Biomass Burial: A Near-Term, Scalable Carbon Removal Technology

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Abstract:

Biomass burial is a near-term, scalable carbon removal strategy that avoids the chicken-and-egg barrier facing large biorefineries: investors hesitate to fund billion-dollar facilities without guaranteed feedstock, while farmers resist producing biomass without reliable processing markets. By contrast, biomass burial can be deployed modularly, using distributed agricultural, forestry, and municipal residues at smaller scales with lower capital risk. This review evaluates the biogeochemical foundations, permanence, and environmental trade-offs of burial pathways, alongside techno-economic and life cycle assessments. We emphasize biomass burial's ability to flexibly integrate with local supply chains, create decentralized carbon removal infrastructure, and deliver durable storage without the need for centralized, high-cost facilities. Positioned within the broader carbon removal portfolio, biomass burial offers a practical and rapidly deployable option capable of contributing gigaton-scale mitigation in the near term.