INTERNATIONAL FOOD POLICY RESEARCH INSTITUTE
IFPRI

July 2023

AGRIFOOD SYSTEM DIAGNOSTICS
COUNTRY SERIES

Burkina Faso's Agrifood System
Structure and Drivers of Transformation

Xinshen Diao, Mia Ellis, Karl Pauw, Josee Randriamamonjy, and James Thurlow

International Food Policy Research Institute

This diagnostic analysis was conducted by IFPRI with financial support from USAID.

FEED THE FUTURE
The U.S. Government's Global Hunger & Food Security Initiative

USAID
FROM THE AMERICAN PEOPLE

Four Parts to the Diagnostics

2019

- **Current structure**

  What does Burkina Faso's food system look like today?

- **Decomposing value chains**

  How are different products contributing to the broader agrifood system?

2009-2019

- **Growth and market structure**

  How is Burkina Faso's agrifood system growing and transforming?

2019+

- **Future drivers of inclusive agricultural transformation**

  Which value chains could be most effective?

Summary

Burkina Faso's agrifood system (AFS) diagnostic results

Burkina Faso's AFS grew rapidly but lacked transformation during 2009–2019

- Agricultural share of total GDP fell modestly over time
- Off-farm AFS grew more slowly than primary agriculture, and its share of total AFS GDP barely changed

AFS growth has been driven by value chains oriented toward both the domestic market and for export

- Less-traded value chains dominated AFS growth with their large size
- Exportable value chains made an important contribution to AFS growth with the fastest growth

Looking forward, the structure of AFS growth will be crucial in driving development outcomes…
(e.g., poverty, dietary improvement, employment creation, and growth)

…but no single value chain is the most effective at driving all these development outcomes

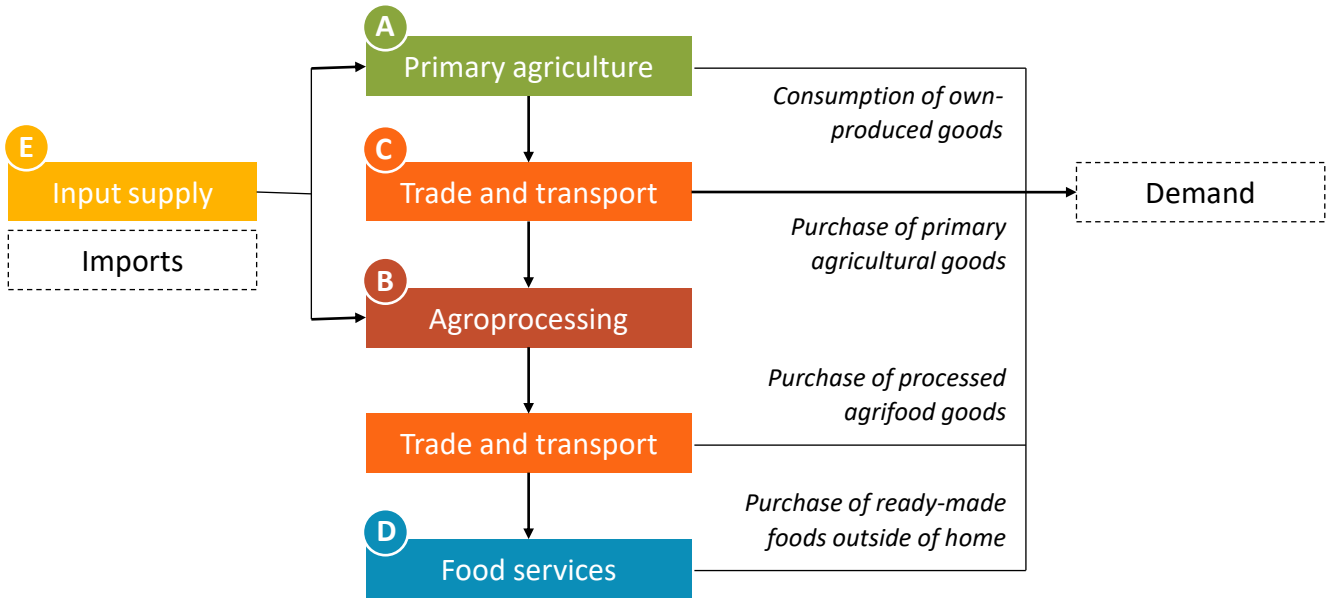
- Root crops are most effective **at reducing poverty**; horticulture and livestock are best for improving **diet quality**; and cattle & dairy and rice have strong **employment effects** and large **growth multipliers**

⇨***Jointly promoting cattle & dairy, horticulture and root crops would offer an effective way to achieve multiple development outcomes***

Framework | Agrifood Systems (AFS)

Includes agriculture, plus all upstream/downstream sectors

- Five major components (A to E)
- Same format as standard economywide datasets (e.g., national accounts)
- Allows us to measure AFS structure and performance using actual data



Agrifood System GDP (AgGDP+)
Total value added generated by all agricultural value chains (in constant dollars)

Agrifood System Employment (AgEMP+)
Total number of workers who are primarily employed in an agricultural value chain

Structure $_{2019}$ | Burkina Faso's Agrifood System Today

- **Part 1** focuses on the **current size and structure** of the national agrifood system
  - Latest AgGDP+ and AgEMP+ estimates
  - Decomposed into five AFS components
  - Situates AFS within the broader economy
- Uses **official data** sources
  - GDP from national accounts
  - Employment from various sources (i.e., population census, labor force surveys, ILO, etc.)
- **Burkina Faso estimates** indicate that
  - AFS makes up more than one-third of GDP ($5.2 billion AgGDP+) …
  - … and two-thirds of total employment (4.6 million AgEMP+)
  - Primary agriculture (A) is large, but off-farm components (B–E) are also important (40% of AgGDP+, 30% of AgEMP+)

GDP and employment in Burkina Faso's agrifood system (2019)

	GDP ($ billions)		Employment (millions of workers)	
Total economy	**14.6**	**100%**	**7.0**	**100%**
Agrifood system	**5.2**	**35.6%**	**4.6**	**66.3%**
Primary agric. (A)	3.0	20.3%	3.9	47.6%
Off-farm AFS	**2.2**	**15.3%**	**1.3**	**18.7%**
Processing (B)	1.1	7.6%	0.4	5.8%
Trade & transport (C)	0.7	4.6%	0.7	9.8%
Food services (D)	0.3	2.4%	0.2	2.7%
Input supply (E)	0.1	0.7%	0.0	0.5%
Rest of economy	**9.4**	**64.4%**	**2.3**	**33.7%**

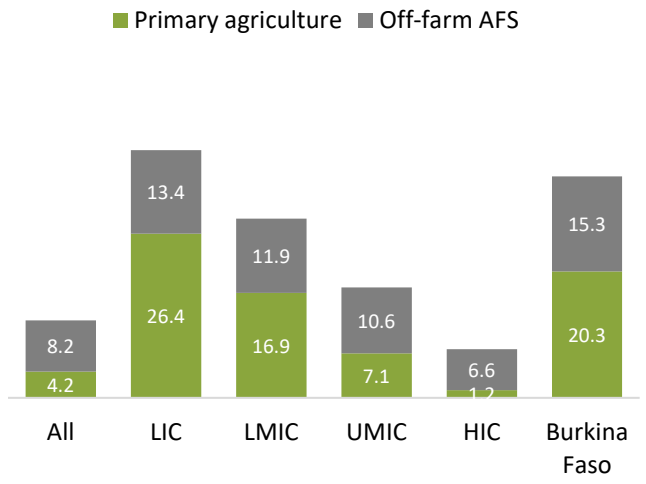
Structure $_{2019}$ | Comparing to Other Countries

- **Importance and structure of the AFS varies at different stages of development**

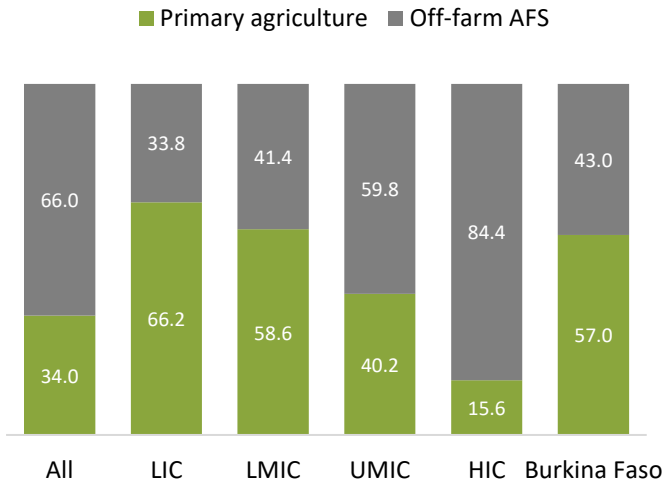
  Burkina Faso is a low-income country (LIC)

  - **A**: Burkina Faso's AgGDP+ share of total GDP lies between LIC and lower-middle-income country (LMIC) averages
  - **B**: Burkina Faso's primary agriculture component in AFS is lower than the LIC average
  - **C**: Burkina Faso's agro-processing is higher than expected, while trade and transport is smaller

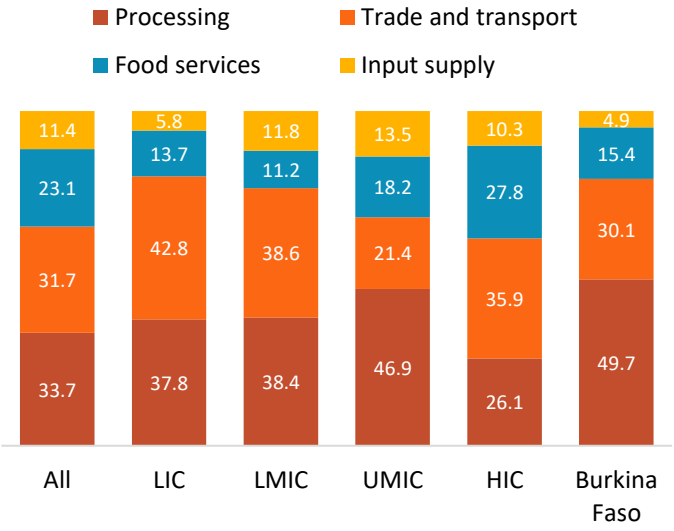
A **Share of total GDP (%)**



B **Share of AFS GDP (%)**



C **Share of off-farm AFS GDP (%)**



LIC = low-income countries | LMIC = lower-middle income | UMIC = upper-middle-income | HIC = high-income

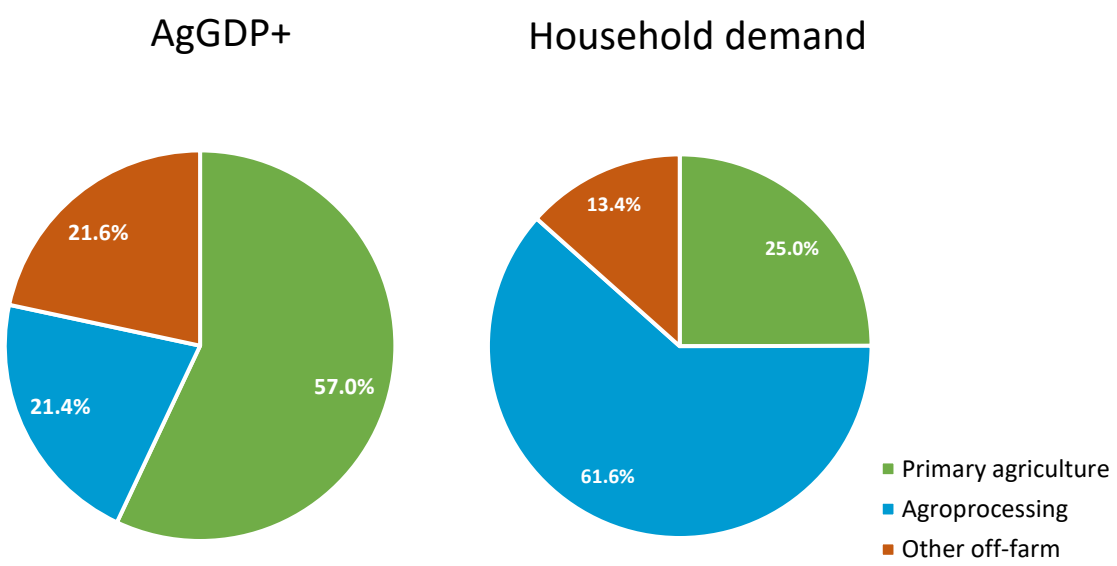
Source: IFPRI Agri-Food System Database

Structure $_{2019}$ | Supply vs. Demand Sides of the Agrifood System

- AgGDP+ defines the AFS on the **supply side**
- Household demand and trade (imports) capture AFS structure on the **demand side**
- Agrifood processing is more important on the demand side than the supply side in the AFS

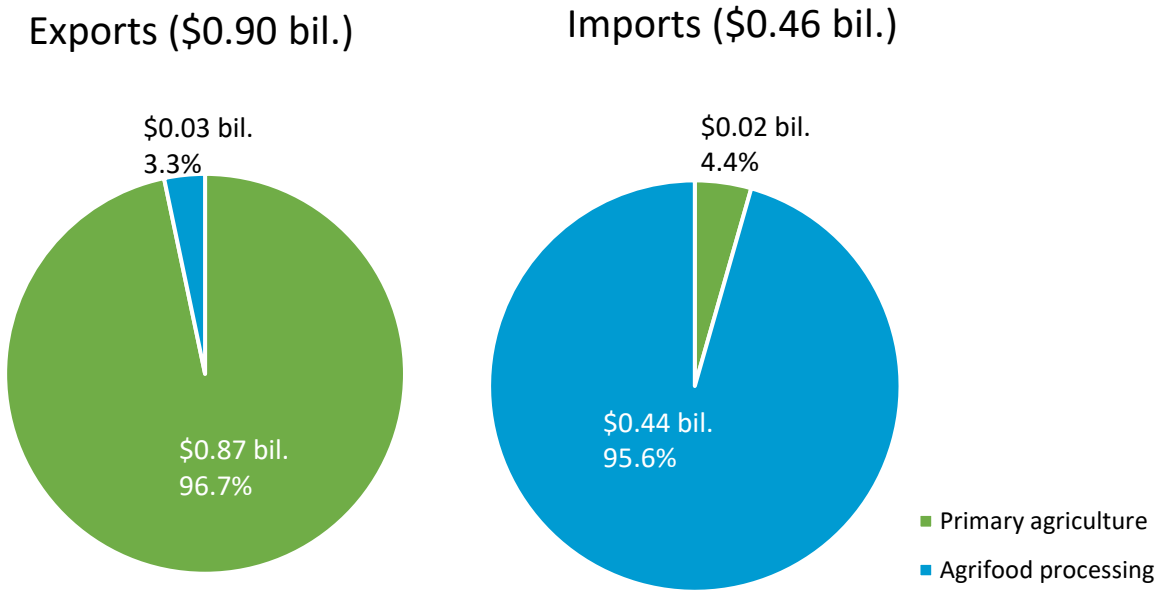
Agrifood GDP vs. consumption

Primary, processed, and other product shares (%)



Agrifood exports vs. imports

Primary and processed product shares (%)



Value Chains $_{2019}$ | Contributions & Trade Orientation

- **Part 2** decomposes the AFS across **broad value chain groupings**

- Classify value chains based on trade orientation
  - **Exportable** value chains have above-average export-output ratios (> 10.7%)
  - **Importable** value chains have above-average import-demand ratios (> 8.5%)
  - **Less-traded** value chains make up the rest

- Domestic market dominates AgGDP+ (58.3%) – seven less-traded value chains; similar on-farm and off-farm shares in GDP (59.3% and 60.6% respectively); cattle & dairy is an exception
- Three exportable value chain groups account for 30% of AFS GDP; relatively small off-farm share (24.5%) than on-farm AFS share (35.4%)
  - Oilseed value chain also has above-average import-to-demand ratio; exports are oilseeds, while imports are mainly cooking oils
- Three importable value chains account for a disproportionate share of off-farm AFS (14.9%); these value chains compete against processed agrifood imports

⇨ *Promoting some importable value chains, horticulture (exportable), and cattle & dairy (less traded) could be effective in driving agricultural transformation by boosting value added and employment in off-farm AFS*

Breakdown of Burkina Faso's agrifood system (2019)

	Share of total GDP (%)			Exports / output (%)	Imports / demand (%)
	Total AFS	Primary agric.	Off-farm AFS		
Total	**100**	**100**	**100**	**10.7**	**6.1**
Exportable	**30.1**	**35.4**	**24.5**	**37.2**	**8.5**
Oilseeds	19.3	24.3	12.7	39.1	12.8
Horticulture	8.2	7.3	9.4	19.3	2.7
Cotton	2.5	3.7	1.0	65.0	
Importable	**9.0**	**5.3**	**14.9**	**0.0**	**22.3**
Rice	2.7	1.6	4.2		41.3
Other crops	4.8	1.8	8.8	0.0	14.2
Fish	1.5	1.9	1.0		10.9
Less traded	**58.3**	**59.3**	**60.6**	**0.1**	**1.0**
Maize	8.1	7.5	8.9	0.2	0.4
Sorghum	16.2	16.3	16.0	0.1	
Pulses	3.1	5.2	0.2		
Roots	0.9	1.0	0.7	0.1	2.6
Cattle & dairy	17.9	16.0	20.4	0.0	1.9
Other livestock	7.1	9.6	3.6	0.1	2.2
Forestry	5.2	3.7	7.1	0.0	0.1

Growth $_{2009\text{-}2019}$ | Agrifood System Performance

- **Part 3** analyzes structural change in the AFS and the contribution of different value chains to AFS growth

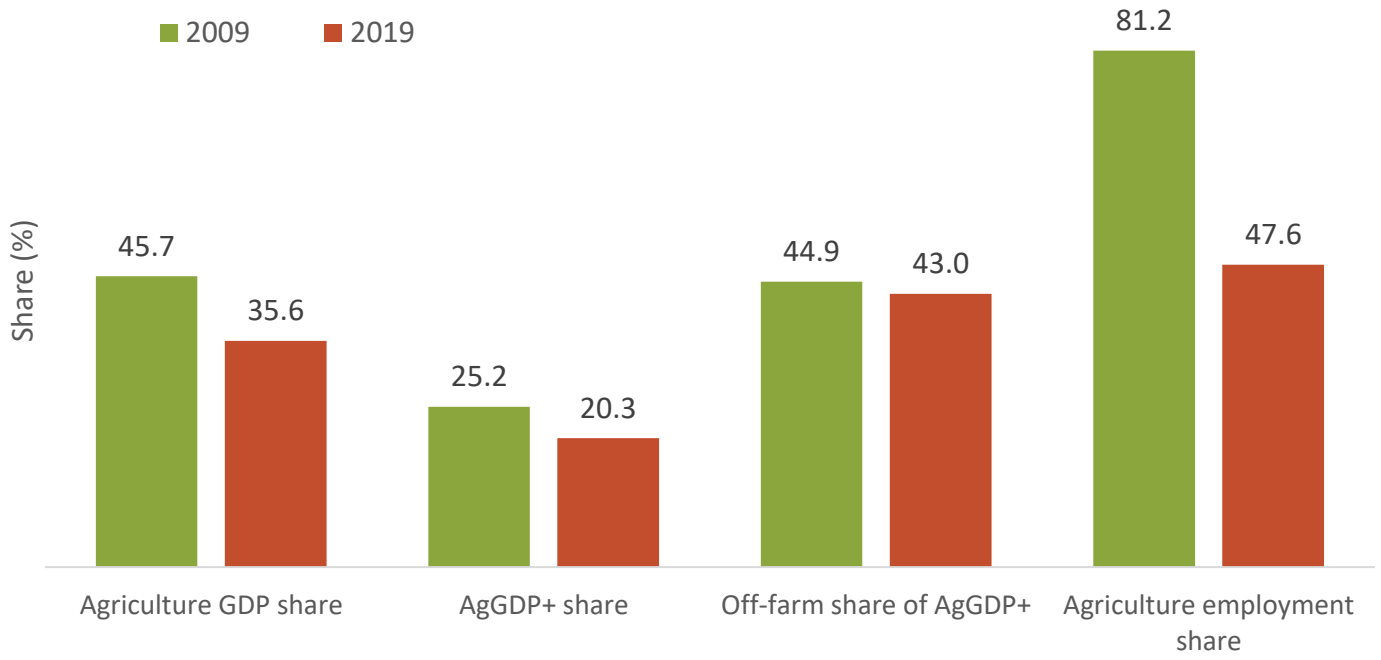
Burkina Faso's AFS grew rapidly but lacked transformation during 2009–2019

- Agricultural share of total GDP fell modestly (25% to 20%)
- Off-farm share of AFS GDP barely changed

Agricultural employment share fell significantly (81% to 48%)

- An indication of structural change in the economy with improved agricultural productivity

Agricultural GDP, agrifood system GDP, and employment shares (2009–2019)



Growth $_{2009\text{-}2019}$ | Value Chain Performance

- AgGDP+ grew rapidly during 2009–2019 (5% p.a.)
- Less-traded value chains dominated AFS growth with their large size and close to average growth (4.6%), contributing nearly 60% of AFS growth
- Exportable value chains made an important contribution to AFS growth with the fastest growth (6.1%)
- Only three value chains with above-average growth (*) (>5.0%)
  - Oilseeds, cotton – exportable value chains
  - Cattle & dairy – less traded
- AgGDP+ growth driven mainly by strong growth in on-farm AFS (5.4%), while off-farm growth rate is lower (4.5%)
  - Off-farm growth is slower than primary agriculture in fast-growing value chains; processing component grew even more slowly

Value chain growth in Burkina Faso (2009–2019)

	Average annual GDP growth rate (%)			
	Total AFS	Primary agric.	Off-farm AFS	Process-ing
Total AFS	**5.0**	**5.4**	**4.5**	**4.5**
Exportable	**6.1**	**7.6**	**3.7**	**2.4**
Oilseeds*	**6.6**	**7.7**	**4.3**	**3.3**
Horticulture	4.3	6.3	2.6	1.4
Cotton*	**9.5**	**9.8**	**8.0**	
Importable	**3.8**	**3.5**	**3.9**	**3.8**
Rice	4.5	4.4	4.6	3.9
Other crops	3.6	1.7	4.2	4.5
Fish	3.0	4.6	-0.1	-3.1
Less traded	**4.6**	**4.4**	**5.0**	**5.7**
Maize	4.5	4.3	4.7	5.3
Sorghum	3.8	3.2	4.8	5.9
Pulses	4.0	4.0	2.3	
Roots	0.8	-0.7	4.1	4.6
Cattle & dairy*	**6.6**	**7.8**	**5.5**	**5.7**
Other livestock	4.8	5.1	3.7	3.3
Forestry	2.6	-0.2	5.2	6.6

Future Drivers $_{2019+}$ | Modeling Faster Growth

- IFPRI's **RIAPA model** is used to analyze different sources of agricultural growth

- **Expand production** in different value chains
  - Increase on-farm productivity growth rates in targeted value chains
  - Achieve same overall growth in agriculture GDP (e.g., 1.0%)
  - Track linkage effect within value chain and spillover effects to other value chains

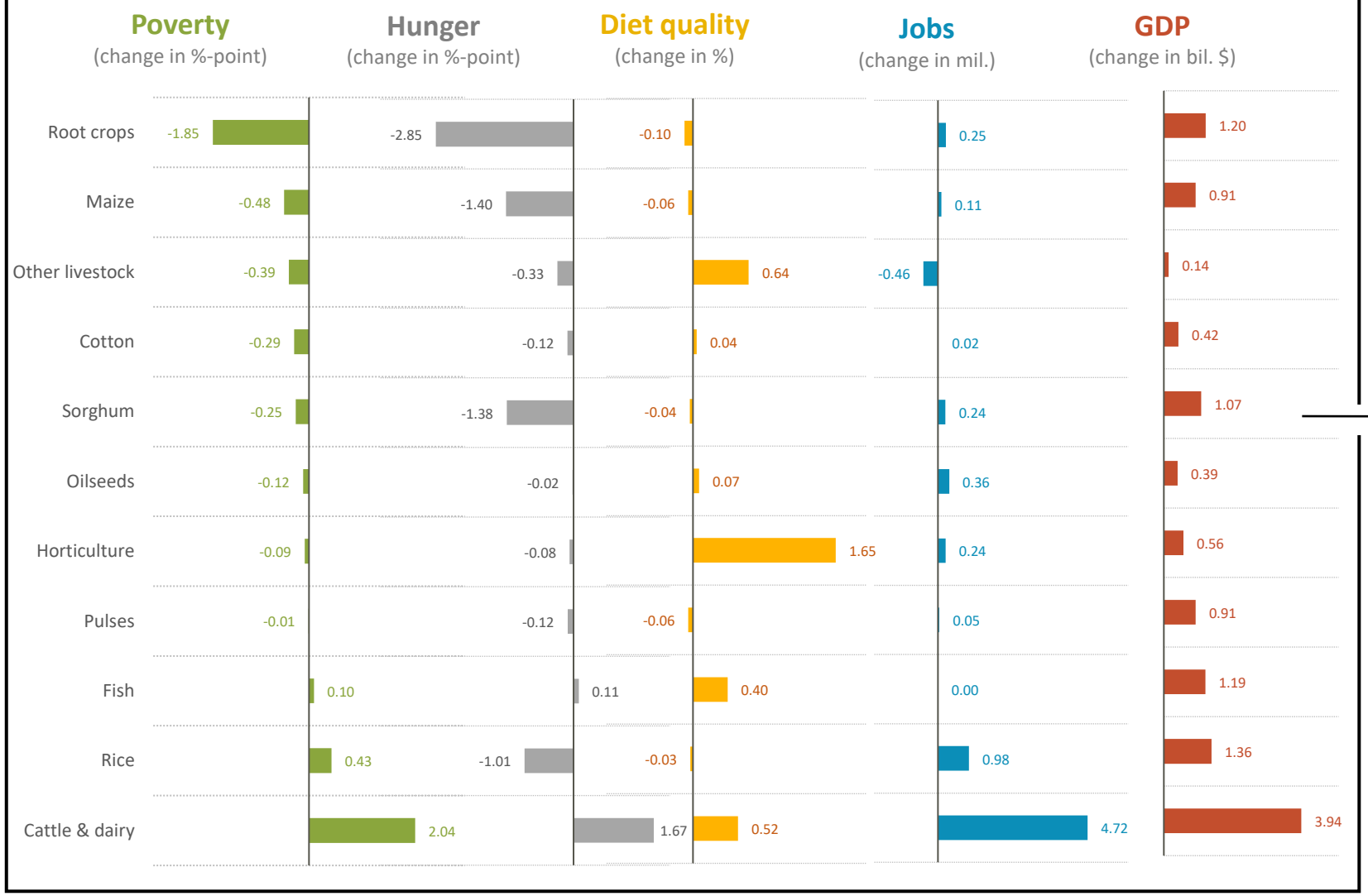
- **Assess outcomes**
  - **Poverty** – Poverty-growth elasticity in percentage points based on $2.15-a-day
  - **Hunger** – Hunger-growth elasticity in percentage points based on prevalence of undernourishment
  - **Diet** – Diet quality to growth elasticity in % derived from Reference Diet Deprivation index (REDD)
  - **Jobs** – Employment multiplier in thousand employed persons associated with US$1 million growth in targeted value chain
  - **GDP** – GDP growth multiplier in US$ millions associated with US$1 million growth in targeted value chain

- **Average across outcomes**
  - The value of outcome indicators (elasticity or multiplier) is expected to differ across value chain growth; not all value chains are equally effective at achieving all outcomes
  - Normalizing the individual outcome scores
    - The values of each outcome indicator are scaled so that the most effective value chain is given a score of one and the least effective is given a score of zero. A value chain with adverse impact is also given a score of zero.
  - An average score with equal weights is used to measure the total impacts across all value chains

Future Drivers $_{2019+}$ | Outcomes of Agricultural Growth

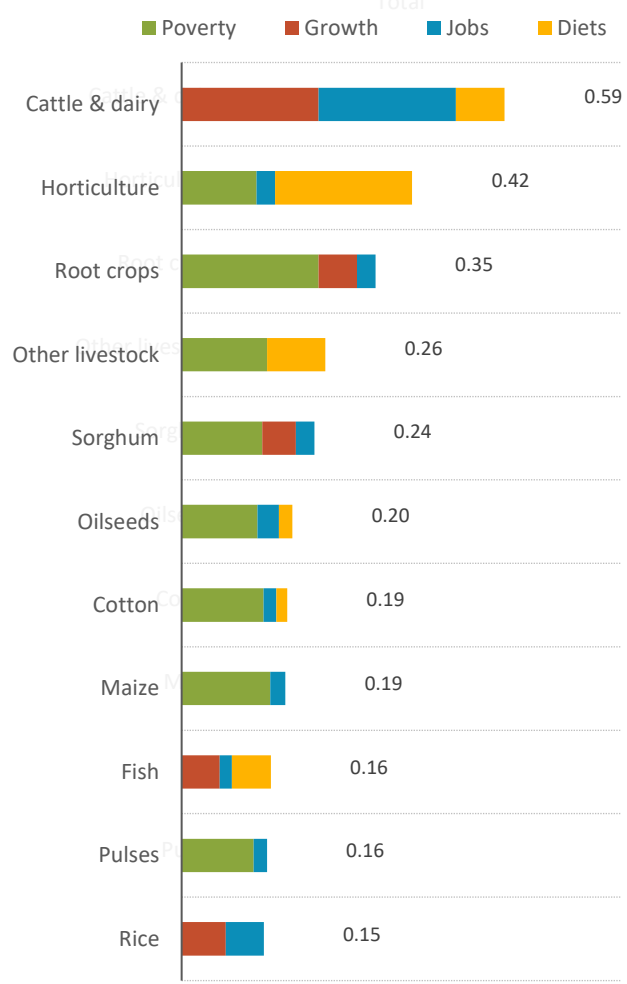
Individual outcomes

(given unit change in agricultural GDP, ordered by poverty)



Average across outcomes

(average from the normalized scores, reordered)



Future Drivers $_{2019+}$ | Key Messages

AFS growth is **pro-poor**

- Growth led by many value chains reduces poverty, but root crops and maize are most effective

AFS growth is effective in improving **food security (hunger)** and **diet quality**

- Most value chains reduce hunger; root crops, maize, and sorghum are most effective
- Most value chains improve diet quality; horticulture and the two livestock value chains are more effective

Agricultural growth creates **jobs** but not necessarily on-farm

- All value chains are associated with an increase in total employment, but most AFS jobs are created off-farm
- Cattle & dairy is the most effective value chain in creating jobs in the overall economy and within the AFS

Agricultural growth has strong **growth** multiplier effects that generate income beyond agriculture

- Cattle & dairy, rice, and root crop value chains have stronger multiplier effects for both AFS income and total GDP growth

In conclusion, **promoting multiple value chains can achieve broad impact**

- No single value chain group is most effective in achieving all the development outcomes we consider
- Cattle & dairy, horticulture, and root crop value chains rank highly in the combined outcome scores for poverty, diet, jobs, and growth
- Only cattle & dairy grew more rapidly than the AFS average in the past. While promoting these value chains would offer an effective way to achieve broad-based outcomes , the lack of growth in some of these value chains in the past requires additional analysis to understand their growth challenges

Note: Value Chain Groups and Agricultural Sectors in Individual VC Groups

Value chain group and their share of AgGDP+	Individual products and their share of group's agriculture GDP
Maize (8.1%)	Maize 100%
Sorghum (16.2%)	Sorghum 100%
Rice (2.7%)	Rice 100%
Pulses (3.1%)	Pulses 100%
Oilseeds (19.3%)	Groundnuts 23.2% | Other oilseeds 76.8%
Roots (0.9%)	Cassava 4.4% | Irish potatoes 31.9% | Sweet potatoes 32.3% | Other roots 31.4%
Cotton (2.5%)	Cotton 100%
Horticulture (8.2%)	Leafy vegetables 2.9% | Other vegetables 32.5% | Nuts 28.3% | Fruits 36.3%
Other crops (4.8%)	Sugarcane 58.6% | Other crops 41.4%
Cattle & dairy (17.9%)	Cattle meat 83.7% | Raw milk 16.3%
Other livestock (7.1%)	Poultry meat 13.9% | Eggs 5.7% | Small ruminants 40.2%| Other livestock 40.2%
Fish (1.5%)	Captured fish 100%
Forestry (5.2%)	Forestry 100%