Position paper on avoided emissions and handprint methodologies in lubricants and greases

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1. Executive context and intent

WBCSD's Avoided Emissions Guidance v2 [1] represents an important step toward greater consistency, credibility, and comparability in the way avoided emissions claims are quantified and communicated. The lubricants and greases sector supports this objective and aligns with the need for robust, transparent frameworks that prevent overstated or misleading sustainability claims. Independent scientific and industry analyses indicate that lubricant-enabled efficiency improvements can contribute to measurable greenhouse gas reductions[2][3]. At EU level, these contributions are estimated to correspond to tens of millions of tonnes of CO_2 emissions avoided annually, while tribology-related efficiency improvements may represent a significant mitigation potential at the scale of global energy systems. However, certain elements of Guidance v2 - particularly the treatment of efficiency gains in legacy technologies - risk unintentionally excluding real, measurable, and verifiable climate benefits[2][3] already delivered across global systems today.

This position paper sets out the consolidated position of the European lubricants and greases industry - represented by ATIEL & UEIL - on the appropriate application of avoided emissions and handprint concepts. It aims to provide constructive clarification, highlight sector-specific considerations, and propose pathways to ensure that the guidance evolves in a way that recognises genuine climate contributions while maintaining high levels of methodological integrity. It aims to provide technical clarification and propose pathways for ensuring that methodological frameworks fully reflect the role of product-based efficiency enablers.

[1] World Business Council for Sustainable Development. (2025, July 24). *Guidance on avoided emissions v2.0: Drive innovations and scale solutions toward net zero*.
[2] Woydt, M., Bock, E., Hosenfeldt, T., Bakolas, V., Luther, R., & Wincierz, C. (2023). *Tribology in Germany: Effects of tribology on CO_2 emissions in the use phase of products—Contributions of tribology to defossilization* (Version 1). Gesellschaft für Tribologie e.V.
[3] Hill, N., Parrett, M., Neiva, R., Hilton, G., & Yucel, S. (2019, June 20). *Lubricants' contribution to fuel economy: Final report for ATIEL EEIG* (Ref. ED12057, Issue 3). Ricardo Energy & Environment.

2. Why this matters for the lubricants sector

Lubricants and greases are non-combustion products that enable efficiency, durability, and reduced environmental impact across transport, industrial, and energy systems. Their role spans legacy internal combustion engines (ICEs), transitional systems such as hybrids and combined heat and power (CHP), as well as future-aligned technologies including electric vehicles (EVs) and renewable energy assets.

Efficiency improvements enabled by lubricants contribute directly to lower greenhouse gas emissions by reducing energy consumption. Friction-related losses are reported in the range of approximately 20–30% [4] of global primary energy demand in tribology literature. Several studies suggest that tribological improvements, including those associated with advanced lubricants and grease technologies, may contribute to reductions in a portion of these losses, with estimates of up to 30–40% [5] under specific operating conditions. These efficiency improvements can, depending on system boundaries and energy sources, contribute to reductions in associated greenhouse gas emissions. Excluding these improvements from avoided emissions frameworks risks undervaluing a major source of near-term mitigation potential and weakening incentives for innovation in technologies that will remain dominant during the transition period.

3. Handprint vs. avoided emissions

The industry recognizes the importance of clearly distinguishing between “handprint” and “avoided emissions” to ensure credibility and prevent misinterpretation of claims.

Handprint refers to the broader set of positive environmental effects associated with product use. For lubricants, this includes reduced wear, extended equipment lifetime, extended fluid service intervals, improved circularity, reduced waste generation, and efficiency gains across a wide range of applications, including internal combustion engine (ICE) systems, hybrid systems, and electrified powertrains, without differentiation based on energy carrier or fuel type within the handprint concept.

Avoided emissions, by contrast, are defined as quantified reductions in greenhouse gas emissions relative to a clearly defined reference scenario. They require robust system boundaries, conservative assumptions, traceable data, and transparent methodologies aligned with recognised frameworks such as WBCSD guidance.

[4] Holmberg, Kenneth & Erdemir, Ali. (2017). Influence of tribology on global energy consumption, costs and emissions. Friction. 5. 263-284. 10.1007/s40544-017-0183-5.
[5] Woydt, M., Bock, E., Hosenfeldt, T., Bakolas, V., Luther, R., & Wincierz, C. (2023). *Tribology in Germany: Effects of tribology on CO_2 emissions in the use phase of products—Contributions of tribology to defossilization* (Version 1). Gesellschaft für Tribologie e.V.

4. Summary of WBCSD avoided emissions guidance v2

Avoided Emissions Guidance v2 [6] introduces a structured approach for determining the eligibility of avoided emissions claims. The WBCSD paper sets out a series of criteria in the form of 'gates' that solutions must pass in order to be considered eligible. Under Gate 2, only technologies considered 'climate-aligned' are eligible. Efficiency gains in fossil-based systems are generally excluded as transitional improvements.

Additional Gate 2 requirements - such as demonstrating the absence of scalable alternatives, detailed monitoring and tracing of impacts, and alignment with transition plans - pose challenges for a product-based sector characterized by widespread, diverse applications.

While the intent of the guidance is sound, its current structure does not fully reflect the specific nature of lubricants and greases, nor their proven contribution to immediate emissions reduction.

5. Core issue: exclusion of efficiency gains in legacy systems

A key concern for the sector is the exclusion of lubricant-enabled efficiency improvements in legacy fossil-based systems. These improvements are measurable, verifiable, and already deliver substantial climate benefits today. Excluding them risks overlooking a pragmatic and scalable decarbonization lever at precisely the moment when rapid emissions reduction is required.

6. Practical challenges with gate 2 'additional criteria'

The application of Gate 2 criteria presents several practical and methodological challenges for the lubricants and greases sector. Lubricants are used across a highly diverse range of applications in transport, industry, and energy systems, resulting in complex and fragmented value chains. In many cases, this makes direct tracing of end-use energy impacts at product level challenging without introducing significant assumptions that may affect methodological consistency.

In addition, certain Gate 2 requirements appear primarily designed for system-level or asset-based technologies, such as renewable energy installations, rather than for high-volume, dispersed product categories used continuously across multiple sectors. As a result, requirements related to detailed attribution, impact traceability, and demonstrating the absence of scalable alternatives may not be fully proportionate to the operational reality of lubricants, despite well-established evidence in scientific and engineering literature of their efficiency benefits.

[6] World Business Council for Sustainable Development. (2025, July 24). *Guidance on avoided emissions v2.0: Drive innovations and scale solutions toward net zero*.

Beyond these implementation aspects, the current interpretation of Gate 2 may lead to unintended consequences. In particular, the exclusion of efficiency improvements in widely deployed legacy systems risks overlooking a potentially material and immediately available source of greenhouse gas mitigation. Given the long lifetime of existing transport and industrial assets, lubricant-enabled efficiency gains can contribute meaningfully to emissions reductions during the transition period.

Furthermore, limiting the eligibility of such improvements for avoided emissions recognition may reduce the visibility of performance differentiation, thereby weakening market incentives for the adoption of higher-efficiency lubricant technologies.

Taken together, these considerations suggest that while the intent of Gate 2 is to ensure robustness and credibility, its current structure may not yet fully capture the specific characteristics of lubricant applications nor the system-level contribution of friction reduction and efficiency improvements in existing energy-consuming assets.

7. Lubricants as enablers of the energy transition

Lubricants and greases act as important enablers of energy efficiency, emissions reduction, and equipment durability across all parts of the energy system[7][8]. This includes EV drivetrains, industrial energy-efficient equipment, CHP units, and wind turbines.

Innovation in advanced lubricants - including ultra-low-viscosity engine oils, high-performance EV fluids, and high-durability turbine lubricants - is largely funded by today's mainstream markets. Excluding transitional applications from avoided emissions claims may reduce incentives for investments essential to long-term decarbonization.

Furthermore, the sector supports circularity through the use of re-refined base oils[9], where technically feasible, and waste minimization solutions, contributing to a broader sustainability agenda. In addition, it offers feedstock flexibility through bio-based and readily biodegradable products, which have been successfully used in demanding applications. Together, these developments underline the sector's crucial role in overall transition solutions.

[7] Holmberg, Kenneth & Erdemir, Ali. (2017). Influence of tribology on global energy consumption, costs and emissions. Friction. 5. 263-284. 10.1007/s40544-017-0183-5.
[8] Woydt, M., Bock, E., Hosenfeldt, T., Bakolas, V., Luther, R., & Wincierz, C. (2023). *Tribology in Germany: Effects of tribology on CO_2 emissions in the use phase of products—Contributions of tribology to defossilization* (Version 1). Gesellschaft für Tribologie e.V.
[9] Abdalla, N., Fehrenbach, H., & Theis, S. (2022). *Updated LCA for regeneration of waste oil to base oil – Summary*. ifeu – Institut für Energie- und Umweltforschung Heidelberg GmbH, on behalf of GEIR (Groupement Européen de l'Industrie de la Régénération).

8. Principles for sector guidance

To ensure credibility and practical implementation, sector-specific guidance should align with global standards while recognizing the unique properties of lubricants. Key principles include transparency of assumptions and data; conservatism in baselines and performance claims; assessment of material impacts; consideration of relevant frameworks such as the Green Claims Directive, GHG Protocol, CSRD, and ISO standards; and the use of application-specific methodologies.

9. Key recommendations

The lubricants and greases sector recommends the following actions to ensure that avoided emissions frameworks reflect real-world impact and methodological feasibility.

- Consider enabling recognition of efficiency gains in legacy systems where emissions reductions are measurable and verifiable, regardless of fuel type or system age.
- Clearly distinguish lubricants and greases from combustion fuels, recognizing their role as efficiency enablers rather than energy carriers or emission sources.
- Consider adapting Gate 2 eligibility criteria to ensure applicability to high-volume, dispersed product categories with indirect but measurable system-level impacts.
- Explore dedicated sector-specific methodologies for lubricants and greases, reflecting their cross-sector applications and indirect emissions pathways.
- Ensure alignment with existing global frameworks (GHG Protocol, CSRD, ISO standards, Green Claims Directive), while allowing methodological flexibility for product-based efficiency solutions.
- Promote transparency, conservatism, and traceability in all avoided emissions claims, including clearly defined baselines, system boundaries, and assumptions.

These recommendations are intended to ensure that avoided emissions frameworks remain scientifically robust while fully capturing the real-world decarbonisation potential of lubricant-enabled efficiency improvements.

10. Industry alignment and collaborative approach

This position represents the aligned views of ATIEL & UEIL, developed in cooperation with international partners. The sector recognizes that harmonized approaches across regions and organisations are essential to avoid fragmentation and maintain credibility.

The industry is committed to supporting the development of consistent, practical, and scientifically robust methodologies for avoided emissions and handprint claims.

11. Closing position

Lubricants and greases deliver measurable efficiency improvements that contribute directly to greenhouse gas emissions reductions across multiple sectors of the global economy.

A robust avoided emissions framework must balance methodological integrity with real-world applicability. In its current form, WBCSD Avoided Emissions Guidance v2 represents an important step forward but requires refinement to fully capture the contribution of product-based efficiency enablers.

Limited recognition of lubricant-enabled efficiency improvements risks overlooking a highly immediate, scalable, and cost-efficient pathway for achieving global emissions reductions.

A collaborative, science-based evolution of the framework will strengthen credibility, improve consistency, and ensure that all material decarbonization pathways are appropriately recognized.

ATIEL & UEIL stand ready to contribute technical expertise, data, and methodological input to support this development.

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