

Carbon Accounting in BECCS Value Chains

WS30: Bioenergy in a Net Zero Future

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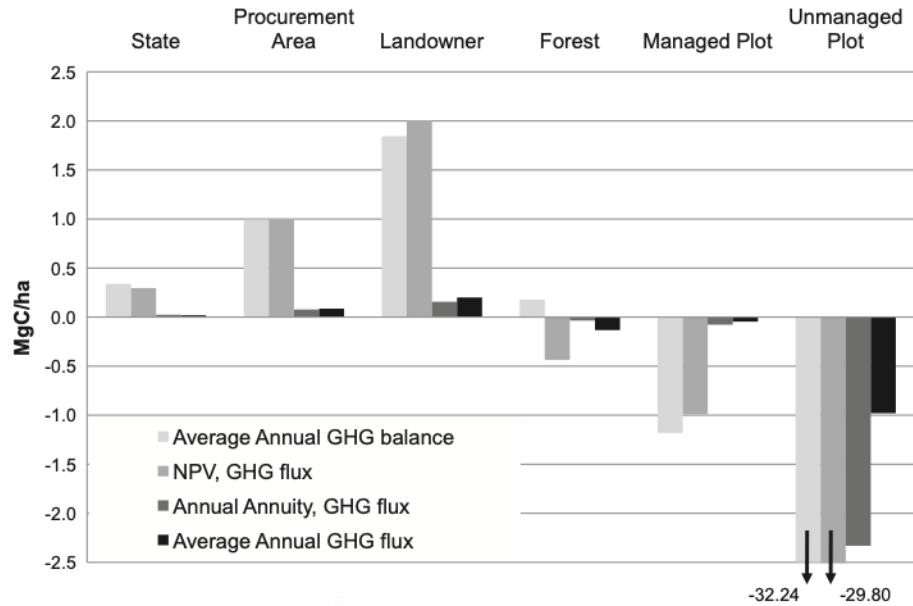


Fig. 3 – Greenhouse gas (GHG) implications by assessment scale and reporting approach. Positive values represent improved GHG performance relative to a baseline, non co-fire scenario.

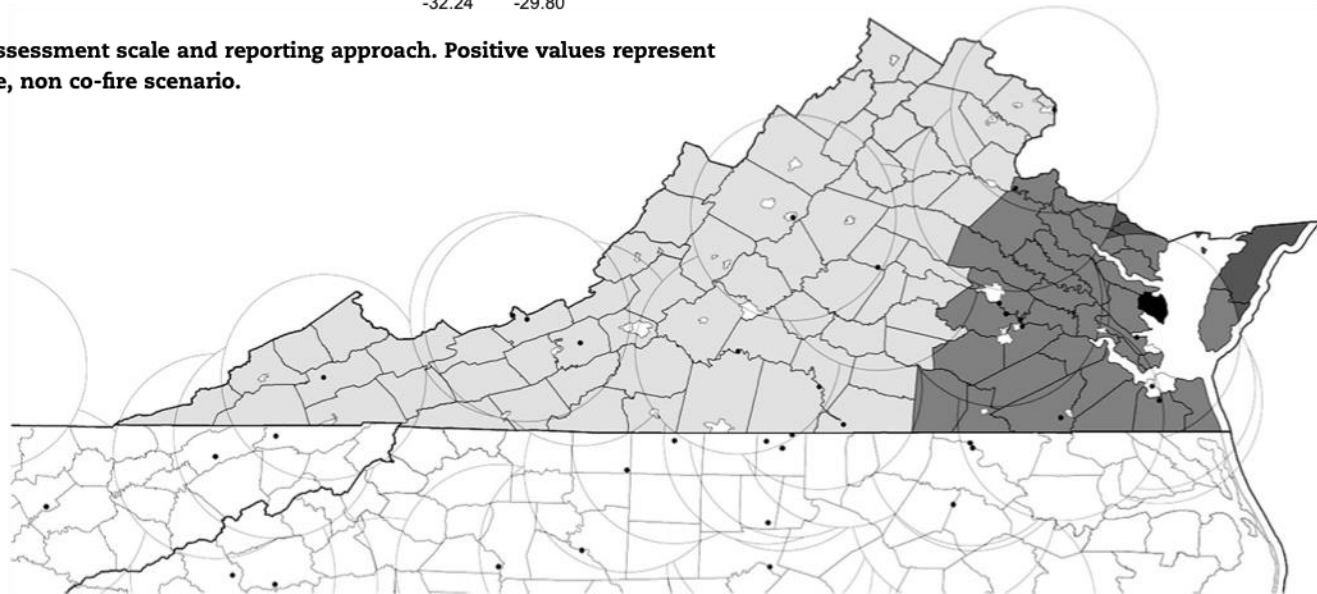
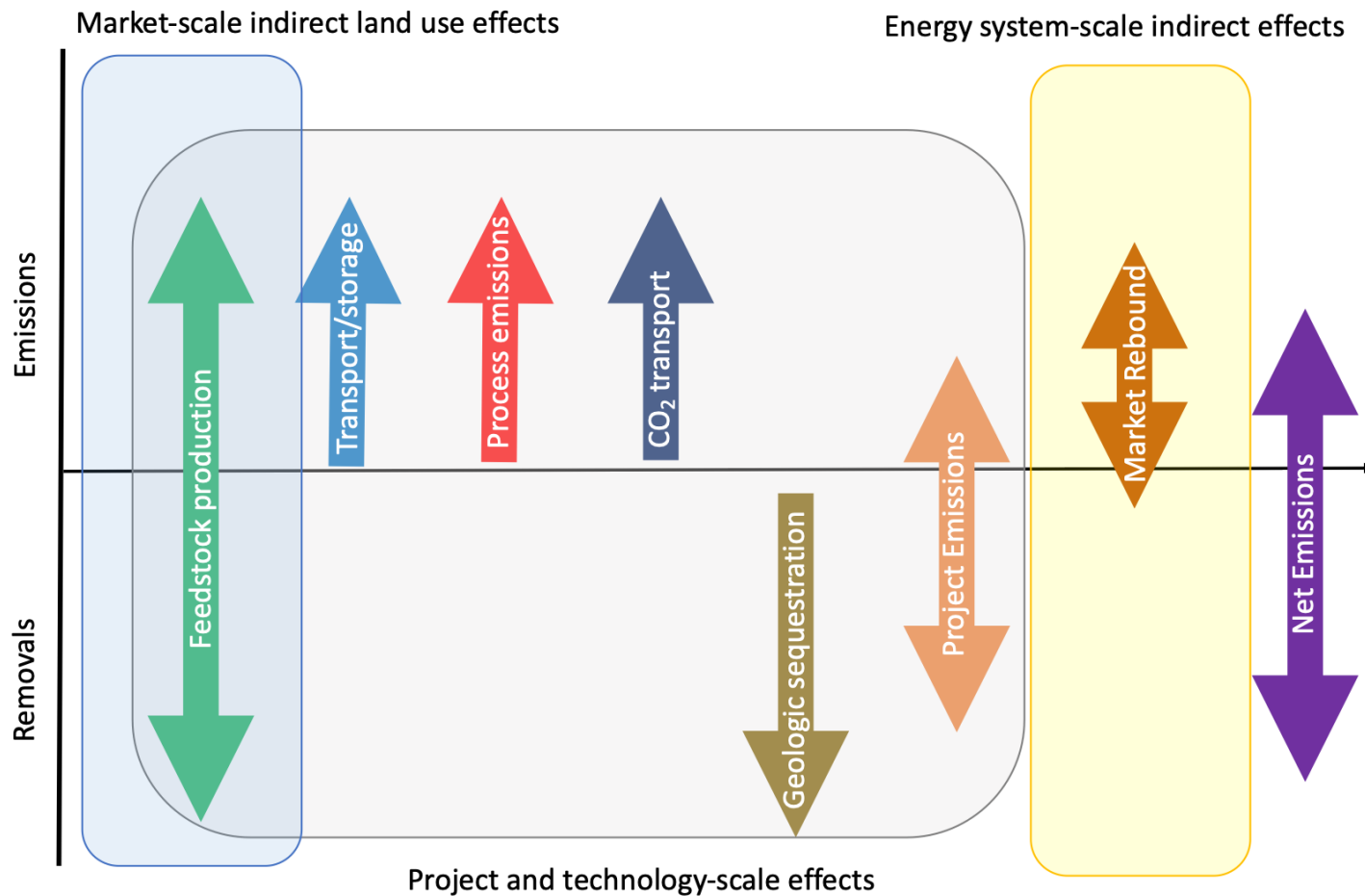


Fig. 1 – Study area, indicating size and location of Virginia Forest Inventory and Analysis (FIA) Survey Unit 1 (gray shaded), Mathews County (black shaded), and the location and sourcing areas of coal-fired facilities (black points and attendant 50mi radii buffers).

“As first and foremost a strategy for deep decarbonization, future deployment of BECCS will require confidence in the GHG mitigation potential associated with its use, both in terms of scientific understanding and treatment under relevant policy...”



Conceptual diagram of GHG emissions or removals from a BECCS pathway.
Source: Galik et al. (2023)

In this stylized example, project-specific components can either generate net emissions or net removals as indicated by the direction of shaded columns. Note that, for some effects (e.g., feedstock production, energy system market rebound) emissions or removals could include both direct and indirect effects.

The Challenges

- Continuing public distrust—and strong scientific debate—surrounding accounting of biogenic stocks, generally.
- Multiple layers of reporting complicate transmission of incentives along an accounting chain.
- BECCS shares challenges with CDR and renewable pathways. Consistent treatment is needed to avoid implicitly favoring pathways.

The Opportunities

- Multiple policies exist with the potential to influence the accounting and allocation of removals across a BECCS supply chain. Precedent also exists in accounting approaches for traditional bioenergy (biopower, liquid biofuels)
- Feedstock transport, energy or fuel production processes, and other direct emissions are generally well-understood. Simplified accounting might be used for pathways that have clear baseline conditions and minimal indirect effects (e.g., waste, residues).

Some parting thoughts...

- **Consider building on existing approaches.** The constituent elements onto which accounting pathways are built have precedent. While potentially biasing against new and/or superior approaches, existing approaches have benefits of implementation experience and buy-in.
- **Consider taking the easy way out—for now.** Specific pathways that have clear baseline conditions and minimal indirect, market-level effects (e.g., waste, “residues”) might provide critical experience and exposure to ease further deployment.

References

1. Galik, C. S., & Abt, R. C. (2012). The effect of assessment scale and metric selection on the greenhouse gas benefits of biomass. *Biomass & Bioenergy*, 44, 1-7.
2. Galik, C. S., Baker, J. S., Bartuska, A., & Abt, R. C. (2023). Accounting Considerations for Capturing the GHG Consequences of BECCS. Energy Futures Initiative, Washington, D.C.