Building a Primary Product-level Emissions Data Platform

Hosted by:
Argonne National Laboratory, Bank of International Settlements Irving Fisher Committee on Central Bank Statistics, De Nederlandsche Bank, Organization for Economic Co-operation and Development, and the University of Oxford Blavatnik School of Government

Operating partner:
E-ledgers Institute

Location:
Amsterdam, Netherlands

Dates:
Monday 13 October and Tuesday 14 October, 2025

There is growing demand worldwide for accurate, comparable, and verifiable primary emissions data at the product-level. This two-day technical conference will convene an expert group from academia, business, central banks, international institutions, and civil society to sketch the architecture of a high-integrity system for dynamically tracking embedded emissions in traded products. The focus will be on the statistical, accounting, chemical, computational, and governance building blocks needed for a global repository of real-time, cradle-to-gate product emissions data. This is a by-invitation working conference where participants actively contribute to the outcome. Each working session will be framed by 2-3 expert summaries outlining the state of play and the key problems to solve, followed by hackathon-style brainstorming to generate practical solutions. Our objective at the end of the conference is a working plan for a worldwide platform that can credibly track product-level emissions data across borders and sectors.

Venue: Amstel Hotel, Professor Tulpplein 1, 1018 GX Amsterdam.

Dress code: Business casual.

AGENDA

Day 1 – Monday 13 October 2025

11:30 – 12:30 | Guided Tour at De Nederlandsche Bank (optional)

13:00 – 14:00 | Arrival, Registration, and Lunch

14:00 – 14:10 | Introductory Remarks: Framing the Vision

We need a system that provides accurate, comparable, and verifiable data on the cradle-to-gate emissions of products traded in the global economy. Such information is essential for sound decision-making in business and government, supporting fair trade and effective decarbonization policies.

This opening session will set the stage for developing a universal repository of product-level emissions data. Building on existing bilateral and multilateral discussions, it aims to bring key actors together to advance this work in a coordinated and timely way.

Speakers will outline why credible, comparable product-level data matters and introduce the vision for a global data hub. The session will also define the workshop's goals and invite participants to help shape a practical roadmap forward.

Discussion leads:

- Fabienne Fortanier, De Nederlandsche Bank
- Professor Karthik Ramanna, Blavatnik School of Government, University of Oxford

Guiding questions:

- Why this conference and why now?
- What lessons from financial accounting systems can guide emissions accounting?
- What does success look like over the next 12-18 months?

Optional pre-reading:

- SUERF Policy Brief, "Carbon accounting: policy solutions for an important information gap," No 1042, December 2024.

14:10 – 15:30 | Working Session 1: Accounting Principles for Product-level Embedded Emissions

This session will establish the foundational accounting principles required for high-integrity, dynamic, product-level emissions data. We will examine cradle-to-gate boundaries, allocation methods across complex supply chains, and thresholds for materiality and assurance. A key focus will be the role of the E-ledgers approach in accurately measuring and allocating emissions at the product-level through value chains. Participants will also explore applied challenges such as

emissions allocation in electricity markets, where data provenance and aggregation create unique complexities.

Discussion leads:

- Miranda Ballentine, former and founding CEO, Clean Energy Buyers Alliance (CEBA)
- Professor Robert S. Kaplan, Harvard Business School

Guiding questions:

- What defines "high-integrity" emissions data at the product level?
- What allocation principles are most appropriate when shared infrastructure (e.g., power grids, refineries) complicates attribution?
- How can E-ledgers be designed to maintain auditability while avoiding excessive data burdens?

Optional pre-reading:

- Robert S. Kaplan and Karthik Ramanna. 2021. "Accounting for Climate Change: The First Rigorous Approach to ESG Reporting." Harvard Business Review, Vol. 99, No. 6, November–December.
- Robert S. Kaplan and Karthik Ramanna, E-ledgers Carbon Accounting (August 2, 2025). Harvard Business School Accounting & Management Unit Working Paper No. 26-004, Harvard Business School Working Paper 26-004.
- Karthik Ramanna; Lauren Holloway; Lara Panjkov; Chloe Wenye Zhang; and Robert S. Kaplan. A Proto-Standard for Carbon Accounting and Auditing using the E-Liability Method (v. 2) (August 20, 2025).

15:30 – 15:45 | Break

15:45 – 17:15 | Working Session 2: Statistical Methods for Aggregate and Top-down Emissions Analysis

The aim of the overall conference is to work towards establishing a global data hub of real-time, cradle-to-gate product emissions data, to support policymakers and enterprises. The first step towards such a data hub is to ensure sufficient initial data are available, so that the hub will be used and can be built upon to provide enhanced estimates of emissions factors.

Luckily, the hub does not need to start from scratch: both statistical offices and research institutes have already invested in collecting and disseminating CO2 data in various formats–from air emission accounts to granular data, from enterprise-reported information to detailed product life-cycle assessments or even real-time dynamic data. The challenge is to combine these sources according to consistent classifications and data structures to ensure comparability and usability, and to allow for aggregations at various levels (from micro to macro).

This working session aims to enhance our shared understanding of what is already available in terms of emissions data, and how the data hub could make the best use of it. We will work to

identify what is minimally needed in terms of classifications and data models, data management and quality standards, but also on ways of keeping the data confidential where needed, acknowledging the preferences of the original owner of the data. We would combine insights from academic research on life cycle assessment, current corporate measurement approaches, while exploring how to leverage existing (international, statistical, institutional) networks (e.g. BIS, OECD, IMF, NGFS, ECB, or Eurostat).

Discussion leads:

- Michael Wang, Argonne National Laboratory
- Caroline Willeke, European Central Bank

Guiding questions:

- How do we ensure micro and macro data harmonization on product-, company-, industry-, and country-level going forward? What are the priorities here, and what are the secondary requirements for companies to start leveraging the data?
- Which existing and new (or newly amended) data collections (e.g., SEEA, WCO Harmonized System (HS) codes, CBAM, FPFA) and/or specific identification variables are needed to combine existing/new data sets and facilitate harmonization?
- How could statistical offices support and make available, where possible, more detailed CO_2 data at the product level?

Optional pre-reading:

- SEEA: System of Environmental Economic Accounting
- NGFS Bridging the Data Gaps report
- ECB statistical indicators: Climate change-related statistical indicators
- Eurostat Figaro IO model including GHG emissions: Information on data - ESA supply, use and input-output tables - Eurostat
- Ulf von Kalckreuth. Product carbon contents – an encompassing and market based information system, Latin American Journal of Central Banking, 2025, 100170, ISSN 2666-1438.
- IMF Multi Analytical Regional Input-Output (MARIO) project. Available on request.
- Argonne National Laboratory (Greenhouse gases, Regulated Emissions, and Energy use in Technologies) GREET Life Cycle Assessment (LCA) model: R&D GREET Life Cycle Assessment Model | Department of Energy
- Karthik Ramanna, Niels Angel, Michael Wang, and Maria T. Zuber. 2024. "Accelerating the Implementation of Accurate Product-Level Carbon Accounting." Available on request.
- IO and LCA model data comparison: How do carbon footprints from LCA and EEIOA databases compare? A comparison of ecoinvent and EXIOBASE
- WCO Harmonized System (HS) codes: World Customs Organization
- CBAM: Carbon Border Adjustment Mechanism - Taxation and Customs Union
- FPFA: Foreign Pollution Fee Act | Impacts & CBAM Comparisons | CarbonChain

17:30 | Boat Tour, Reception, and Hosted Dinner

- Opportunity for informal networking among stakeholders
- Dinner at the Amstel Hotel (from 19:00)

Day 2 – Tuesday 14 October 2025

08:30 – 09:00 | Morning Coffee and Networking

09:00 – 10:30 | Working Session 3: Calculating Primary Data in Practice

This session will focus on the measurement and calculation of primary emissions data–accurate, product-level, and batch and site-specific–and the technical and organizational challenges of doing so dynamically at scale. Representatives from the steel, agriculture, and oil and gas/direct air capture sectors will present current best practices and emerging methodologies for dynamic emissions measurement and on-site auditing. Participants will identify common barriers (e.g., technical, regulatory, cost-based) to achieving assured, interoperable primary data flows.

Discussion leads:

- Pratik Chatterjee, Tata Steel
- James Johnson, Capital SAFI
- Dr Vijay Swarup, ExxonMobil

Guiding questions:

- What does "state-of-the-art" primary data calculation look like today in your sector?
- What are the key challenges to generating batch-specific, auditable emissions data at source?
- How can verification frameworks evolve to support real-time or near-real-time assurance?
- What role can public institutions and open standards play in lowering the cost of participation for firms?

Optional pre-reading:

- Robert S. Kaplan, Karthik Ramanna, and Piyush Jha. 2023. "Update on E-liability Accounting." Accountability in a Sustainable World Quarterly, Vol. 4, September, pp. 96–116.
- Karthik Ramanna and Lauren Holloway. 2025. "How BMW Started Auditing Emissions Across Its Supply Chain." Harvard Business Review Online, February 26.

10:30 – 11:00 | Break

11:00 – 12:30 | Working Session 4: Computational Principles and Design of a Global Product-Level Primary Data Hub

This session will examine architectures for a global emissions data hub: its computational foundations, governance models, interoperability standards, and potential system designs. Participants will explore the implications of token architectures, metadata standards, and verification principles for scalability, privacy protection, cost efficiency, and emissions impact. The objective is to define the design parameters of a data infrastructure that is trustworthy, efficient, and globally adoptable.

Discussion leads:

- Abhishek Sankritik, Finternet Labs
- Salil Pradhan, Google X

Guiding questions:

- What computational models best support transparency, trust, and cost-effectiveness at scale?
- How can we encode metadata and assurance information in a way that allows automated interpretation and regulatory "look-in"?
- How can token architectures or other mechanisms support provenance tracking and permissioning?
- What principles can ensure interoperability across jurisdictions and data standards while maintaining privacy and data ownership?

Optional pre-reading:

- Finternet architecture and market-infrastructure vision: BIS Working Paper 1178: Finternet: the financial system for the future.
- World Bank WDR 2025 background paper, "Digital Public Infrastructure: Setting Standards with the Hourglass Model."
- DEPA (consent-based data sharing): Executive Summary (NITI Aayog).
- Account Aggregator ecosystem: key resources hub.
- Beckn protocol: open, interoperable transaction protocol.
- DeDi Global: decentralized directory / trust registries.

12:30 – 13:30 | Lunch

13:30 – 15:00 | Working Session 5: Governance Models for the Product-level Emissions Data Hub

Establishing an international data hub for product-level emissions raises important questions about organization, governance, legitimacy, and collaboration. For such a hub to gain global acceptance, it would need to demonstrate neutrality, transparency, and trust, supported by a broad coalition of international stakeholders.

This session will explore key issues and themes related to building such a hub, including governance and operational principles, early development pathways, and sustainable funding. Discussion will also consider how an international collaboration could leverage existing policy

frameworks (such as the EU's CBAM and the US FPFA) and data standards (e.g., the WCO Harmonized System) to promote consistency and interoperability across borders.

Participants are invited to reflect on how best to balance ambition and practicality–ensuring the hub's design supports global trust, shared ownership, and meaningful impact.

Discussion leads:

- Nadim Ahmad, OECD
- Omid Harraf, formerly Public Company Accounting Oversight Board

Guiding questions:

- Who owns, manages, oversees, governs, and advises the data platform?
- What structures and safeguards would ensure independence, credibility, and effective coordination across jurisdictions?
- What would a functional organizational diagram for the data hub look like?
- How can the role of standards-setting bodies, assurance bodies, national bodies, and INGOs be best represented?
- How could short- and long-term financing models support a neutral and durable platform?
- What practical steps could help move from concept to implementation?

Optional pre-reading:

- Karthik Ramanna, The Governance Playbook for Climate Standard-Setting (April 4, 2024).

15:00 – 15:30 | Closing Remarks and Next Steps

This concluding session will distill the major themes and takeaways from the workshop as a whole. The hosting institutions will offer reflections on the path forward, including any proposed working groups, coordination mechanisms, and a timeline for pilot implementation. Participants will be invited to commit to near-term collaboration, data contributions, or technical scoping efforts.

Discussion leads:

- Fabienne Fortanier, De Nederlandsche Bank
- Professor Karthik Ramanna, Blavatnik School of Government, University of Oxford

Guiding questions:

- What foundational principles and design parameters have we aligned on?
- What immediate actions are needed to move from concept to pilot implementation?
- How can institutions coordinate to ensure continuity and shared learning?
- What role should each stakeholder group (technical, financial, policy, academia) play in the next phase?

15:30 – 16:00 | Farewell Networking

16:00 – 17:00 | Guided Tour at De Nederlandsche Bank (optional)