



CARBON COMPOSITION ASSESSMENT

**Standard fuel analysis turned into a fuel-specific fossil CO₂ figure.
Verified against carbon-14.**

An introduction to the model, its applications and the data behind it

THE CHALLENGE

How should you price waste-derived fuels when you don't know their fossil emission?

Waste-derived fuels are a mix of biogenic and fossil carbon. Reporting, cost and climate claims all depend on knowing the split

Every fossil ton carries a price tag

Biogenic CO₂ from food waste, paper and wood is treated as climate-neutral. Only the fossil fraction: plastics, textiles, rubber, that derives from fossil sources will generate a cost of emission when incinerated.

Waste is never homogeneous

A single analysis is good but to get a reliable result of a heterogeneous material where each batch is different, quantity beats quality in data.

Calculate the whole system, not just the gate fee

The deal can look profitable per ton and still fail once cost of emissions are included. Knowing the fossil share turns that cost into something you can predict, price into fuel contracts and actively reduce.



THE SOLUTION

From ordinary fuel analysis to a fossil CO₂ in seconds

THE CARBON COMPOSITION ASSESSMENT - no more waiting

Analyze your fuel

Standard fuel parameters from your ordinary lab.

- NCV, Moisture, Ash, Total Carbon

Enter the parameters into model

It can't be easier!

Results within seconds

A statement of fossil and biogenic share, the resulting emission factor and the CO₂ released on incineration.



**CENTERFUEL**
Independent Carbon Composition Assessment Report

Report ID: CF-2026-114
Date Issued: 2026-10-13

Assessment Information

Customer	Centerfuel AB
Customer Reference	RDF supplier 70
Analysis Reference	DW/42575x

Executive Summary

Biogenic Carbon Share 34.55 %	Fossil Carbon Share 65.45 %
Fossil CO ₂ /Tonne Fuel 777.55 kg	Fossil CO ₂ /MWh Fuel 217.04 kg

Fuel Data Used

Net Calorific Value (NCV)	12.90 MJ/kg
Moisture	23.80 %
Ash Content	28.90 %
Total Carbon	32.40 %

Assessment Statement

Based on the supplied analytical data and application of the Centerfuel Carbon Composition Model, the fuel sample identified as RDF supplier 70 is estimated to contain 65.45% fossil carbon and 34.55% biogenic carbon. The corresponding fossil CO₂ emissions are estimated at 777.55 kg CO₂ per tonne of fuel and 217.04 kg CO₂ per MWh of fuel energy.

Disclaimer

This assessment is based on Centerfuel proprietary calculation models developed from historical radiocarbon analysis data. The assessment is intended as a decision-support tool and does not replace laboratory radiocarbon analysis or regulatory compliance testing.

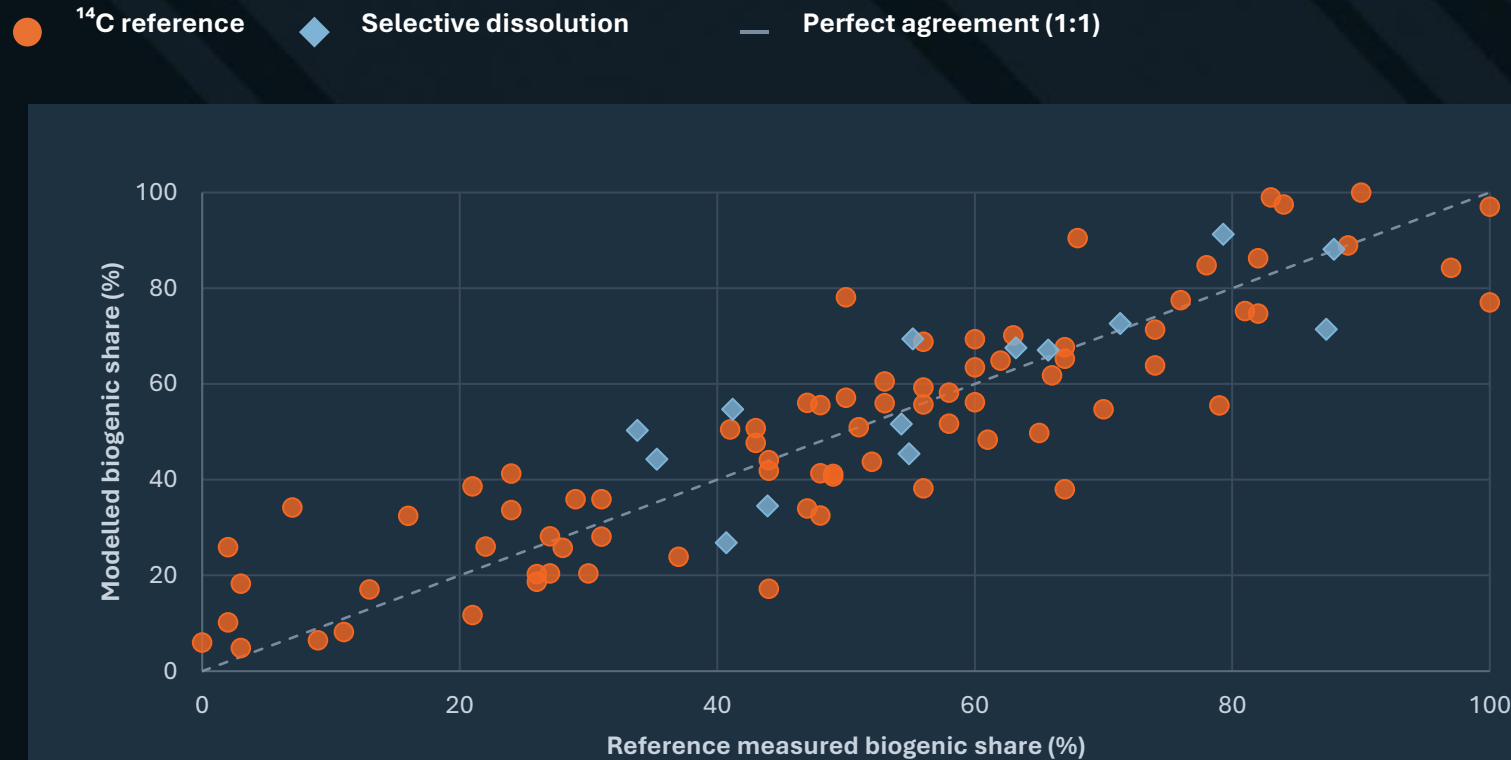
Centerfuel International ABReport ID: CF-2026-114



VALIDATION

How the model compares with the reference methods

Modelled biogenic carbon share vs. reference analysis — 92 fuel samples.



Agreement with
reference

$R^2 \approx 0.79$

correlation across the
batch set

MAE $\pm 9,0$ pp

typical deviation from the
reference

No bias

no systematic over- or
under-estimate



An analysis is only as good as the sample

RDF/SRF is heterogeneous: segregation, layering, large particle size and hard-to-reach material all increase the risk of bias.

WHERE DOES THE ERROR ARISE?

55 %



Sampling

Largest risk

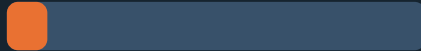
40 %



Sample preparation

Crushing and division

5 %



Instrument

Smallest share

Source: Alterline

1

Several increments

Take increments over time and from several positions. Combine them into one composite sample.

2

The right sampling point

Prioritize material in motion, for example a transfer chute or belt. Static piles and trucks are harder.

3

Particle size governs

The largest particle drives the uncertainty. Increase the sample mass or reduce particle size before division.

4

Every particle must be selectable

Tools and sampling point must give every particle a real chance to be included. Avoid surface sampling and hand picking.



Message: invest more in the sampling plan and sample preparation than in extra decimals in the laboratory!

Fuel sourcing with quality control and supplier evaluation

Contracts and pricing

- Rank potential and ongoing suppliers on fossil share, not only gate fee
- Differentiate price on delivered fossil content
- Make fossil carbon a measurable contract parameter

Supplier evaluation

- Check deliveries against the agreed fuel specification
- Flag batches that drift outside the accepted fossil range
- Separate single deviations from quality violations

Analyze portfolio

- Analyze your fuel economics with large sets of data
- Compare across contracts and types of waste
- Spot trends over time

Sustainability strategy

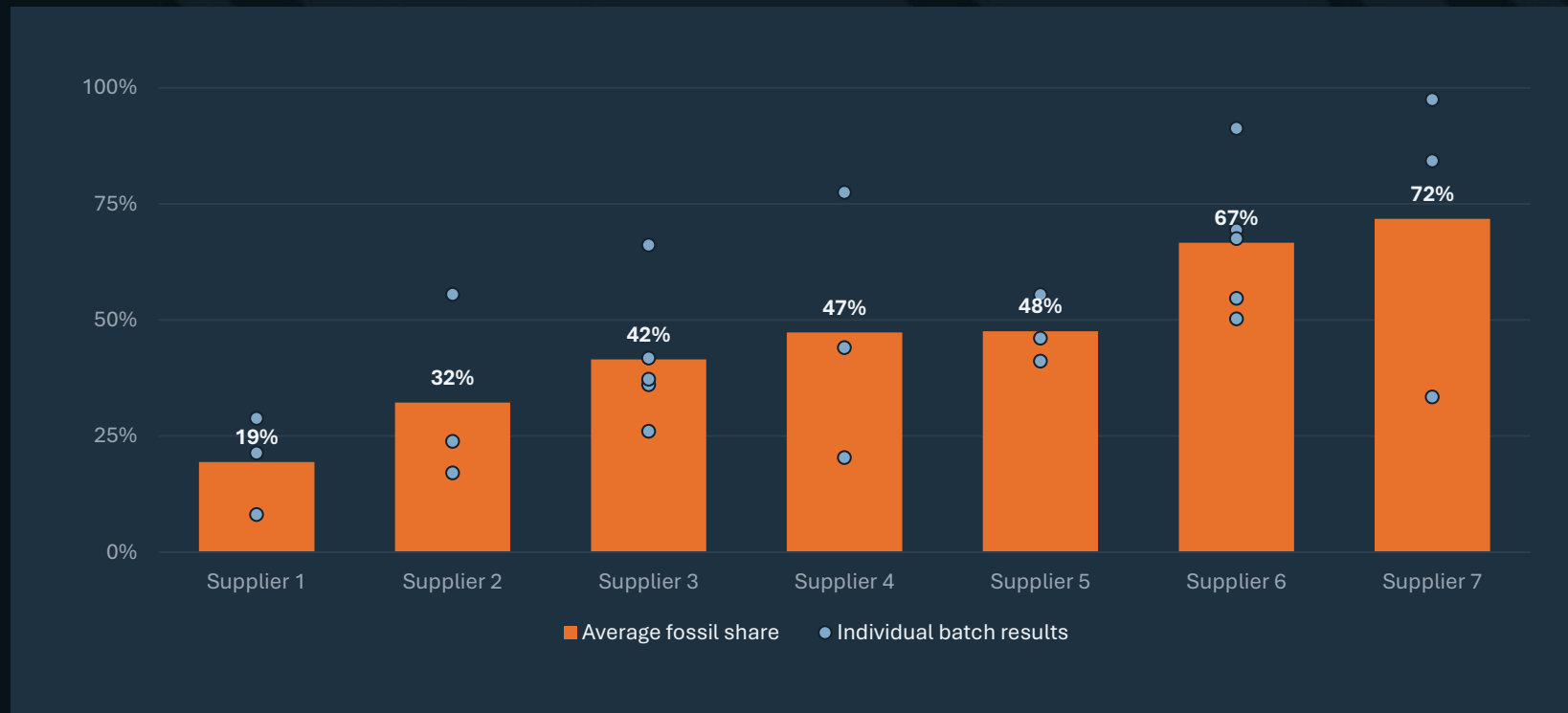
- Supports the Polluter Pays Principle
- Steer the fuel mix toward lower fossil batches
And link CO₂ emissions to the waste
- Enable large sets of fuel data over time to support sustainability strategy



APPLIED AT SCALE

Implement the result into Quality Monitoring

Track each supplier's fossil carbon share over time to improve your fuel sourcing



Evaluate suppliers

Fossil share

What's the average fossil share over time?

Consistency

What's the variation between deliveries

Profitability

Gate fee minus fossil CO₂ costs



CENTERFUEL
WASTE-TO-ENERGY SOLUTIONS

EASY TO USE

From fuel analysis to Carbon Composition, in seconds

Get started and get control of your CO₂ figure.

1

Create your login

Start a subscription in the portal. No new lab equipment and no isotope measurement per batch.

2

Enter your fuel analysis

Fill in the parameters your lab already delivers. The result is calculated in seconds, not weeks.

3

Use the result

Report, fuel-specific emission factor and full batch history, ready for statistics, pricing, contracts and quality follow-up.

Results within seconds · Uses the fuel analyses you already have · Low cost per Assessment

<https://centerfuel.se/carbon-composition-assessment-for-rdf-and-srf/>



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