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The Nexus of Poverty, Hunger + Climate Change

Most of the world's 500 million smallholder farmers suffer from poverty and malnutrition having never been offered adequate training in alternatives to farming practices such as short rotation slash-and-burn or chemical intensive farming that degrade the land and soil, decrease biodiversity, contribute significantly to climate change and degrade the land's long-term ability to grow crops. Hunger has been on the rise again since 2015, with the majority of the 821 million hungry, including 49.5 million children suffering from acute malnutrition, living in rural areas [FAO, 2019]. This is partially caused by and a consequence of roughly 33% of the world's soils being degraded, which has led to large losses of soil organic carbon [FAO, 2017]. Soils from various global agroecosystems such as croplands and grazing lands have lost 25–75% of their original soil organic carbon. Deforestation for farmland accounts for 17% of total greenhouse gas emissions [Allen], while the Haber-Bosch process of fabricating nitrogen-based fertilizers accounts for another 7.2% [Meinhausen et. al. 2009].

An Agroecology Extension Success Story

Over 24 years working with smallholder farmers in Belize, Honduras, Nicaragua and Panama, Sustainable Harvest International (SHI) has:

- provided direct technical assistance to over 3,000 families (15,000 people),
- catalyzed the regeneration of 27,000 acres of previously degraded land
- planted over 4 million trees.

Of our 3,000 graduated families, 91% continue using the agroecology practices they learned years after finishing the program + share the knowledge with others.



The Potential of Agroecology Extension for Smallholders

Large scale farms are and must be part of this movement to regenerative agroecology practices, but it's going to take a lot more incentive for those that have millions of dollars invested in the old way of doing things to switch to this ecologically based approach. The low-hanging fruit of climate stabilization is helping smallholder farmers in the Global South who have so little to lose and so much to gain by making this transition. All over the world smallholder farmers are embracing this opportunity when given the chance.

If the world's 500 million smallholder farms shift to regenerative agroecology practices such as the 3,000 SHI farms, they will:

- restore 4 billion acres of land
- draw down eight billion tons of CO₂ every year,
 - equivalent to closing every coal-fired plant on earth. [Toensmeir, 2016]
- plant 500 billion trees
- create three billion acres of biodiversity-rich habitat on their farms too [GRAIN],
 - thirty times bigger than all the national parks in the United States combined. [NPS 2020]
- provide food security / sovereignty for 2.5 billion members of their families, as well as consumers

The ROI

The cost to deliver agroecology extension programs such as SHI's would be approximately \$60 billion per year for 12 years, or 10% of the \$600 billion per year that governments of the world currently provide in subsidies to industrial agriculture, GMOs, globalized exports and factory farms [RI], all of which are collectively responsible for about half of the world's greenhouse gas emissions. Redirecting this current government spending away from degenerative farming to regenerative agroecology training could cover the costs of providing technical assistance for those 500 million farms thus ending hunger and poverty for 2.5 billion people while also mitigating climate change and restoring degraded lands.



