COUNCIL OF ENGINEERS
FOR THE ENERGY TRANSITION

An independent advisory council to the
United Nations Secretary-General

Contribution to the COP30 Presidency Roadmap on the Transition Away from Fossil Fuels in a Just, Orderly and Equitable Manner

In response to paragraph 28.d of the UAE Consensus (GST1) and the COP30 Presidency Roadmap, Part I

1. Institutional relevance

The Council of Engineers for the Energy Transition (CEET), the UN Secretary-General's advisory body on net-zero pathways, submits this contribution in response to paragraph 28.d of the UAE Consensus, which calls on Parties to transition away from fossil fuels in a just, orderly, and equitable manner, and to accelerate action in this critical decade. This contribution addresses Part I of the COP30 Presidency Roadmap and argues that carbon accounting harmonization is a necessary enabling condition for that transition, not a background technical matter.

Carbon accounting now determines how emissions are measured, how reductions are recognised, how certified goods are compared, and how governments and companies manage disclosure, certification, pricing, and trade obligations. From an engineering standpoint, the core problem is that the same physical quantities — fuel volumes, process emissions, feedstock properties, methane fluxes — are measured under different boundary conditions and converted to CO_2-equivalent using different parameters, producing outputs that are structurally incomparable even when they appear to use the same units. As these systems interact across sectors and jurisdictions, inconsistencies once confined to technical guidance increasingly shape investment signals, market access, and regulatory trust. Without a shared baseline of integrity, the transition away from fossil fuels generates a governance gap: different systems will reward different things, credit the same reductions more than once, and allow low-integrity claims to circulate alongside high-integrity ones. The Roadmap is an opportunity to close that gap before it widens further.

Common rules should make emissions data more comparable and transferable across systems while still accommodating sectoral and territorial differences in application. Disclosure frameworks are spreading rapidly, as the IFRS Foundation's jurisdictional adoption profiles for the ISSB standards confirm. That spread creates pressure for operational interoperability across product accounting, certification, and compliance systems, which disclosure requirements alone do not deliver.

2. Where current systems fail

The central problem is fragmentation. Voluntary initiatives, mandatory disclosure regimes, product carbon methodologies, certification systems, and carbon pricing tools rest on different assumptions about system boundaries, baselines, emissions factors, methane treatment, allocation, and the distinction between gross reductions, removals, and offsets. These differences are not minor. They determine which reductions are recognised, which fuels qualify for credits or certificates, and which claims withstand regulatory scrutiny.

Methane treatment is one of the most consequential of these differences. Methane emissions from fossil fuel operations, waste, and agricultural systems are accounted for under divergent global warming potential values, monitoring protocols, and boundary assumptions across national inventories, product lifecycle assessments, and corporate reporting frameworks. Because methane accounts for a substantial share of near-term warming, inconsistent treatment directly undermines the credibility of claimed reductions and the integrity of transition pathways that depend on methane abatement.

A 2025 study published in Nature Communications quantified this gap directly. Analysing 2,864 companies, it found that inconsistent GWP value selection across reporting frameworks resulted in a cumulative gap of 170 MtCO2e in reported methane emissions, rising to 3,300 MtCO2e when the GWP20-GWP100 divergence is included. The choice of metric is not a technical preference. It determines whether methane-reduction commitments are structurally equivalent across systems or merely appear so, and it affects the climate

significance of any carbon-accounting claim that includes fossil-fuel operations, waste, or agricultural methane.

Fragmentation is also acute in biofuels, biomethane, waste-based pathways, and sustainable aviation fuel, where co-products, residues, and by-products can substantially alter carbon-intensity results depending on how they are classified. When equivalent material flows are treated differently across methodologies, comparability collapses and incentives distort.

A second failure is the gap between regulatory ambition and accounting infrastructure. Jurisdictions are advancing faster in disclosure and carbon-related regulation than in establishing the data systems needed for cross-system comparison. Product-level emissions data now carries direct trade implications. The EU Carbon Border Adjustment Mechanism (CBAM) entered its full phase in 2026 following a transitional period from 2023 to 2025; the UK is preparing its own CBAM for 1 January 2027. According to the World Bank's State and Trends of Carbon Pricing 2025, carbon pricing instruments now cover approximately 28 per cent of global greenhouse gas emissions, representing economies responsible for nearly two-thirds of global economic output. Once emissions data affects trade exposure, certification status, or pricing obligations, inconsistent accounting is no longer a governance inconvenience. It becomes a structural disadvantage, one that falls disproportionately on developing country producers and exporters, whose accounting infrastructure is less developed and access to verification services is more constrained.

3. What the Roadmap must establish

The Roadmap's primary task is to establish a common minimum integrity framework across disclosure, certification, product carbon accounting, and pricing systems. That framework must specify what remains consistent even when implementation varies: system boundaries, baselines, methane treatment, allocation rules, co-product and residue handling, and the analytical separation of gross reductions, removals, and offsets. Without this shared core, the same emissions data will be collected multiple times for different purposes, with limited comparability and persistent scope for strategic interpretation.

Digital measurement, reporting, and verification (MRV) and registry systems belong in the Roadmap, but as complements to methodological rigour, not substitutes for it. Australia's Guarantee of Origin scheme and the EU Union Database demonstrate how digital infrastructure can support traceability and emissions-related claims. What they also demonstrate is the limit of that function: digital systems and certification schemes supply reliable information only when the foundational accounting rules are coherent. Where methodology is weak or contested, registries circulate claims whose integrity cannot be verified.

The governance of these systems requires the same attention as their technical design. Digital registries, traceability platforms, and MRV infrastructure that operate under opaque or heavily centralised governance structures reproduce the power asymmetries they are meant to correct. A decentralised architecture, including regional and context-specific arrangements that reflect diverse institutional realities, is more likely to sustain broad participation and legitimate oversight across jurisdictions. The same principle applies to the bodies responsible for periodic methodology revision and for verification and compliance oversight. These processes must be inclusive and representative, with meaningful participation from developing countries, subnational actors, and diverse production systems, rather than shaped primarily by the regulatory priorities and technical preferences of actors in advanced economies.

The Roadmap must also be explicit about what the interaction of voluntary and compliance-linked systems requires. These systems are already interacting in ways that make inconsistent accounting consequential rather than merely inconvenient. When reductions, removals, offsets, certificates, and product claims are not analytically separated, weaknesses in one area contaminate others. Verification, traceability, safeguards against double-counting, and clarity on how credits and certificates relate to compliance obligations are institutional protections that the Roadmap should treat as non-negotiable rather than enhancements to be addressed later.

Certificate generation, even when associated with real emissions reductions within a defined system boundary and verified through robust accounting, does not, by itself, guarantee an economy-wide emissions

decline. A carbon market that expands the supply of certificates without a corresponding cap on absolute emissions remains compatible with continued growth in overall greenhouse gas emissions. For the transition away from fossil fuels to deliver the temperature outcomes called for by the Paris Agreement, traceability, certification, and market instruments must be connected to mechanisms that enforce absolute emissions constraints over time. The Roadmap should explicitly acknowledge that carbon accounting harmonization strengthens the integrity of market instruments, but those instruments require an absolute limit to deliver the climate objective for which they are designed. Credible accounting that is not anchored to an absolute constraint legitimises market activity without guaranteeing decarbonisation.

4. What implementation experience shows

Carbon accounting has its greatest policy impact when embedded in the operational framework of regulatory instruments rather than treated as a background methodology. Brazil's RenovaBio programme demonstrates this directly. Through RenovaCalc, certified biofuel producers assess lifecycle carbon intensity within a system that links certification, tradable decarbonisation credits (CBIOs), and mandatory blending obligations. One CBIO represents one tonne of avoided carbon dioxide equivalent. The institutional significance is that accounting harmonization here shapes incentives, governs recognised reductions, and determines the value of compliance, rather than serving as a reference tool alongside policy.

Brazil also illustrates a durability challenge that the Roadmap must address. Standardised calculators remain credible only if they are regularly updated as feedstocks change, production methods evolve, and previously settled classification choices become contested. The treatment of products, co-products, sub-products, and residues is not a peripheral matter. It shapes system boundaries, allocation choices, and the carbon intensity ultimately attributed to fuels, with especially significant consequences in multi-output systems where classification decisions can materially alter recognised emissions results.

That lesson is confirmed by experience elsewhere. The California Air Resources Board Low Carbon Fuel Standard, Canada's Clean Fuel Regulations, and the EU Renewable Energy Directive all show that carbon accounting most strongly shapes outcomes when it directly determines credit generation, traceability, eligibility, or compliance value. These systems differ substantially in legal design and administrative structure, but they share one feature: lifecycle accounting must be standardised enough to allow comparison while remaining adaptable enough to reflect actual production conditions and emerging evidence.

The ICAO Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) makes the cross-border dimension explicit. Because emissions claims under CORSIA must be recognised across different jurisdictions, certification schemes, and market participants, the framework depends on approved lifecycle accounting rules and recognised sustainability certification systems for eligible fuels. Once carbon attributes move across markets and regulatory systems, weak or inconsistent accounting affects not just reporting quality but recognition, market access, and the credibility of claimed reductions. This is precisely the situation the Roadmap must prevent from becoming the norm across transition-relevant sectors.

The G20 Carbon Accounting Technical Workshop held in Brazil in 2024 reinforced this position at the international level, emphasising that carbon accounting should rest on transparent, evidence-based, and verifiable lifecycle assessments with consistent system boundaries and the best available data. It also identified the risks associated with subjective classification labels, opaque counterfactual crediting, and indirect land-use change factors that are difficult to verify directly.

The Belém Package adopted at COP30 in November 2025 makes one further connection that the Roadmap must address directly. COP30 operationalised the Paris Agreement Crediting Mechanism (PACM) under Article 6.4, formally closed the Clean Development Mechanism, and advanced guidance on Article 6.2 cooperative approaches, including review processes for internationally transferred mitigation outcomes (ITMOs). These mechanisms connect carbon accounting integrity to the international transfer of mitigation claims between countries. When ITMOs move under Article 6.2 or credits are issued under the PACM, the accounting rules that govern those transfers determine whether corresponding adjustments are made to

national inventories and whether double counting is prevented. Without a minimum integrity framework of the kind this contribution recommends, the Article 6 architecture, now operationally active, will, at the international level, encounter the same fragmentation that currently afflicts domestic accounting systems. The Roadmap should treat carbon accounting harmonization as a direct enabler of Article 6 integrity, not as a parallel technical track.

These experiences do not support a single universal template. Carbon accounting harmonization works best when it provides a credible integrity baseline for classification, boundaries, allocation, traceability, and avoided emissions, while remaining administratively manageable across different production structures and territorial contexts. This is where the COP30 Roadmap should position the issue: *not methodological rigidity, but transparent and internationally legible core rules that enable comparability while maintaining policy usability*.

5. Why differentiated implementation matters

A just, orderly, and equitable transition cannot proceed from the assumption of equivalent starting conditions. Dependence on fossil fuels, institutional capacity, data maturity, industrial structure, feedstock availability, and trade exposure vary substantially across countries and territories. A single implementation pathway is not realistic, and a Roadmap that imposes one would undermine both political durability and practical execution.

The design challenge is to distinguish what must be standardised from what can remain adaptable. Core rules for boundaries, baselines, allocation, traceability, and verification must be sufficiently consistent to enable fair comparison. Their implementation will necessarily differ. A multi-product biorefinery, a municipal waste-to-energy facility, and a biomethane project in an agricultural context all operate under the same integrity principles, but they produce data through different processes, face different verification costs, and require different classification approaches. Recognising this is not a concession to lower standards; it is a condition for those standards being applied at all.

The same applies to economies highly dependent on fossil fuels. Countries that depend heavily on coal, oil, or gas for fiscal revenue, industrial output, or employment face transition challenges that go beyond emissions accounting. For them, carbon accounting harmonization interacts with questions of transition finance, industrial restructuring, and social protection. The Roadmap should acknowledge that differentiated implementation pathways are necessary for these contexts and that the accounting framework should be designed so that countries at different stages of transition can participate meaningfully, rather than being excluded by compliance costs they cannot absorb.

For low-emissions fuels, including biomethane, waste-derived pathways, and sustainable aviation fuel, precision in accounting is especially consequential. Overly rigid or poorly defined methods can produce distorted results in multiproduct systems, with substantial economic effects. The risk intensifies when methodologies rely on vague labels, opaque modelling, or average values that do not reflect local conditions. Credible harmonization must be transparent, evidence-based, verifiable, and grounded in data that genuinely represents the system being assessed. Performance-based, technology-neutral, and feedstock-agnostic approaches should be favoured where they are feasible and technically sound.

For developing countries and subnational actors, differentiated implementation is not a political accommodation. It is a condition for the Roadmap to deliver equitable outcomes. Minimum integrity standards should therefore be combined with phased implementation, proportionate data requirements, technical assistance, digital support, and accessible verification pathways. The same core emissions data should eventually underpin disclosure, certification, trade, and pricing systems. The path to that convergence will differ across regions, and the Roadmap should design for those differences from the outset rather than treating them as complications to be managed later.

Carbon traceability and trade-related accounting systems should not be framed solely as compliance tools. Where designed with development objectives in view, they unlock access to investment, technology, and capacity-building. A producer in a developing country that can demonstrate verifiable, traceable emissions

performance across international markets gains not only certification but also the financing conditions, technology partnerships, and premium markets that performance-based accountability opens. Carbon governance that disciplines markets without creating these development pathways falls short of what an equitable transition requires. The Roadmap should therefore require that accounting and traceability frameworks be designed to generate development-relevant opportunities for the countries and producers that need them most, not only to enforce integrity.

6. Recommendations to the Presidency

CEET respectfully urges the COP30 Presidency to treat carbon accounting harmonization as a practical enabling condition for the transition called for in paragraph 28.d, and to reflect that position in the design of the Roadmap. The following recommendations address the specific design choices that will determine whether the Roadmap strengthens integrity and comparability across disclosure, certification, pricing, and trade-related systems, or leaves fragmentation intact.

- Anchor the Roadmap explicitly to paragraph 28.d of the UAE Consensus and make carbon accounting harmonization a named enabling condition for the transition, not a technical annex. This framing change is necessary to signal that accounting integrity is a structural requirement, not an optional enhancement.
- Establish a minimum integrity framework with binding core parameters: system boundaries, baselines, methane treatment (specifying global warming potential values and monitoring protocols), allocation rules, co-product and residue classification, and the analytical separation of gross reductions, removals, and offsets. These parameters must apply consistently across disclosure, certification, carbon pricing, and trade-related instruments.
- Require that digital MRV, registry, and traceability systems be designed to implement agreed-upon methodological standards, with an explicit statement in the Roadmap that digital infrastructure and certification schemes are complements to, not substitutes for, accounting integrity. Registries that circulate claims based on inconsistent methodology do not resolve the integrity problem.
- Design the governance of digital MRV systems, registries, and traceability platforms to be inclusive, representative, and decentralised. Regional and context-specific governance arrangements should be explicitly provided for in the Roadmap, and the processes for periodic methodology revision and compliance oversight must allow meaningful participation from developing countries, subnational actors, and diverse production systems. Governance architecture that concentrates agenda-setting power in a small number of advanced economies will undermine both the legitimacy and the durability of the framework.
- Strengthen coordination across disclosure frameworks, transition plans, certification instruments, and border carbon adjustment measures to enable consistent use of the same core emissions data across systems. The EU CBAM, the forthcoming UK CBAM, and national carbon pricing schemes are already creating pressure for this consistency; the Roadmap should channel that pressure toward shared standards rather than parallel fragmentation.
- Mandate regular methodological review cycles for any harmonized accounting tools referenced in the Roadmap, with transparent governance for updating classification choices as feedstocks change, production methods evolve, and new evidence becomes available. Standardisation without updating creates credibility decay.
- Establish differentiated implementation as a core design principle, not an afterthought. This means specifying phased pathways, proportionate data requirements, technical assistance arrangements, and affordable verification mechanisms for developing countries and subnational actors in the Roadmap text itself, with reference to their particular exposure to fossil fuel transition costs and trade-related accounting pressures.

- Require that carbon traceability and trade-related accounting frameworks be designed to generate development opportunities, not only compliance obligations. The Roadmap should specify that these systems must be capable of unlocking investment, access to technology, and capacity-building for producers in developing countries, so that carbon governance advances climate and development objectives simultaneously rather than treating them as parallel tracks that intersect only by coincidence.
- Frame the harmonization objective as disciplined comparability: common integrity rules that coexist with contextually appropriate application across different sectors, production structures, and territorial realities. This framing prevents harmonization from being rejected as an instrument of regulatory uniformity while maintaining the integrity baseline that transition credibility requires.
- Connect carbon accounting harmonization, certificate generation, and market mechanisms to absolute emissions constraints. The Roadmap should state explicitly that robust traceability and certification are necessary but not sufficient conditions for the climate objective: certificate expansion without an economy-wide or sectoral emissions cap is compatible with continued absolute emissions growth. Any framework that relies on carbon market instruments must therefore specify or reference the cap mechanisms that give those instruments their climate relevance. Accounting integrity without an absolute limit is a discipline applied to an open system.
- Explicitly connect the Roadmap to the Article 6 architecture operationalised at COP30. The Paris Agreement Crediting Mechanism and the Article 6.2 framework for internationally transferred mitigation outcomes both rely on accounting rules that prevent double-counting and ensure corresponding adjustments to national inventories. Carbon accounting harmonization at the domestic level and integrity standards at the international carbon market level are not separate agendas. The Roadmap should treat them as a single technical architecture, with the minimum integrity framework providing the floor for both.

7. Institutional signature

This contribution is submitted by the CEET in support of the COP30 Presidency Roadmap for a just, orderly, and equitable transition away from fossil fuels. The CEET is available to provide further technical input on carbon accounting harmonization, the design of implementation pathways, and the policy architecture for credible and comparable transition frameworks.

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Respectfully submitted,

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