Value Chain Analysis for Development: providing evidence for better policies and operations in agricultural value chains

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ENHANCING PRODUCTIVITY OF SMALLHOLDER STAPLE FOOD CROP PRODUCERS IN AFRICA WHEN INPUTS SUBSIDIES ARE NOT WORKING: THE EMERGING SUSTAINABLE BUSINESS-TO-FARMERS OPTION

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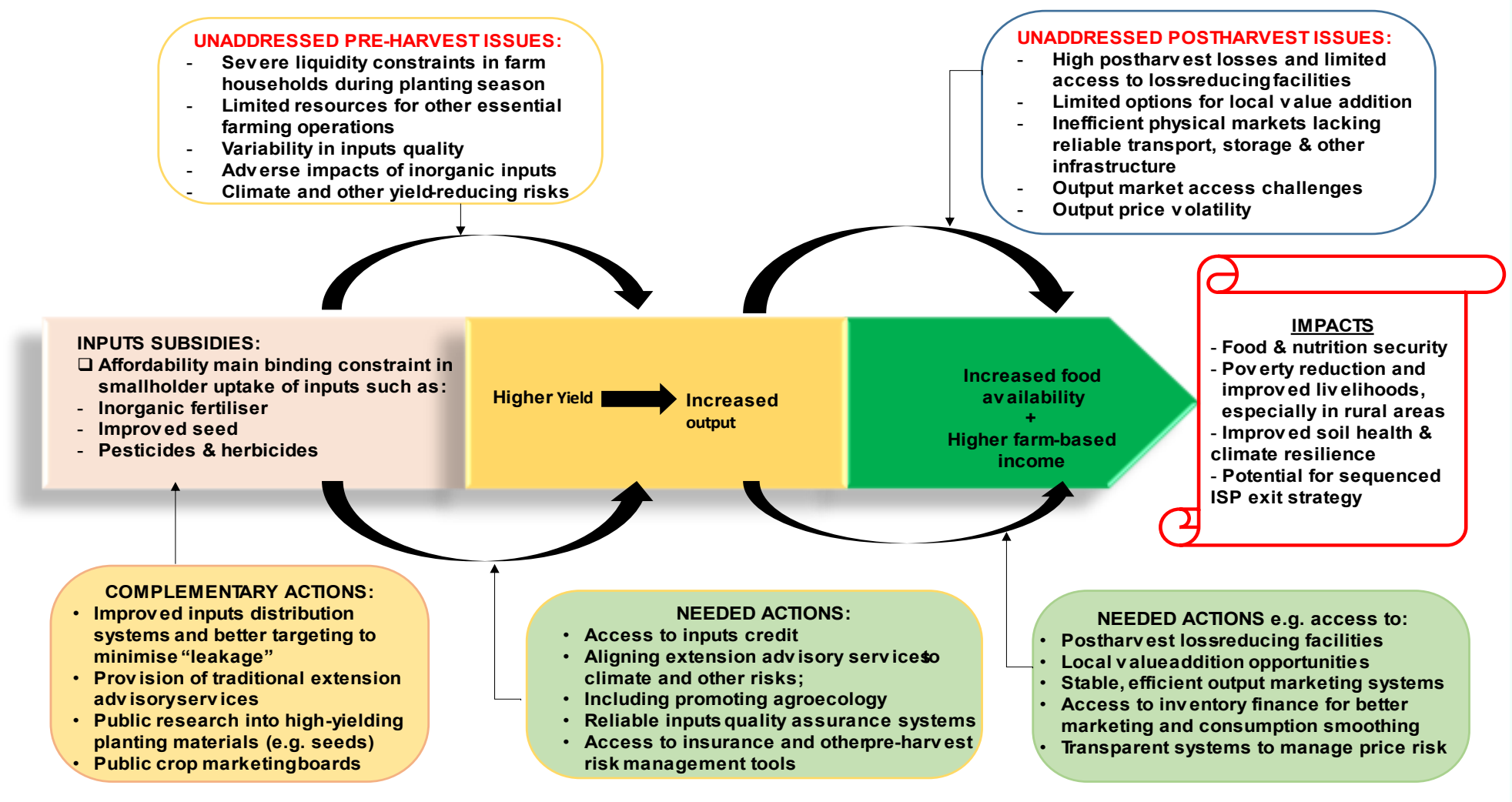
Issues, key question and VCA4D materials

- **Long history of inputs subsidy programmes (ISPs) in Africa, to increase productivity of smallholder farmers; because**
  - Smallholders' low-inputs and low productivity equilibrium reinforces a vicious cycle of low output growth and high incidence of rural poverty (Dorward et al. 2008)
  - Most ISPs have produced suboptimal outcomes, despite several reforms in terms of design and implementation strategies
  - But many African governments remain committed to ISPs, though it is not working
- **Our key question is: can emerging business-to-farmers (B2F) models offer a more viable, sustainable and inclusive alternative or complement to ISPs?**
- **To address this question:**
  - We develop a framework for analysis summarised below
  - Review literature on ISPs in Africa, focused on two specific countries: Nigeria and Zambia
  - Review B2F models identified in VCA4D studies on two staple crop VCs (maize in Nigeria and sorghum in Ghana). The B2F models described below.
  - The results are triangulated with evidence from the case of a non-staple crop (soya in Zambia) based on evidence from a report on the Zambia egg value chain (2018).

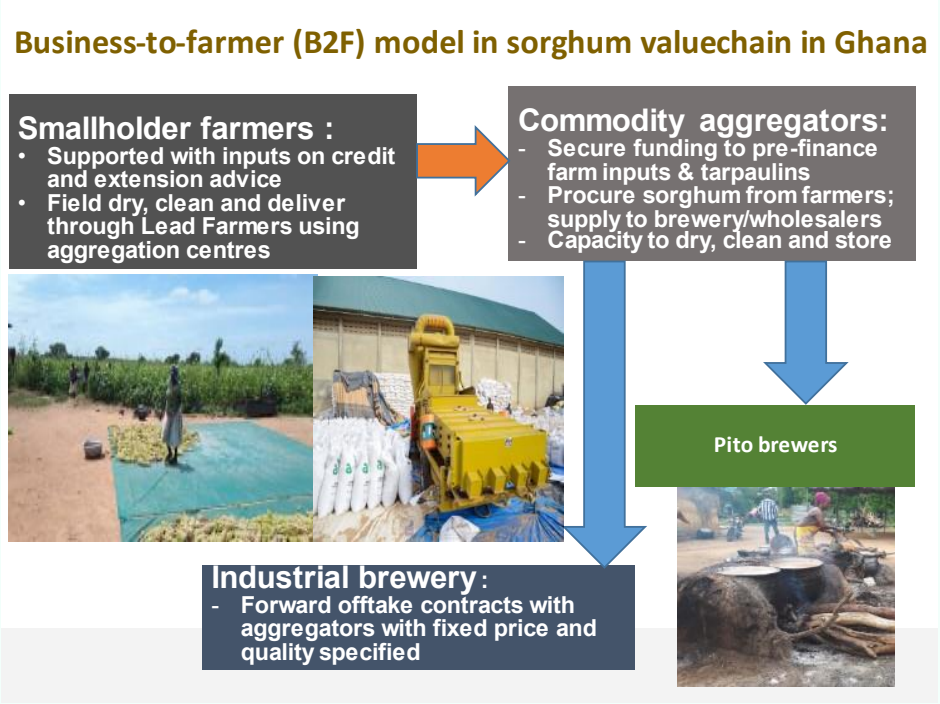
Framework for analysis



The Business-to-farmers (B2F) model

- **The B2F involves formal/informal ties between agribusinesses and smallholder farmers, illustrated with case in sorghum value chain in Ghana (below):**

- **Large-scale offtakers**
  - e.g. processors such as grain millers, exporters and end-users such as large-scale poultry farmers which undertake feed formulation on-farm.
  - They benefit from consistent supply of quality raw materials, sometimes on the basis of formal supply contracts
- **Commodity aggregators supplying grains to offtakers:**
  - Use forward contracts and track record to secure credit;
  - To finance inputs supply to participating smallholders;
  - Provide extension advice using field staff; and
  - Field staff monitor farmers to reduce default risk.
- **Smallholder farmers who obtain finance for inputs:**
  - Access inputs and extension advice (from aggregators);
  - Sell to aggregators (first to repay inputs credit); but
  - Can also sell extra produce; because
  - Aggregators offer of better prices



Finding 1

❑ The ISP in Nigeria:

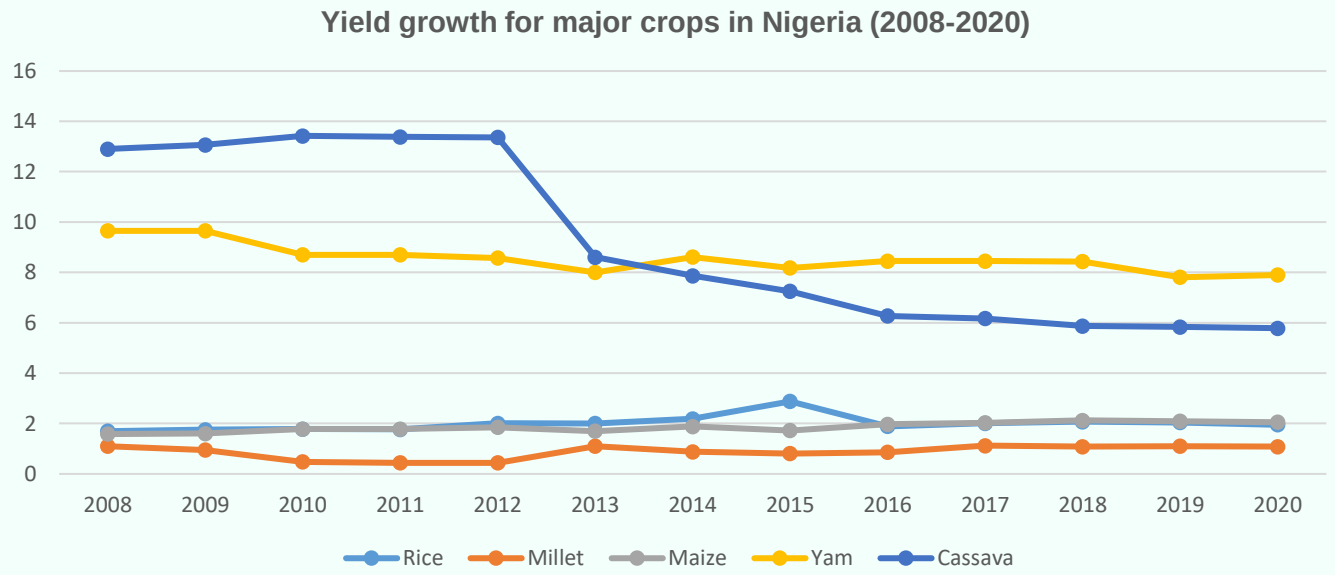
- **Been running since 1980-90s; first through direct supply of fertiliser with subsidy of 25%-75%, depending on the location (as transport cost was subsidised)**
  - Involved centralised procurement by the Federal Govt and distribution by the States.
- **Changed to paper-based vouchers under the Fertiliser Voucher Programme in 2009**
  - Opened space for private sector suppliers; subsidy at 50%; and local fertiliser production promoted. Hindered by ad hoc changes fertiliser import duties.
- **Introduced electronic (e-Wallet) Scheme under Growth Enhancement Support Scheme in 2012**
  - Subsidised inputs expanded to include improved seed and pesticides
  - Federal govt provides 25% subsidy matched by 25% subsidy from States; farmers pay difference upfront
- **Complemented by:**
  - Significant public investment in breeding and multiplication of improved crop varieties
  - National extension advisory system – focused mainly technical advice on inputs application
  - Several agricultural finance schemes: e.g. the Supervised Agricultural Credit Scheme (1979), the Agricultural Credit Support Scheme (2006); the Nigerian Incentive based Risk Sharing system for Agricultural Lending (NIRSAL) in 2010, and the Anchor Borrowers' Programme (2015).

- **Yet no evidence of improved access to inputs credit by smallholders!**

Finding 1(a)

❑ Results:

- **About 7.2% of Federal budget for agriculture spent on covering its share of the cost of inputs subsidies (i.e. the 25% subsidy it provides which is matched at same level by States)**
- **Lack of data on number of smallholders benefiting from the ISPs.**
- **Main performance measure used in analysis is the impact on yield growth for major crops**
  - Estimates based on official data from the National Bureau of Statistics, showing as below:
  - That crop yields stagnated or declined, especially between 2013 and 2020.



Finding 2

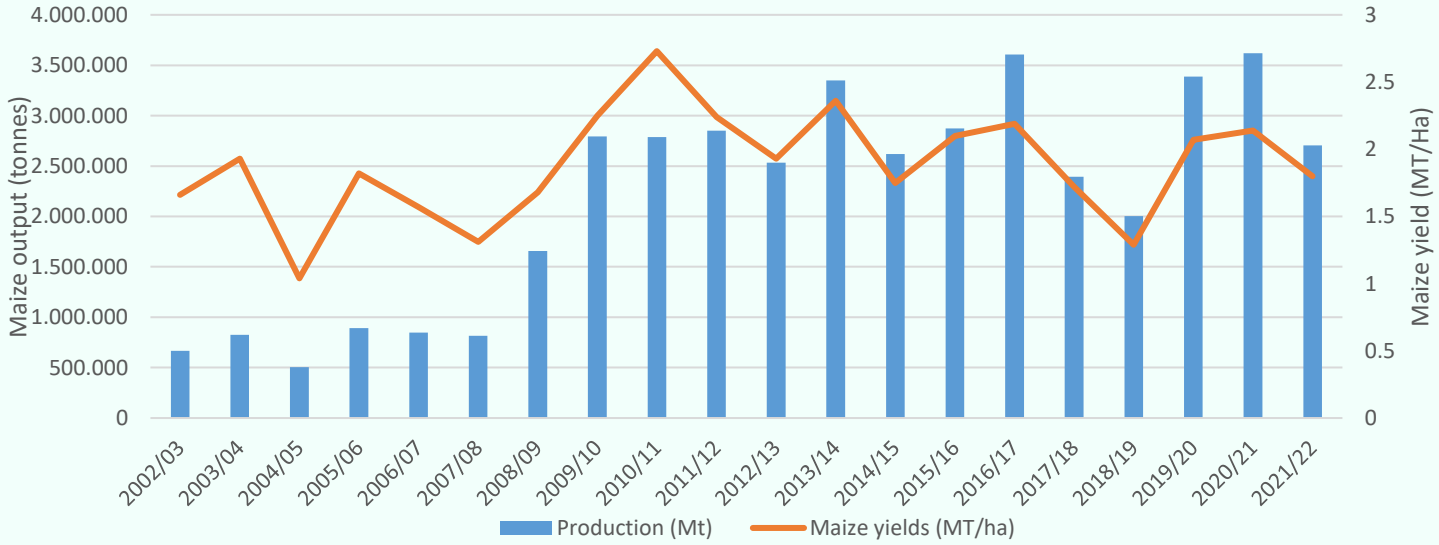
ISP in Zambia

- **Fertilizer Support Programme (FSP) launched in 2002 as a temporary measure to cushion smallholder farmers against the impact of severe drought which occurred in 2000/2001.**
  - Starting with 50% subsidy but farmers to be "weaned off" over three years.
  - Only fertiliser distributed.
- **FSP not phased out but restructured and relaunched as the Farmers Inputs Support Programme (FISP) in 2009:**
  - Package expanded to include improved seed but targeting only maize producers.
  - Subsidy at 50% and involved direct distribution to farmers and later use of paper vouchers.
- **In 2015/16 season E-voucher system introduced and coverage expanded to other crops e.g. soya. Subsidy of up to 80% and farmers free to redeem vouchers with a range of inputs suppliers, leading to:**
  - Emergence of a rural network of inputs distributors.
  - Also supported by significant public investment in breeding and multiplication of improved crop varieties; and a technology-biased national extension advisory system.
  - Piloted indexed-linked agricultural insurance to ease access to finance for over 1 million farmers but is facing challenges.

Finding 2(a)

❑ Results:

- **Official data shows that the number of target beneficiaries has ballooned from 120,000 in 2002/03 to over 1,000,000 by the 2021/22 season.**
- **About 31% of national budget for agriculture is used in supporting FISP, with total spending in the 2021/22 season estimated at about €400 million. Despite this below:**
  - Yields for maize, the main national staple crop, have stagnated.
  - Furthermore, reports, including by Fusillier et al. (2021), show no increase in use of non-subsidised inputs by smallholders and marginal impact on poverty reduction (as relatively poor smallholders account for only 27% of the subsidised inputs distributed).



Finding 3

- **Generic evidence from across Africa**
  - Evidence from the two ISP cases reported above is consistent with findings from several recent studies, including recent cross-country studies by Jayne et al. (2018) and Ntinyari et al. (2022).
  - The overriding conclusion from these studies is that most ISPs have recorded limited or no success despite investment of considerable resources by governments.
  - This has led to suggestions by authors such as De Weerdt and Duchoslav (2022) that policy focus shifts from supporting so-called "unproductive" smallholders, who tend to sell the subsidised inputs to other "more productive farmers" through parallel inputs markets (e.g. in Malawi).
- **Not much attention has also been paid to some of the underlying factors causing under-performance of ISPs, including:**
  - Liquidity constraints which hamper uptake of inputs; Inputs quality risks which discourage uptake; climate and other risks which reduce yields; and
  - Factors affecting profitability of inputs use such as high postharvest losses and inefficient output marketing systems that squeeze producer margins.
- **These issues are borne in mind when assessing the potential of B2Fs.**

Finding 4

❑ B2F in Ghana sorghum:

- **Core business of aggregators is supply of sorghum grains to the leading brewery in the country. To enable them supply quality sorghum grain on consistent basis, they have developed links with groups of farmers, involving provision of:**
  - Credit to cover 50% payment for inputs under Ghana Government's Planting for Food and Jobs (PFJ), its "flagship" ISP. Funding provided meets requirements for 1 hectare of land.
  - Assured access to extension advisory services through their own field staff and resource persons employed under a GIZ-funded Market Oriented Agriculture Project (MOAP).
  - Tarpaulins to facilitate field drying of the grains so as to minimise postharvest losses (PHL). Cost of tarpaulin amortised over three years and recovery is through sorghum grain sales.
  - Small village stores (20-tonne capacity) as aggregation centres, thereby shifting storage from homes to further reduce PHL.
  - Providing an assured market and at a fixed price (negotiated with the offtaker).
- **Funding for inputs supply usually obtained from local banks, leveraging the formal contracts with the brewery as a form of security. Complemented by access to MOAP Revolving Fund.**

Finding 4 (a)

- **Impact of sorghum B2F as reported in Onumah et al. (2020) shows that:**
  - Participating smallholders (about 2,000) were able to take up their allocation of inputs under the PFJ with credit provided by aggregators; increased area planted with sorghum by about 20%; and recorded average yield about 25% higher than their counterparts without inputs.
  - Their average PHL was about 35% lower than what non-participants experienced; due to improved grain drying using tarpaulins; and storage in more efficient community stores.
  - The combined effects of the above was a rise in total volume of sorghum grain marketed by about 30% PLUS increase in volume of grain available for household consumption by about 40%.
  - Their return on turnover (ROT) (measure of profitability) was only marginally higher than what non-participants posted: about 24.2% compared to the respective rate of about 22.0%. This is because the low-input smallholders avoid not just cost of inputs but also of on-farm application.
  - The income effects of participation was far more significant. The estimated annual income earned from sorghum production by participating smallholders was about €287, which is above the national poverty line estimated at €245 per annum. In contrast, non-participating smallholders, who dedicate their entire landholding to sorghum production obtain estimated annual income of about €132, which is well below the national poverty line.

Finding 5

❑ B2F in Nigeria maize:

- Specific case involves about 100,000 smallholder maize producers with average area cultivated of 2-5 hectares.
- Aggregator trades with multiple offtakers e.g. major millers and feedstock producers;
- No firm forward contracts but long-term transaction-based track record enables it to leverage funds from commercial banks and donor-funding sources for the B2F operations. Services to participating farmers include:
- Acquiring and supplying inputs required for 1 hectare on credit. Inputs package consists of improved seed, fertiliser, pesticides and herbicides. Repayment in form of volume of grain output predetermined by aggregators.
- Extension advisory services combined with farmer monitoring undertaken by field agents of aggregators.
- Provision of suitable packaging materials (e.g. bags) to farmers at postharvest. Early offtake minimises need for household storage in inefficient facilities.
- Farmers can deliver not only volume of grain needed to repay inputs credit but tend to sell extra since they obtain prices higher than in the open markets (reflecting the quality of the grains they deliver).

Finding 5 (a)

- **Results of B2F in Nigeria maize based on report by Onumah et al. (2021)**
  - Average yield obtained by participants estimated at 2.1 tonnes per hectare, about 20% higher than obtained by non-participating smallholders. Still below medium-scale farmers achieve (about 3.5 tonnes per hectare) and is due to spreading (e.g. fertiliser) over wider area than is recommended. As in the case of Ghana sorghum, they extend area cultivated by over 25%.
  - Participants have significantly lower PHL than for non-participants, estimated respectively at about 13.5% and 18.5%. This is due to better packaging and shifting storage from home to aggregation facilities.
  - Analysis of their operations shows participants are slightly less profitable than non-participants (posting a ROT of 31.5% compared to 34.2% for the latter). This is despite increase in volume sold due to higher yields, lower PHL and receiving producer prices close to 25% higher than prevailing farmgate prices in their communities. Operating costs rise because of cost of inputs and related cost of application of the inputs.
  - Maize-based household income for participating smallholders rise to about €625 per annum, which is far above the national poverty line estimated at €340 per annum. In contrast non-participants earn average annual maize-based income of about €170. Furthermore, rising yields per hectare has positive environmental impacts.

Finding 6

- **B2F involving Zambian commodity trader specialising in cotton marketing.**
  - Ventured into promoting soya production to enable smallholders diversify in order to minimise impact of cotton price shocks on their households; and also to
  - Take advantage of opportunity to sell soya to the leading egg producer in the country.
  - It was done under a “Smallholder Soya Outgrower Scheme” piloted in Mpongwe District in Zambia, which was developed with support from the EU Technical Assistance Facility (TAF), under which the egg producer was assisted to secure investment to scale up its production and implement a novelle egg distribution system targeting relatively poor urban communities.
  - The company supplies improved soya seed, inoculum, herbicide and fertiliser on credit to the participating farmers; and provides extension advice using its field staff; and
  - “Bought” soya using its rural seed cotton procurement network on a barter basis (volume of soya delivered by the farmers in repayment for inputs credit provided). Any extra soya sold attracted higher prices than prevailing farmgate prices in the community.
  - Anecdotal evidence indicates: participating farmers obtained comparatively higher yields because of access to high quality improved seed and inoculum; their household incomes also rose due to the increased volume of output and the competitive prices paid by the company. However, volatility of soya prices in the Zambian market posed a risk to smallholder soya producers.

Implications for decision making process 1

- **Conclusions from two ISP cases (Nigeria and Zambia)**
  - Not new and clearly consistent with consensus among researchers and policymakers
  - That ISPs not working, i.e. no evidence that ISPs increase productivity and wellbeing of smallholders
  - This is despite investment of huge public resources and efforts to restructure delivery mechanisms in order to improve targeting.
- **Framework shows fundamental issues that need to be addressed:**
  - If agricultural productivity growth is to be achieved and in a manner that is inclusive of smallholders.
  - Requires improvements in complementary actions (e.g. extension); and
  - Addressing marginalised issues such as liquidity constraints that farmers face during planting season as well as postharvest handling and market access challenges.
- **B2F has demonstrated potential**
  - To drive productivity growth which is inclusive and produces tangible benefits for participating smallholders
  - Due to covering some of the issues that affect the outcome of ISPs

Implications for decision making process 2

- **B2Fs need improvements:**
  - Strengthening bargaining position of participating smallholders, including
  - Institutionalising more transparent terms for repayment of inputs credit
  - B2F schemes have improved access to extension messaging needs to change to take account of factors such as soil health issues and natural risks e.g. drought, flooding and incidence of crop pests and diseases, which are evidently being accentuated by climate change
  - Revisiting the challenge of financing production e.g. leveraging rather than exclusively channelling finance through aggregators
  - Promoting improvements in crop marketing systems in order to minimise access and price uncertainty
- **Further research and dialogue with policymakers needed**
  - Not limited to replicability of B2F; but also
  - An approach which recognises that inclusiveness of smallholders has sound economic justifications;
  - Informed by the framework used by authors – feedback especially on that most welcome.

Thank you for your attention!

https://europa.eu/capacity4dev/value-chain-analysis-for-development-vca4d-/events/conference-value-chain-analysis-development-providing-evidence-better-policies-and-operations