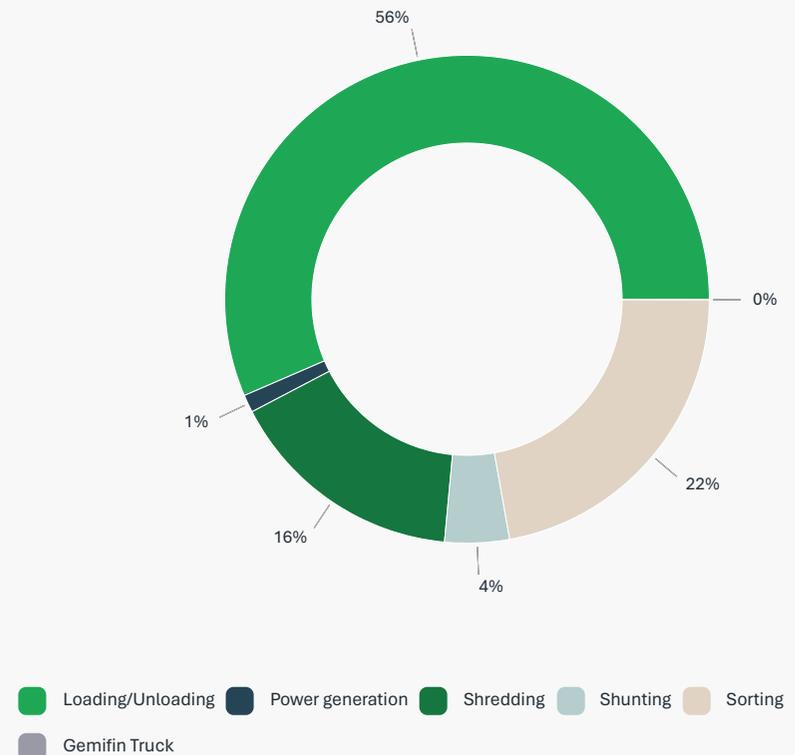
 tCO<sub>2</sub>e

Improved method for 2024

FIGURE 2

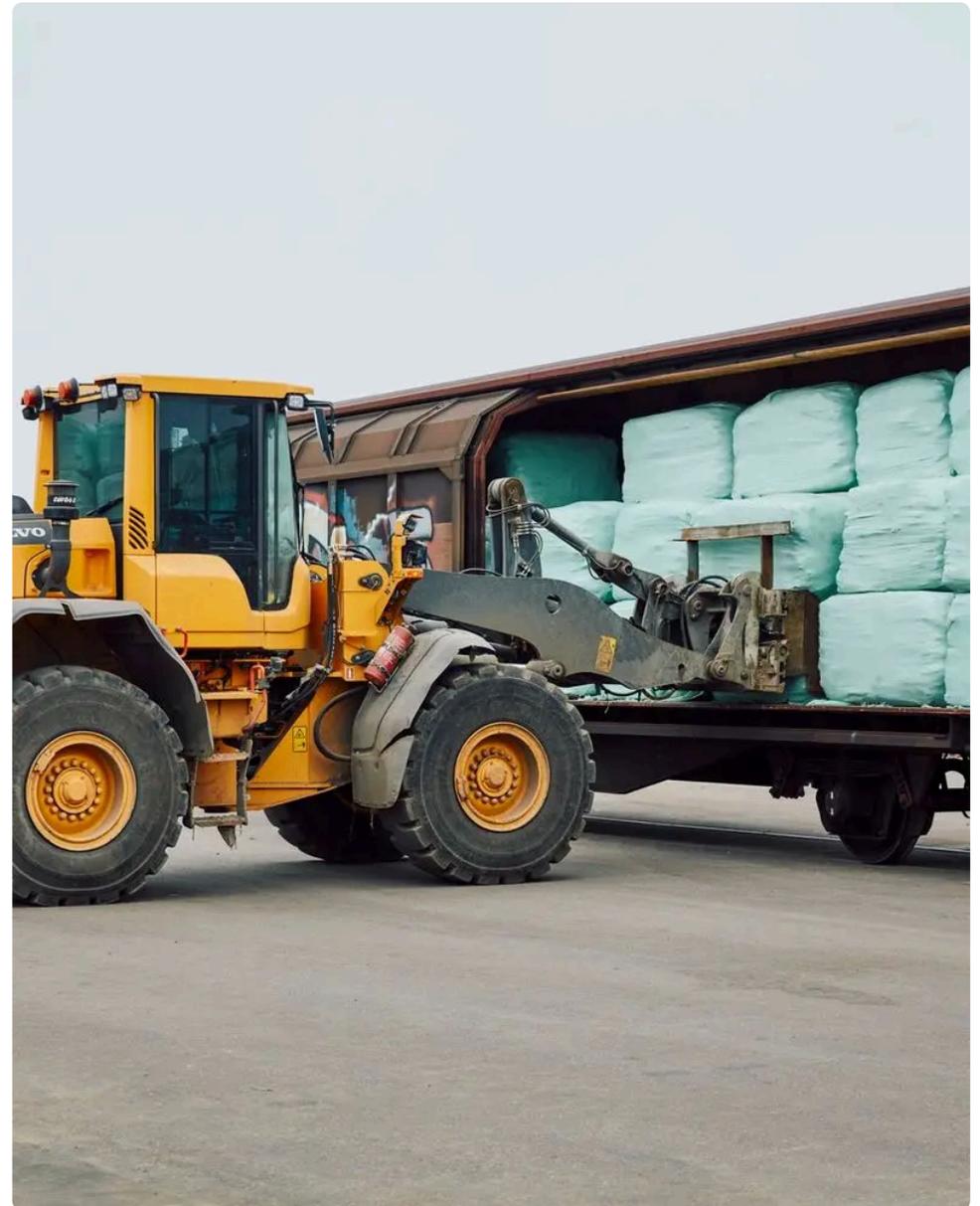
### Total Scope 1 Emissions 2024

tCO<sub>2</sub>e



## 2024 Spotlight

- Our **Scope 1 emissions total 642.4 tCO<sub>2</sub>e** in 2024, marking the first year we've captured such detailed, activity-level data.
- **Loading/Unloading remains the largest emissions source at 56%**, driven by the operational demands of waste handling.
- **Shredding accounts for 22% of emissions**, a key area where we are **strategically focusing improvements** to enhance processing efficiency





## Electricity Emissions

Our Scope 2 emissions include purchased electricity for our hubs and offices. We report these using two methods in line with the GHG Protocol:

- **Market-based:** Reflects our specific electricity purchases and contracts (our primary KPI).
- **Location-based:** Reflects the average emissions intensity of the local grids where we operate.

Scope 2 Breakdown - tCO<sub>2</sub>e (2022-2024)

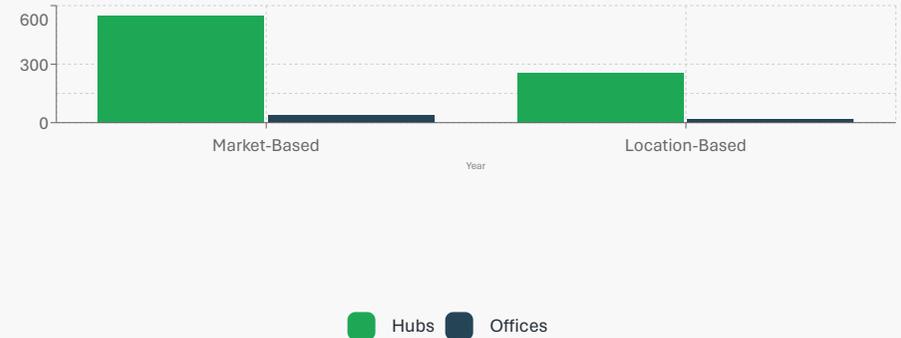
603.4 tCO<sub>2</sub>e

↗ +32 % vs previous year

FIGURE 3

## Scope 2 Breakdown

tCO<sub>2</sub>e



## 2024 Spotlight

- **Market-based Drivers:** In 2024, the **UK Hub (Geminor UK Ltd)** and the **Danish Hub (GWT DK ApS)** represented the highest market-based emissions, significantly impacting our total Scope 2 footprint.
- **Location-based Efficiency:** Location-based figures remain lower than market-based figures. This is largely due to our operations in regions with low-carbon power systems, such as **Norway**, where high hydropower availability results in minimal grid intensity.



### Value Chain Emissions

Our **Scope 3 (indirect) emissions**, primarily from waste transport, account for **~98% of our total climate footprint**. These emissions are driven by logistics choices, transport distances, and recovery routes - factors largely outside our direct control. While we do not yet report comprehensive Scope 3 data, we are actively working to improve traceability and data quality to better understand and reduce these impacts.

#### Emissions Sources

Our indirect emissions are dominated by waste transport across the value chain, with the majority of tonnage moved by road and sea and a small share historically carried by rail. As a waste trading business, these emissions are strongly influenced by logistics choices, transport distances and recovery destinations rather than our own operations.

## Regulatory focus and data needs

Following changes to CSRD requirements, our approach has shifted toward aligning with **RED III** and partner expectations. As a minimum, this requires the ability to provide reliable input data for emissions calculations, including:

- Distance travelled
- Transport mode
- Vehicle and fuel type used

This data forms the basis for credible emissions reporting and informed decision-making across the value chain.

## Actions

To improve how value chain emissions are managed and understood, we are focusing on:

- Using Gemisoft to maintain strong traceability of transport routes and logistics choices
- Prioritising case-specific data over generic Scope 3 factors
- Working with selected partners to improve primary data quality over time
- Linking waste quality, logistics and recovery routes to climate impact
- Exploring opportunities to increase lower-emission transport options where viable
- Strengthening value chain due diligence, including compliance, transparency and welfare standards



## Waste Recovery and Circularity

Geminor's core impact within the circular economy lies in how waste is recovered and treated. Our role is to ensure that residual waste streams are directed to the highest viable treatment route, prioritising recycling and energy recovery, and minimising landfill, while complying with national and cross-border waste regulations.

### Methodology

All waste volumes are captured and traced digitally through Gemisoft, Geminor’s internal logistics and reporting system.

Every tonne collected, transported, and treated is recorded with its recovery route, enabling consistent KPIs for energy recovery, recycling, and landfill across markets. This ensures traceable, auditable data reflecting actual operational outcomes rather than estimates.

### Reduction Goals

- Maximize recovery at the highest viable treatment level - in accordance with the waste hierarchy
- Maintain full regulatory compliance across all waste streams and shipments, in particular recognising the changes to POPs measurements in transboundary shipments of waste.
- Improve waste quality insight to support ETS and carbon cost navigation - develop our digital database in 2025 to support this.
- Increase recycling where material quality and markets allow
- Minimize landfill, particularly for non-recoverable residues

### Strategic Objectives

Geminor’s strategy is to grow responsibly within its core fractions; RDF, SRF, biomass, hazardous waste, and waste wood, where quality and regulatory compliance are critical. The primary objective is to identify waste quality risks and opportunities across these streams, with a strong focus in 2025 on ETS-related challenges for waste-to-energy and their implications for fuel quality, fossil carbon, and costs. While post-consumer recycled fractions represent a smaller share of volumes, they remain strategically important to Geminor’s circular value chain.

#### Material Recycled

205 K t

+16% vs previous year

#### Energy Recovered

2.07 Million t

-3.5% vs previous year

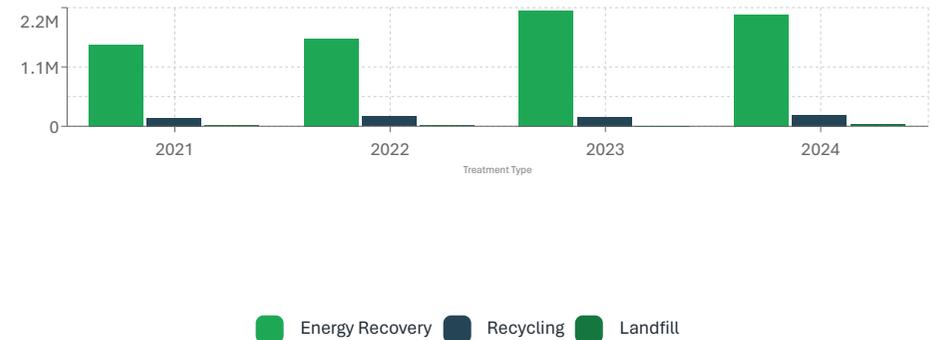
### Landfill Diversion

Over 98% of the waste handled by Geminor is diverted from landfill. This is primarily achieved through energy recovery of residual waste, which generated approximately **6.0 TWh** in 2024 - enough to power roughly **403,320** Nordic households.

FIGURE 4

### Waste to Resource Comparison (2021–2024)

Amount



## Trends

- **Stable Diversion:** Over the past four years, our diversion rate has remained consistently high, with total volume peaking in 2023 at over **2.2M tonnes**.
- **Growth in Energy Recovery:** Since 2021, the volume of waste diverted into energy recovery has grown significantly, reflecting the availability of waste in the EU and UK for export to the Nordics to meet regional heating demands.

## Recycling vs Energy Recovery

Material composition dictates the treatment pathway. Engineered fuels like **RDF** and **SRF** are almost entirely dedicated to energy recovery, while other materials show a more diverse recovery profile.

Hazardous waste follows stricter treatment pathways, with landfilling applied when residues cannot be safely recovered, although energy recovery increased again in 2024 compared to 2023.

FIGURE 5A

## Fractions Handled

Tonnes

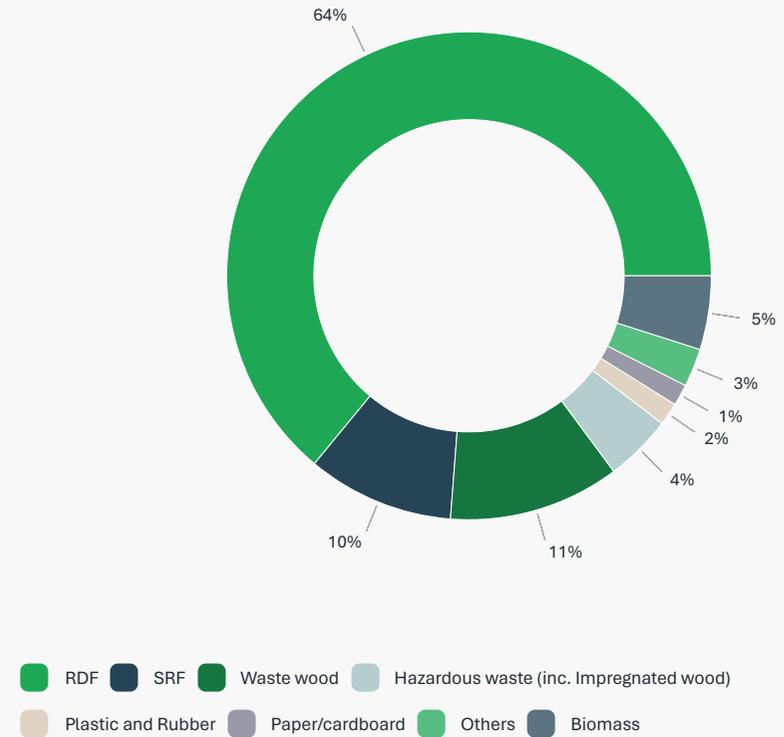
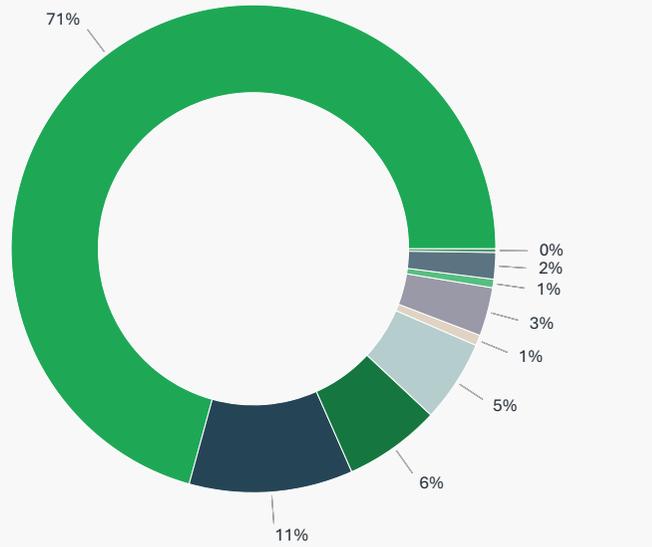


FIGURE 5B

### Energy Recovery

Tonnes

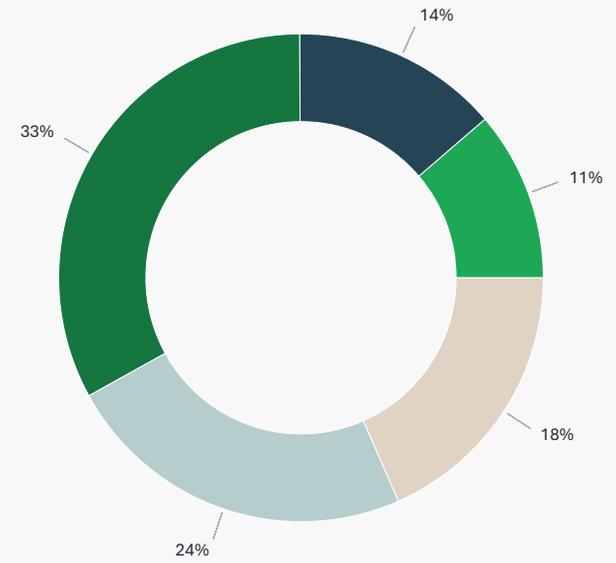


- RDF
- SRF
- Waste wood
- Biomass
- Hazardous waste
- Impregnated Wood
- Plastic and Rubber
- Other
- Paper/cardboard

FIGURE 5C

### Recycled Fractions

Tonnes



- Waste wood
- Impregnated Wood
- Paper/cardboard
- Plastic and Rubber
- Other

## 2024 Spotlight

- **Fuel Quality & Demand: RDF (64%)** and **SRF (10%)** dominate our volumes. We are seeing a shift in the market where RDF quality demands and technical knowledge requirements are now mirroring those of high-spec SRF.
- **Market Maturity: Waste Wood** remains our lead recycled fraction (**33%**), driven by a highly mature recycling infrastructure.
- **The Plastic Gap:** While **Plastic and Rubber** make up **24%** of recycling, they remain a tiny fraction of total waste handled; a result of a difficult secondary market struggling to compete with virgin plastic prices.
- **Biomass:** Continues to be a stable pillar of our energy recovery portfolio, providing reliable renewable heat and power.
- The **"Others"** category (**4%**), mostly glass and metals, is a key focus area. We are investigating these residual streams to ensure valuable materials aren't being "wasted" when they could be recovered.



## Hazardous Waste

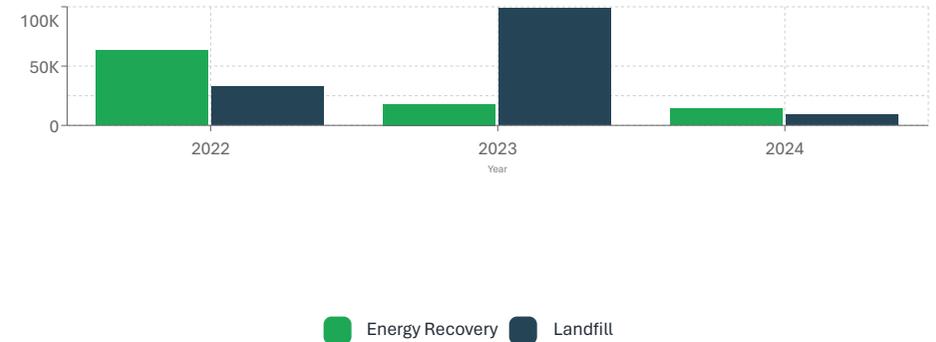
Hazardous waste is managed under a rigorous global and European framework, requiring approved and controlled treatment routes. Our impact lies in ensuring fully compliant transboundary movements, strictly adhering to the **Basel Convention** and **EU Waste Shipment Regulations (WSR)** to steadily maximize recovery and minimize landfill.

FIGURE 6

### Hazardous Waste Trends (2022-2024)

Metric Tonnes

%



## 2024 Spotlight

- **Significant Landfill Reduction:** Landfill volumes dropped drastically from **98,463 tonnes** in 2023 to just **8,898 tonnes** in 2024.
- **Recovery Breakthrough:** We achieved a significant shift in 2024, with energy recovery reaching **237,512 tonnes**—a major increase compared to previous years.
- **Basel & "PIC" Compliance:** Every cross-border shipment follows the **Prior Informed Consent (PIC)** procedure, requiring written authorization from all states of dispatch, transit, and destination before movement begins.
- **The "OECD Plus" Standard:** We operate under "OECD Decision" rules, ensuring hazardous waste only moves between countries with equivalent environmental standards for recovery.
- **Financial Security:** As required by the Basel Convention, all shipments are covered by mandatory **financial guarantees** to protect against environmental risks during transit. **Landfill Trends:** While landfill remains a necessary route for specific residues (**32,645 tonnes** in 2024), our strategic focus is to continue transitioning these volumes toward high-efficiency energy recovery.



Social

At Geminor, we recognise that sustainability depends on people as much as on environmental performance. Our focus is on building a fair, safe, and supportive workplace while fostering strong partnerships that advance responsible waste management and social value across the communities we work in.

## Strategy Goals

### → Fairness:

Promote an inclusive workplace built on merit, equality and respect, with zero toleration for discrimination.

### → Employee wellbeing:

Support the health, safety, and professional development of all employees to foster engagement and long-term growth.

### → Partnerships:

Collaborate with partners, municipalities and communities to advance sustainable waste management and environmental awareness in line with our values.

## UN Sustainable Development Goals



8. Decent Work and Economic Growth

Read more



11. Sustainable Cities and Communities

Read more



## Our People and Workplace

Our people are central to Geminor's long-term success. We focus on providing decent working conditions, supporting employee wellbeing, and developing leadership capabilities to ensure a resilient and future-ready organisation.

Geminor's strategy under SDG 8 focuses on creating decent working conditions, supporting employee wellbeing, and developing the competencies and leadership needed for long-term, sustainable growth. We aim to provide a safe, fair and inclusive workplace where employees are supported in their professional development and able to contribute meaningfully to the company's success.

Our objectives include strengthening role clarity and competence mapping across the organisation, equipping leaders with the tools to conduct structured performance and development dialogues, and fostering an engaging company culture through regular employee feedback. By investing in our people and leadership capabilities, we seek to build a resilient, future-ready organisation that supports both employee wellbeing and responsible economic growth.

### Number of Employees (Permanent Staff)

136

↗ 35% Female, up 2% since previous year

### Women Permanent Staff New Hires

42%

Women accounted for 42% of new hires in 2024



# Governance

Strong governance is the foundation of trust and accountability. We are committed to transparent operations, ethical business practices, and rigorous compliance across our entire value chain.

## Strategy Goals

### → Transparency

Communicate openly and honestly with stakeholders, ensuring clear accountability and accuracy in all reporting and disclosures.

### → Ethics

Uphold the highest standards of integrity with zero tolerance for corruption, criminality, or unethical behavior.

### → Supply Chain Compliance

Maintain strict compliance and risk management across all suppliers, ensuring adherence to legal, ethical and environmental standards.

## UN Sustainable Development Goals



9. Industry, Innovation and Infrastructure

Read more



12. Responsible Consumption and Production

Read more



13. Climate Action

Read more

## Ethics, Code of Conduct & Integrity

At Geminor, ethical conduct, transparency and respect for human rights are fundamental to how we operate. Our governance framework sets clear expectations for responsible business practices across all operations and relationships.

Geminor's Code of Conduct defines clear expectations for ethical behaviour, legal compliance and responsible business practices across our value chain. In line with the Norwegian Transparency Act (Åpenhetsloven), we conduct due diligence to identify, assess and mitigate risks related to human rights and working conditions, including through regular supplier engagement and published Modern Slavery Statements.

Whistleblowing mechanisms and clear reporting channels support a culture of openness and accountability, allowing concerns to be raised and addressed appropriately. Together, these measures form the foundation of Geminor's approach to ethical governance and responsible business conduct.

[Policies, certifications and governance documents](#) →

## Management Team & Accountability

Geminor's management team provides clear leadership and accountability for strategic direction, operational performance and sustainability oversight across the organisation.

Geminor's management structure ensures clear accountability for strategic direction, operational performance and sustainability oversight. The management team is responsible for integrating sustainability considerations into decision-making processes, including investments, innovation initiatives and operational development.

Governance of climate-related topics, data quality and reporting is embedded within management responsibilities, supporting transparent and consistent climate-related disclosures. Oversight of innovation and infrastructure development ensures that new systems, tools and processes contribute to efficiency, resilience and long-term value creation.

Through defined roles and responsibilities, Geminor aims to ensure that sustainability is managed as an integral part of the business rather than as a standalone activity.

[Learn more about our management team →](#)

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## Quality Management System and Certification

Geminor operates under a structured quality and management system, supported by recognised certifications, to ensure consistent compliance, traceability, and risk control across operations.

Geminor operates under a structured quality and management framework supported by recognised ISO certifications. These management systems provide a consistent foundation for quality assurance, environmental management and occupational health and safety across the organisation.

ISO-certified processes support compliance, traceability and continuous improvement, helping to ensure that operations are carried out in a controlled and responsible manner. Regular audits and reviews are used to assess performance, identify improvement opportunities and maintain alignment with internal standards and external requirements.

Together, these systems strengthen Geminor's governance framework and support reliable, transparent and accountable operations across all areas of the business.

[View our certifications →](#)

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## External Sustainability Networks

**Klimapartnere Rogaland** is a regional sustainability network in Norway that brings together businesses, public authorities, academia and civil society to support knowledge sharing and dialogue on climate- and sustainability-related challenges.

As part of its governance approach, Geminor participates in selected formal sustainability networks to support informed decision-making and oversight of sustainability-related topics. Geminor is a member of Klimapartnere Rogaland, reflecting the company's head office location in the region and its commitment to engaging in structured, cross-sector dialogue on sustainability.

This involvement provides a forum for exchanging perspectives, staying informed on global, national and regional sustainability developments, and contributing business insight to wider discussions.



[Learn more about Klimapartnere Rogaland →](#)



**GEMINOR**

Looking Forward

Sustainability at Geminor is rooted in how waste quality, recovery routes and regulation interact in practice. Our focus is on improving recovery outcomes, reducing fossil carbon, and working with our people and value chain partners to support resilient, data-driven decision-making.

## Research and Development

In 2024, Geminor focused its R&D activity on a small number of targeted initiatives while preparing for the launch of a formal R&D department in 2025. Work centred on three core projects: Innovation Norway, CIRCFUEL, and ACT LOUISE. CIRCFUEL and ACT LOUISE were industry-led collaborations, where Geminor contributed feedstock knowledge and supplied representative waste streams. The Innovation Norway project was funded and led by Geminor and formed the main internal R&D effort during the year.

[Learn more →](#)



COMPLETED

### Innovation Norway

#### ⚡ Action

In 2024, the Innovation Norway-funded project ***Pilot for a new chemical process for circular plastics*** was concluded following a difficult preceding year for secondary plastics markets. While the project was initiated to support chemical recycling and increase plastic circularity, market conditions required a practical refocus. Work shifted to understanding the quality and availability of plastics within RDF supplied to waste-to-energy. The project was anchored at Geminor's hub in Hull, where RDF was analysed and tracked through processing and export to waste-to-energy facilities in Norway. The impact of plastic content and RDF quality was evaluated using batch burn data.

#### 🎯 Impact

The project delivered measured data linking plastic content in RDF to waste-to-energy performance and fossil carbon emissions. This evidence is now used to inform RDF quality management, hub processing decisions, and discussions with offtakers on specifications, operational risk, and carbon exposure. The outcomes also provided a technical foundation for subsequent R&D work on plastic diversion, alternative recovery routes, and emissions reduction within a carbon-constrained waste-to-energy market.



COMPLETED

Learn more 

## ACT LOUISE

### Action

The **ACT LOUISE – Low-Cost CO<sub>2</sub> Capture by Chemical Looping Combustion (CLC) of Waste-Derived Fuels** project ended in December 2024. The project was delivered by an international consortium comprising Technische Universität Darmstadt (coordinator), SINTEF Energy Research, SINTEF AS, Doosan Lentjes GmbH, CheMin GmbH, Provadis Hochschule, Infraserv GmbH & Co. Höchst KG, EEW Energy from Waste GmbH, Kvitebjørn Bio-EL AS, Geminor AS, Kronos Titan AS, Titania AS, Centre for Research and Technology Hellas (CERTH), Helector A.S., TÜBİTAK MAM, SOCAR Türkiye Enerji A.Ş., and Erdemir (Ereğli Iron and Steel). Geminor participated as a partner, contributing waste-derived fuel and feedstock expertise to support pilot-scale chemical looping combustion tests at 150 kWth and 1 MWth.

### Impact

The project delivered validated pilot data on chemical looping combustion of waste fuels and characterised seven potential oxygen carrier materials for CLC applications. A basic design and cost estimate for a 10 MWth CLC demonstration plant were developed, alongside business case assessments and life-cycle comparisons showing competitive climate performance against other CO<sub>2</sub> capture options.



COMPLETED

## Academic Research Support – Master’s Theses (2 projects)

### Action

In 2024, Geminor had the pleasure of acting as academic mentor and industry partner for two independent master’s thesis projects. One was conducted at the Norwegian University of Life Sciences (NMBU) under the title *“How Does CO<sub>2</sub> Tax on Waste Incineration Facilitate New Business Opportunities for the Circular Economy? A Case Study of Geminor”* (Hansen & Yrke, 2024). The second was completed at the Norwegian School of Economics (NHH) under the title *“Collaboration for Sustainability: The Impact of Collaboration on Sustainability in the Norwegian Waste Industry”* (Tørresen & Alne, 2024). In both projects, Geminor supported the work by sharing industry insight, practical context, and access to relevant experience from across the waste value chain.

### Impact

The theses provided complementary insights into sustainability and market development in the waste sector. The NMBU study examined how carbon taxation influences business models and circular opportunities, while the NHH study analysed how collaboration across the value chain affects sustainability outcomes. Together, the projects strengthened the link between academic research and industry practice and contributed perspectives that are directly relevant to Geminor’s strategic focus on policy navigation, collaboration, and innovation.

A big congratulations to all students on successfully completing their master's degrees and many thanks for their energy and valuable contributions to research on sustainability in the waste value chain!



ACTIVE

Learn more

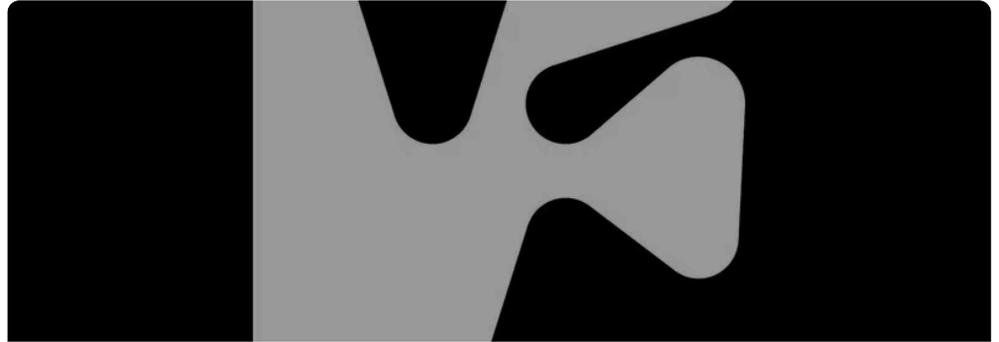
### CIRCFUEL

#### Action

The **CIRCFUEL – Circular Economy: Pyrolysis of Waste into Synthetic Fuel at Cement Plants** project (2021–2025) is a multi-partner research collaboration led by DTU Chemical Engineering to investigate the conversion of refuse-derived fuel (RDF) and other waste streams into synthetic liquid fuels via pyrolysis for potential use in hard-to-abate sectors such as cement, marine, or refinery applications. Geminor participated by supplying RDF feedstock and waste expertise to support reactor testing and fuel characterisation. Other partners include DTU Chemical Engineering, DTU Management, FLSmidth A/S, Dampskibsselskabet Norden, MAN Energy Solutions SE, Haldor Topsøe, and Finnsementti Oy.

#### Impact

In 2024, CIRCFUEL contributed peer-reviewed research outputs on pyrolysis of waste and RDF to synthetic fuels, including experimental data on fuel properties and process performance. These results strengthen the evidence base for waste-derived fuels in cement and other hard-to-abate sectors and support further development of pyrolysis as a circular alternative to conventional waste treatment.



PLANNED

### Polluter Pays (SkatteFUNN)

#### Action

The planned **Polluter Pays (SkatteFUNN)** project will focus on developing evidence-based methods to navigate evolving carbon regulation in the waste sector, including ETS and national carbon taxes. The work will explore how data, traceability, and quality indicators across the waste value chain can be used to support fair and targeted application of carbon costs.

#### Impact

The project aims to strengthen market transparency by ensuring that carbon pricing mechanisms primarily impact waste streams with higher fossil plastic content, while avoiding unintended penalties for actors investing in sorting, quality improvement, and circular solutions. By connecting data from both ends of the waste value chain, the project is intended to support better-informed decisions that prioritise recovery, reduce fossil emissions, and reinforce the polluter-pays principle in practice.

## Outlook and Strategic Direction



Looking ahead, Geminor will focus on delivering measurable climate impact through better data, targeted carbon reporting and smarter waste recovery as markets and regulation continue to evolve. Increasing regulatory requirements, including RED III, the inclusion of Waste-to-Energy in the EU ETS and the emergence of differentiated carbon taxation, are reshaping how residual waste streams are managed and valued across Europe. These developments create both risk and complexity, particularly in a secondary plastics market that remains constrained and volatile.

In this context, Geminor will strengthen performance across its core fractions including RDF, SRF, biomass, hazardous waste and waste wood by doing what we do best, better. At the same time, we will continue to identify viable recycling pathways for plastics, paper and other recoverable materials where markets, infrastructure and quality allow. Strong value chain due diligence will remain essential, with a continued focus on compliance, transparency and welfare standards across suppliers, logistics partners and downstream offtakers.

From 2025, the launch of Geminor's R&D function will support improved data quality, more informed operational and commercial decision-making, and long-term value creation. This will be underpinned by strong governance structures and continued investment in our people, ensuring sustainability remains a practical, credible and integrated part of how we operate.

Continue to follow our work

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