World Journal of Advanced Research and Reviews
eISSN: 2581-9615 CODEN (USA): WJARAI
Cross Ref DOI: 10.30574/wjarr
Journal homepage: https://wjarr.com/

(REVIEW ARTICLE)

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Carbon footprint tender evaluation of drilling chemicals-navigating the absence of industry benchmarks

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World Journal of Advanced Research and Reviews, 2025, 26(03), 2348-2350

Publication History: Received on 07 April 2025, revised On 15 April 2025; accepted on 23 April 2025

Article DOI: https://doi.org/10.30574/wjarr.2025.26.3.1930

Abstract

The evaluation of product carbon footprints in drilling chemical tenders has become an essential part of sustainability efforts in the oil and gas sector. However, the lack of universally accepted benchmarks complicates the tender evaluation process. This paper discusses methodological challenges and proposes a relative evaluation framework that normalizes supplier data against an internal baseline. A detailed case study illustrates how these variations can affect supplier ranking and tender outcomes, highlighting the need for industry-wide standardization to ensure fair and transparent evaluations.

Keywords: Product Carbon Footprint; Tenders; Digital data; Green House Protocol; Standardization

1. Introduction

The oil and gas industry has seen an increased focus on the environmental performance of drilling chemicals. In response, many operators now include product carbon footprint evaluations as part of their tendering process. Although international standards such as ISO 14067 and protocols from the Greenhouse Gas Protocol provide guidance on calculating PCFs, the absence of consistent industry benchmarks creates uncertainty in comparing supplier data.

This paper examines the challenges that arise from this lack of standardization and presents a framework for relative evaluation, enabling procurement teams to better assess supplier sustainability performance despite data variability.

2. Methodology

The proposed framework utilizes a relative scoring system to normalize PCF data submitted by different suppliers. The evaluation follows these key steps:

- Data Validation: All submitted PCF values are verified for alignment with ISO guidelines and relevant environmental disclosure protocols.
- Normalization Process: Supplier data are normalized by comparing each submission against the lowest reported PCF within the tender. This creates a relative scale for evaluation rather than relying on absolute values.
- Integration into Tender Scoring: The normalized PCF values are then integrated into an overall sustainability score, which forms one component of the tender evaluation.
- This process addresses the absence of external benchmarks by establishing an internal reference point, thereby reducing bias and enhancing comparability.

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3. Discussion

3.1. Challenges in the Absence of Benchmarks

Without established industry benchmarks, suppliers often report PCF values using varying system boundaries, data sources, and assumptions. These discrepancies may include differences in the inclusion of packaging, transportation, and end-of-life treatment. As a result, direct comparisons become problematic, and tender evaluations may inadvertently favor one methodology over another.

3.2. Relative Evaluation Approach

The relative evaluation framework proposed in this study mitigates these challenges by focusing on the performance of each supplier relative to the best-performing submission. This approach encourages transparency in reporting and pushes suppliers to disclose detailed methodological choices. It also reduces the risk of misinterpretation, as all data are contextualized within the tender's internal scoring system (Jones et al., 2003).

3.3. Impact on Procurement Decisions

Procurement teams using this normalized approach can identify not only the supplier with the lowest PCF but also understand the underlying factors contributing to the differences. In cases where a supplier reports a marginally higher PCF due to more comprehensive data inclusion, further investigation can reveal whether the higher score is justified. Such nuanced evaluation is essential for making informed decisions and advancing sustainability goals (Martinez et al., 2005).

4. Case Study: Tender Evaluation in a Major Operator

A prominent operator issued a tender for a high-performance drilling chemical. Four suppliers submitted their PCF data, each calculated using slightly different methodologies. By applying the relative evaluation framework:

- The lowest PCF submission established the internal baseline.
- Other suppliers' scores were normalized relative to this baseline.
- The resulting scores were incorporated into the overall tender evaluation matrix, which also considered technical compliance and commercial offer.

In one instance, a supplier with a slightly higher PCF, attributed to a more comprehensive life cycle analysis including packaging and transport, was initially ranked lower. However, upon further technical review, the inclusion of these additional factors was recognized as a strength, prompting a reassessment of the supplier's overall sustainability performance.

5. Conclusion

The absence of standardized benchmarks for drilling chemical PCFs presents significant challenges in tender evaluations. A relative evaluation framework that normalizes supplier data against an internal baseline offers a practical solution, allowing procurement teams to account for methodological differences. Ultimately, industry-wide standardization is needed to ensure that PCF evaluations are transparent, comparable, and meaningful. Until such benchmarks are established, operators must rely on internal normalization and detailed technical audits to drive sustainable procurement decisions.

Compliance with ethical standards

Disclosure of conflict of interest

No Conflict of interest to be disclosed. It has been presented at 2025 Green Technology Conference.

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