



Tropentag, September 20-22, 2017, Bonn

“Future Agriculture:
Socio-ecological transitions and bio-cultural shifts”

Assessing the Downstream Socioeconomic and Land Health Impacts of Agroforestry Promotion in Western Kenya

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Abstract

Agroforestry is widely purported to improve the livelihoods of smallholder farmers, rehabilitate degraded landscapes, and enhance the provisioning of critical ecosystem services, including carbon sequestration. Yet, the evidence base supporting these longer-term impacts is weak. Using a quasi-experimental evaluation design based on a theory-based and mixed methods framework, our study investigates both the downstream and intermediate effects of an eight year effort led by Vi Agroforestry (herein Vi), a Swedish non-governmental organisation (NGO), to promote agroforestry in large sections of Bungoma and Kakamega counties in western Kenya. In particular, we compare two sets of households against various outcome measures along the causal chain: those belonging to (a) 226 pre-existing farmer groups operating in 60 targeted programme villages; and (b) 206 non-targeted pre-existing farmer groups operating in 61 geospatially and demographically matched comparison villages. To further counter selection bias, we combine several econometric analytical methods, including two-stage least squares regression (2SLS), with difference-in-differences estimation. In addition, to triangulate key findings and interrogate impact pathways, unforeseen outcomes, and unexpected quantitative results, we carried out semi-structured in-depth interviews with a sub-sample of 40 purposively selected programme participants. We also applied process tracing to investigate the linkages between Vi's programme and previous agroforestry research carried out by the World Agroforestry Centre (ICRAF). We find these research-to-programme linkages to be strong and that a significantly greater albeit geographically variable uptake of the agroforestry practices promoted by Vi took place in the villages it targeted. Significant, yet modest and variable effects, were also identified for tree product income, fuelwood access, and milk yields among dairy farmers. Ironically, soil organic carbon (estimated via remote sensing) increased at a higher rate in the sampled farm plot's in the programme villages, overall, but so too did soil erosion. Finally, while we find limited evidence that the programme significantly bolstered food security, resilience, and education progression and spending, statistically significant, albeit modest, effects we identified for our asset and consumption expenditure measures (which includes the study's primary outcome variable), particularly among female farmer group members.

Keywords: Agroforestry, asset accumulation, causal chain, consumption expenditure, impact, mixed methods, process tracing, quasi-experimental, research impact, soil erosion, soil organic carbon, theory based impact evaluation, Vi Agroforestry

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