

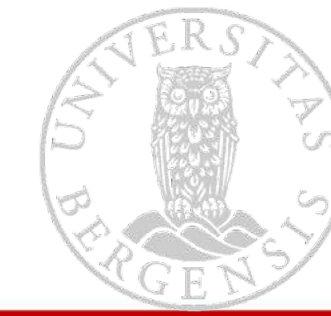
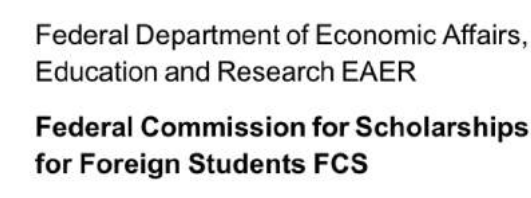
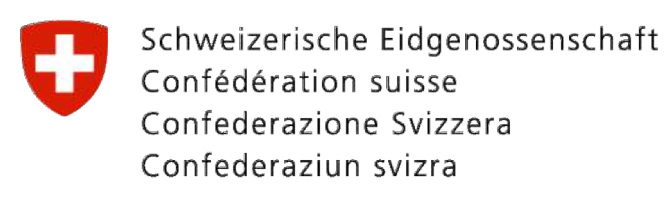


Critical resilience , poverty traps and power relations in face of climate change

The case of the tomato value chain in Ghana

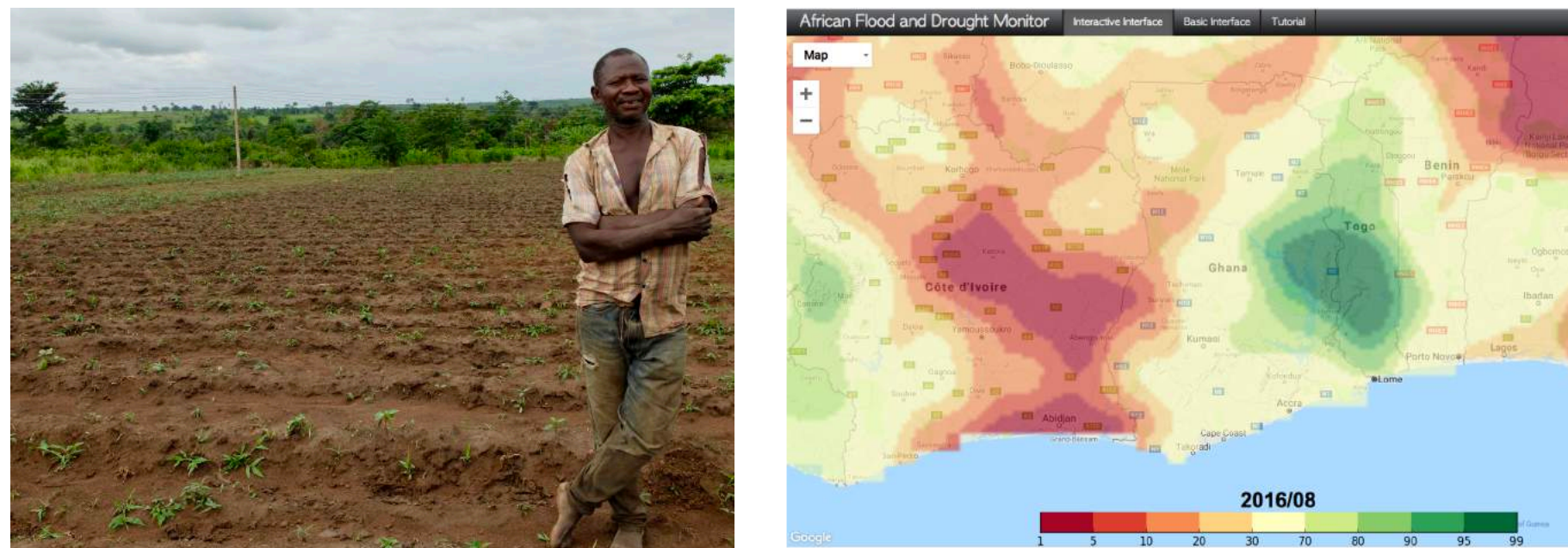
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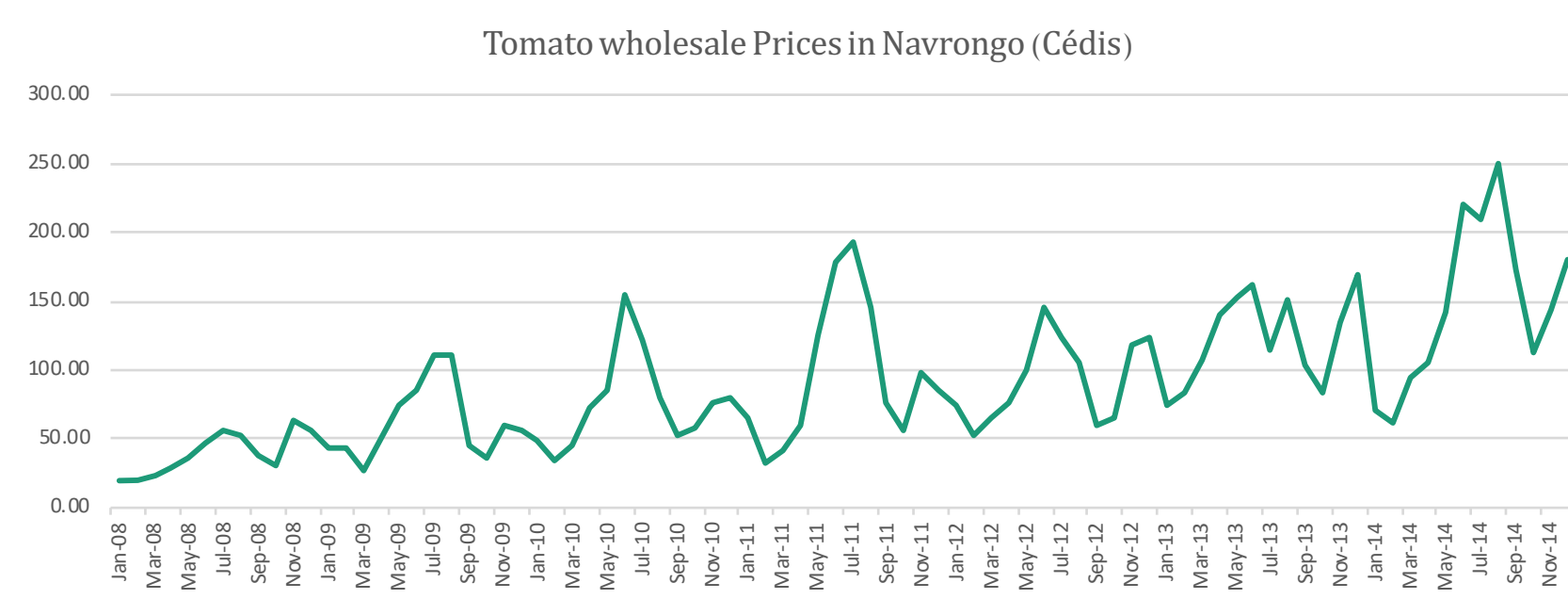
1. Introduction

Smallholder farming systems in Sub-Saharan Africa (SSA) are increasingly **pressured by climate change extreme weather events**. Dynamics in biophysical and socio-economic environment shape **smallholder farming systems**. The dependency on rain-fed irrigation generates **production variability**. When coupled with **high price volatilities**, and **inappropriate policies** often caused by failures in market organization and infrastructures, **climate shocks** ultimately leave farmers in **poverty traps**.



Tomato Farmer in Ashanti during Survey (2016)

Tomatoes are among the most consumed vegetables; they also represent **high value crop** and are one of the **main sources of income** for a large number of producers.



This raises concerns about the ability of value chain actors, in particular **tomato smallholder farmers, to be sustainable and resilient** to unexpected changes. All in all, farmers, will find themselves in **poverty traps** that are **reinforced by production hazards on the one hand, and market price fluctuations**.

2. Objectives

This study seeks to **understand and discuss ways to enhance tomato smallholder farmer's resilience in face of climate change** by :

1. **Evaluating** effects of **climate variability** on **production and income generation**, through a **systemic approach**
2. Identifying **adaptation strategies** are employed by small-holder farmers to cope with **climate variability and market price fluctuation**
3. Understanding how **shocks**, such as extreme climatic events, **influence the power relations** among the actors of the tomato value chain ?
4. **Provide a ground for critical discussion on resilience enhancement through power analysis studies**



3. Ghanaian case study

Data collection

Survey among 350 tomato farmers (2 Regions)

Upper East Region (semi-arid climatic condition)

Ashanti Region (Tropical conditions)

Timeseries compilation

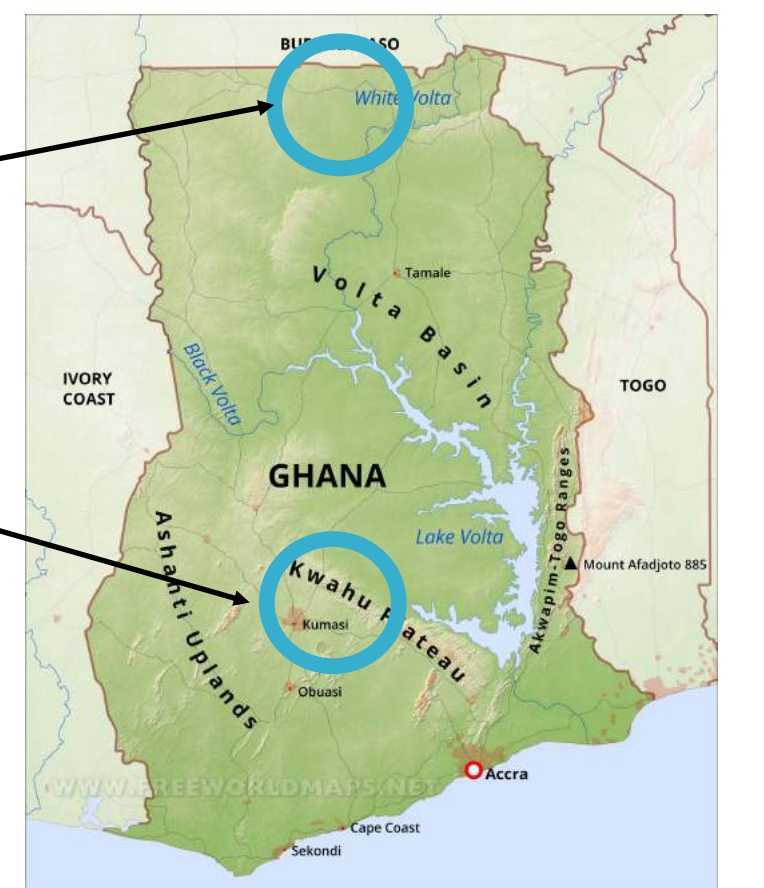
Tomato price - from 1978 to 2017

Input prices - from 1992 to 2017

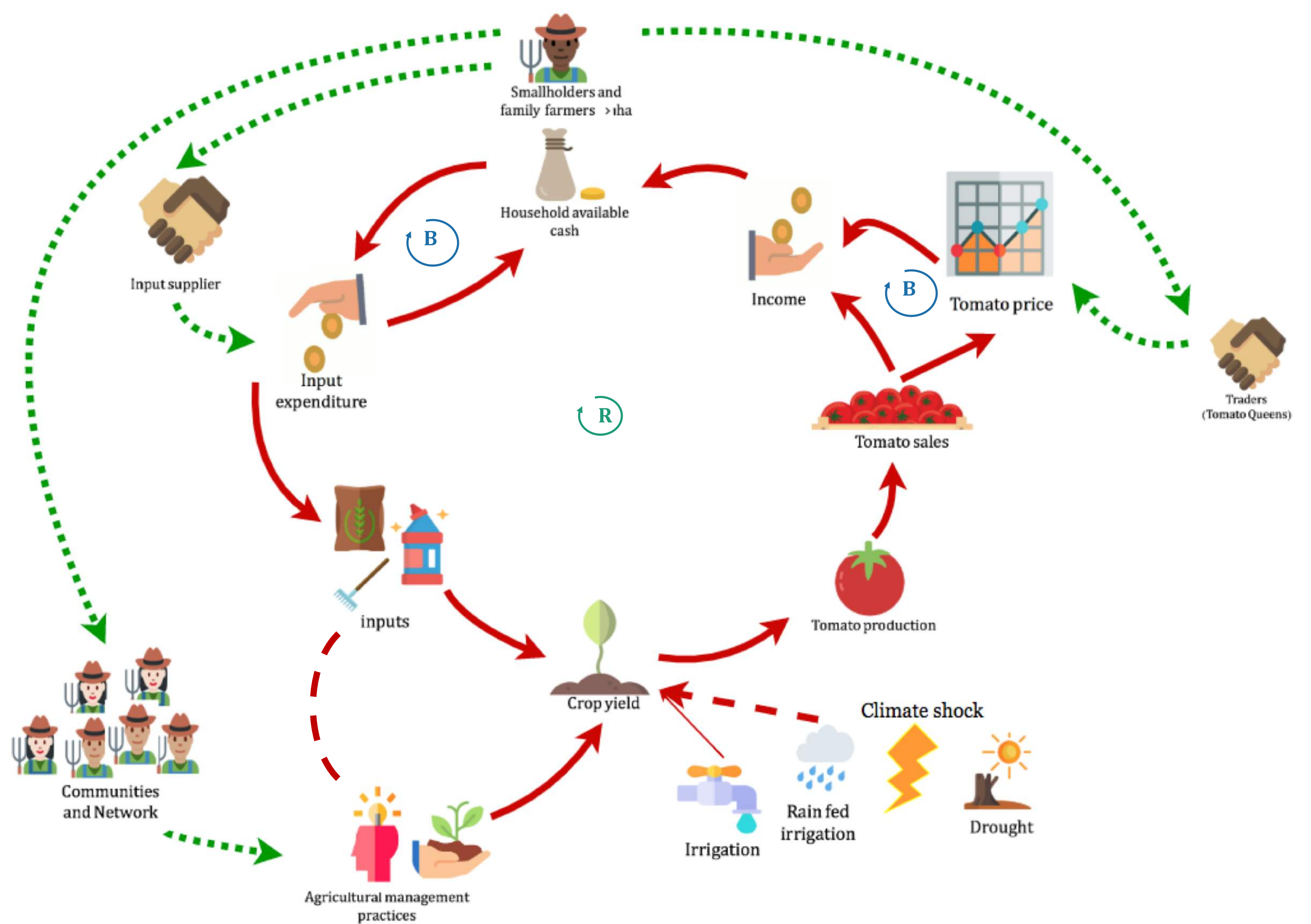
Tomato production - from 2003 to 2013

Precipitation - from 1991 to 2018

Interviews - power analysis (on going) of tomato value chain key stakeholders



Systemic view on the value chain



This Causal loop Diagram is characterized by 2 main loops :

(R) Reinforcing feedback loop – Poverty traps

(B) Balancing feedback loop – Input expenditures and household available cash – Price fixation

--- Power relations within the tomato production system and its value chain

4. Insights from the system

- **High rates of poverty and food insecurity** in the country.
- Integrating **power relations into food systems analysis** provide better insights on ways, not only, **to adapt**, but **to transform** in face of a shock.
- An in depth **systemic approach** will bring us a **step forward to a critical resilience**.

5. References

1. Kumasi, T. C., Antwi-Agyei, P., & Obiri-Danso, K. (2019). Small-holder farmers' climate change adaptation practices in the Upper East Region of Ghana. *Environment, Development and Sustainability*, 21(2), 745–762. <https://doi.org/10.1007/s10668-017-0062-2>
2. Banson, Kwamina Ewur, Nguyen, N. C., & Bosch, O. J. H. (2016). Using System Archetypes to Identify Drivers and Barriers for Sustainable Agriculture in Africa: A Case Study in Ghana. *Systems Research and Behavioral Science*, 33(1), 79–99. <https://doi.org/10.1002/sres.2300>
3. Amikuzuno, J., & von Cramon-Taubadel, S. (2012). Seasonal Variation in Price Transmission between Tomato Markets in Ghana. *Journal of African Economies*, 21(4), 669–686. <https://doi.org/10.1093/jae/ejs008>