



Tropentag, September 20-22, 2017, Bonn

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

Adoption of Agroforestry-Based Biofuel Programs: A Case Study in Hassan District, India

FLORIS DALEMANS, MIET MAERTENS, BART MUYS

KU Leuven, Earth and Environmental Sciences, Belgium

Abstract

Local production of liquid biofuels has been widely considered in the South as a strategy towards energy security in remote areas depending on fickle fossil fuel markets and isolated from centralised electrification grids. In particular, much hope is set on biofuels derived from non-edible feedstock grown on marginal or underutilised lands, thereby trying to prevent interference with food production and food markets. This has given rise to many biofuel projects based on wasteland plantations, but their implementation faces many technical, ecological, socio-economic and institutional challenges, and many projects have failed to gain momentum. In this empirical case study, we investigate an alternative biofuel model in Hassan district, South India, which promotes the cultivation of various native oilseed trees in agroforestry systems on smallholder farms through training and planting programs, marketing support, cooperative establishments and distribution of processing equipment. Using an extensive survey with 396 local smallholder farmers, we aim to understand how context-specific factors play a role in smallholders' decisions to adopt the proposed biofuel model or not. Our analysis confirms that multiple barriers exist towards smallholder adoption, including labour and land opportunity costs, poor economic viability, ecological cultivation constraints, lack of knowledge on the value chain, and aversion towards revenue lags. The main implication is that even for these low input — high diversity — high resilience (LIHD) agroforestry-based systems with their associated multiple uses and co-benefits, not only opportunities but also constraints exist towards smallholder adoption. Ex-ante assessments of these context-specific determinants of (dis)adoption and rigorous performance evaluations are crucial to programme design, targeting and value chain establishment.

Keywords: Agroforestry, biofuels, energy security, smallholder adoption