



GLOBAL DAIRY
PLATFORM

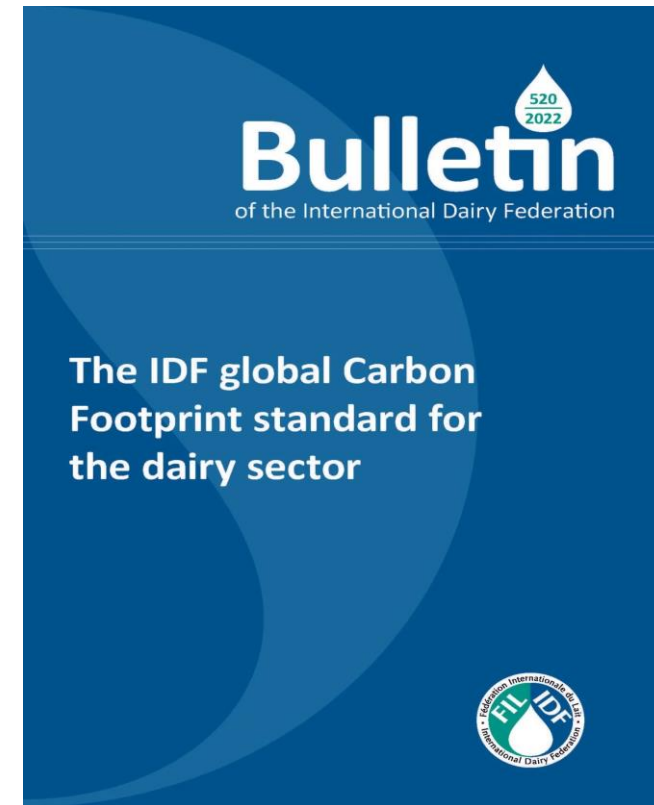
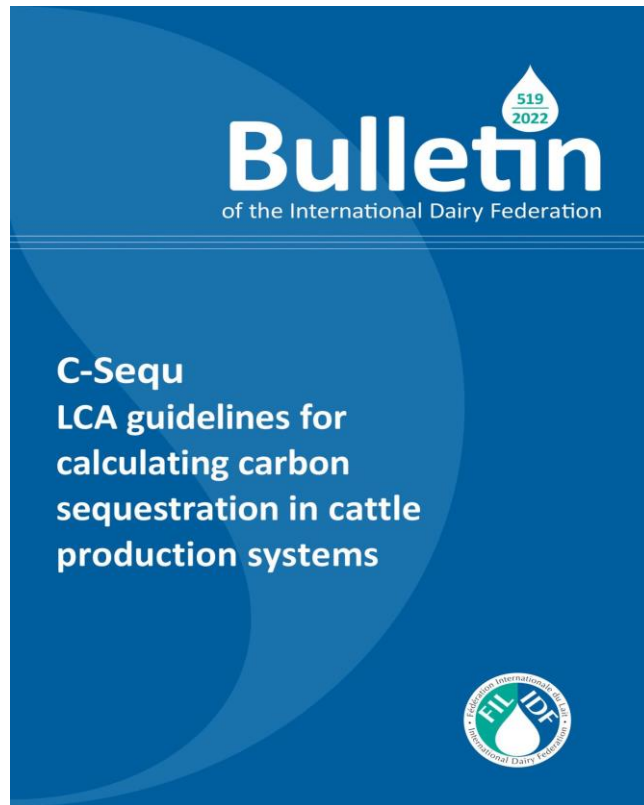
Dairy Sector and the Metrics Minefield

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RESEARCH ARTICLE

Retrospective and projected warming-equivalent emissions from global livestock and cattle calculated with an alternative climate metric denoted GWP*

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Article	Authors	Metrics	Comments	Media Coverage	Peer Review
✓					

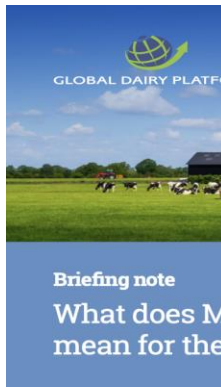
Abstract

- Introduction
- Materials and methods
- Results and discussion
- Conclusions
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- Acknowledgments
- References

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Abstract

Limiting warming by the end of the century to 1.5°C compared to pre-Industrial times requires reaching and sustaining net zero global carbon dioxide (CO₂) emissions and declining radiative forcing from non-CO₂ greenhouse gas (GHG) sources such as methane (CH₄). This implies eliminating CO₂ emissions or balancing them with removals while mitigating CH₄ emissions to reduce their radiative forcing over time. The global cattle sector (including Buffalo) mainly emits CH₄ and N₂O and will benefit from understanding the extent and speed of CH₄ reductions necessary to align its mitigation ambitions with global temperature goals. This study explores the utility of an alternative usage of global warming potentials (GWP*) in combination with the Transient Climate Response to cumulative carbon Emissions (TCRE) to compare retrospective and projected climate impacts of global livestock emission pathways with other sectors (e.g. fossil fuel and land use change). To illustrate this, we estimated the amount and fraction of total warming attributable to direct CH₄ livestock emissions from 1750 to 2019 using existing emissions datasets and projected their contributions to future warming under three historical and three future emission scenarios. These historical and projected estimates were



Introduction and Summary

The cattle sector (dairy, beef and buffalo) produces milk and meat that provide high-quality nutrition to a growing global population. As is the case with all agricultural sectors, greenhouse gas (GHG) emissions are emitted during the production process. For cattle, the majority of these emissions are in the form of methane. Methodologies that accurately assess the warming (or temperature) impacts of GHGs are critical for informing the sector's mitigation pathways.

Modeling research was recently completed by BC3Research (Spain) to better understand GWP*, a relatively new metric developed by the University of Oxford (UK), Victoria University (NZ) and a number of global experts to measure the warming-equivalent emissions of methane.

This document summarizes recently conducted modeling research to better understand GWP*. The modeling confirmed previous studies that found GWP* provides a more accurate evaluation of the global warming impact of methane than does GWP₁₀₀. GWP* clearly shows that net zero warming from cattle can be achieved by 2050 (against a 2020 baseline) by consistently reducing global cattle methane emissions by 0.3% annually (9% over the period 2020-2050). GWP* has proven to be an excellent planning and forecasting model for identifying appropriate mitigation actions and should be considered an enhancement to GWP₁₀₀ when assessing mitigation pathways for methane. However, there are limits to its applicability and any potential use as a benchmarking or target-setting instrument at any level less than a global perspective is not appropriate, which is explained later.

¹ Net zero warming defined as the situation where there will be no additional warming from methane, which is equivalent to meeting carbon dioxide emissions.

¹ Briefing note: What does Modeling with GWP* mean for the cattle sector?

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Pathways to Dairy Net Zero

A collaboration between:



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**PATHWAYS
TO DAIRY
NET ZERO.**

OBJECTIVES

- Systematically ***introduce or enhance climate action*** in global dairy systems
 - food and nutrition security
 - livelihoods and economic growth
 - animal health and welfare
 - climate and natural resource use
- Develop ***pathways*** for all dairy systems
- Stimulate commitments + Action

MiLCA

Protocol for including Mitigation actions in Agricultural Lifecycle Assessment

- New Technologies coming to the market (additives)
- Initial criteria before consideration by any organization
- Science
- Data quality
- Conservative reporting
- Science based
- 6-week public consultation
- Documented responses
- are confident in this outcome
- Science informs the statistical approach to be applied
- Balance – robustness - Application

Project collaborators



Partner organization





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Many Thanks

