

# How climate-smart are the GIZ supported soil protection and rehabilitation technologies in Benin, Burkina Faso, Ethiopia, India and Kenya?



Celine Birnholz, Juliet Braslow, Birthe Paul, Jessica Koge, An Notenbaert, Suvarna Chandrappagari, Biyensa Gurmessa, Špela Kalčić, Rolf Sommer

African Soil Seminar, 28 – 30 November, Nairobi, Kenya

## RATIONALE

GIZ together with partners are implementing soil protection and rehabilitation interventions in Western Kenya, Benin, Burkina Faso, Ethiopia and India as part of the BMZ global program on *Soil Protection and Rehabilitation for Food Security*, under the German *One World – No Hunger* Special Initiative.

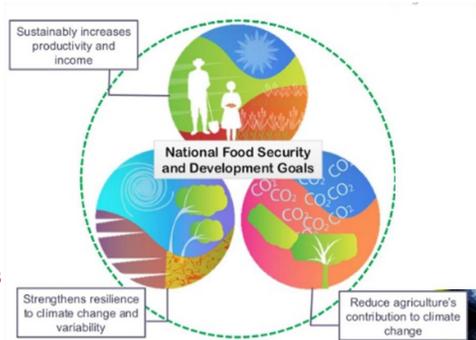
The climate-smartness of these interventions was assessed by a set of simple CSA indicators, and trade-offs were presented across farming systems and countries to support prioritization.

## METHODOLOGY

Modelling of CSA indicators and tradeoffs at farm level: 3 indicators

### Calories produced on farm

- Cash crops and meat not taken into account
- 'Potential supply' only

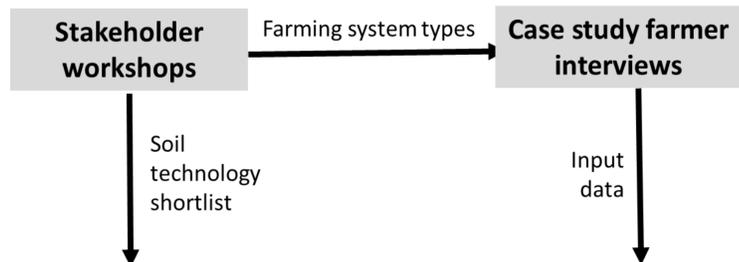


### GHG emissions from agriculture

- Soil C stock changes not included
- IPCC tier 1/2 overestimating for SSA

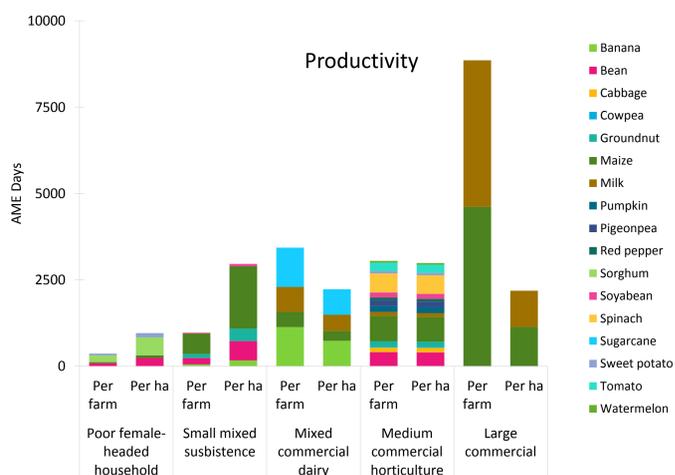
### Soil nitrogen balances

- Simplified, non-holistic indicators

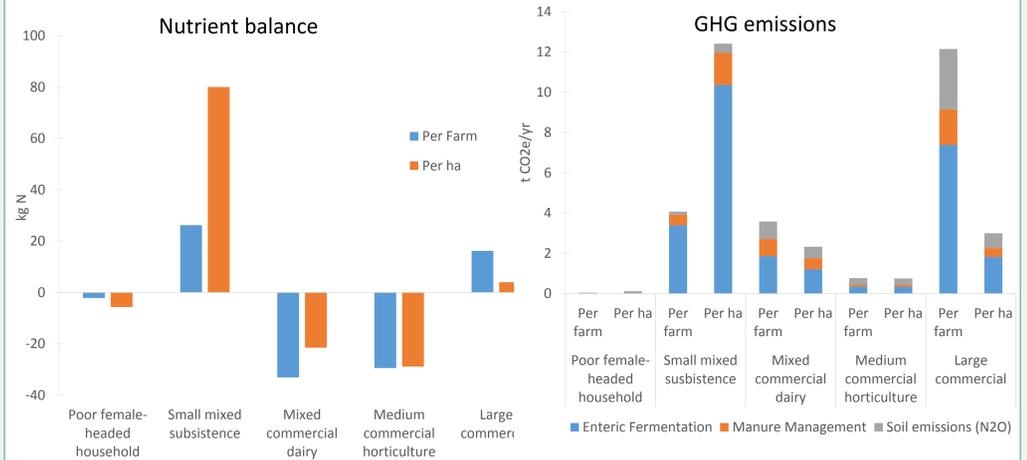


Modelling CSA indicators for baselines and scenarios

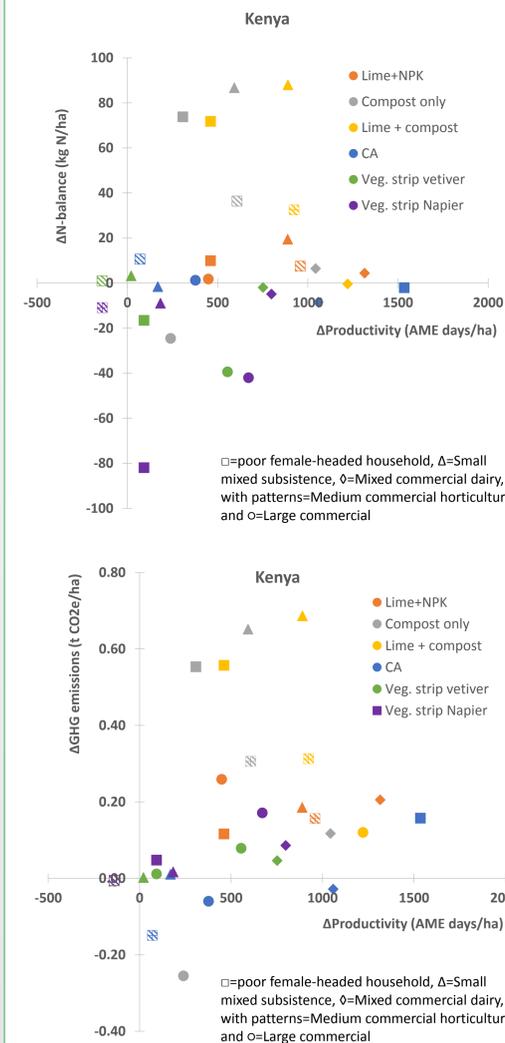
## BASELINES WESTERN KENYA



- Diversity of crops add to the calories produced
- Per ha productivity lower in small farms and large farms
- Smallest/poorest farms cannot sustain a family from their on-farm production only



## TRADE-OFFS



Impacts did not only vary by technology, but also farming system. Targeting is key, and rapid quantifications can help to prioritize. True CSA triple-wins are rare, i.e. trade-offs need to be made.

- Productivity increases often come with a trade-off of nutrient mining.
- Intercropping alone does not fully address this issue, but attention needs to be paid to organic and inorganic nutrient inputs.
- In global comparison, GHG emissions are low.
- If production increases, in most cases so do GHG emissions, but GHG emissions efficiencies may improve.

Climate change mitigation is a co-benefit, not a primary objective. Given the global interest in low carbon development pathways, climate change mitigation options merit further analysis.

It is important to understand farmers' economic perceptions and preferences relating to climate-smart soil protection and rehabilitation practices. This was achieved in a follow-up study using the ELMO (Evaluation of Land Management Options) tool.



This research is funded by BMZ, and part of the CGIAR Research Program on Water, Land and Ecosystems (WLE). We thank all donors that globally support our work through their contributions to the [CGIAR system](#). This poster is licensed for use under the Creative Commons Attribution 4.0 International Licence (September 2016)

With the financial support of



Federal Ministry for Economic Cooperation and Development



RESEARCH PROGRAM ON Water, Land and Ecosystems