UNRAVELLING THE ROLE OF SOCIO-ECOLOGICAL INTERACTIONS IN CACAO PRODUCTIVITY UNDER AGROFORESTRY SYSTEMS: A COMPARISON OF TWO MOUNTAINOUS REGIONS IN COLOMBIA

AUTHOR: MARIA SOFIA MORALES GUZMAN, HUMBOLDT UNIVERSITÄT ZU BERLIN

INTRODUCTION

- Cacao agroforestry systems: social ecological complex systems (CAFS)
- Cacao: important commodity for global trade
- Colombia: important regional cacao producer
- Unsustainable production of cacao
- Cacao: predominantly grown as monoculture, although traditionally cultivated as CAFS
- CAFS provide numerous benefits to tackle climate change impacts.

METHODS

1. Application of the SE-AS framework.
2. Case study: two municipalities of Colombia (La Paz in the Caribbean region and Belen de los Andaquíes in the Amazonian region).
3. Data collection: interviews and their transcripts and audios; data processing.
4. Data analysis: qualitative content analysis of the interviews; quantitative analysis.

OBJECTIVE

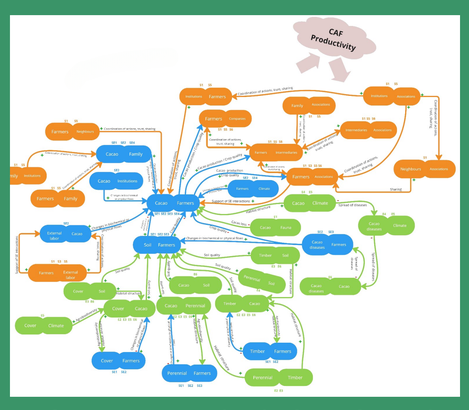
Identify and analyze social-ecological interactions that affect the productivity of CAFS.

WHY STUDYING CAFS INTERACTIONS?

- Practical way to study system complexity. Facilitates understanding of system behavior or features e.g., productivity.
- Most studies of CAFS focus on benefits and yields and often disregard causes and factors that may influence productivity of CAFS as a system.

RESULTS

- **168** interactions give rise to cacao productivity
- Most influential interactions in the CAFS in both regions are:
  - Cacao-farmers
  - Soil-farmers
  - Farmers-intermediaries
  - Farmers-cacao diseases



- Soil quality (fertilizers, and pesticides) is fundamental for productivity.
- Plasticity of the CAFS: can be adapted to a variety of biophysical conditions and socio-economic needs.

CONCLUSIONS

- Despite geographical, cultural, or environmental differences, interactions that affect cacao productivity in both regions do not change.
- Role of farmers management, and soil quality are determinant for cacao productivity.
- Cacao productivity linked to ecological dimension of CAFS through soil-farmer and cacao diseases-farmers
- Ecological interactions are a bridge between the ecological and social dimensions.
- Level of complexity of the network of interactions is challenging due to its continuous change and variations.