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“Bridging the gap between increasing knowledge and decreasing resources”

The Roles of Agroforestry System and Coffee Certificate in Improving Farmers' Economic and Environmental Benefits in Sumatra, Indonesia

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Abstract

This study examines the roles of coffee agroforestry system and coffee certificates in improving farmers' economic and environmental benefits in Upper Sekampung Watershed in the Province of Lampung, Sumatra-Indonesia. Way Sekampung is the main watershed and major food basket and is therefore important for agricultural exports of the province. This watershed covers an area of 484 thousand hectare, of which 49 percent is degraded land, 34 percent has the potential to degrade and only 17 percent of non-degraded land. The rate of soil erosion in the watershed is probably the highest in the country, averaging 67.5 ton per hectare per year, far higher than the tolerable rate of 25 ton per hectare per year.

The study applies quasi-experimental impact evaluation method using a propensity score matching (PSM) technique by analysing 408 farm households practicing agroforestry systems and coffee certificates in two subdistricts of Pulau Panggung and Pugung in Tanggamus Districts of Lampung. PSM constructs a statistical comparison group by modelling the probability of participating (known as propensity score) in the programme on the basis of observed characteristics unaffected by the program. The PSM technique basically compares farm adopters of coffee agroforestry system, i.e. 216 famers (53%) who have grown 100 shade trees per hectare and multi-purpose tree species (MPTS) and adopting coffee certification and control group of 92 farmers (47%) that grow less than 100 MPTS and/or not apply shade trees. About 203 households have joined coffee certification (mostly Rainforest Alliance and 4C certificates) and the rest are in the process of adoption. The impact evaluation shows that both agroforestry systems and coffee certificates have positive significant impacts on improving economic benefits. Coffee agroforestry systems have positive significant impacts on improving environmental benefits, but coffee certificates have non-significant impacts for environmental benefits. The study calls for a more structured and comprehensive action-research and development activities that facilitate the reward transfers for environmental services generated from coffee agroforestry systems in the watershed.

Keywords: Coffee agroforestry system, impact evaluation, Indonesia, Sumatra