

## Changes from the 2022 Draft to the Land Sector and Removals Standard

The *draft Land Sector and Removals Guidance* (2022 draft Guidance) was circulated for public consultation and pilot testing in September of 2022. The GHG Protocol Secretariat received over 4,000 individual comments from over 300 reviewers and 96 pilot testing organizations, consisting of both pilot testing companies and supporting partners. The Secretariat identified **42 key issues** from the feedback that required further discussion with the Land Sector and Removals Technical Working Group (LSR TWG), Advisory Committee (AC), and Independent Standards Board (ISB).

To address these key issues, the LSR TWG formed **11 subgroups** to discuss the feedback received and develop recommendations on how to proceed. After a series of subgroup meetings and an in-person TWG workshop in 2023, the LSR TWG proposed revisions to the draft Guidance to maintain scientific integrity and alignment with GHG Protocol’s accounting and reporting principles while ensuring approaches were fit for purpose and feasible to implement. This proposal included structural changes to improve clarity and refinements to existing requirements and recommendations related to traceability, land use change, land use and leakage, forest carbon accounting, removals and product carbon storage (see figure below).

In 2024 the AC reviewed, refined and approved the proposal. The AC was unable to reach consensus on two issues, agricultural leakage and forest carbon accounting, which were brought to the ISB for decisions in 2025.

### Changes from the 2022 Draft to the Land Sector and Removals Standard

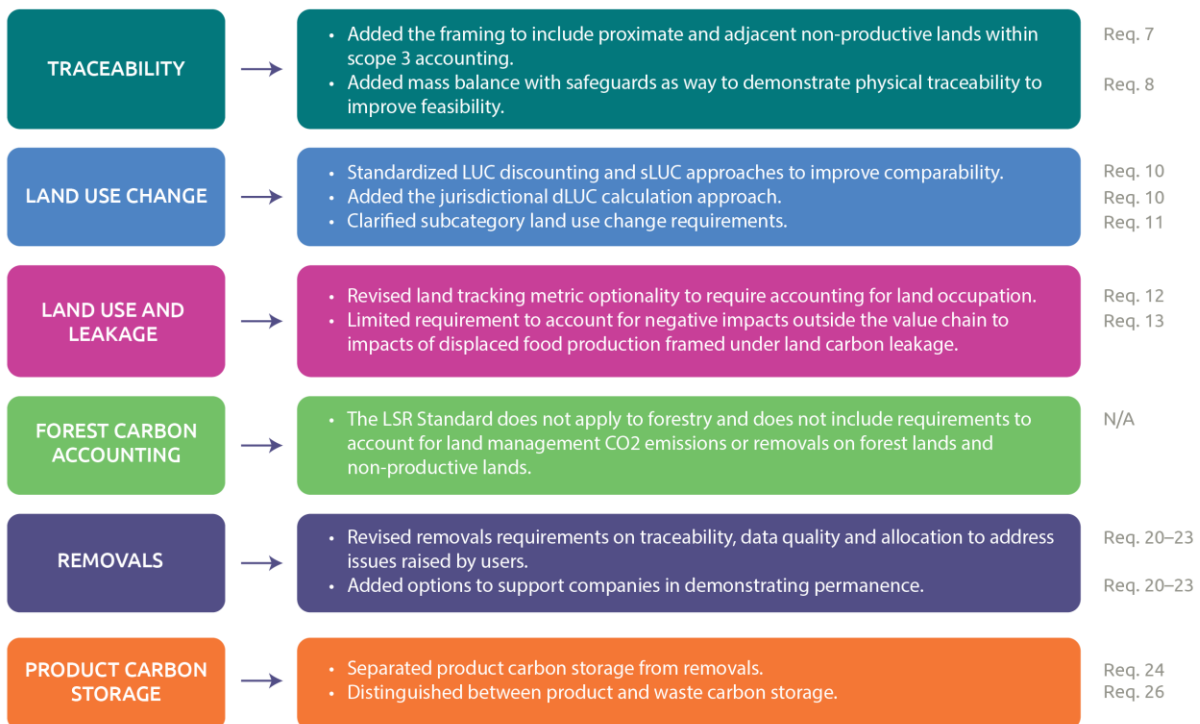


Table 1 summarizes the 32 requirements of the *Land Sector and Removals Standard, version 1.0* and how they changed from the 2022 draft Guidance.

This table does not include all details associated with revisions to recommendations, options or guidance in the LSR Standard. This document is a summary only and deliberately does not use shall/should/may language. Refer to the LSR Standard for the complete text of requirements, recommendations, options and guidance.

**Table 1. Summary of changes by requirement**

Requirement	Changes or additions	Summary of former text that was changed (2022 draft Guidance)	Summary of final text related to the change or addition (LSR Standard)
<b>1. Applicability of the Land Sector and Removals Standard and Guidance</b>	Revised requirement to clarify that the LSR Standard must be followed by companies with “significant” land sector activities, and not necessarily by “all” companies with land sector activities.	The <i>Land Sector and Removals Guidance</i> is applicable if the company has land sector activities or if the company is reporting removals.	Companies are required to follow the <i>Land Sector and Removals Standard</i> and <i>Guidance</i> if the company has significant land sector activities and/or if the company chooses to account for and report CO <sub>2</sub> removals or CO <sub>2</sub> capture with geologic storage. Justify if land sector activities are not significant.
<b>2. Required GHG accounting and reporting principles</b>	<i>Non-substantial amendments were made to improve clarity</i>	<i>N/A</i>	<i>N/A</i>
<b>3. Conformance with other GHG Protocol standards</b>	Added requirements that were already applicable from the <i>Scope 3 Standard</i> or from broader GHG Protocol governance, but that were not explicitly mentioned.	<i>N/A</i>	Companies are required to apply 100-year GWP values provided by the IPCC and disclose the source. GWP values from the most recent IPCC Assessment Report are recommended.
		<i>N/A</i>	Companies are required to disclose the reporting period covered by the GHG inventory.
		Companies are required to account for all scope 3 emissions (following the <i>Scope 3 Standard</i> ), including emissions from the fifteen scope 3 categories, and disclose and justify any exclusions.	Companies are required to account for all life cycle GHG emissions specified in the <i>Scope 3 Standard</i> and meet or exceed the minimum boundary requirements for each scope 3 category. For land sector value chains, this specifically includes product life cycle GHG emissions and emissions from food loss and waste.
		<i>N/A</i>	If companies apply the <i>Product Standard</i> , they are required to apply the accounting and reporting requirements in the <i>Land Sector and Removals Standard</i> when accounting for and reporting a product life cycle inventory report for relevant products.

<b>4. Required accounting categories</b>	<p>Revised requirements to reflect that indirect land emissions, land use metrics and removals with geologic storage associated with purchased energy are accounted for and reported in scope 3, not in scope 2.</p> <p>Updated accounting category names for certain required categories.</p>	<p>Companies are required to:</p> <ul style="list-style-type: none"> <li>Report scope 1, scope 2 and scope 3 emissions disaggregated by land emissions and non-land emissions.</li> <li>Companies are required to report scope 1, scope 2 and scope 3 land tacking metric(s) (i.e., indirect land use change carbon opportunity costs, and/or land occupation).</li> <li>Report certain scope 1, scope 2 and scope 3 gross CO<sub>2</sub> emissions, if relevant (i.e., gross biogenic product CO<sub>2</sub> emissions, gross TCDR-based product CO<sub>2</sub> emissions and gross CO<sub>2</sub> emissions from geologic storage).</li> </ul>	<p>Companies are required to:</p> <ul style="list-style-type: none"> <li>Account for and report scope 1 and scope 3 land emissions, land use, land carbon leakage (when applicable), and reversals (when applicable).</li> <li>Account for and report scope 1, scope 2 and scope 3 fossil fuel and industrial and certain gross CO<sub>2</sub> emissions, if relevant (i.e. biogenic product CO<sub>2</sub> emissions, TCDR-based product CO<sub>2</sub> emissions and gross CO<sub>2</sub> emissions from geologic storage).</li> </ul>
<b>5. Spatial boundary requirements</b>	<p>Consolidated the requirements related to spatial boundaries for each accounting category to a single standardized approach across the GHG inventory.</p>	<p>Spatial boundary requirements or related guidance were found in different chapters based on the accounting category.</p>	<p>Companies are required to determine which lands are included in their scope 3 spatial boundary based on the level of traceability they have to the associated products or services.</p>
	<p>Added a recommendation for companies to engage with value chain partners to ensure equity and upholder landholder rights when determining their scope 3 spatial boundary.</p>	<p>N/A</p>	<p>Companies are recommended to work with value chain partners and other landholders in their scope 3 spatial boundary to obtain free, prior, informed consent, provide fair compensation and follow best practices regarding human rights.</p>
<b>6. Attributable productive lands for scope 3 accounting</b>	<p>Broadened the requirement that determined which lands to include when estimating scope 3 land management net CO<sub>2</sub> emissions or removals to apply across all land emissions (e.g. attributable productive lands used to estimate jurisdictional direct land use change approaches).</p>	<p>Companies accounting for land management net CO<sub>2</sub> emissions or removals at a jurisdiction or sourcing region level are required to exclude unmanaged lands, managed lands not relevant to the product, lands with harvest restrictions, lands not capable of producing the product and lands with other protective status</p>	<p>Companies that set a jurisdiction or sourcing region level scope 3 spatial boundary are required to only include attributable productive lands which excludes non-productive lands, lands producing other products or materials, lands with harvest restrictions, lands with other protective status or in certain cases lands that issued GHG credits.</p>
<b>7. Interim requirement on proximate and adjacent non-productive lands within LMUs for scope 3 LMU-level accounting</b>	<p>Added the option to include proximate and adjacent non-productive lands within a land management unit-level (LMU-level) scope 3 spatial boundary, with the appropriate safeguards to ensure such lands are integrated into the agricultural management system and are within the land management unit boundary.</p> <p><i>Note: This requirement cannot currently be implemented since it is subject to forest carbon accounting.</i></p>	<p>N/A</p>	<p>If companies set a LMU-level scope 3 spatial boundary, such boundary can include proximate and adjacent non-productive lands if relevant criteria are met, including: single land management plan, connection to productive agricultural lands, same boundaries across accounting categories, same allocation methods, avoid double counting, and additional safeguards to account for anthropogenic CO<sub>2</sub> emissions and removals that are pending the final resolution on forest lands and non-productive non-forest lands.</p>

<b>8. Interim traceability requirement</b>	The requirement was revised to clarify the applicability of physical traceability to emissions and other metrics as well, not only removals.	Companies are required to establish physical traceability to account for removals.	Companies are required to establish physical traceability to define a sourcing region, LMU, or harvested area scope 3 spatial boundary to account for emissions, removals and other metrics.
	The chain of custody models eligible to demonstrate physical traceability were broadened to include mass balance, with the appropriate safeguards.	Physical traceability can be demonstrated with the following chain of custody models: Identity preserved, segregation, and controlled blending. Physical traceability cannot be ensured with mass balance, and book and claim.	Physical traceability can be demonstrated with the following chain of custody models: Identity preserved, segregation, controlled blending, and mass balance when specific criteria are met. Physical traceability cannot be demonstrated with book and claim and mass balance when specific criteria are not met.
	Added the concept of impact traceability.	N/A	Emissions and removals associated with impact traceability (i.e., the ability to track information on GHG emissions or removals impacts of project or interventions in the value chain) are required to be reported separately from the physical GHG inventory.
	Added a recommendation on considerations to determine the level of traceability and the scope 3 spatial boundary.	N/A	The most appropriate level of traceability is context-specific, and companies are recommended to determine this based on the type of land management units producing the goods/services and the reporting company's position in the value chain.
<b>9. Same allocation methods across metrics</b>	Added an allocation requirement for land sector accounting across emissions, removals and other metrics.	N/A	Companies are required to apply the same allocation method across accounting categories (i.e., emissions, removals, and other metrics) within a given spatial boundary.
	Added scope 3 allocation recommendation where the allocation decision tree was revised.	Companies are recommended to: 1) avoid allocation, if possible, 2) consider physical allocation, and 3) if data is not available use another method.	Companies are recommended to: 1) avoid allocation, if possible, 2) align with legislative requirements, 3) align with sectoral recommendations, 4) consider physical allocation, and 5) consider economic or other allocation.
	Added agriculture sector allocation recommendations where additional guidance was provided on allocating land emission and removals within specific cropping systems and at agricultural product processing facilities.	N/A	Companies are recommended to apply allocation approaches for crop rotations, crop rotations with cover crops, and intercropping systems. Companies are recommended to apply there following hierarchy of land allocation methods among agricultural products: 1) consider economic allocation, 2) consider area-time allocation.

			Companies are recommended to apply economic allocation at the agricultural product processing facility. <i>These recommendations include additional guidance.</i>
<b>10. Land use change emissions accounting</b>	The requirement was revised to reflect that there are no scope 2 land use change emissions.	Companies are required to account for and report direct land use change (dLUC) emissions or statistical land use change (sLUC) emissions in scope 1, scope 2, and scope 3.	Companies are required to account for and report direct land use change (dLUC) emissions or statistical land use change (sLUC) emissions in scope 1, and scope 3 (there are no scope 2 LUC emissions).
	The requirement to distribute LUC emissions across the LUC assessment period was standardized to require linear discounting.	Companies are required to use a linear discounting approach or an equal discounting approach to distribute emissions across the assessment period in the inventory.	Companies are required to use linear discounting or disclose and provide justification if another time discounting method is used (e.g., equal discounting) in specific circumstances.
	The requirement to calculate sLUC emissions was standardized to require the product expansion method.	Companies are required to disclose and justify the allocation approach used to estimate sLUC (i.e., shared responsibility or product expansion approach).	If sLUC metrics were used, companies are required to apply the product expansion allocation method or provide justification if the shared responsibility allocation method is used in the specific circumstance set forth.
	Added a requirement to select the most accurate calculation approach available and criteria for when companies are required to re-baseline.	N/A	Companies are required to select the most accurate calculation approach that data availability and value chain traceability allow. Companies are required to re-baseline when there is a change in the LUC emission calculation approach or the data/ methods used.
	Added a recommendation to follow a hierarchical approach for LUC accounting based on data availability.	N/A	Companies are recommended to follow the hierarchy of calculation approaches for land use change accounting (see Table 7.1)
	Added the jurisdictional dLUC approach among the calculation approaches that can be used.	Spatial methods for estimating LUC emissions within a jurisdiction were only included in a box as a pilot testing consideration.	When companies have traceability to a sourcing region or jurisdiction, and adequate spatial data exists they can estimate "jurisdictional" dLUC emissions on all attributable productive lands in the sourcing region or jurisdiction the company sources from.
<b>10.1 Animal products</b>	Added a requirement to explicitly address LUC emissions in the life cycle of animal products.	N/A	Companies that raise livestock or have animal products in their value chain are required to account for LUC emissions on both lands used for livestock grazing and croplands used for feed production consumed by the livestock over the animal's life cycle.

<b>10.2 Water reservoir emissions</b>	Added a requirement to account for water reservoir emissions, that specifies which companies must account for such emissions and to account for them as LUC emissions.	Companies are required to account for and report emissions from reservoirs as land management non-CO <sub>2</sub> emissions.	Companies that own or control water reservoirs, purchase electricity generated from hydropower at water reservoirs, produce or purchase agricultural products irrigated with water stored in water reservoirs, or otherwise have water in their value chain are required to account for and report emissions from water reservoirs as LUC emissions.
	Revised the accounting approach for emissions associated with purchased electricity generated from hydropower at water reservoirs to be reported as life cycle emissions in scope 3, category 3 (not in scope 2).	If companies acquire electricity, steam, heating or cooling from reservoirs (e.g., electricity generated for hydropower reservoirs) companies are required to account for land management non-CO <sub>2</sub> emissions in scope 2.	If electricity generated from hydropower is acquired or purchased, companies are required to account for emissions from the water reservoir as LUC emissions in scope 3, category 3.
	Added recommendations on the appropriate assessment period for CO <sub>2</sub> emissions and CH <sub>4</sub> emissions from water reservoirs, and a hierarchy of methods to be used.	<i>N/A</i>	Companies are recommended to use a 20-year assessment period for CO <sub>2</sub> emissions and a 100-year assessment period for CH <sub>4</sub> emissions. Companies are recommended to follow the specified hierarchy of methods.
<b>11. Subcategory land use change emissions accounting</b>	Added a requirement to explicitly address subcategory land use change (conversion of natural land to intensively managed land within the same land use).	Where the land use category remains the same but land use subcategory changes companies are recommended to account for this as LUC emissions.	If there is conversion of natural forest to plantation forest, natural grassland to intensively managed grassland, or natural wetland to productive wetland, companies are required to account for subcategory LUC emissions.
<b>12. Land use accounting</b>	The metric to account for land use was standardized to land occupation.	Companies are required to account for and report at least one land tracking metric (indirect land use change emissions, carbon opportunity costs, land occupation), reported separately from emissions and removals.	Companies are required to account for scope 1 and scope 3 agricultural land occupation, and report this under "land use" separately from the physical GHG inventory.
<b>13. Land carbon leakage accounting</b>	<p>The requirement to account for negative impacts outside of the physical GHG inventory boundary was removed.</p> <p>A requirement to account for GHG impacts of displaced food production when activities with high risk of land carbon leakage are implemented was added.</p> <p>The metric to account for land carbon leakage was standardized to the carbon opportunity cost on lands where food or feed production was diverted to.</p>	<p>If actions are implemented, that could have a potentially significant negative impact (i.e., increase GHG emissions and/or decrease removals) outside the scope 1, 2 and 3 boundary, estimate the impacts on GHG emissions and removals resulting from the action and report the impacts separately from the scopes.</p> <p>Quantify impacts using intervention accounting methods (including land tracking metric(s)).</p>	<p>If companies implement specified activities with high risk for land carbon leakage, and as a result report reduced GHG emissions or increased removals, but such activities also reduce or divert food or feed production on agricultural land, they are required to quantify land use-related GHG impacts of displaced food production, and report such leakage under "land carbon leakage" separately from the physical GHG inventory.</p> <p>Companies are required to quantify land carbon leakage using the annualized, average carbon stock losses from the conversion of native ecosystems to agricultural land to</p>

			replace the quantity and type of reduced or diverted food or feed production at average yields ("carbon opportunity cost").
<b>14. Land management net biogenic CO<sub>2</sub> emissions accounting</b>	Revised the requirement to specify its applicability to productive agricultural lands and not forest lands.	Companies are required to account for land management net CO <sub>2</sub> emissions based on annual net land carbon stock changes.	Companies are required to account for land management net biogenic CO <sub>2</sub> emissions on productive agricultural lands based on annual or annualized net land carbon stock changes. <i>Note: The LSR Standard v1 does not include rules to account for land management net biogenic CO<sub>2</sub> emissions on forest lands and non-productive, non-forest land for corporate GHG inventories.</i>
	Moved the option to account for longer monitoring frequencies from the Guidance into the requirement and made the explicit connection between monitoring frequencies and crop rotation and cultivation cycles.	Companies can account based on the annual net carbon stock change or net carbon stock change annualized over a longer monitoring frequency.	Companies can account for cropland carbon stock changes using monitoring frequencies at timescales that reflect the relevant crop rotation or crop cultivation cycle.
<b>15. Anthropogenic impacts on agricultural land</b>	Revised the requirement to specify its applicability to productive agricultural lands and not forest lands. <i>The GHG Protocol's Independent Standards Board did not reach a resolution to account for land management net biogenic CO<sub>2</sub> emissions on forest lands.</i>	Companies are required to account for anthropogenic impacts using one of the following two approaches: <ul style="list-style-type: none"> <li>• Classify all lands as managed lands</li> <li>• Develop and consistently apply an approach to classify lands as managed or unmanaged</li> </ul>	Companies are required to account for all changes in land carbon stocks on productive agricultural land. All of these changes are considered anthropogenic. <i>Note: Distinguishing anthropogenic impacts due to forest management activities or non-forest lands outside of agricultural production is complex, final requirements may be published in future versions of the LSR Standard.</i>
<b>16. Land management production emissions accounting</b>	The accounting subcategory name was changed from "land management non-CO <sub>2</sub> emission" to "land management production emissions".	Companies are required to account for and report "land management non-CO <sub>2</sub> emissions".	Companies are required to account for and report "land management production emissions".
	Added a requirement to explicitly address land management production emissions in the life cycle of animal products.	N/A	Companies that raise livestock, practice aquaculture, or have animal products in their value chain are required to account for land management production emissions on lands used for livestock grazing and croplands used for feed production consumed by the livestock or other animals over their life cycle.
	Added a recommendation to clarify how fossil fuel and industrial emissions related to this accounting subcategory should be reported.	N/A	Companies are recommended to report these emissions as "fossil fuel and industrial emissions" if data allow. If not, companies can report these emissions as "land management production emissions."

<p><b>17. Biogenic product emissions accounting</b></p>	<p><u>Open question #1:</u> Revised the requirement based on an alternative option for how to report biogenic product CO<sub>2</sub> emissions when life cycle emissions are not reported. Adopted general terms as a shorthand for more precise terms (e.g. “biogenic product CO<sub>2</sub> emissions” as shorthand for “gross biogenic product CO<sub>2</sub> emissions”). Revised the applicability of this requirement to companies that purchase, consume, or sell non-food, non-feed biogenic products (excluding biogenic wastes).</p>	<p>Companies are required to account for all direct and indirect gross biogenic product CO<sub>2</sub> emissions across the life cycle and separately report these emissions under “gross emissions”.</p> <p><u>Open question #1:</u> How should biogenic CO<sub>2</sub> emissions and removals be reported:</p> <ol style="list-style-type: none"> <li>1) Current approach (stock-change accounting in scopes, flow-based accounting outside scopes)</li> <li>2) Scope 1 if not scope 3</li> <li>3) Dual reporting</li> <li>4) Other options</li> </ol>	<p>Companies that purchase, consume, or sell non-food, non-feed biogenic products (excluding biogenic wastes) are required to account for scope 1, scope 2 and scope 3 biogenic product CO<sub>2</sub> emissions as follow:</p> <p>If all GHG emissions that occur in the life cycle of products (including land carbon leakage, where required) are accounted for, report biogenic product CO<sub>2</sub> emissions under “gross CO<sub>2</sub> fluxes” separately from the physical GHG inventory.</p> <p>If any of the GHG emissions that occur in the life cycle of products (including land carbon leakage, where required) are not accounted for, report biogenic product CO<sub>2</sub> emissions under “land emissions” within the physical GHG inventory.</p>
<p><b>18. TCDR-based product emissions accounting</b></p>	<p><u>Open question #1:</u> Revised the requirement based on an alternative option for how to report TCDR-based product CO<sub>2</sub> emissions when life cycle emissions are not reported.</p>	<p>Companies are required to account for all direct and indirect gross TCDR-based product CO<sub>2</sub> emissions across the life cycle and separately report these emissions under “gross emissions”.</p>	<p>Companies are required to account for scope 1, scope 2 and scope 3 TCDR-based product CO<sub>2</sub> emissions as follow:</p> <p>If it is demonstrated that the CO<sub>2</sub> or carbon in the TCDR-based product is technologically removed CO<sub>2</sub>, and all life cycle GHG emissions associated are accounted for, report TCDR-based product CO<sub>2</sub> emissions under “gross CO<sub>2</sub> fluxes” separately from the physical GHG inventory.</p> <p>If it is not demonstrated that the CO<sub>2</sub> or carbon in the TCDR-based product is technologically removed CO<sub>2</sub>, or not all life cycle GHG emissions associated are accounted for, report TCDR-based product CO<sub>2</sub> emissions under “fossil fuel and industrial emissions” within the physical GHG inventory.</p>
<p><b>19. Removals accounting</b></p>	<p>Revised the requirement to specify its applicability to productive agricultural lands and not forest lands.</p>	<p>Companies that optionally choose to account for land management CO<sub>2</sub> removals are required to account for them based on annual net land carbon stock changes.</p>	<p>Companies that optionally choose to account for land management CO<sub>2</sub> removals are required to account for them based on annual or annualized net land carbon stock changes within productive agricultural lands.</p> <p><i>Note: The LSR Standard v1 does not include rules to account for land management CO<sub>2</sub> removals on forest lands and non-productive, non-forest land for corporate GHG inventories.</i></p>
	<p>Revised the requirement to develop a contractual agreements to report scope 1 net removals with geologic storage when no single entity owns or controls both the sink and the pool of the CO<sub>2</sub> removals, changing the existing criteria to include all entities involved to a</p>	<p>Companies are required to report a description of the contractual arrangement and avoidance of double counting of scope 1 removals between all entities in the geologic removal and storage value chain.</p>	<p>R19.GS Companies that optionally choose to account for scope 1 CO<sub>2</sub> removals with geologic storage with multiple entities in the geologic storage process are required to develop a contractual agreement to report scope 1 net removals with geologic storage. It is recommended that the contractual agreement to be between, at a minimum, the party</p>

	<p>recommendation to include at least the party that captures and the party that stores the CO<sub>2</sub>.</p>		<p>that captures the CO<sub>2</sub> and the party that stores the CO<sub>2</sub> in a geologic reservoir.</p> <p>Land managers and landowners are not required to be included in such contractual agreements if those land managers and landowners will not report such removals with geologic storage.</p>
	<p>Revised the “technological CO<sub>2</sub> removal” definition to be inclusive of the capture of biogenic CO<sub>2</sub>.</p>	<p>Technological sinks: Mechanical or chemical processes that remove CO<sub>2</sub> from the atmosphere and store CO<sub>2</sub> or TCDR-based carbon in non-atmospheric carbon pools.</p>	<p>Technological sink: Mechanical or chemical processes that remove CO<sub>2</sub> from the atmosphere or capture biogenic CO<sub>2</sub> from a source, and store such CO<sub>2</sub> or other forms of carbon derived from CO<sub>2</sub> removals in non-atmospheric carbon pools.</p>
<p><b>20. Scope 3 removals traceability</b></p>	<p><u>Open question #3</u>: Finalized the requirement to only allow land management CO<sub>2</sub> removals with land management unit traceability or sourcing region traceability with safeguards.</p> <p>Revised the sourcing region safeguards.</p>	<p><u>Open question #3</u>: What level of physical traceability is appropriate to account for land management net CO<sub>2</sub> removals?</p> <p>1) Land management unit or more precise traceability, 2) Sourcing region with safeguards.</p>	<p>R20.LMR Companies that optionally choose to account for land management CO<sub>2</sub> removals are required to have physical traceability to the sourcing region, land management unit, or harvested area. Additionally, for such companies that only have physical traceability to a sourcing region are required to meet sourcing region safeguards.</p>
<p><b>21. Data quality for removals</b></p>	<p>Revised the criteria related to uncertainty, changing the requirement for statistical significance from a requirement to a recommendation.</p>	<p>Companies that optionally choose to account for CO<sub>2</sub> removals are required to account for CO<sub>2</sub> removals only if the net land carbon stock increase is statistically significant.</p>	<p>Companies that optionally choose to account for CO<sub>2</sub> removals are recommended to use sampling approaches that ensure statistically significant estimates of carbon stock changes.</p>
	<p>Revised the criteria related to sampling changing requiring measurements representative of the inventory base year or period to a recommendation, and revised language.</p>	<p>Companies that optionally choose to account for CO<sub>2</sub> removals are required to include land carbon stock measurements representative of relevant lands and carbon pools in the company’s GHG inventory base year or period.</p>	<p>Companies that optionally choose to account for CO<sub>2</sub> removals are recommended to obtain measurements or calibrate models to ensure that estimates are representative of that carbon pool in the initial year.</p>
<p><b>22. Scope 3 allocation for removals</b></p>	<p>Added a requirement to avoid double counting when two companies use different overlapping levels of traceability for removals.</p>	<p>N/A</p>	<p>Companies that optionally choose to account for CO<sub>2</sub> removals are required to avoid double counting from the same LMU, sourcing region, or technological CO<sub>2</sub> removal operation with other companies at the same or similar tiers of the value chain.</p> <p>They are also required to not over-allocate removals from an LMU, sourcing region, or technological CO<sub>2</sub> removal operation.</p>
<p><b>23. Permanence for removals</b></p>	<p>Added options to help manage permanence, including: monitoring periods, collaborative monitoring approaches and reserve approach.</p>	<p>N/A</p>	<p>Companies that optionally choose to account for CO<sub>2</sub> removals can define a series of consecutive, sequential time intervals for ongoing monitoring to implement Requirement 23.</p>

			<p>Ongoing storage monitoring can be managed by a single entity or multiple entities.</p> <p>Such companies can also use a reserve approach (or “buffer pool”) as a risk management tool to help implement the requirement to account for losses of stored carbon on an annual basis.</p> <p><i>These options each include additional guidance.</i></p>
<b>24. Product carbon storage accounting</b>	<p><u>Open question #2:</u> Finalized the requirement to state that product carbon storage accounting category is an additional accounting category reported separately from the physical GHG inventory.</p>	<p><u>Open question #2:</u> Should net product carbon stock changes, accounted for using a storage monitoring framework be reported in scope 3 or outside the scopes in a separate reporting category?</p>	<p>Companies that optionally choose to account for product carbon storage are required to use the stock-change accounting approach based on annual net product carbon stock changes and report product carbon storage separately from the physical GHG inventory.</p>
	<p>Revised the data quality requirements for product carbon storage to distinguish product carbon storage data quality requirements from the CO<sub>2</sub> removals data quality requirements.</p>	<p>Companies that optionally choose to account for product carbon storage are required to account using primary data (i.e., empirical data specific to the sinks and product carbon pools where carbon is stored in the reporting company’s operations or value chain).</p>	<p>Companies that optionally choose to account for product carbon storage are required to use information regarding the carbon content of the sold product, as well as data regarding product lifetime (half-life value), and conversion rates from raw material to intermediate products, final products, and/or recycling and reuse.</p>
	<p>The product carbon pool definition was revised to only include products or materials during the use phase.</p>	<p><u>Product carbon pool:</u> Carbon in products or materials not included within land-based or geologic carbon pools. Includes biogenic, fossil and technological carbon dioxide removal (TCDR)-based products.</p>	<p><u>Product carbon pool:</u> The carbon in products or materials during the use phase of the product life cycle, including recycling and reuse. Includes biogenic and TCDR-based products.</p>
<b>25. Land accounting for biogenic carbon storage in geologic reservoirs and for agricultural product carbon storage</b>	<p>Revised the land accounting requirements for companies choosing to account for and report captured biogenic CO<sub>2</sub> with geologic storage and biogenic product storage.</p>	<p>Companies that optionally choose to account for CO<sub>2</sub> removals with geologic storage or product carbon storage associated with biogenic feedstocks are required to account for the annual net land carbon stock changes on lands where the biogenic carbon contained in products is sourced from and demonstrate that there are increases or no changes in land carbon stocks within attributable managed lands.</p>	<p>Companies that optionally choose to account for captured biogenic CO<sub>2</sub> with geologic storage or biogenic product carbon storage are required to account for all life cycle GHG emissions, land use and leakage and demonstrate that there are no significant land use change emissions attributable to the biogenic materials.</p>
<b>26. Waste carbon storage accounting</b>	<p>Added a separate accounting category and definition for waste carbon pool, distinguished from the product carbon pool.</p>	<p>N/A</p>	<p><u>Waste carbon pool:</u> Carbon contained in landfills or waste materials during their end-of-life phase, excluding recycling and reuse.</p> <p>Companies that optionally choose to account for waste carbon storage are required to meet the same requirements as those for product carbon storage, take adequate</p>

			measures to avoid soil and groundwater contamination, and account for all GHG emissions from the end-of-life treatment of sold products.
<b>27. Target-setting approaches</b>	Changed the requirement to separate land and non-land net targets to a recommendation to programs, regulators, and companies not participating in target-setting programs.	Companies that choose to set targets are required to set separate land net targets (for land emissions and removals) vs. non-land net targets (for non-land emissions and removals)	GHG programs and regulators are recommend to require separate targets for land net targets (for land emissions and land management CO <sub>2</sub> removals) and non-land net targets (for fossil fuel and industrial emissions and CO <sub>2</sub> removals with geologic storage).
	Added the option to separately set targets for product storage.	Inclusion of product storage in removals or net targets was subject to open question #2.	If companies choose to set targets for product carbon storage, product carbon storage targets are required to be separate from and not included in their emissions, removals, or net targets.
<b>28. Setting a base year or base period and tracking progress</b>	<i>Non-substantial amendments were made to improve clarity</i>	<i>N/A</i>	<i>N/A</i>
<b>29. GHG crediting principles</b>	<i>Non-substantial amendments were made to improve clarity</i>	<i>N/A</i>	<i>N/A</i>
<b>30. Avoid double counting with GHG credits</b>	<i>Non-substantial amendments were made to improve clarity</i>	<i>N/A</i>	<i>N/A</i>
<b>30.1 Inset credits</b>	<i>Non-substantial amendments were made to improve clarity</i>	<i>N/A</i>	<i>N/A</i>
<b>31. Disaggregated reporting</b>	Added the option for companies to report aggregated data under certain conditions and if justification is provided.	<i>N/A</i>	If emissions of a given accounting category comprise a small share of the total GHG inventory and disaggregated data is not available, companies can use aggregated data to report by scope and scope 3 category without disaggregated accounting subcategories. They have to disclose and justify the use of aggregated data.
<b>32. Additional reporting of aggregate values</b>	Added a new requirement applicable to companies that report a single aggregated value, to include relevant accounting categories in that value.	<i>N/A</i>	If companies choose to report a single value that aggregates emissions or nets land emissions and land management CO <sub>2</sub> removals, include fossil fuel and industrial emissions, land emissions and land carbon leakage in that value. They are required to report “total emissions” separately from the physical GHG inventory.