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Sustainable Investing Research Initiative

SUMMARY

Columbia University Sustainable Finance Seminar

SFS12:

How can reporting frameworks best support the low-carbon transition?

April 1, 2026

OVERVIEW

This seminar explored the shift from aggregate corporate emissions reporting to more detailed, product-level carbon accounting frameworks. This transition aims to reshape how capital is allocated. The central argument was that current climate reporting practices, along with traditional financial valuation models, are not sufficient to drive large-scale capital reallocation. To address this gap, the presenters introduced concepts such as full lifecycle accounting and sustainable capital expenditure analysis. These approaches highlight that the choice of accounting boundaries can directly influence the economic viability of low-carbon products. As more standardized, product-level emissions data become available, the field is likely to move away from relying solely on broad corporate targets and toward more dynamic, system-level market mechanisms. While detailed product-level accounting has potential, its implementation will necessitate corresponding advancements in corporate liability, institutional standard-setting, and macroeconomic profitability metrics.

Product-Level Carbon Accounting

The first presentation examined the structural barriers that continue to slow the transition toward a low-carbon global economy. Its central premise is that systemic decarbonization remains constrained because high-carbon commodities are still, in many cases, more profitable than low-carbon alternatives. While existing corporate climate standards have helped accelerate emissions target-setting across institutions, empirical evidence shows a persistent gap between corporate commitments and actual capital reallocation in the real economy. Only a small share of firms currently aligns capital expenditures with publicly stated emissions reduction pathways.

To address this gap, the presentation called for a paradigm shift from aggregate corporate carbon reporting toward more granular, product-level accounting. The speaker viewed this transition as essential for designing financial mechanisms capable of reshaping market demand with greater precision. Under such a framework, regulators could classify products into carbon-intensity categories and apply differentiated policy instruments such as targeted taxes, subsidies, and conditional procurement rules. Over time, these mechanisms would reshape price signals and improve the relative competitiveness of low-carbon goods.

A key enabler of this shift is the harmonization of global accounting standards. The speaker noted ongoing efforts to align greenhouse gas product frameworks with international standard-setting systems in order to establish a more unified and comparable methodology. Within this context, a major methodological debate centers on system boundary design, specifically whether accounting should remain focused on upstream emissions or extend to full lifecycle impacts.

The presentation cautioned about frameworks that exclude downstream emissions, particularly in high-impact sectors such as fossil fuels. In these cases, approximately 82% of total emissions occur during end use, meaning that upstream-only accounting significantly underestimates the true carbon footprint. Excluding this stage distorts both pricing signals and policy design. A robust product standard, therefore, would need to incorporate the full lifecycle in order to accurately reflect the real environmental cost of production and consumption.

Sustainable Capital Expenditure

The second presenter introduced a complementary analytical framework centered on capital expenditure as a leading indicator of corporate transition progress. The speaker critiqued current emissions reporting systems, arguing that aggregate data are often distorted by inconsistent definitions and methodological noise. Standard normalization techniques may inadvertently disadvantage firms that report more transparently, while simultaneously obscuring meaningful differences in actual transition performance. To address this limitation, the speaker proposed shifting attention toward sustainable revenues and categorizing green capital expenditures.

The speaker highlighted that current market data suggests that investment in sustainable capital is growing at roughly twice the rate of conventional capital spending. However, despite this acceleration, total transition-related investment remains approximately 50% below the level required to meet global decarbonization targets. This persistent gap appears to reflect structural constraints within capital markets rather than a lack of directional momentum.

The speaker pointed out that markets often fail to fully price the long-term value creation potential of sustainable infrastructure. Projects such as renewable energy systems require substantial upfront capital investment, which can depress short-term returns and reduce near-term shareholder distributions. As a result, firms undertaking transitions may be penalized through lower valuations, even when their long-term fundamentals improve.

The presentation also examined narrower carbon accounting approaches sometimes supported by incumbent fossil fuel interests. The speaker argued that limiting accounting to upstream emissions can function as a mechanism to reduce exposure to downstream liabilities. In contrast, incorporating full lifecycle emissions provides a more accurate representation of transition risk and responsibility allocation.

To address financing constraints in the transition, the speaker emphasized the need for clearer and more standardized classification of green capital expenditures. Greater transparency in this area could enable investors to better distinguish credible transition strategies from superficial commitments, ultimately reducing mispricing and improving capital allocation efficiency across markets.

Harmonization and Policy Application of Product Standards

A key issue raised was the practical challenges of applying product-level emissions standards across global markets. While existing greenhouse gas protocols provide an important foundation, translating them into policy requires simpler and more adaptable implementation tools. Some policymakers may prefer technology-specific mandates rather than relying solely on detailed intensity-based metrics. At the same time, regulators face a trade-off between broad comparability across product categories and the precision required for lifecycle analysis. The participants noted that future categorization systems must balance methodological rigor with usability. Only then can these standards function effectively within international trade and cross-border financial regulatory frameworks.

Corporate Accountability and Downstream Liability

The discussion then focused on the legal implications of excluding downstream emissions from carbon accounting frameworks, with some participants noting that narrower upstream-only boundaries can reduce firms' exposure to litigation related to end-use emissions. Supporters of this approach often justify it on the grounds of avoiding double counting, yet several participants viewed it as an incomplete representation of responsibility that risks shifting environmental costs away from primary producers. Including downstream emissions was seen as necessary to capture systemic risk and accurately reflect a product's full ecological impact. Excluding these metrics leaves significant liabilities unaccounted for within both capital markets and regulatory frameworks.

Methodological Integrity in Financial Valuation

Participants also examined how conventional financial valuation frameworks fail to incorporate environmental externalities, a gap that can distort profitability signals and inadvertently favor high-emission industries. As a result, low-carbon investments may appear less attractive than they are in reality, despite having more favorable long-term cost structures. In this context, product-level carbon data was seen as an important mechanism for correcting market signals and enhancing capital allocation efficiency. At the same time, corporate-level emissions reporting was still regarded as necessary for assessing aggregate institutional risk, with participants emphasizing that both levels of analysis are required to provide a complete picture for investors and regulators.

Institutional Constraints and Market Headwinds

The group discussed macroeconomic and political factors shaping sustainable investment, highlighting how rising interest rates disproportionately affect renewable energy projects due to their high upfront capital requirements. Policy uncertainty and frequently shifting incentives further compound this challenge by increasing investor hesitation and making long-term infrastructure commitments more difficult to justify. The discussion concluded that stable and legally durable policy frameworks are essential, as without predictable regulatory environments, capital flows are unlikely to scale at the pace required to meet global decarbonization targets.

The Normative Dimensions of Economic Valuation

The discussion examined the underlying motivations that shape corporate transition strategies. Some participants argued that relying on corporate “moral conscience” is insufficient, and that decarbonization should instead be driven by strict economic incentives that make low-carbon products more profitable by design. In contrast, others emphasized that economic valuation itself is never purely neutral. Choices about what to measure, how to define assets, and how to account for externalities are inherently social and political decisions. From this perspective, market failures cannot be addressed without recognizing the normative assumptions embedded in current accounting systems. Participants highlighted that existing valuation frameworks already reflect particular historical and institutional biases. Therefore, redirecting capital flows toward low-carbon outcomes requires not only technical adjustments, but also a broader reassessment of the assumptions underlying conventional economic metrics.

Methodological Approaches to Emissions Double Counting

Participants also discussed concerns about double counting emissions in complex supply chains, a critique often used by incumbent fossil fuel producers to support narrower reporting boundaries. While they acknowledged that avoiding double counting is essential for national greenhouse gas inventories, they noted that this concern plays a different role in product-level accounting systems. For demand-side policy design, the priority is not aggregation at the national level, but accurate representation of a product's full lifecycle emissions. In this context, assigning clear responsibility across each stage of production is more important than eliminating overlaps in reporting. Participants mentioned that well-defined system boundaries can separate shared supply chain responsibility from product-level carbon intensity without reducing transparency.

Execution of Cross-Border Fiscal Mechanisms

National governments and international trade blocs need to move beyond theoretical carbon metrics toward the active deployment of differentiated tariff systems, such as Carbon Border Adjustment Mechanisms (CBAM). At the same time, regulatory authorities could implement targeted public procurement policies grounded in harmonized carbon accounting standards.

Reclassification of Transition Capital Expenditures

Financial regulators may want to consider establishing binding taxonomies, supported by independent third-party verification, to clearly distinguish transition-related capital expenditures from routine maintenance spending. Once standardized, these metrics can be integrated into investor valuation models, enabling more accurate assessment of transition performance and thereby improving capital allocation toward sectors undergoing significant infrastructure transformation.

Revision of Financial Reporting Frameworks

Financial reporting frameworks need to be revised to better reflect environmental externalities. This may involve introducing mechanisms such as mandatory shadow carbon pricing and recognizing ecological liabilities within balance sheets. Furthermore, compliance can be enforced by mandating the integration of these adjusted financial statements into all annual audited shareholder disclosures.

Amplification of Low-Carbon Corporate Advocacy

Companies with significant exposure to sustainable products may want to strengthen their policy engagement efforts. At present, incumbent fossil fuel industries tend to exert greater influence over regulatory design. To address this imbalance, coalitions of low-carbon producers can engage more actively with policymakers and advocate for stable, long-term regulatory incentives. Strengthening this collective voice is essential for securing the policy stability required to support sustained decarbonization.

Implementation of Consumer-Facing Disclosure Mandates

Regulators may want to consider requiring clear carbon intensity disclosures at the point of sale. Ideally, such disclosures include both upstream production emissions and downstream usage impacts. By reducing information asymmetry, this approach would help consumers make more informed decisions and strengthen demand-side pressure for low-carbon products.
