

**GROUNDING IN CLIMATE SCIENCE?**

# ASSESSING THE GREENHOUSE GAS PROTOCOL'S LAND SECTOR AND REMOVALS STANDARD



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# Executive summary

The newly released Greenhouse Gas Protocol Land Sector and Removals Standard (LSRS) establishes a critical framework for companies to account for land-based emissions and carbon removals, addressing long-standing gaps in corporate climate disclosure. However, the standard's potential to drive genuine decarbonisation and accurately account for emissions and removals is compromised by two structural ambiguities.

Companies that produce or source land-based products or undertake activities that enhance removals are merely encouraged, not obliged, to set targets in line with global climate goals and to track their performance over time. Excluding removals from the mandatory part of the standard weakens the framework. Without mandatory participation, companies can selectively opt out of reporting removals, creating loopholes that allow significant portions of removals to remain unaccounted for.

Secondly, while the standard mandates the separation of targets for emissions and removals to ensure transparency, it includes provisions that could allow the Science-Based Target initiative's (SBTi) Forest, Land and Agriculture Science-Based Target-Setting Guidance (FLAG Guidance), which permits aggregating these figures into a single "net" target to take precedence. This contradiction risks enabling companies to mask ongoing emissions behind, in the worst case, temporary carbon sequestration and storage, undermining the LSRS's core intent.

To fulfil its promise, the LSRS must explicitly assert its primacy over the FLAG Guidance regarding target separation, ensuring that climate commitments remain transparent, scientifically robust, and incapable of being diluted by aggregation.



# Introduction

The Greenhouse Gas Protocol (GHG Protocol) [Land Sector and Removals Standard](#) (LSRS) is the first of two<sup>1</sup> documents emanating from the 2022 draft Land Sector and Removals Guidance. It provides a framework for companies to calculate, report on, and set targets for land-based emissions, as well as carbon dioxide removals from agriculture and land management, including biogenic and technological removals.<sup>2</sup> Although the standard is robust, certain elements are optional, which risks weakening the whole framework.

The LSRS has been long awaited by companies seeking guidance on the methodological steps they need to take if land emissions are significant in their value chains or if they wish to receive recognition for their carbon removals efforts. Rigorous guidance on removals and on agricultural emissions is necessary for corporate climate disclosure and meaningful target setting. [Previous analysis](#) by NewClimate Institute in collaboration with Carbon Market Watch has shown that major agrifood companies' emission reduction targets are undermined by the undefined role of land-based carbon removals. Unlike initially planned, this version of the GHG Protocol LSRS does not (yet) include forestry.

The LSRS stands alongside the Science-Based Target initiative's (SBTi) [Forest, Land and Agriculture Science-Based Target-Setting Guidance \(FLAG Guidance\)](#). While the Greenhouse Gas Protocol produces greenhouse gas measuring, accounting and reporting standards for corporate emissions

inventories, the SBTi provides corporate frameworks for setting emission reduction targets that are meant to be aligned with the level of decarbonisation required to keep global warming below 1.5°C (or 2°C). The GHG Protocol provides the accounting backbone that makes target setting possible, while the SBTi expects companies to base their targets on emissions inventories prepared according to GHG Protocol standards.

While the LSRS and FLAG Guidance aim to drive ambition and complement each other, the two documents diverge on the point of setting targets: LSRS requires separate targets for land emissions and removals, whereas the FLAG Guidance (implicitly) allows the aggregation of the two into a net figure.

Despite being more robust with regards to separate targets for emission reductions and removals than the FLAG Guidance, the LSRS includes a provision that could be interpreted to mean that the FLAG Guidance takes precedence over the LSRS requirements. In other words, the LSRS lays the necessary foundation for a substantially improved target setting regime, only to then risk diminishing itself by implying SBTi's FLAG guidance may take precedence. While we welcome the overall rigour of the LSRS, we believe this ambiguity hinders the standards potential to herald a wider change in corporate target-setting.

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1 The second (forthcoming) document is the Land Sector and Removals Guidance, which will provide implementation and calculation guidance, as well as examples.

2 The LSRS classifies temporary sequestration and storage as removals. We don't regard temporary sequestration and storage as removals, as carbon stored in biological systems is fundamentally transient in relation to carbon stored in or emitted from fossil fuels. Read our report '[A framework for assessing the climate value of temporary carbon storage](#)' for more information.

# Removals safeguards

The GHG Protocol's LSRS includes a comprehensive list of six requirement categories, covering accounting, reporting, traceability, data quality, allocation for scope 3 removals and permanence. The standard differentiates between land-based and geological removals and mandates the accounting of all life-cycle greenhouse gas emissions of the removal activity across all scopes. There are also solid provisions in place to prevent double counting and the over-allocation of removals in a company's inventory.

The most important requirement set out in the LSRS is the separate accounting and target setting requirement for emissions and removals.

Unfortunately, reporting on removals remains voluntary, revealing the Achilles heel of the scheme: irrespective of how ambitious the rules may be, companies are not actually obliged to implement these. Consequently, there is a contradiction between how the GHG Protocol presented the LSRS as "recognising the importance of removals to reach net zero" and the fact that removals accounting is not mandatory under the standard.

## Definitions

The LSRS defines removals as "the transfer of a GHG from the atmosphere to storage within a non-atmospheric pool". The document differentiates between sinks and pools, stating that a sink is "the process, activity, or mechanism by which the transfer occurs", and can either be a biological or technological sink. In addition, it differentiates between storage processes specific to the carbon pool in which the removed CO<sub>2</sub> is stored, namely what the GHG Protocol classifies as (1) land management CO<sub>2</sub> removals, stored in land carbon pools and (2) removals with geological storage, stored in geologic carbon pools.

## Removals and permanence

The Standard subjects reported removals to the permanence principle and related requirements. Importantly, the standard clarifies that only continued storage in non-atmospheric pools contributes to reducing cumulative net CO<sub>2</sub> emissions in the atmosphere. In other words, it acknowledges that carbon must remain stored to be able to meaningfully contribute to net zero. Unfortunately, the reference to “non-atmospheric” pools mixes land-based and geological pools, downplaying the inherent permanence vulnerabilities of the former. This definition should therefore be strengthened by setting a clear timeframe as to what “continued storage” entails.

While the LSRS does mention that geologic reservoirs “can store carbon on millennial timescales”, and companies should include information on the expected duration of carbon storage, this remains vague and difficult to enforce. Clarifying the storage duration is necessary to flag the level of vulnerability of the sink. For instance, temporary storage is inherently vulnerable and may vary depending on the particular storage medium, as well as the natural conditions it might be exposed to (e.g. fire-prone areas face a higher chance of reversal).

Permanence is also subject to on-going storage monitoring. To monitor the permanence of removals, the standard allows companies to define a series of consecutive, sequential time intervals for ongoing monitoring, a flexibility which could lead to great disparity across company practice and risk a race to the bottom. The standard does, however, add a strong bottom line for reversals accounting by mandating that “If companies lose the ability to monitor carbon stocks associated with previously reported removals or if the monitoring plan is not renewed, companies shall assume previously reported removals are emitted and report net CO<sub>2</sub> emissions or reversals.”

## Carbon storage in products

The LSRS deliberately places carbon storage in products, which counts as a type of delayed emissions, outside of the removals category. It declares this form of storage as optional and to be recorded in a separate accounting line, distinct from emissions and removals. The document defines carbon storage in products as “not fungible with scope 3 emissions or removals”.

It is commendable that the LSRS makes it clear that product carbon storage depends on the lifespan of the sold product, and the fact that the length of storage in a product depends on the end user (e.g. the buyer of a wooden chair) makes it non-eligible for use by a company. Consequently, this indicates that product carbon storage is unsuitable for corporate target setting because a company cannot control the eventual release of carbon stored in the product.

It would have been helpful if the GHG Protocol had inserted more detailed guidelines for harvested wood products in this section of the standard, since this is an area known for complex biomass sourcing challenges and implications for wood management.



## Captured carbon and enhanced oil recovery

It is commendable that the LSRS excludes carbon capture from its definition of carbon removals. Page 78 of the standard defines captured carbon dioxide as: “CO<sub>2</sub> collected at a source (preventing an emission) and that continues to be stored in a non-atmospheric carbon pool. In this case, companies do not need to account for those emissions in the relevant scope if they meet the geologic storage requirements, but this is not accounted for and reported as a removal.”

However, the standard allows for both removals and captured CO<sub>2</sub> to be used for enhanced oil recovery. This is a major flaw of the LSRS. CMW demands the exclusion of enhanced oil and gas recovery from the standard because this is little more than a delayed emission and perpetuates the continued burning of fossil fuels and further legitimises the activities of the oil and gas sector. Read our 2024 report *Assessing the climate strategy of Occidental Petroleum (Oxy)* for further information on why this practice is dangerous.

In sum, the standard takes a step in the right direction by excluding emission reductions at the point of extraction (captured carbon), and thus clearly differentiating between a removal and the avoidance of emissions, but fails to disincentivise fossil fuel extraction as it accommodates rules for enhanced oil and gas recovery.

## Quantification of removals

### Technical aspects

It is positive that some of the LSRS’s more technical quantification criteria indicate that companies should “calibrate model-based and remote sensing-based calculation approaches using empirical data specific to the land area, management practices, and GHG impact under analysis”. In addition, from the first year that removals from a given carbon pool are reported in the inventory, companies are required to obtain measurements or calibrate models to ensure that estimates are representative of the reality of that carbon pool in the initial year.

These provisions are key. Models base their calculations on parameters and assumptions, meaning there is always room for error. Calibration based on ground-truth measurements is therefore crucial for validating the results of the model.

However, it is unfortunate that the LSRS does not require companies to prioritise measurement-based approaches, which are far more accurate. This becomes more pressing considering that specific models aren’t prescribed, nor are there criteria that models must meet before they can be used. These would include that the models are open source, enable results to be traced and verified and are valid for the project’s domain. Such omissions enable unscrupulous or less diligent companies to select models whose parameters produce the most favourable results, thereby risking overestimation. The standard should have included provisions that allow the use of models or remote-sensing only when on-the-ground measurement is impossible.

### Robust data quality and uncertainty

Regarding data quality, the LSRS requires companies to use empirical data specific to the sinks and pools where carbon is stored in their operations or value chain.

Yet for geological storage, accounting is only required “if data specific to the CO<sub>2</sub> injection site(s), geologic storage reservoir(s), and CO<sub>2</sub> inputs into the geologic storage reservoir(s) is used”. Similarly, companies are required to account for and report net removals with geological storage only if they provide quantitative uncertainty estimates. It is unclear what happens if specific data and quantitative uncertainty estimates are not provided, potentially representing a loophole to account all removals together.

The uncertainty provisions are generally robust: companies should use sampling approaches that ensure statistically significant estimates of carbon stock changes; select conservative values from a confidence interval; and document all causes of uncertainties that are likely to be addressed through a quantitative uncertainty analysis. However, this could be strengthened by specifying a confidence interval level of at least 90%, as opposed to a vague reference to “conservative values”. Additionally, an uncertainty deduction factor of at least 20% of the total carbon removed could have been applied. For instance, say calculations indicate that 200 tonnes have been sequestered, applying such a deduction factor would mean that only 160 tonnes would be reported.



### Unclear leakage reporting

The LSRS defines land carbon leakage as “corporate actions that displace food or feed production to locations beyond the lands in their operations or value chain, leading to agricultural expansion and land use change”. This displacement causes emissions elsewhere. In other words, it causes emissions to leak. The standard correctly recognises the high potential for leakage in the land sector, particularly where land area is finite and competition for such land is on the rise. It therefore mentions that quantifying such leakage can help companies to properly account for such impacts, with the aim of reducing their total emissions.

Unfortunately, the requirements for reporting leakage are convoluted. In some sections, this calculation is split from the life cycle GHG emissions calculations, whereas in others, leakage is part of the life cycle GHG emissions. While it is clear that activities with high risk for land carbon leakage will have an impact on the overall level of emissions or removals reported, as a form of indirect emissions, leakage should always form part of the overall life-cycle assessment.

Similarly, the standard requires the quantification of leakage only if activities with high risk for land carbon leakage are implemented. Such activities involve biofuels, reducing food production significantly, or a significant reduction in crop yields resulting from a change in cropland management practices that are not in the spirit of enhancing the sustainability of the land (p.49). Leakage risks in the land sector are immense, and so quantification should not be restricted to “high risk” activities, but applied to all of them.

# Separate accounting and reporting

Separate accounting of removals and emissions is mandatory under the LSRS. This requirement is a major step forward and should serve as a catalyst for stronger target-setting across corporate accountability frameworks - including the SBTi's FLAG Guidance, which currently permits netting of removals against emissions.

The separation of targets in both companies' and countries' climate plans is vital. We have called for this in many of our publications and joint initiatives, including the 2025 [Corporate Climate Responsibility Monitor](#) and accompanying [special report on carbon removals](#), our policy brief '[The weak link: Do carbon credits actually accelerate corporate decarbonisation?](#)', our [Carbon Negative Handbook](#) and the [joint letter on separate targets](#) signed by more than 120 stakeholders.

The standard allows companies to aggregate land emissions and land removals into a figure called "total emissions",<sup>3</sup> but the aggregation has to happen in a separate ledger. This would ensure that the physical inventory records land emissions and removals separately. While we welcome this development, we would also like to see permanent removals distinguished from temporary storage so that the climate impact of each can be evaluated accurately and distinctly.

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<sup>3</sup> Page 109: "If companies additionally choose to report a single value that aggregates emissions or nets land emissions and land management CO2 removals, this value shall include at a minimum the accounting categories below. In such a case, companies shall report "total emissions" as an additional accounting category separately from the physical GHG inventory under "additional accounting categories," organized by scope and scope 3 category."

# Target setting

According to the LSRS, companies that produce or source land-based products or undertake activities that enhance removals are encouraged, not obliged, to set targets in line with global climate goals and track their performance over time. Interestingly, the standard notes that it is the role of policymakers to set targets. While regulation is key, this argument stalls progress and passes the parcel on responsibility. We are operating in an era where climate change denial still shapes public discourse and policy agendas, where economic interests are regularly invoked to water down ambition, and where offsetting continued emissions with often low-quality, non permanent removals is allowed for competitiveness. Therefore, relying solely on policymakers will not deliver the deep and fast transformation needed. A broader coalition of forces, as led by the likes of SBTi, ISO, GHG Protocol and other civil and private entities must exert pressure, provide frameworks and rules, and spearhead concerted efforts to achieve meaningful climate targets.

Despite the target setting framework being optional, companies are required to set separate targets for emissions, removals and - optionally - product storage. Companies may also optionally differentiate between different types of removals. In principle, companies may stop defining removals at the level of "Removals with geologic storage," disaggregated by scope 1 and scope 3 category. They can, as a recommendation, disaggregate further.

## Detering climate action?

The standard recommends rather than obliges companies to treat the primary goal of corporate targets emissions reduction and clarifies that removals play an important role in balancing residual emissions. While this helps focus attention on the primacy of emissions reductions, the LSRS fails to clarify that companies must only use permanent removals to counterbalance residual emissions.

This is because removals with geological storage have significantly greater permanence than land-based removals and are consequently better suited for use against residual emissions, even though they can never fully compensate for them. Naturally, the key question will be which sector and how many emissions may qualify as residual. As we approach net-zero, certain sectors may need to fully decarbonise or simply cease operations. The standard does not delve into this issue, which is a massive oversight and opens up a plethora of potential loopholes in which emissions are self-classified as "residual" by companies, even if they would not be considered as such by society at large.

## Interaction with FLAG guidance

The LSRS stipulates that for companies participating in target setting programmes that align with GHG Protocol standards (and mentioning specifically the SBTi), the target setting rules of those programmes take precedence over the requirements in the relevant LSRS chapter.

Consequently, the SBTi's FLAG Guidance risks overriding the stricter accounting and target setting rules introduced by the LSRS. The FLAG Guidance does not specify emission reduction requirements for FLAG targets. Instead, it remains ambiguous on the extent to which land-based removals may be used to meet these emission reduction targets. This ambiguity is exploited by companies like Danone, Mars, and Nestle and obscures the picture of company progress towards reaching emission reduction levels needed (see the [Corporate Climate Responsibility Monitor Agrifood sector deep dive of 2025](#)).

This implied hierarchy could undermine the very purpose of the separate-accounting mandate and could erode transparency (separate ledgers guarantee that emissions and removals are visible and auditable), ambition (companies often rely on net targets to greenwash their image or obscure their inaction), and scientific soundness (emissions and removals are not scientifically equivalent).

To unlock the full potential of this standard in the corporate accountability landscape, the GHG Protocol should take precedence over the FLAG Guidance, and the GHG Protocol and SBTi should state this publicly. More specifically, the separate accounting and target setting rules of the LSRS should supersede any netting provisions in the SBTi FLAG Guidance.

In addition, rather than including the potential caveat (about the precedence of target setting frameworks), the publication of the LSRS should have triggered a revision of the SBTi's FLAG Guidance's rules, which are in urgent need of an update.

# Carbon credits

The LSRS requires credits to be quantified and reported differently from emissions and removals included in the GHG inventory. This separation is particularly relevant as the accounting systems differ. Indeed, as clarified in the LSRS, inventory accounting, also called “attributional accounting”, looks at changes in the emissions profile of a company over a timespan. In contrast, carbon credits, as well as so called “insets”, are based on “consequential accounting”, where emission levels are derived from a change (corresponding to a counterfactual scenario) after an intervention or project. In other words, two scenarios are compared to each other, one representing the emission levels after a project has been implemented, and another one representing something that has never demonstrably happened. There are serious causal inference issues with consequential accounting since (unprovable) counterfactual scenarios are used as references.<sup>4</sup>

## Avoidance of double counting

The document has rules in place that ensure the same carbon-saving isn't counted both by companies that create credits and those that buy them. Therefore, the company that created a credit has to record this reduction or removal separately from its normal inventory when it tracks its process. Meanwhile, the company that bought the credit cannot simply subtract that amount from its own emissions or removals inventory. The credit is used only to meet its separate target, not to lower the numbers in its inventory.

While we appreciate the emphasis the LSRS puts on keeping the physical inventory distinct from any crediting, the standard nonetheless provides guidance on how to calculate credit-based emissions and removals levels in parallel, and even includes guidance on how to set targets when credits are issued or used. The rule unnecessarily weakens the principles of inventory accounting by offering companies the option to translate their targets into credit-style metrics. This complicates reporting, creates competing inventories and runs counter to the idea of providing a single, straightforward GHG emissions inventory.

Moreover, this allows companies to set and communicate climate targets that are based on external achievements which are often overstated and unreliable. This risks allowing greenwashing in a sector which is crucial for achieving the goals of the Paris Agreement.

## Quality criteria

Quality criteria for carbon credits are mentioned, but will be further detailed in future guidance. At this time, it is difficult to assess whether these will be any good, particularly since quality is not guaranteed in current high-level provisions. Overall, detailed requirements for each criterion, accompanied by clear procedures and transparent disclosure of data, assumptions and results, are needed to demonstrate whether carbon credits are of decent quality.

This could become particularly relevant in the future, should links with existing schemes, like the Carbon Removals and Carbon Farming (CRCF) framework, be drawn. Current methodological rules under the CRCF lack quality and are consequently not reliable and are likely to overestimate gains, potentially subjecting investors to the reputational risks associated with greenwashing. The GHG Protocol should therefore strive for further ambition.

<sup>4</sup> For more on the differences between attributional and consequential accounting, see: <https://ghginstitute.org/2025/01/17/the-differences-between-allocational-and-consequential-greenhouse-gas-accounting-summarized/>

## Masked offsetting

Crucially, the LSRS does not prohibit the practice of offsetting, but envisages using credits to meet compensation targets<sup>5</sup> outside of the company's operations or value chain. It is commendable that the standard mentions the existence of [contribution models](#) alongside compensation models, but falls short of requiring the use of the contribution model, which constitutes a more honest and less misleading way of communicating about corporate climate impacts.

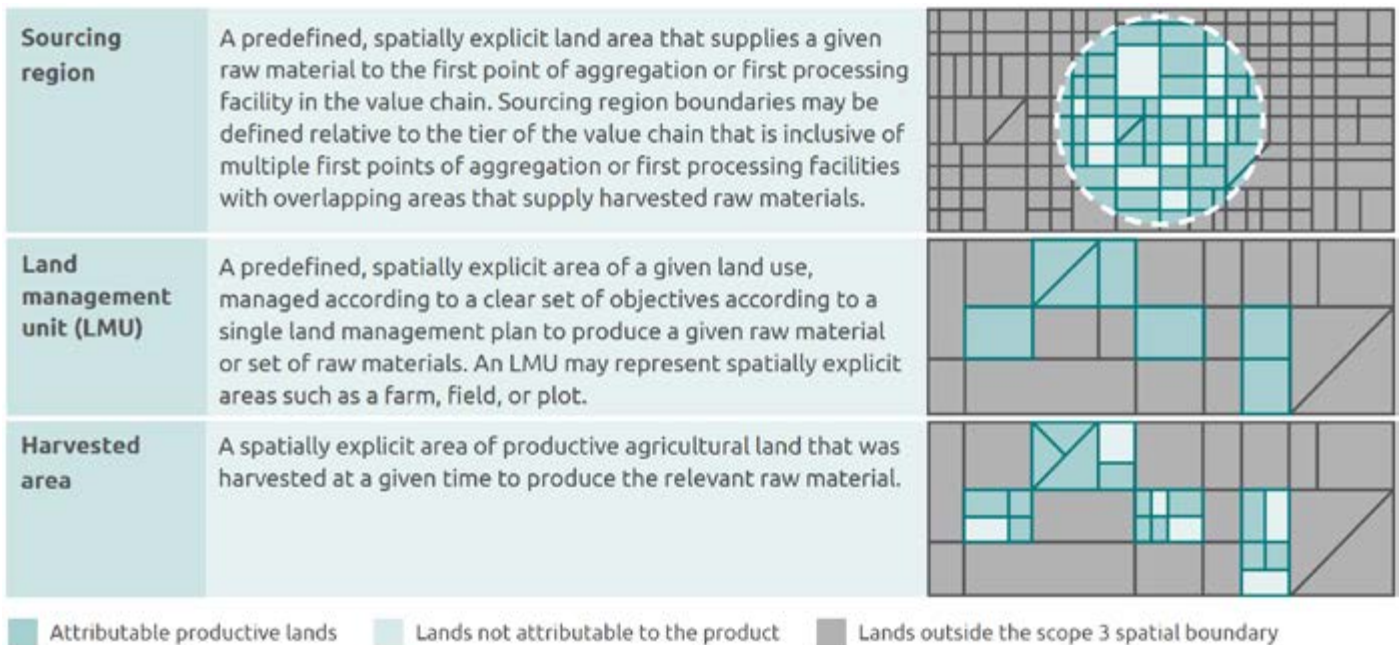
The LSRS also fails to acknowledge the general issues around quality in existing GHG crediting programmes. Carbon credit programmes continue to [vastly overestimate the mitigation claimed by projects, often by a factor of five or more](#). Offsetting with carbon credit is even more problematic when this involves temporary sequestration. A recent [paper](#) reveals that, in nature-based projects, a large number of variables lead to high levels of uncertainty when it comes to attributing changes in carbon storage. Offsetting also risks distracting from much-needed internal emission reductions. Overall, the issues at hand indicate that, to preserve environmental integrity, the contribution claim model [should be made mandatory](#).



# Traceability issues

When a company estimates emissions and removals, it must first define the geographic extent from which data will be drawn. As supply chains are increasingly long and data availability a bottleneck for many companies, there is a need for a clear conceptual link between spatial boundaries and traceability. The LSRS introduces the concept of 'physical traceability', but fails to guard against misuse.

For scope 3 emissions and removals, the standard requires that a company demonstrates traceability to the sourcing region, the land-management unit (LMU) or the harvested area.<sup>6</sup> In practice, this means that a firm must install a traceability system that applies certain [chain of custody](#) models<sup>7</sup> which enable reference to the exact parcel of land, or at least to a well-defined regional aggregate. The chosen traceability system indicates where the emissions or removal data is derived from. It is commendable that the standard mandates that the geographical transfer boundary has to be within the same country and sourcing region, even though the definition of "physical traceability" still leaves room for improvement.



**Source:** Greenhouse Gas Protocol 2026, Land Sector and Removals Standard, Figure 5.1, <https://ghgprotocol.org/sites/default/files/2026-01/Land-Sector-and-Removals-Standard.pdf>

6 Sourcing region: A defined land area that supplies a raw material to the initial aggregation or processing site; its boundaries can encompass multiple, possibly overlapping, first-stage facilities. LMU: A clearly defined land parcel such as a farm, field, or plot, managed under a single plan to produce specific raw material(s). Harvested area: A spatially explicit area of productive agricultural land that was harvested at a given time to produce the relevant raw material.

7 "By defining a set of requirements that control the movement, handling and processing of certified materials and volumes within and between certified companies (usually defined within a chain of custody standard), CoC enables the transfer of claims and communications about materials, products, processes and services covered by a sustainability system. "

## No book and claim but conditional mass balance

The LSRS commendably prohibits book-and-claim approaches<sup>8</sup> for physical inventory accounting. This mechanism, which doesn't guarantee that the removals (or emissions) data is physically traceable to the actual land asset, is deemed unsuitable for a robust traceability regime. By banning this shortcut, the LSRS reinforces the principle that only carbon physically connected to a company's value chain may be counted.

The LSRS introduces the concept of 'physical traceability' because it allows mass balance, a chain of custody approach in which commodities of different quality or environmental characteristics are mixed together in the production process (and can therefore no longer be distinguished from each other) under certain conditions. These are that the allocation (between product types) must be proportional to the amounts of each input that enters the system, but attribution (within a product type) is allowed to be non-proportional.

We think that treating allocation and attribution as fundamentally separate concepts creates an artificial split that undermines the very purpose of a physical link. If the proportion of inputs assigned to a given output (allocation) does not reflect the actual physical flow, the resulting traceability system cannot be said to correspond to a specific parcel of land. The same is true for non-proportional attribution - so if either allocation or attribution are non-proportional, there isn't necessarily a physical link between the emissions/removals data and the land asset.

In our understanding, non-proportional attribution does not meet the requirement of 'physical traceability', since anything physically traceable would be what would be reported in the physical inventory. There is a space for this type of mass balance in a market-based reporting system, but not in an attributional inventory accounting system. Market-based reporting merely indicates the purchases of instruments by a company, and not the progress towards emission reduction targets. Attributional accounting reflects the physical reality of progress on a year by year basis and needs to be kept separate.

**Example:** Consider a dairy-cattle operation in which the herd spends part of the year grazing on pasture and the remainder confined in a barn. The farm generates three co-products:

Co-product	Share of total climate impact
Milk	55%
Beef	35%
Leather	10%

**Allocation** step – Because the same herd produces all three outputs, the farm allocates the total emissions to each co-product in proportion to these shares: 55% of the emissions are assigned to milk, 35% to beef, and 10% to leather.

**Attribution** step – Within the beef stream, the farmer may wish to market "low-carbon beef" that originates from the period when the cattle were on pasture, where the emissions intensity is lower than during confinement. To do this, the farmer can attribute a non-proportional share of the pasture-related climate benefits to a subset of the beef production (for example, 70% of the pasture benefit applied to 30% of the beef volume). The remaining beef is then credited with the higher emissions associated with the barn phase.

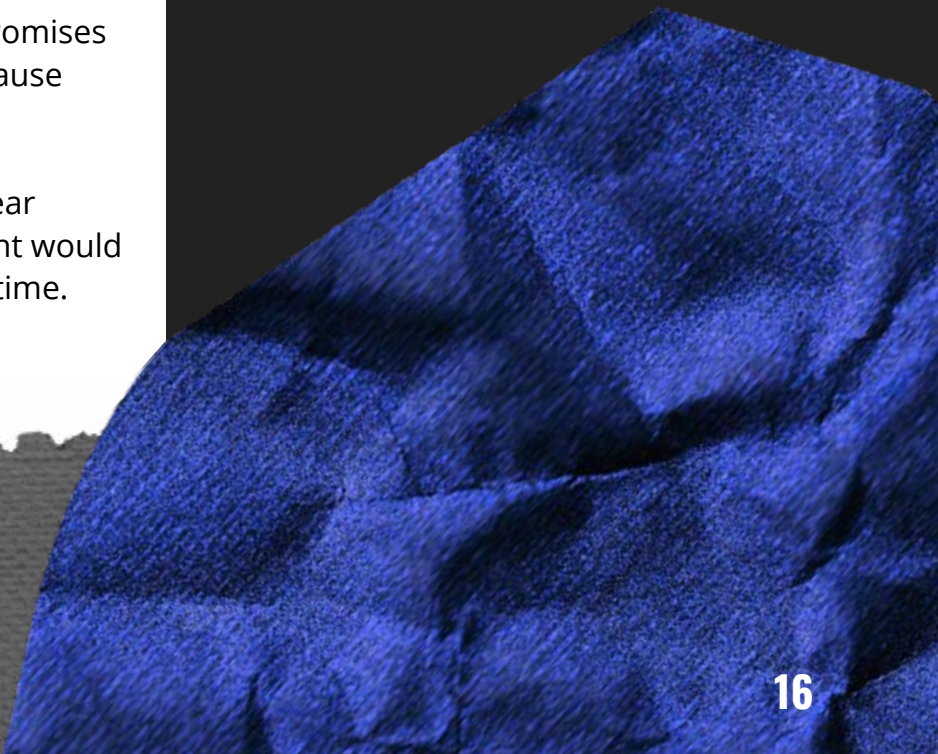
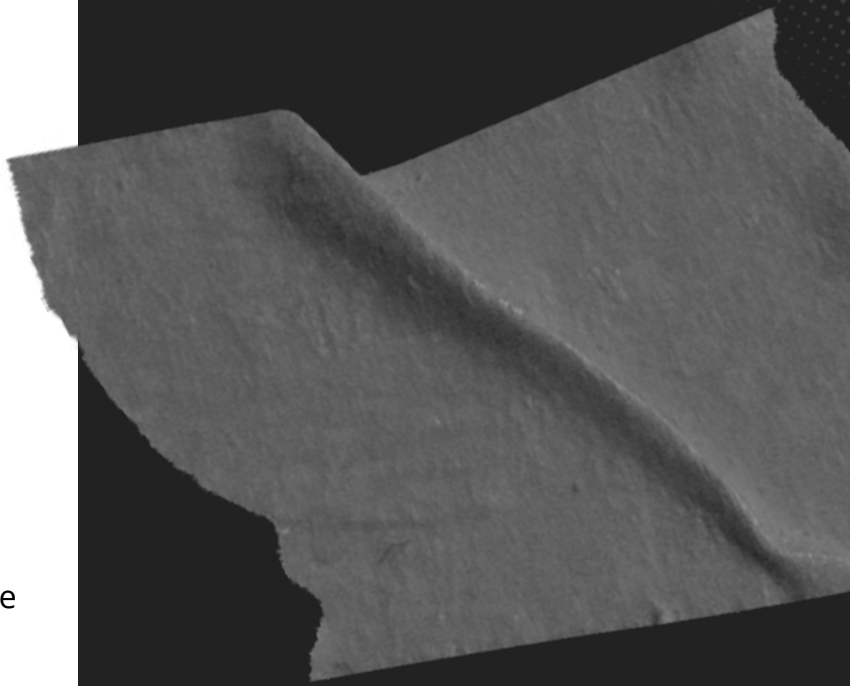
<sup>8</sup> In a book-and-claim chain of custody, the physical commodity (e.g. sustainably harvested timber or green steel) can be kept separate from the environmental attribute claim. Hence, the claim can be transferred, traded, or retired by any party while the underlying commodity continues to be used or sold elsewhere without a mandatory direct link to the claimant.

While this approach lets the farmer label a portion of the beef as “low-carbon,” it breaks the physical link between the emissions data and the actual meat that reaches the consumer. If attribution is non-proportional, the carbon benefit assigned to a specific batch of beef does not correspond to the real emissions incurred during its entire life-cycle. Consequently, the traceability claim becomes highly questionable, because the climate impact of the beef cannot be tied unequivocally to the land parcel or grazing period that generated the benefit.

## **(Missing) incentive to improve**

Despite the commendable provisions it contains, the LSRS falls short by only encouraging continuous improvement of traceability. The document establishes a floor by mandating that companies must meet a minimum level of spatial definition, but it offers no upward incentive or roadmap for moving from regional to LMU- or harvested-area level. As a result, firms may be content to remain at the least granular acceptable boundary, knowing that compliance is secured without any penalty for poor data granularity.

This static approach inevitably compromises the overall quality of accounting, because less precise spatial boundaries dilute the reliability of removal estimates. Strengthening the standard with a clear pathway for incremental improvement would ensure that traceability evolves over time.



# Recommendations

To strengthen the integrity of corporate action through standards like the Land Sector and Removals Standard, we urge all voluntary corporate accountability frameworks in the ecosystem to uphold scientific principles.

Specifically, the **Greenhouse Gas Protocol** - when it revises the LSRS - should undertake the following changes to further strengthen it:

- The mandatory separation of land-based emissions and removals must supersede any netting provisions of other target-setting frameworks, such as the SBTi FLAG Guidance.
- Removal reporting must be moved from “optional” to “mandatory” for all companies.
- There must be a minimum monitoring horizon. This should be set at over 1,000 years for geological storage and the chosen horizon must be disclosed.
- Enhanced oil and gas recovery must be categorically excluded from the list of permissible removals techniques. There must be no incentive to use removals to sustain fossil fuel extraction.
- Incentives must be established for the enhanced traceability of datapoints. Companies must move from regional to more granular data collection but are unlikely to do so if the minimum bar remains low.
- Non-proportional mass balance chain of custody approaches must be covered under ‘impact traceability’.
- As an associated, indirect emissions, land carbon leakage quantification should be part of (the life-cycle) GHG emissions calculation and not be reported separately.
- A minimum confidence interval ( $\geq 90\%$ ) must be specified for all uncertainty estimates.
- Potential reversals must be accounted for with a quantified deduction factor (over 20% of total removal).

**Other frameworks**, such as the forthcoming ISO 14060 Standard and the 2023 SBTi FLAG Guidance should take note of the following points. If these frameworks want to be compliant with the LSRS, they urgently need to:

- Treat removals as emitted and report them as a reversal, if or when monitoring of a removal ends
- Clearly state that product-carbon storage is non-fungible with scope 3 emissions/removals and, therefore, unsuitable for target-setting
- differentiate between permanent (geological) removals and temporary (biogenic) removals

**Governments** [should separate emission reduction and carbon dioxide removal targets](#). The LSRS has confirmed that is critical at the corporate level. It is [also essential at the national level](#).

**In summary**, the LSRS provides the accounting engine that corporate land emissions and removals accounting needs, but its optional provisions and the suggestion that the FLAG guidance could outrank it leave the standard vulnerable to being sidetracked. To unleash its full potential, the LSRS must assert its primacy and eliminate its ambiguities. Otherwise the promise of a solid, land-specific foundation for land emission reductions and the scale up of removals will remain unrealised.



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