Using Decision Making Models to Design Effective Policy for Natural Climate Solutions: A Case Study of Agroforestry in West Africa

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Abstract: Agroforestry is a traditional land use practice that leverages agricultural lands as a natural climate solution (Griscom et al., 2017) and is an integral part of numerous countries’ Nationally Declared Contributions (NDCs) to climate mitigation and adaptation (IPCC, 2014). Agroforestry can increase crop yields, biodiversity, and livelihood resilience (Oakleaf et al., 2015; Minang et al., 2014). Despite these benefits, adoption of agroforestry remains low (Kabwe et al., 2016; Pattanayak et al., 2003). Growers who choose to adopt agroforestry must value the long-term benefits of their management practices sufficiently to outweigh deep uncertainties about environmental and market conditions over long time horizons. We therefore propose to use agroforestry as a case study to explore multi-scalar driving and restraining forces of decisions made for long-term benefits under uncertainty. Our project seeks to understand why growers adopt agroforestry by synthesizing and simulating agroforestry adoption. We will synthesize previous research and policy documents from Benin, Nigeria, and Cameroon to identify factors in the decision-making space for agroforestry adoption; implement a force field analysis to understand how factors drive or restrain agroforestry adoption; develop a conceptual decision-making model; and integrate this model into simulations of agroforestry adoption through time. We will then explore the relative impact of different levers of change in the simulation model, such as financial incentives, land tenure policies, and risk-mitigating programs. Synthesizing and simulating the forces that drive and restrain agroforestry adoption will inform policy design and actionable steps for implementing agroforestry as a climate adaptation and mitigation solution.

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