

AGRIFOOD SYSTEM DIAGNOSTICS

COUNTRY SERIES

Tajikistan's Agrifood System Structure and Drivers of Transformation

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Four Parts to the Diagnostics

2020

- **Current structure**

What does Tajikistan's food system look like today?

- **Decomposing value chains**

How are different products contributing to the broader agrifood system?

2011-2020

- **Growth and market structure**

How is Tajikistan's agrifood system growing and transforming?

2020+

- **Future drivers of inclusive agricultural transformation**

Which value chains could be most effective?

Summary

Tajikistan's agrifood system (AFS) diagnostic results

Tajikistan's AFS has been transforming with rapid growth

- Off-farm AFS GDP has grown more rapidly than primary agriculture, and its share in total AFS rose
- Primary agriculture, however, still dominates AFS, and its labor productivity is far below productivity of off-farm AFS

AFS growth has been driven by domestic-market-oriented value chains

- Less-traded value chains dominated AFS growth with their large size and rapid growth
- Exportable value chains made an important contribution to AFS growth with above-average growth
 - Fruit value chain has grown rapidly
 - Fruit exports were under-reported according to some case studies. Many fruit products have high potential for further increasing exports

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

- Cereals and fruits are most effective at **reducing poverty**; livestock value chains are best for improving **diet quality**; cotton and poultry have strong **employment effects**; and poultry and pulses & oilseeds have large **growth multipliers**

⇒ ***Jointly promoting horticulture, poultry, and cereals would offer an effective way to achieve multiple development outcomes***

Framework | Agrifood Systems (AFS)

Includes agriculture, plus all upstream/downstream sectors

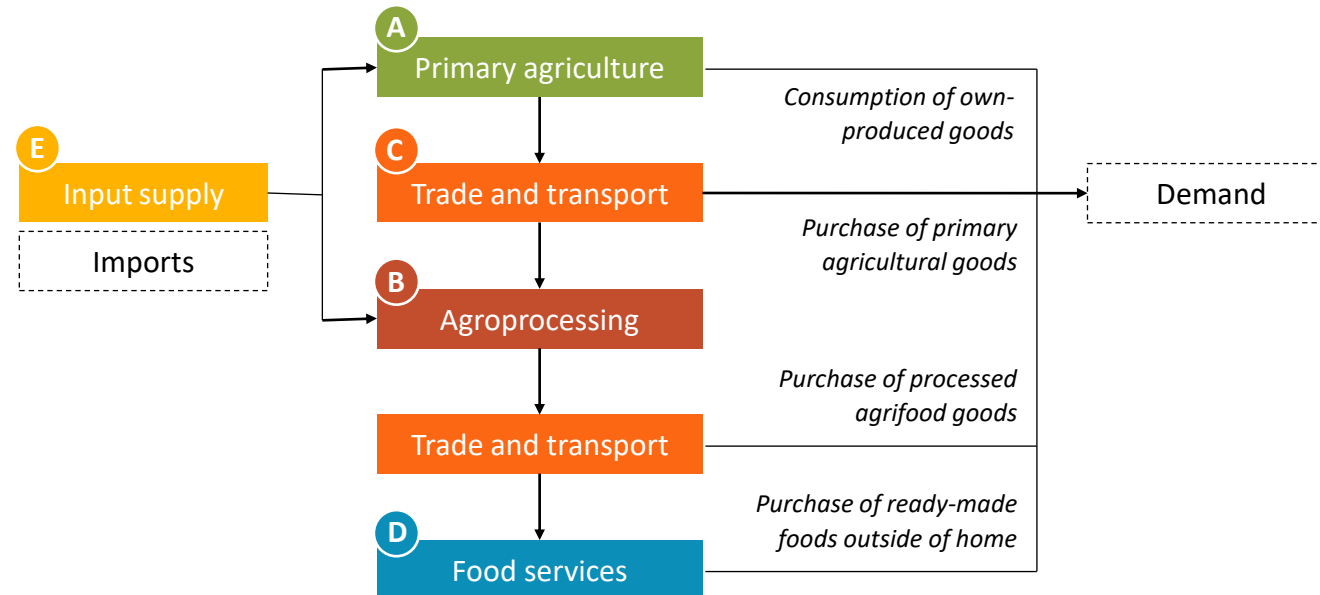
- Five major components (A to E)
- Same format as standard economywide datasets (e.g., national accounts)
- Allows us to measure AFS structure and performance using actual data

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



Structure₂₀₂₀ | Tajikistan'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.)
- **Tajikistan estimates** indicate that
 - AFS makes up 40% of GDP (\$2.9 billion AgGDP+) ...
 - ... and two-thirds of total employment (1.7 million AgEMP+)
 - Primary agriculture (A) is large, but off-farm components (B–E) are also important (near 40% of AgGDP+, 10% of AgEMP+), indicating labor productivity is much higher off-farm than in primary agriculture

GDP and employment in Tajikistan's agrifood system (2020)

	GDP (\$ billions)		Employment (millions of workers)	
Total economy	7.5	100%	2.5	100%
Agrifood system	2.9	39.0%	1.7	66.2%
Primary agric. (A)	1.8	24.7%	1.6	60.9%
Off-farm AFS	1.1	14.3%	0.1	5.3%
Processing (B)	0.5	6.6%	0.0	1.2%
Trade & transport (C)	0.4	6.0%	0.1	3.1%
Food services (D)	0.1	0.9%	0.0	0.3%
Input supply (E)	0.1	0.8%	0.0	0.8%
Rest of economy	4.6	61.0%	0.8	33.8%

Notes: GDP is defined at factor costs

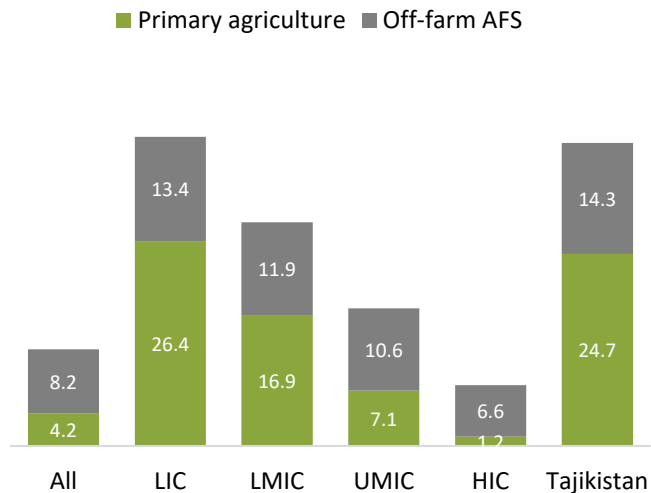
Structure₂₀₂₀ | Comparing to Other Countries

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

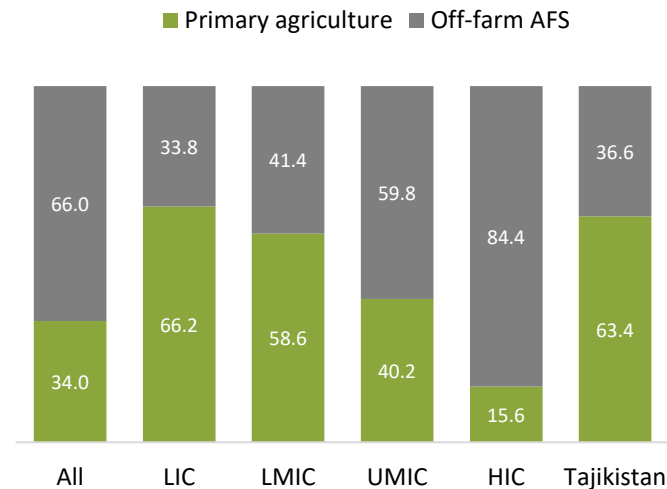
Tajikistan is a lower-middle-income country (LMIC)

- **A:** Tajikistan's AgGDP+ share of total GDP is higher than most LMICs and close to the low-income country (LIC) average
- **B:** Tajikistan's primary agriculture component is even larger than most LICs (i.e., less off-farm value added in AgGDP+)
- **C:** Tajikistan's agro-processing sector is larger than expected

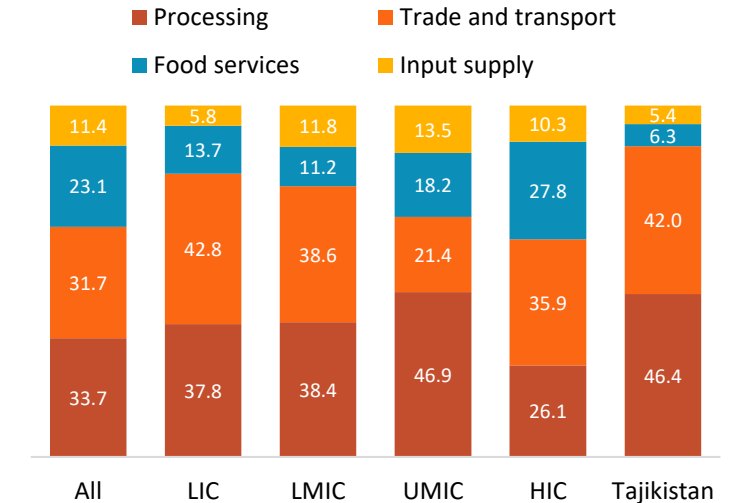
A Share of total GDP (%)



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

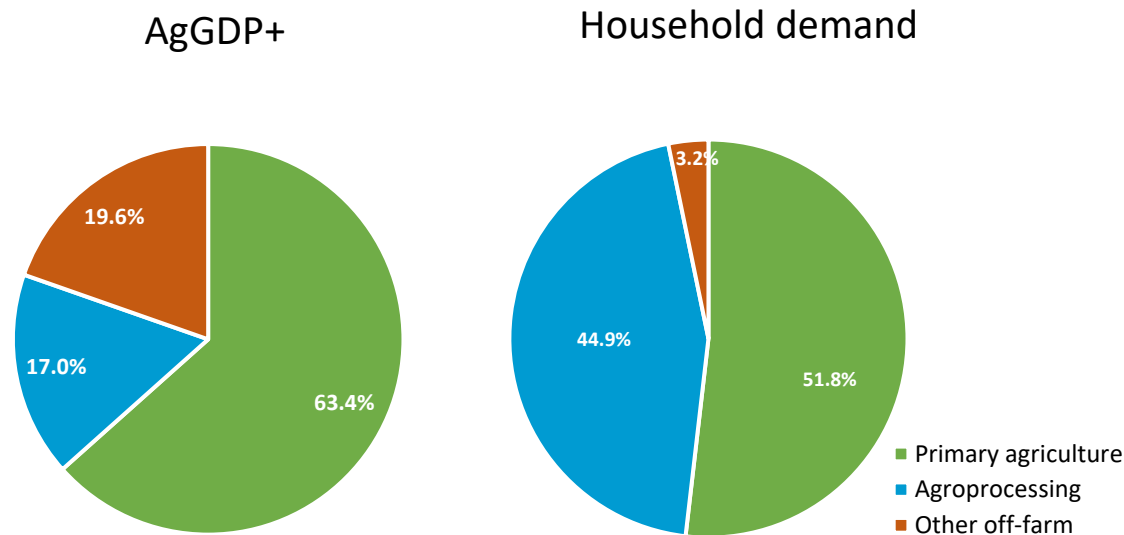
Source: IFPRI Agri-Food System Database

Structure₂₀₂₀ | 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**
- Processing agriculture is more important on the demand side than the supply side in the AFS

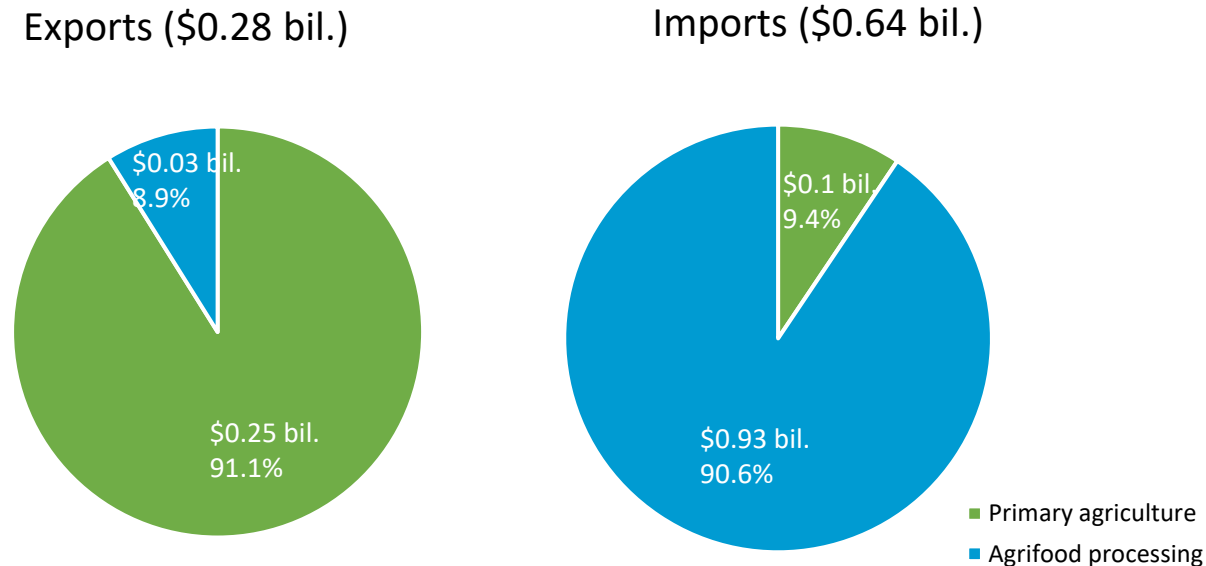
Agrifood GDP vs. consumption

Primary, processed, and other product shares (%)



Agrifood exports vs. imports

Primary and processed product shares (%)



Value Chains₂₀₂₀ | 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 (> 6.3%)
 - **Importable** value chains have above-average import-demand ratios (> 19.9%)
 - **Less-traded** value chains make up the rest
- Tajikistan relies heavily on imports for agrifood consumption – six importable value chains (31% of AgGDP+); much larger off-farm share (53.5%) than on-farm (primary) share (17.7% of total)
- Domestic market dominates AgGDP+ (51%) – five less-traded value chains; much smaller off-farm share (30.5%) than on-farm share (63% of total)
- Exportable includes two value chains; fruit exports (particularly dried fruits) have high potential

Breakdown of Tajikistan's agrifood system (2020)

	Share of total GDP (%)			Exports / output (%)	Imports / demand (%)
	Total AFS	Primary agric.	Off-farm AFS		
Total	100	100	100	6.3	19.9
Exportable	18.2	19.5	15.9	31.7	1.1
Cotton	4.5	5.5	2.9	65.7	
Fruits	13.6	13.9	13.0	19.4	1.2
Importable	30.8	17.7	53.5	0.3	37.5
Wheat	15.9	6.8	31.7	0.1	34.6
Other cereals	4.8	2.8	8.3	0.1	31.1
Oilseeds	6.5	6.9	5.9	0.1	24.3
Other crops	1.6	0.6	3.3	2.1	44.5
Fish	0.2	0.3	0.1	0.0	25.7
Forestry	1.7	0.3	4.2	0.2	62.0
Less traded	51.0	62.9	30.5	0.3	5.8
Pulses	2.4	3.3	0.7	0.1	5.4
Roots	7.4	10.4	2.0		1.0
Vegetables	25.5	35.8	7.6	0.6	1.0
Cattle & dairy	10.8	7.3	16.9	0.1	15.3
Other livestock	5.0	6.0	3.3	0.1	3.1

Growth₂₀₁₁₋₂₀₂₀ | Agrifood System Performance

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

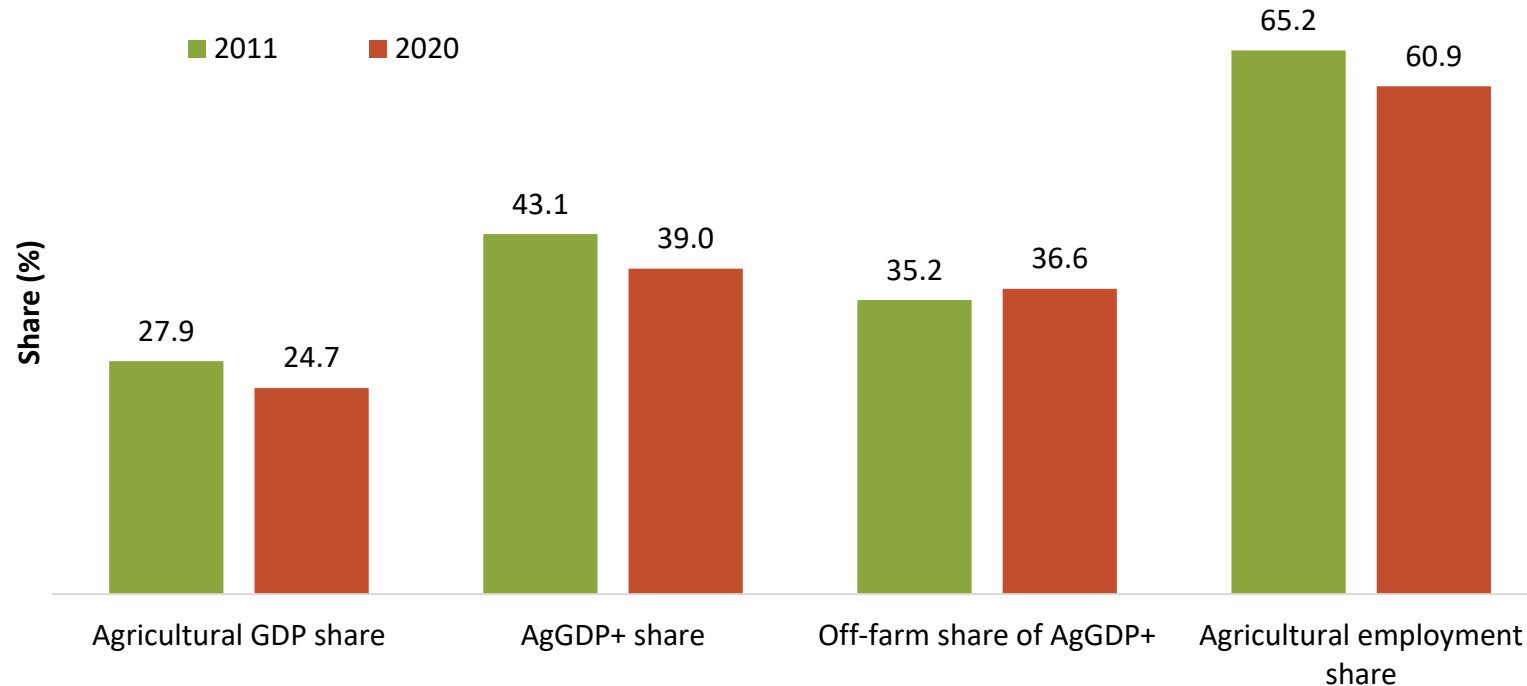
Tajikistan's AFS has been transforming

- Agricultural share of total GDP fell during 2011-2020 (28% to 25%)
- Share of off-farm in total AFS GDP rose

Agricultural employment share fell modestly (65% to 61%)

- But agriculture remains the dominant sector for employment

Agricultural GDP, agrifood system GDP, and employment shares (2011–2020)



Growth₂₀₁₁₋₂₀₂₀ | Value Chain Performance

- AgGDP+ grew rapidly during 2011–2020 (6% p.a.)
- Less-traded value chains dominate AFS growth with their large size and above-average growth (6.7%), contributing 55% of AFS growth in 2011–2020
- Exportable and importable value chains made important contributions to AFS growth, either with their relatively large size (i.e., importable) or above-average growth (i.e., exportable), contributing, respectively, 19% and 26% of AFS growth in 2011–2020
- Value chains with above-average growth (*)
 - Fruits – exportable
 - Wheat, fish, forestry – importable
 - Vegetables, cattle & dairy – less traded
- **Off-farm growth is faster** than primary agriculture for fast-growing value chains
 - Agrifood processing grows most rapidly; double-digit growth rate for fruits and some other value chains
 - Vegetables are currently identified as a less-traded value chain, while potential exists for increasing fresh and processed vegetable exports
 - Tajikistan has potential in increasing horticulture exports

Value chain growth in Tajikistan (2011-2020)

	Average annual GDP growth rate (%)			
	Total AFS	Primary agric.	Off-farm AFS	Processing
Total AFS	6.0	5.7	6.4	10.1
Export-oriented	6.2	5.5	8.0	14.1
Cotton	3.6	3.4	4.3	
Fruits*	7.3	6.5	9.0	14.1
Import dependent	4.8	3.2	5.7	9.6
Wheat*	6.4	4.8	7.0	9.5
Other cereals	5.5	3.1	7.3	9.8
Oilseeds	0.8	1.0	0.3	9.4
Other crops	1.9	9.2	0.4	9.5
Fish*	11.8	11.7	12.1	9.4
Forestry*	9.7	8.4	9.9	11.9
Less traded	6.7	6.6	6.9	9.6
Pulses	2.0	1.9	3.1	9.4
Roots	3.8	3.7	4.3	
Vegetables*	8.8	8.8	8.6	9.5
Cattle & dairy*	6.9	7.0	6.9	9.6
Other livestock	4.1	3.7	5.7	9.4

Future Drivers₂₀₂₀₊ | 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 effects within value chains and spillover effects to other value chains
- **Assess outcomes**
 - **Poverty** – Poverty-growth elasticity in percentage points based on \$2.15-a-day
 - **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 Drivers₂₀₂₀₊ | Prioritizing Agricultural Growth



Future Drivers₂₀₂₀₊ | Key Messages

AFS growth is **pro-poor**

- Growth led by most value chains reduces poverty, but cereals, fruits, and poultry are most effective

AFS growth is effective in improving **diet quality**

- Most value chains improve diet quality, but the three livestock value chains are most effective

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

- Most value chains are associated with an increase in total employment, but AFS jobs are mainly created off-farm
- Cotton, poultry, and oilseeds & pulses are the most effective value chains in creating jobs in the overall economy and within the AFS

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

- Poultry, oilseeds & pulses, and other livestock value chains have stronger multiplier effects for both AFS income and total GDP growth

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

- No single value chain group is the most effective in achieving all the outcomes we consider
- Poultry, cereals, and cotton value chains rank highly in the combined outcome scores for poverty, diet, jobs, and growth
- The fruit value chain grew rapidly in the recent years, and the potential for fruit exports is high. Fruit growth scenario shows a more balanced impact on poverty, diet, jobs, and growth. Further promoting fruit growth together with the three high-ranking value chains would offer an effective way to achieve broad-based outcomes

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

Value chain group and their share of AFS GDP	Individual product's share of group's Agriculture GDP
Wheat (15.9%)	Wheat 100%
Other cereals (4.8%)	Maize 79.6% Rice 20.4%
Pulses (2.4%)	Pulses 100%
Oilseeds (6.5%)	Groundnuts 4.9% Other oilseeds (including cottonseeds, sunflower seeds, sesame seeds, etc., dominated by cotton seeds) 95.1%
Roots (7.4%)	Irish potatoes 100%
Vegetables (25.5%)	Vegetables 100%
Fruits (13.6%)	Nuts 4.7% Fruits (including fresh and dried fruits) 95.3%
Cotton (4.5%)	Cotton 100%
Other crops (1.6%)	Tobacco 4.0% Other crops 96.0%
Cattle & dairy (10.8%)	Cattle meat 31.9% Raw milk 68.1%
Other livestock (5.0%)	Poultry meat 15.6% Eggs 63.5% Small ruminants 11.2% Other livestock 9.7%
Fish (0.2%)	Fish 100%
Forestry (1.7%)	Forestry 100%