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Climate Change Adaptation, Mitigation and Livelihood Benefits in Coffee Production: Where are the Synergies?

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Abstract

Worldwide there are approximately 4.3 million coffee producing smallholders generating a large share of tropical developing countries' Gross Domestic Product, notably in Central America. Their livelihoods and coffee production are facing major challenges due to projected climate change. A temperature increase of 2.4 °C means that more than 50 % of today's coffee producing areas in Central America will become unsuitable by 2050, whereby some may continue growing coffee under adequate adaptation practices.

To assess potential synergies between climate change mitigation and adaptation in smallholder organic coffee production systems, we quantified (i) the potential of changes in organic coffee production and processing practices as well as other livelihood activities to reduce net greenhouse gas emissions, (ii) organic coffee farmers' climate change vulnerability and need for adaptation, including the possibility of carbon markets subsidizing adaptation.

We worked with smallholder organic coffee farmers in northern Nicaragua, using workshops, interviews, farm visits and the Cool Farm Tool software to calculate greenhouse gas balances of coffee farms. Twelve activities were found to be relevant for adaptation, whereby two showed strong and five showed modest synergies with mitigation. Highest synergies were found with activities outside of the coffee plots. These activities were afforestation of degraded areas with coffee agroforestry systems and boundary tree plantings.

The applied methodology allowed for a holistic assessment of the relevant livelihood activities of smallholding farmers to identify synergies between adaptation to and mitigation of climate change. This enabled the prioritization of climate-smart practices. Financing possibilities arise through carbon offsetting, carbon insetting, and carbon footprint reductions.

Keywords: Adaptive capacity, carbon footprint, carbon insetting, carbon offsetting, exposure to climate change, sensitivity to climate change, Nicaragua

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