



**FUNDAMENTALS OF ORGANIZATIONAL GHG ACCOUNTING**

**FOR ENVIRONMENTAL AND GHG SPECIALISTS**

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ENVIRONMENTAL SPECIALIST CURRICULUM



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**ADDITIONAL TECHNICAL ISSUES**

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**LEARNING OBJECTIVES**





- Sequestered carbon
- Emissions from biofuels
- Greenhouse gas emission offsets (i.e., emission reductions from projects)



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## CARBON SEQUESTRATION



✓ Carbon sequestration refers to the uptake of CO<sub>2</sub> and storage of carbon in biological or geological sinks.

✓ This lesson does not cover accounting for geological carbon sequestration, as this practice is still very nascent and consensus methodologies have not yet been developed.

✓ Methodologies for accounting for biological carbon sequestration, on the other hand, while still lacking at the corporate level, can draw from work on national inventories and project GHG accounting, which are reviewed in this lesson.



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## BIOLOGICAL CARBON SEQUESTRATION



✓ During photosynthesis, plants remove carbon (as CO<sub>2</sub>) from the atmosphere and store it in plant tissue. Until this carbon is cycled back into the atmosphere, it resides in one of a number of "carbon pools." These pools include

- Above-ground biomass (e.g. vegetation) in forests, farmland, and other terrestrial environments
- Below-ground biomass (e.g. roots)
- Biomass-based products (e.g. wood products) during use and contained in landfills

✓ Carbon can remain in some of these pools for long periods of time, sometimes for centuries. If the stocks of sequestered carbon stored in these pools increase, it represents a net removal of carbon from the atmosphere... and if the stocks decrease, it represents a net addition of carbon to the atmosphere.



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## ACCOUNTING FOR SEQUESTERED CARBON



✓ It is generally recognized that changes in stocks of sequestered carbon and the associated exchanges of carbon with the atmosphere are important to national GHG emissions inventories, and consequently, these impacts on sequestered carbon are commonly addressed in national inventories.

✓ Similarly, for companies in biomass-based industries, such as the forest products industry, some of the most significant aspects of a company's overall impact on atmospheric CO<sub>2</sub> levels occur as a result of impacts on sequestered carbon in their direct operations as well as along their value chain. As a result, some companies have begun to address this aspect of their GHG footprint within their corporate GHG inventories.

✓ Information on a company's impacts on sequestered carbon can be used for strategic planning, for educating stakeholders, and for identifying opportunities for improving the company's GHG profile. Opportunities may also exist to create value from reductions created along the value chain by companies acting alone or in partnership with raw material providers or customers.



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## ACCOUNTING FOR SEQUESTERED CARBON +



Consensus methods have yet to be developed for accounting of biologically sequestered carbon as it moves through the value chain of biomass-based industries. Nonetheless, some issues that need to be addressed when evaluating biologically sequestered carbon in the context of GHG inventories include:

- Setting organizational boundaries
- Setting operational boundaries
- Tracking removals over time
- Identifying and calculating GHG removals
- Reporting GHG removals



## SEQUESTERED CARBON – ORGANIZATIONAL BOUNDARIES



✓ In some cases, it may be possible to apply the equity share approach or the control approach directly to emissions or removals associated with sequestered atmospheric carbon.

✓ Among the issues that may need to be examined is the ownership of sequestered carbon under different types of contractual arrangements involving land and wood ownership, harvesting rights, and control of land management in harvesting decisions.



## SEQUESTERED CARBON – OPERATIONAL BOUNDARIES



✓ Companies may, for example, need to provide a description of the value chain capturing impacts that are material to the decision-makers. This should include which pools (e.g., below ground biomass) are included in the analysis, which are not, and the rationale for the selections.



### SEQUESTERED CARBON – TRACKING OVER TIME

Inventory data on sequestered carbon may need to be averaged over multiple years to accommodate the year-to-year variability expected in these biological systems. The temporal scale used in sequestered carbon accounting will often be closely tied to the spatial scale over which the accounting is done. The question of how to adjust/recalculate base years to account for land acquisition and divestiture, land use changes, and other activities may need to be addressed, as may the question of whether certified sustainable forestry practices provide assurance that over a given time and area, that carbon stocks are not declining.



### CALCULATION AND REPORTING

✓ There are no widely accepted calculation tools for calculating sequestered carbon at the corporate level. In some cases, quantification methods for national inventories (IPCC methodologies) or for project-level accounting can be adapted for corporate-level quantification.

✓ Until consensus methods are developed for characterizing impacts on sequestered atmospheric carbon along the value chain, this information should be included in the "optional information" section of the inventory report.



### ACCOUNTING FOR EMISSIONS FROM BIOFUELS

✓ Emissions data for direct CO<sub>2</sub> emissions from biological sources (e.g., CO<sub>2</sub> from burning biomass or biofuels) should be reported separately from Scope 1, 2, or 3.

✓ This is because the capture and emissions of CO<sub>2</sub> from biofuels are part of the short-term carbon cycle, in which CO<sub>2</sub> is captured through photosynthesis and released through respiration on a relatively short time horizon.

✓ This is in contrast to fossil fuels, which are part of the long-term carbon cycle, in which CO<sub>2</sub> is captured and released through chemical weathering and geological processes on a much longer time horizon.





## ACCOUNTING FOR GHG OFFSETS

- ✓ A GHG emission offset is a discrete GHG emission reduction used to compensate for (i.e., offset) GHG emissions elsewhere, for example to meet a GHG target or cap.
- ✓ Offsets are calculated relative to a baseline scenario that represents the level of GHG emissions that would have occurred absent any consideration of the implementation of a project intended to reduce emissions.
- ✓ This contrasts sharply to corporate GHG accounting, in which GHG reductions are tracked over time by comparing corporate GHG emissions in any given year to those that occurred in the company's base year.
- ✓ It is very important to distinguish GHG offset accounting for emission reduction projects from corporate GHG accounting of emissions for an entity over time.



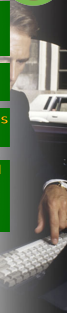
## ACCOUNTING FOR GHG OFFSETS

- ✓ In order to account for GHG offset projects, you should use the GHG Protocol for Project Accounting, and/or a recognized project accounting methodology relevant to your project type.
- ✓ If your company purchases GHG offsets (or GHG credits), for example to meet a corporate GHG reduction target or to "go carbon-neutral," you must report these separately from your Scope 1, 2, and 3 emissions. You may not subtract the quantity of offsets from your corporate inventory.



## SUMMARY

- ✓ Carbon sequestration, biofuel emissions, and GHG offsets are subject to special GHG accounting and reporting rules
- ✓ Sequestered carbon should be reported under "optional information"
- ✓ Information on biofuel emissions should be reported as a memo item separate from the Scopes
- ✓ GHG impacts from offset projects should be calculated using a Project Protocol-based methodology, and corporate emissions must be reported without netting out any offsets





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