

Emissions regulation has reached Brazil. MRV legislation is being defined now. **How will you report your emissions?**

Welcome to the first edition of the DatamarLab newsletter. At the start of each month, we share what we've advanced, what we've learned, and what's coming next.

AN INITIATIVE BY Datamar

THE CONTEXT

Emissions regulation has arrived. Ignoring it is no longer an option — and Brazil is in its path.

Maritime shipping accounts for approximately 3% of global greenhouse gas emissions. For decades, it operated outside the major carbon pricing systems. That era is over.

Globally: already an operating cost

Since January 2024, vessels calling at European ports have been subject to the **EU ETS** (Emissions Trading System) — Europe's carbon pricing mechanism. Every tonne of CO₂ emitted on routes with European port calls carries a direct financial cost: in 2024, shipowners paid between €50–€70 per tonne. Coverage scales progressively: 40% of emissions in 2024, 70% in 2025, 100% from 2026 onwards.

In parallel, the **FuelEU Maritime** regulation entered into force in 2025, setting progressive limits on the carbon intensity of marine fuels. Non-compliance carries a penalty of €2,400 per tonne of fuel equivalent in deficit. The goal is to force a gradual transition to alternative fuels — methanol, ammonia, hydrogen — whose costs are still 4 to 7 times higher than conventional HFO.

The IMO adopted a revised net-zero-by-2050 strategy in 2023, with interim targets in 2030 and 2040. The **IMO Net-Zero Framework** — an amendment to MARPOL Annex VI — establishes a global GHG fuel intensity standard on a lifecycle basis and a worldwide carbon pricing mechanism, with implementation expected from 2027.

In Brazil: regulation is being built — but the impact is already here

Brazil does not yet have a formal carbon pricing system for the maritime sector, but the regulatory trajectory is clear. The **Brazilian Carbon Market (SBCE)**, established by Law 15,042/2024 and being regulated through 2025–2026, lays the foundations for a national cap-and-trade system. Inclusion of the transportation sector — including maritime — is planned for subsequent phases.

For **Brazilian ports** (Scope 2), ANTAQ and the Ministry of Ports are already developing energy efficiency guidelines and port emissions inventories. The port authorities of Santos, Paranaguá and Itajaí are in the process of environmental certification and adopting reduction targets — driven by both regulatory requirements and the demands of major international shippers.

For **Brazilian exporters** (Scope 3), the impact is already present. European and North American buyers — especially in food, pulp and paper, and steel — already require transport carbon footprint data as part of supplier due diligence. The European **CSRD** (Corporate Sustainability Reporting Directive), in force since 2024 for large European companies and expanding to third-country suppliers, makes Scope 3 emissions reporting a contractual obligation — not just a preference.

The question DatamarLab answers: what is the real carbon footprint, per bill of lading, of every maritime operation passing through Brazil — calculated independently, with a verifiable methodology, and consolidated across carriers? That is the reference exporters need to report Scope 3, that ports need to demonstrate energy efficiency, and that Brazil's emerging regulatory framework will require.

STORY SO FAR

From concept to a real voyage

Over the past several months, we went from zero to a complete Proof of Concept applied to a real vessel on a real voyage. The M/V **EVER FAME** — an 11,888 TEU containership operated by Evergreen — sailed the Brazil/ECSA coastwise route through to Singapore in September–October 2025, carrying 6,210 TEU with 73% refrigerated cargo.

Using Datamar's operational data (bills of lading, vessel drafts, port call times), we built a Python-based bottom-up model that calculates CO₂ emissions by leg, by component (main engine, auxiliaries, reefers, boiler) and across nine fuel and speed scenarios.

The results revealed significant operational asymmetries – between short and long legs, between cargo types, and between fuel technologies – that fundamentally change where the biggest emission impacts lie for shipowners and exporters. Full details will be published shortly in the scientific paper and in the executive report for Pioneer Sponsors.

What we can already say: a voyage's carbon footprint is not determined by distance alone. Cargo type, route profile, and propulsion technology produce measurable, material differences – and they can be quantified with real operational data.

1 vessel complete voyage analyzed leg by leg	1,177 BLs bills of lading allocated with zero deviation	9 fuel and speed scenarios tested
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POC	EVER FAME – full voyage modeled, leg by leg. The results revealed operational asymmetries that fundamentally change the picture of where the largest emissions impacts actually sit. The details are reserved for the executive report.
ML MODEL	Phase 1 calibration complete. The model has reached the level of precision required for use in regulatory and carbon market contexts. Full methodology available in the scientific paper.

STRATEGIC PARTNERSHIP

USP RCGI: a strategic partnership for the future of maritime MRV

The USP RCGI – Research Center for Greenhouse Gas Innovation is one of the world's most recognized research centers in greenhouse gas innovation and decarbonization, based at the University of São Paulo. Funded by Shell and FAPESP, it brings together leading researchers in energy systems, process engineering and emissions monitoring.

Around two years ago, RCGI created the USP RCGI Carbon Registry – an initiative dedicated to the traceability and credibility of carbon credits in Brazil. It is with this specific arm of RCGI that we have established our first partnership: a collaboration to investigate potential avenues for jointly developing MRV (Measuring, Reporting and Verification) methodologies for maritime shipping.

What the RCGI Carbon Registry partnership represents is the next horizon: bringing the academic rigour and institutional credibility of one of the world's leading universities to the future development of methodologies the maritime industry will need to meet its regulatory obligations – EU MRV, ETS, FuelEU, and the Brazilian regulatory framework now being built.

WHO WE ARE

More than decarbonization

DatamarLab was born from a straightforward question: what can Datamar build with thirty years of real maritime trade data that goes beyond reports and queries? The answer points to something larger than any single issue.

Our mission is to develop a **Collaborative Decision-Making (CDM) framework** for maritime transport in South America – starting with Brazil. Bringing together shipowners, shippers, terminals and regulators around independent, scientifically grounded data, so that the industry's most consequential decisions are made with more information and less noise.

Decarbonization was chosen as the first frontier. Not because it's the only one, but because it's urgent, regulatory, and demands exactly the kind of independent reference that Datamar is uniquely positioned to provide.

MISSION – DATAMARLAB

To apply the most recent and best technologies to transform foreign trade cargo data into actionable intelligence.

CHIEF SCIENTIST

Prof. Walter Teixeira Lima Junior, Ph.D.

Researcher in Artificial Cognitive Systems and Social Robotics – Unifesp. Pioneer of the Internet in Brazil.

CIO

Marcos Silva, M.Sc.

Specialist in Optimisation and Decision-Making. Responsible for Datamar's technology architecture.

CEO

Andrew Lorimer

Extensive experience in maritime foreign trade and data intelligence across South America.

UPCOMING MILESTONES

What's coming next

COMING SOON

Scientific paper – publication

The full POC EVER FAME paper will be publicly available. Methodology, results and IMO benchmarks documented for open review.

COMING SOON

Executive report – Pioneer Sponsors only

In-depth strategic analysis covering fleet performance, regulatory scenarios and implications for EU MRV, ETS and FuelEU. Available exclusively to Pioneer Sponsors.

COMING SOON

Newsletter Issue #002

New findings and expansion of the model to multiple vessels.

GET INVOLVED

Pioneer Sponsors

The last remaining spots are still open. Sponsors who join now help shape the product, get early access to the September Executive Report, and are recognized as founding sponsors of DatamarLab.

The USP RCGI partnership, the next methodological steps, DatamarLab's positioning in the industry: all of it is built with Pioneer Sponsors, not delivered to them later.

The value is concrete and spans multiple dimensions: vessel and fleet performance, energy spending, port performance, and reliable carbon footprint data for exporters – covering Scope 1, 2 and 3. An independent reference, scientifically grounded and world-class institutional backing, to sit alongside EU MRV, ETS and FuelEU calculations.

What Pioneer Sponsors receive

Early access to the Executive Report (September 2026) · Participation in shaping the next topics and frontiers covered by DatamarLab · Direct influence on feature development · Recognition as a founding sponsor of DatamarLab.

GLOSSARY

Terms you'll find in this newsletter

For those new to maritime decarbonization, here are the key concepts that appear throughout this edition.

CDM

Collaborative Decision-Making. A model in which multiple actors across a supply chain – shipowners, shippers, terminals, regulators – share data and participate jointly in the sector's strategic decisions, rather than acting in isolation.

POC

Proof of Concept. A pilot project that tests whether a methodology or technology works in practice before being scaled. DatamarLab's POC was applied to a real voyage of the vessel EVER FAME.

BOTTOM-UP

A calculation approach that starts from the most granular data available – fuel consumption by component, leg by leg – to arrive at total emissions. The opposite would be a top-down estimate applying average factors to a total. Bottom-up is more precise and traceable.

MAPE

Mean Absolute Percentage Error. A metric that measures how close a model is to reality – the lower the MAPE, the more precise the model. Used by DatamarLab to measure the accuracy of its per-voyage emissions calculations.

TANK-TO-WAKE

An emissions measurement scope that covers the full fuel lifecycle: from extraction and production (well to tank) through to combustion and emission from the vessel's stack (tank to wake). It is the most comprehensive scope and the one required by European regulations.

EU MRV

Measuring, Reporting and Verification. European regulation requiring vessels above 5,000 GT calling at EU ports to measure, report and verify their CO₂ emissions annually. In force since 2018, it is Europe's official maritime emissions database.

ETS

Emissions Trading System. The EU's carbon pricing mechanism. Since 2024, vessels operating on European routes must purchase emission allowances (EUAs) to cover their CO₂. The financial cost of emissions is now real and direct.

FUELEU MARITIME

European regulation entering into force in 2025 that sets progressive limits on the carbon intensity of fuels used in maritime transport. It incentivizes the adoption of alternative fuels (methanol, ammonia, hydrogen) and penalizes non-compliance. It complements the ETS with a focus on fuel quality.