Motivation and research questions

Agricultural development policy and research in Sub-Saharan Africa (SSA) has a focus on smallholder farmers.

This focus is justified because 60-75% of all farmers in SSA operate on <2 hectares (Nyambo et al. 2022).

But there is much variation in farm size structures and recently an increase in medium-scale farmers (Jayne et al. 2019).

There is very little research to help us understand this variation in farm-size structure between commodities and countries and its implications for rural development.
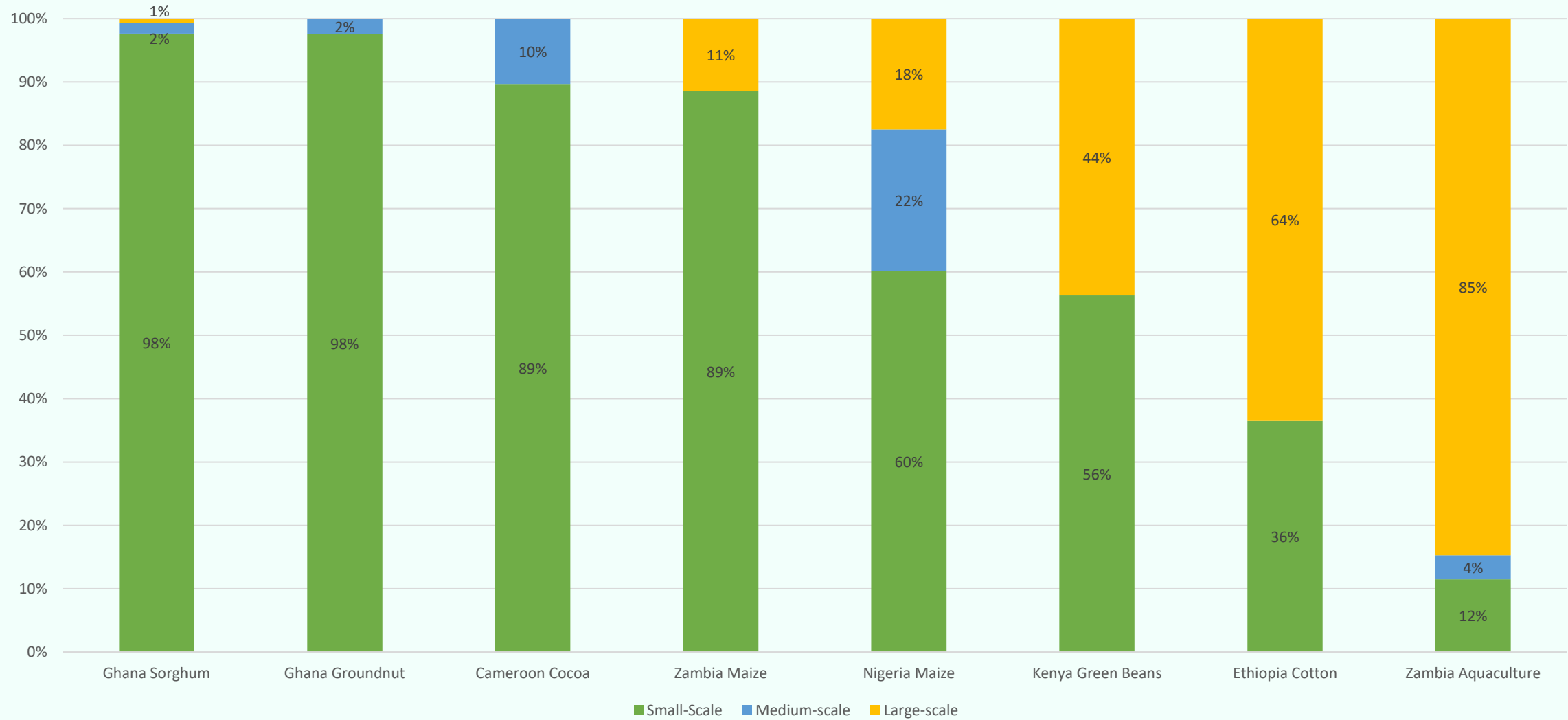
Research Questions:

1)   What is the prevailing farm-size structure in several agri-food value chains in SSA?

2)   What can explain the variation in farm-size structures?

3)   How does the prevailing farm-size structure influence agri-food sector transformation and what does it mean for agricultural development policy and smallholder inclusion?
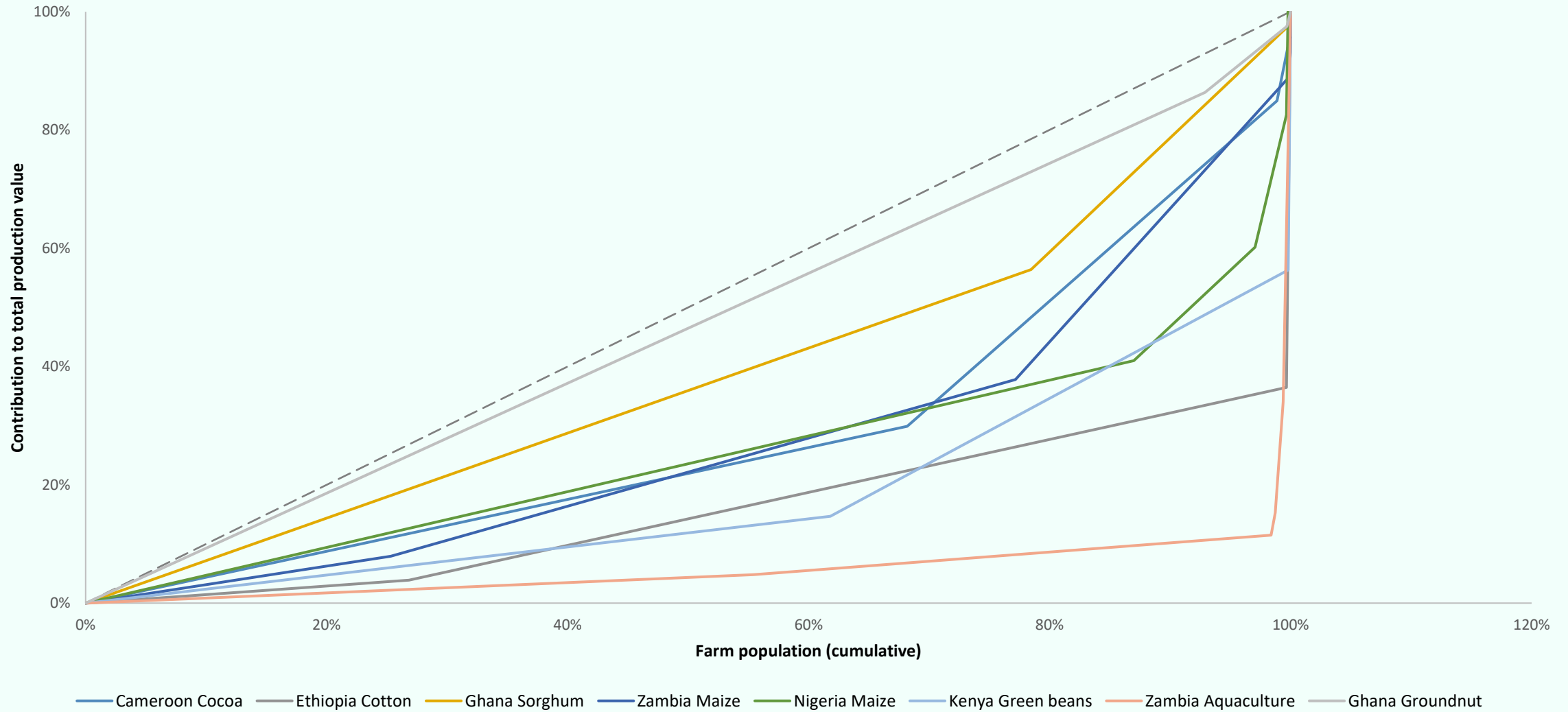
VCA4D materials

Country	Commodity	Farm type	Average farm size (ha)	# farmers	% farmers <3 ha?
Kenya	Green beans	1. Small-scale (spot market)	0.1	19664	100%
		2. Small-scale (linked)	0.1	32397	
		3. Large-scale	50	61	
Zambia	Maize	1. Small-scale (low input use)	0.8	362885	100%
		2. Small-scale (medium input use)	0.9	742590	
		3. Small-scale (high input use)	2.4	325451	
		4. Medium-scale (rainfed)	18.8	1500	
		5. Large-scale (irrigated)	100	100	
Nigeria	Maize	1. Small-scale (spot-market)	1.5	2440600	97%
		2. Small-scale (linked)	3.5	281600	
		3. Medium-scale	9.4	72600	
		4. Large-scale	100	3500	
Ghana	Sorghum	1. Small-scale (low inputs)	1.5	173140	99%
		2. Small-scale (high inputs)	2.5	47180	
		3. Medium-scale	5.6	350	
		4. Large-scale	106.3	4	
Ghana	Groundnut	1. Small-scale (spot-market)	0.76	374089	100%
		2. Small-scale (linked)	0.96	27337	
		3. Medium-scale	3.12	1224	
Cameroon	Cocoa	1. Small-scale (shadow, spot-market)	1.5	200000	99%
		2. Small-scale (shadow, linked)	2.5	45000	
		3. Small-scale (sun, linked)	3	45000	
		4. Medium-scale	12	3000	
		5. Large-scale	25	300	
Ethiopia	Cotton	1. Small scale (traditional)	0.5	7000	100%
		2. Small scale (modern)	0.8	19000	
		3. Large-scale	403.5	90	
Zambia	Aquaculture	1. Small-scale (pond, semi-subsistence)	0.1	1100	98%
		2. Small-scale(pond, commercial)	0.5	853	
		3. Medium-scale (pond)	18.8	7	
		4. Large-scale (pond)	31.3	13	
		5. Large-scale (cage)	N/A	12	

Findings (1): farm-size distribution (contribution to production value)

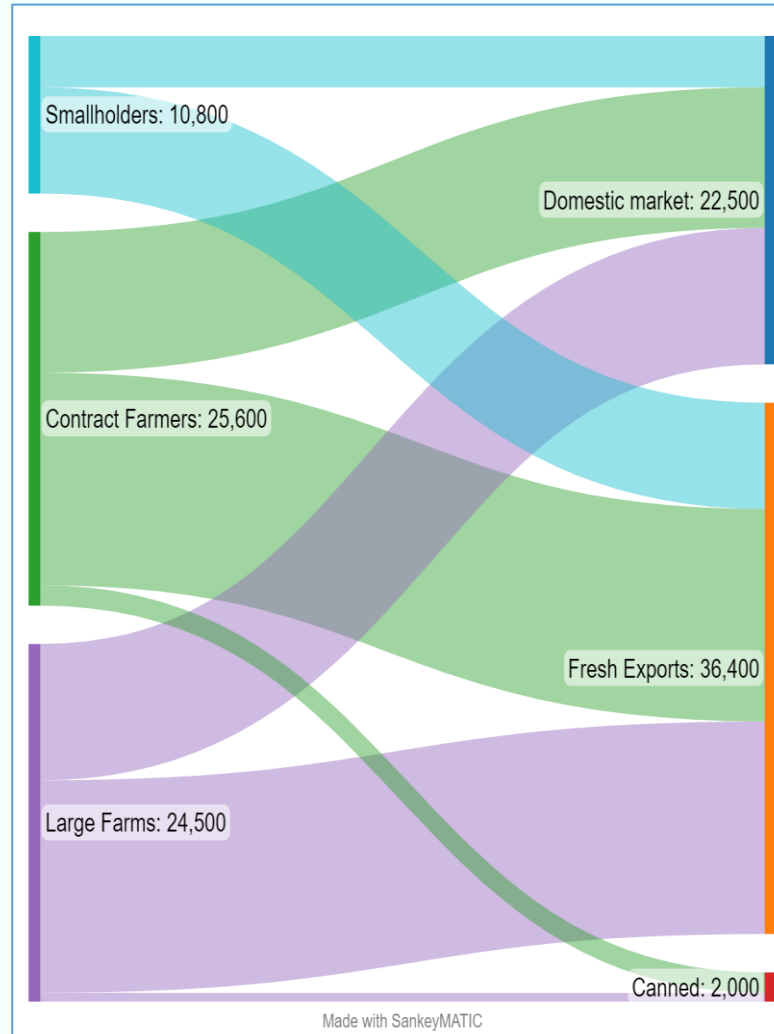|	Small-Scale	Medium-scale	Large-scale
Ghana Sorghum	98%	2%	1%
Ghana Groundnut	98%	2%	
Cameroon Cocoa	89%	10%	
Zambia Maize	89%		11%
Nigeria Maize	60%	22%	18%
Kenya Green Beans	56%		44%
Ethiopia Cotton	36%		64%
Zambia Aquaculture	12%	4%	85%

Finding 2: inequality in production value

Finding 3: Farm-size and value chain organization

Smallholder-based VC (sorghum / Ghana)

- Small scale/low input: 173,140
- Small scale/high input: 100,260
- Medium scale: 3,530
- Large Farms: 1,000
- Pito brewers: 120,600
- Local sales: 139,330
- Industrial brewers: 18,000

Balanced bi-modal VC (green beans / Kenya)

- Smallholders: 10,800
- Contract Farmers: 25,600
- Large Farms: 24,500
- Domestic market: 22,500
- Fresh Exports: 36,400
- Canned: 2,000

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Large-scale dominated VC (cotton / Ethiopia)

- Traditional farmer: 4,550
- Smallscale modern: 22,800
- Middlemen: 91,200
- Commercial farm: 68,400
- Home ginning: 4,570
- Home spinning: 1,684
- Self consumption: 2,886
- Ginners: 8,796
- Cottonseed Processors: 48,660
- Industrial Spinners: 33,744

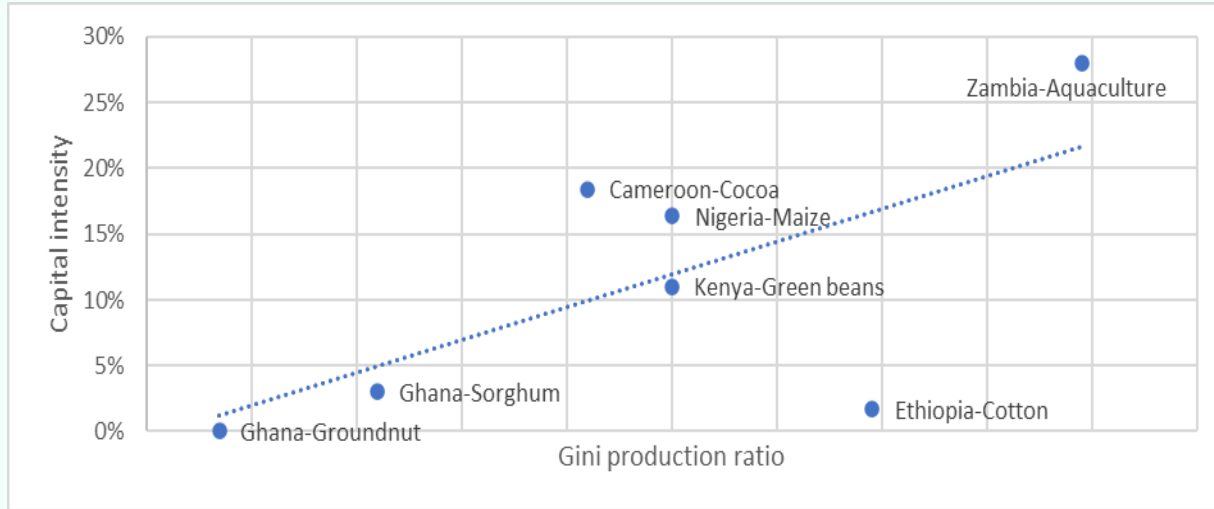**Smallholder-based VC
(sorghum / Ghana)**

**Balanced bi-modal VC
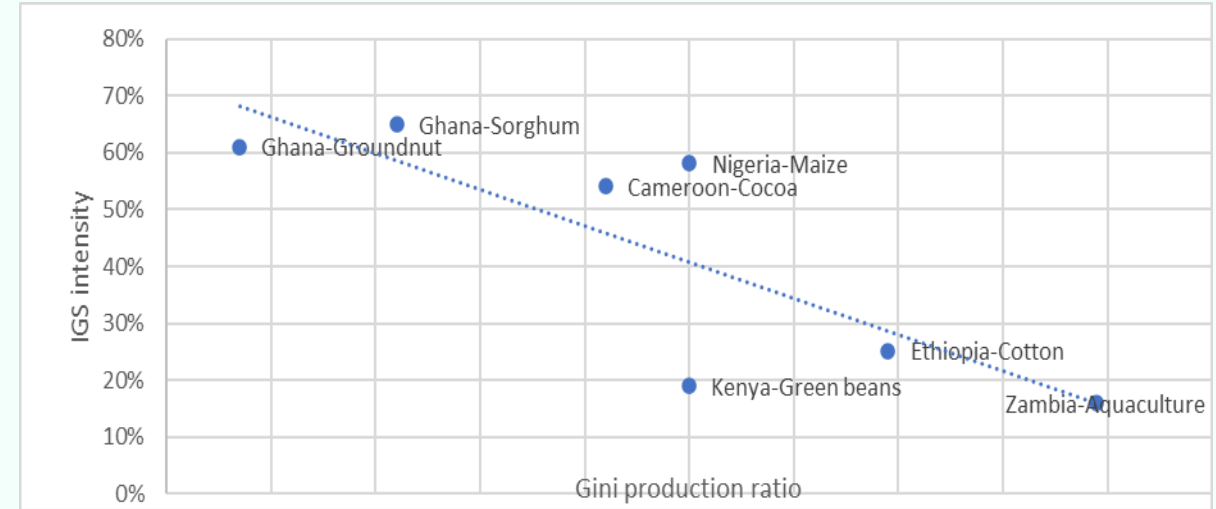(green beans / Kenya)**
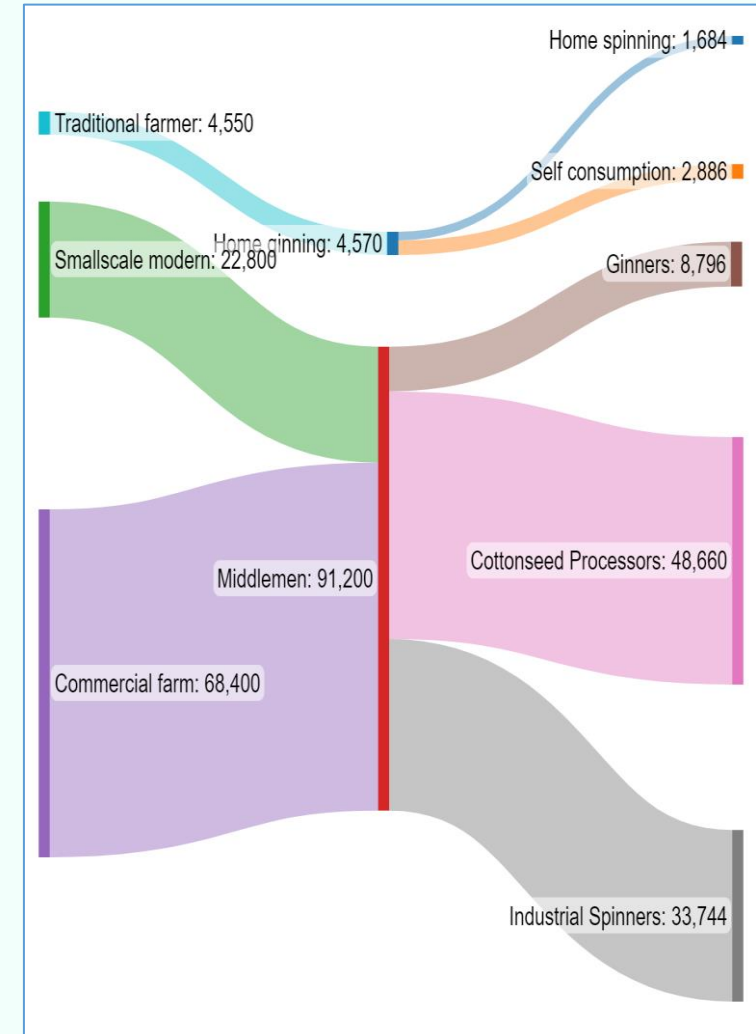
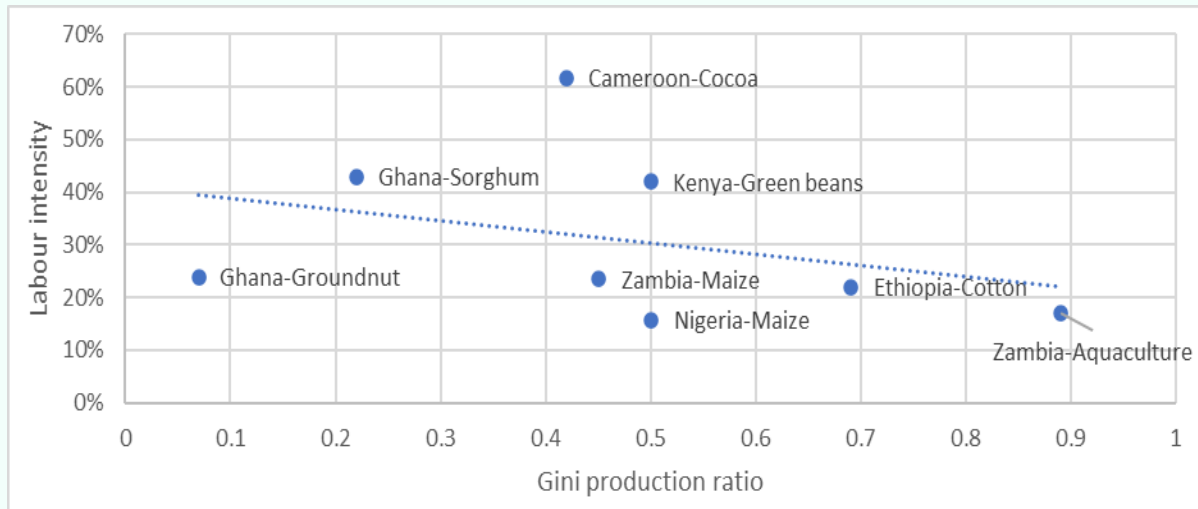**Large-scale dominated VC
(cotton / Ethiopia)**

Finding 4: farm size & factor intensity

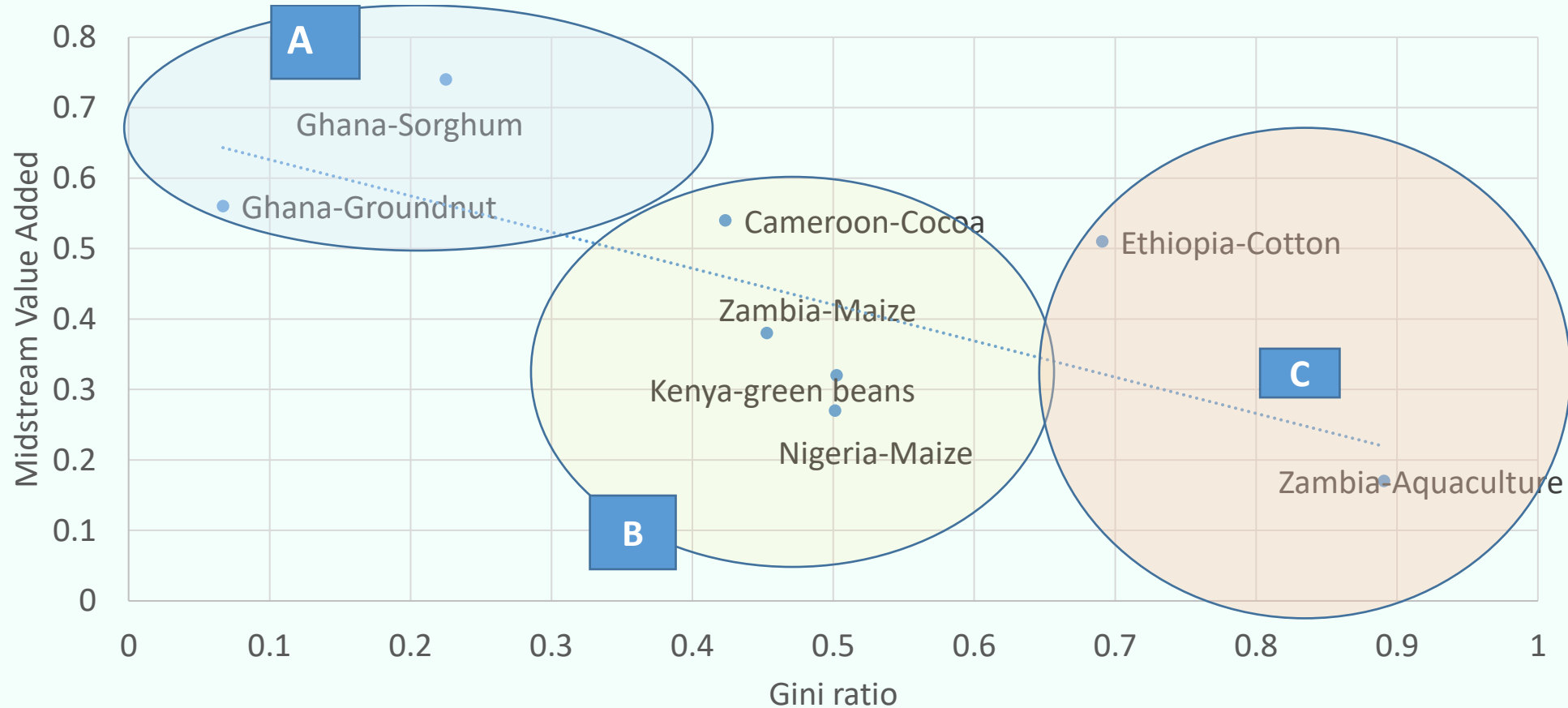Capital intensity by Gini

input use by Gini

Labour intensity by Gini

With higher Gini ratio:

- Increase in capital intensity
- Decreasing use intermediary input
- Decreasing (hired) labour intensity

Finding 5: farm size & midstream value added

A: Smallholder-dominated production of staple foods

B. Bi-modal production oriented towards processing & trade

C: Large-scale firms focussed on urban markets

Finding 6a: Farm-size structures and agricultural transformation

- **Mid-size / large farmers are increasingly more important in terms of marketed volume in SSA (Jayne et al. 2019)**

- **Mixed evidence on farm-size / land productivity relationship**
  - **Negative:** cocoa and cotton;
  - **Positive**: aquaculture, sorghum, maize;
  - **Inverse U**: green beans

- **A shift towards a more unequal farm-size distribution goes hand in hand with**
  - Changes in factor/input use: more capital use, less labour use.
  - Changes in productivity and agricultural sector growth: generally positive (Jayne et al. 2019) but commodity specific.
  - Development of remunerative market outlets (with higher standards)
  - More bargaining power of agriculture vis-à-vis the midstream agents (more entrants in mid-stream, scale and quality -> bargaining power).
  - Shift from self-employment to wage labour.

Finding 6b: Farm-size structures and agricultural transformation

- **What does it mean for smallholders?**
  - Technological spillovers:
    - Better access to services and inputs from mid-stream through entry / more competition
    - Knowledge spillovers (demonstration effects or through learning by doing/employment)
    - Active collaboration between larger and smaller farmers in cooperatives or nucleus farmer-outgrower schemes
  - Increased competition
    - Downward pressure on prices
    - Small farmers might become excluded from supplying to remunerative markets with higher standards (see Maertens and Swinnen 2009, Schuster and Maertens 2013).
  - Land markets
    - The mid-size and large-size farm sector might emerge from non-local entrants resulting in increased demand and higher land prices.
    - Effect on smallholders depends on whether they are
      - Scaling up -> which becomes more contstrained;
      - Stepping out -> structural transformation.
- **In sum: move towards unequal farm size distribution seems to be a feature of agricultural and structural transformation, but is disruptive for incumbent smallholders.**
  - Inclusiveness of process depends on employment creation on large farms and midstream.
  - This employment can benefit the extreme poor the most.

Implications for policy

- **<u>Understand there is a close relationship between agricultural transformation and changing farm-size distribution with increased importance of a small group of medium and large farmers.</u>**

- **Stimulate / reinforce positive effects**
  - Improve functioning of land markets to allow medium and large farms to emerge.
  - Technology spillovers (stimulate inclusive value chain innovations that support collaboration)
  - Development of the mid-stream (creating competition)
  - Stimulate the emergence of remunerative (high standard) market outlets (stimulate trade and FDI in agri-food industry and retail).

- **Counter negative effects / address disruptions for smallholders and wage labourers**
  - Improve labour and working condition (living wage).
  - Productivity and quality **push** for smallholders to benefit from emergence of remunerative markets (**pull):** e.g., participatory innovation systems, government/NGO support to meet buyer standards.
  - Safety nets /cash transfers to protect most vulnerable in economic transition.

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