27. Can ecosystem-based adaptation help smallholder farmers adapt to climate change?

Harvey Celia[1], Alpizar Francisco[2], Avelino Jacques[3,4], Bautista Pavel[2], Cardenas Jose Mario[2], Donatti Camila[1], Rodríguez-Martínez Ruth[1], Rapidel Bruno[3], Saborio Milagro[2], Vignola Rafaelle[2], Viguera Barbara[2]

[1]*Conservation International, Arlington, VA 22202, USA*

[2]*CATIE, Apdo 7170, Turrialba, Costa Rica*

[3]*CIRAD, Avenue Agropolis 34398, Montepellier Cedex 5, France*

Smallholder farmers are critically important for global food security and global land use, as they represent 80% of the world's farmers, provide an estimated 80% of food consumed in developing countries and occupy much of the world's farmland. However, unless adaptation measures are quickly put in place, climate change will have significant impacts on smallholder agricultural production and livelihoods, with important ramifications for global food security. Ecosystem-based Adaptation (defined as the use of ecosystem services and biodiversity as part of an overall adaptation strategy to help people adapt to the effects of climate change) is one approach that could help smallholder farmers adapt to climate change, as part of a broader adaptation strategy. To date, there is little information on what Ecosystem-based Adaptation (EbA) options are feasible for smallholder farmers, how effective these options are, and what the opportunities and constraints are for scaling up its use. Using a combination of detailed household surveys, field characterizations and expert interviews from three countries (Costa Rica, Guatemala and Honduras), we identify EbA options that are appropriate for smallholder coffee and maize/bean farmers in Central America, examine the relative advantages and drawbacks of different EbA practices in coffee and basic grain smallholder farming systems, and compare the effectiveness of different EbA approaches for reducing farmer vulnerability to extreme weather events. We also examine the key technical, policy and financial constraints that currently prevent broad scale adoption of EbA practices across the region. Our study highlights that many smallholder coffee and bean/maize farmers in Central America are already adopting EbA practices (such as shade coffee, soil conservation practices, live fences and other agroforestry practices) and are generally aware of the relative benefits or drawbacks of different practices, but that the lack of extension services, financial incentives and policies favouring the use of EbA currently constrain broad-scale adoption.