

A Hidden Gap in Corporate Climate Reporting

Why is separate GHG disclosure a critical and underutilised lever

Key finding: Of 30 companies reviewed, only one separately disclosed all Scope 1 greenhouse gas emissions by gas type, while none disclosed all seven gases (CO₂, CH₄, N₂O, HFCs, PFCs, SF₆ and NF₃) as required under the GHG Protocol Corporate Standard. This is not a minor technical omission: it could obscure near-term opportunities for measurable, rapid climate impact. This paper sets out the scientific and regulatory case for gas-level reporting and offers practical steps companies can take today.

This paper opens with a closer look at **methane (CH₄)**, the largest near-term driver of climate warming after CO₂, before addressing the full picture of gas-level disclosure. According to the IPCC Sixth Assessment Report, methane has a Global Warming Potential (GWP) of approximately 80 over 20 years (GWP20), meaning **a tonne of methane warms the atmosphere more than 80 times as fast as a tonne of CO₂ in the near term**. Fossil fuels, livestock, and waste are the principal sources.

Because methane is short-lived in the atmosphere (roughly 12 years), reducing emissions now delivers a rapid, measurable cooling effect within the current decade, unlike CO₂ reductions, from which the climate benefits occur over centuries. The IPCC AR6 Mitigation (Working Group III) is explicit: **cutting methane is one of the most effective near-term strategies to limit peak warming and preserve pathways to 1.5°C**.

The Beyond Alliance's Superpollutant Action Initiative (2026) reinforces this urgency: **methane alone accounts for roughly a third of today's near-term warming**. Aggressive action on superpollutants (including methane, HFCs, N₂O, and black carbon) could **prevent more than half a degree Celsius of additional warming by 2050**.

Policymakers' attention is moving in step with science. The EU's first-ever [regulation](#) specifically targeting methane emissions entered into force in August 2024, introducing mandatory measurement, reporting, and verification requirements for fossil energy companies operating in the EU and across their supply chains. This is a signal that methane is no longer a secondary consideration in climate policy, but a regulatory frontier for corporate reporting.

Two objections arise frequently when gas-level reporting is raised with companies: that non-CO₂ emissions are too small to be material, and that emissions factors do not exist to quantify them. Both can be addressed directly. On volume: small is precisely the point. These gases are often addressable with targeted interventions that deliver rapid, verifiable climate benefits, something a large CO₂ footprint rarely offers. On emissions factors: the data exists. For the most common Scope 1 activities like stationary combustion, mobile combustion, flaring, cooling, refrigeration, and agriculture, gas-specific emissions factors are freely accessible from well-established sources such as the [IPCC](#) and [UK Government](#).

What the Standards Require

The GHG Protocol Corporate Standard requires companies to report all seven greenhouse gases separately by gas in both metric tonnes and CO₂e across the mandatory corporate inventory (Chapter 9, p. 63), with NF₃ added as the seventh gas through a 2013 amendment. This requirement is comprehensive for Scope 1, where all seven gases are relevant. The Scope 2 Guidance focuses on CO₂, CH₄, and N₂O, the gases relevant to electricity production, and requires separate gas level

reporting where emission factor data are available. ISO 14064-1 reinforces separate gas level disclosure for direct (Scope 1) emissions.

Gas	Lifetime (year)	GWP20	GWP100	Notes	Reported separately?
CO ₂ (Carbon Dioxide)	multiple	1	1	dominant stock	reported as CO ₂ e
CH ₄ (Methane)	11.8	~81.2	~27.9	near-term lever	1 of 30
N ₂ O (Nitrous Oxide)	109	~273	~273	agri & industry	none
HFCs (Hydrofluorocarbon)	0.2 - 228	up to 12,400	up to 14,600	refrigerants; fast-growing	1 of 30
PFCs (Perfluorocarbons)	0 - 50,000	up to 8,940	up to 12,400	industrial; extremely persistent	none
SF ₆ (Sulphur Hexafluoride)	1,000	~18,200	~24,300	electrical equipment; highest GWP	none
NF ₃ (Nitrogen trifluoride)	569	13,400	17,400	semiconductor & solar manufacturing; fast-growing	none

Table 1. The seven GHGs: lifetime, GWP & reporting by our sample of 30 companies. Source of data on lifetimes, GWP20 and GWP 100: Table 7.SM.7, The Earth's Energy Budget, Climate Feedbacks and Climate Sensitivity Supplementary Material (IPCC, 2021).

While [CSRD](#) requires most GHG reporting in CO₂e, ESRS E1 explicitly names all seven gases and specifies that undertakings shall disaggregate emissions by gas category “as appropriate” (ESRS E1, AR 41).

The case for reporting non-CO₂ gases: science and standards aligned

Separate reporting of all seven gases is not just a requirement, it is critical for targeted climate action:

- **Transparency enables prioritisation.**

Aggregate CO₂e can hide gases which are significant in a company's footprint. SF₆ (GWP100 ~24,300) from a single electrical installation, or HFCs (GWP100 up to 14,600) from refrigeration systems, may represent a disproportionate and addressable share of emissions, invisible when bundled into a CO₂e total.

- **Short-lived pollutants need a different management lens.** GWP100, the prevailing standard, systematically underestimates the near-term impact of methane, HFCs, and N₂O. Separate gas reporting, alongside GWP20 metrics, enables companies to communicate and manage short-term warming risk more accurately, as recommended by the IPCC AR6 and recognised by the Beyond Alliance Superpollutant Tracker.

Practical actions companies can take now

CH₄ (Methane): Conduct value-chain CH₄ mapping (especially Scope 3 categories 1, 3, and 4); engage suppliers in high-emission sectors (agriculture, oil & gas, waste); support methane destruction projects via high-integrity credits (e.g., landfill gas, coal mine methane).

HFCs (Refrigerants): Audit refrigeration and cooling assets; transition to low-GWP alternatives (natural refrigerants, HFOs); report separately and set phase-down timelines aligned with the [Kigali Amendment](#).

SF₆: Identify electrical switchgear containing SF₆; implement leak detection and explore SF₆-free alternatives now commercially available.

N₂O: Engage Scope 3 agricultural supply chains; support soil management and fertiliser efficiency programs. N₂O from agriculture is among the hardest to abate but well-understood at the practice level.

Recommendations

- **Report all GHGs separately**, in tonnes (not only CO₂e), as required by the GHG Protocol and expected under CSRD/IFRS S2.
- If emissions of non-CO₂ gases, converted into CO₂e, are negligible (eg under 1% of total scope 1 emissions), include this information in annual public GHG reports.
- Also report Scope 1 emissions according to the four main categories: stationary combustion, mobile combustion, fugitive emissions and process emissions. This will indicate to stakeholders the likely significance of non-CO₂ gases.
- **Set gas-specific targets**, particularly for methane, HFCs, and SF₆, where abatement pathways are well-established and available today. Start where Scope 1 emissions are material.
- **Engage with the Beyond Alliance Superpollutant Tracker** and similar tools to benchmark superpollutant exposure and identify high-impact mitigation opportunities across value chains.
- **Treat separate GHG reporting as a near-term competitive signal**, not a compliance burden. Companies that lead on gas-level transparency will be better positioned as mandatory requirements tighten.

References

1. Masson-Delmotte, V. et al. Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the IPCC. Cambridge University Press (2021). <https://doi.org/10.1017/9781009157896>
2. Shukla, P. R. et al. Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the IPCC. Cambridge University Press (2022). <https://doi.org/10.1017/9781009157926>
3. European Commission. Methane Emissions. Directorate-General for Energy, European Commission (2024). https://energy.ec.europa.eu/topics/carbon-management-and-fossil-fuels/methane-emissions_en
4. United Nations. Integrity Matters: Net Zero Commitments by Businesses, Financial Institutions, Cities and Regions. Report of the High-Level Expert Group on the Net Zero Emissions Commitments of Non-State Entities. United Nations (2022). <https://www.un.org/en/climatechange/high-level-expert-group>
5. World Resources Institute & World Business Council for Sustainable Development. The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition). WRI/WBCSD (2004). <https://ghgprotocol.org/corporate-standard>
6. World Resources Institute & World Business Council for Sustainable Development. Accounting and Reporting Standard Amendment: Required Greenhouse Gases in Inventories. WRI/WBCSD (2013). https://ghgprotocol.org/sites/default/files/2022-12/Required%20gases%20and%20GWP%20values_0.pdf
7. World Resources Institute & World Business Council for Sustainable Development. GHG Protocol Scope 2 Guidance: An Amendment to the GHG Protocol Corporate Standard. WRI/WBCSD (2015). <https://ghgprotocol.org/sites/default/files/2023-03/Scope%202%20Guidance.pdf>
8. Beyond Alliance. Superpollutant Action Initiative Launch Announcement. Beyond Alliance (2026). <https://beyond-alliance.org/superpollutants/>
9. European Commission. Commission Delegated Regulation (EU) 2023/2772 — ESRS E1 Climate Change. Official Journal of the European Union (2023). https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ:L_202302772
10. IFRS Foundation. IFRS S2 Climate-related Disclosures. International Sustainability Standards Board (2023). <https://www.ifrs.org/issued-standards/ifrs-sustainability-standards-navigator/ifrs-s2-climate-related-disclosures/>
11. Forster, P. et al. The Earth's Energy Budget, Climate Feedbacks and Climate Sensitivity — Supplementary Material. In: Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the IPCC. Cambridge University Press (2021). https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_Chapter07_SM.pdf
12. United Nations. Montreal Protocol on Substances that Deplete the Ozone Layer — Kigali Amendment (Amendment XVIII). United Nations Treaty Collection (2016). https://treaties.un.org/Pages/ViewDetails.aspx?src=IND&mtdsg_no=XXVII-2-f&chapter=27&clang=en