



These country studies are conducted by IFPRI with financial support from BMGF, FCDO, and USAID. All studies use data and models developed with ongoing support from BMGF, USAID and the CGIAR's "Foresight and Metrics" initiative. The Zambia case study benefits from working with Agricultural Policy Research and Outreach Institute (IAPRI) in Zambia.

Zambia

Impacts of the Ukraine and Global Crisis on Food Systems and Poverty

Antony Chapoto, Xinshen Diao, Paul Dorosh, Mia Ellis, Karl Pauw, Mitelo Subakanya, James Thurlow

Agricultural Policy Research and Outreach Institute (IAPRI), Zambia

International Food Policy Research Institute, Washington DC

Antony Chapoto (antony.chapoto@iapri.org.zm) | Xinshen Diao (x.diao@cgiar.org) |
Paul Dorosh (p.dorosh@cgiar.org) | James Thurlow (j.thurlow@cgiar.org)

Overview

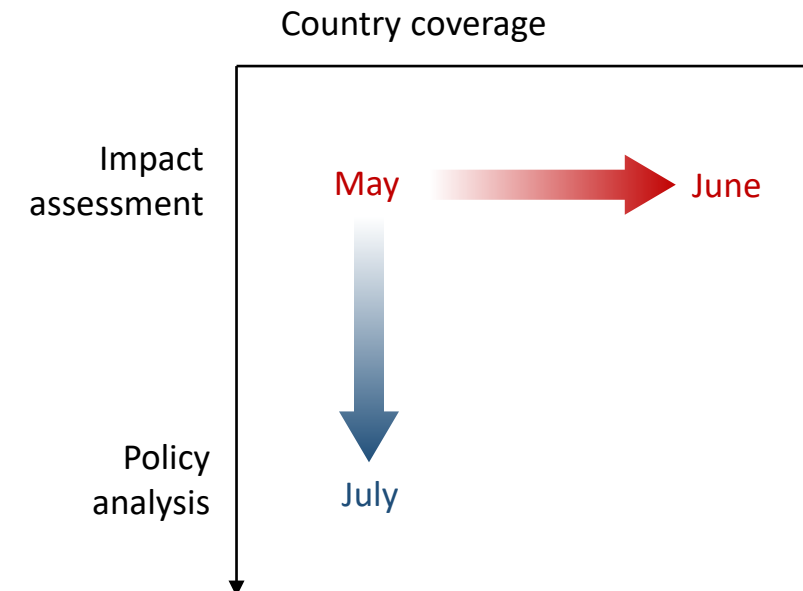
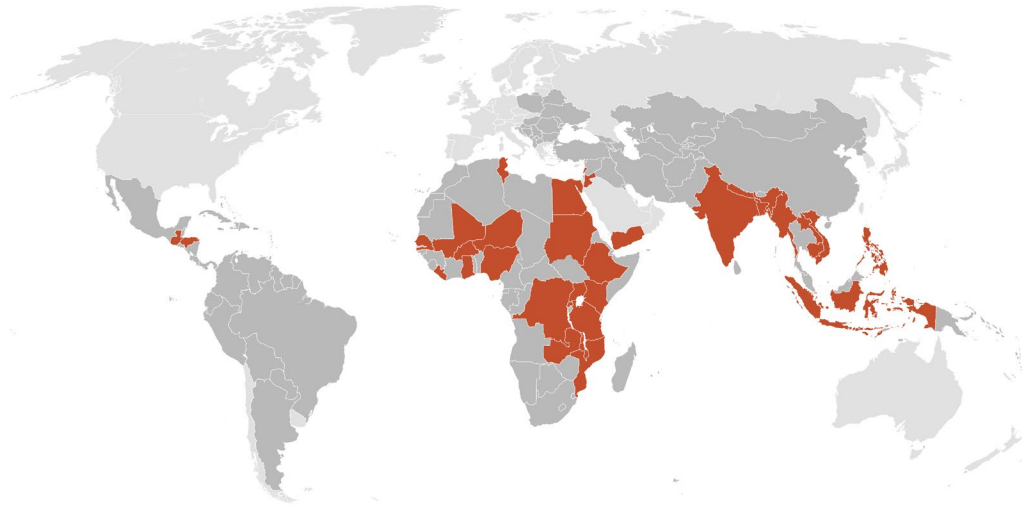
- **Series of country case studies**

- Economywide modeling
- Capture world market shocks
- Estimate impacts on economy, agri-food system, poverty, food security, etc.
- Simulate policy responses

- **Three phases of analysis:**

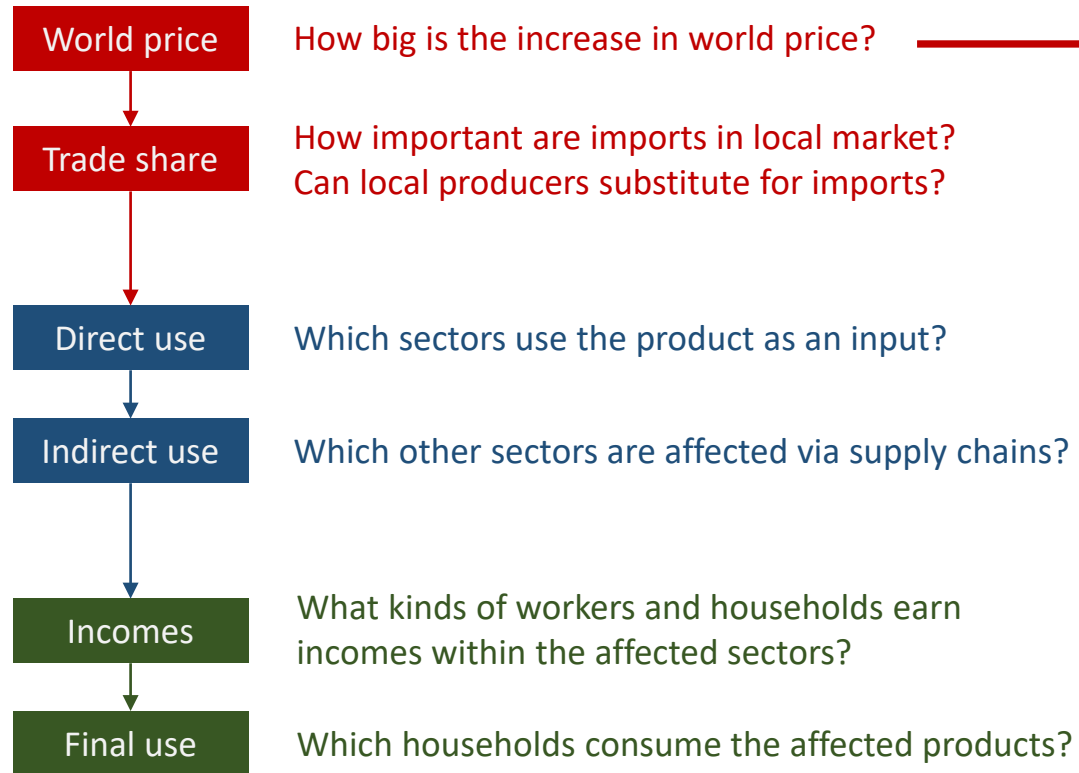
1. Initial data collection and impact assessment
2. Data revisions and analysis of broad policy options
 - Cash transfers, food aid, and fertilizer subsidies
 - Fiscal implications for national governments
3. In-country engagement and tailored policy analysis

Countries with IFPRI RIAPA models



Shocks | World Food, Fuel and Fertilizer Prices

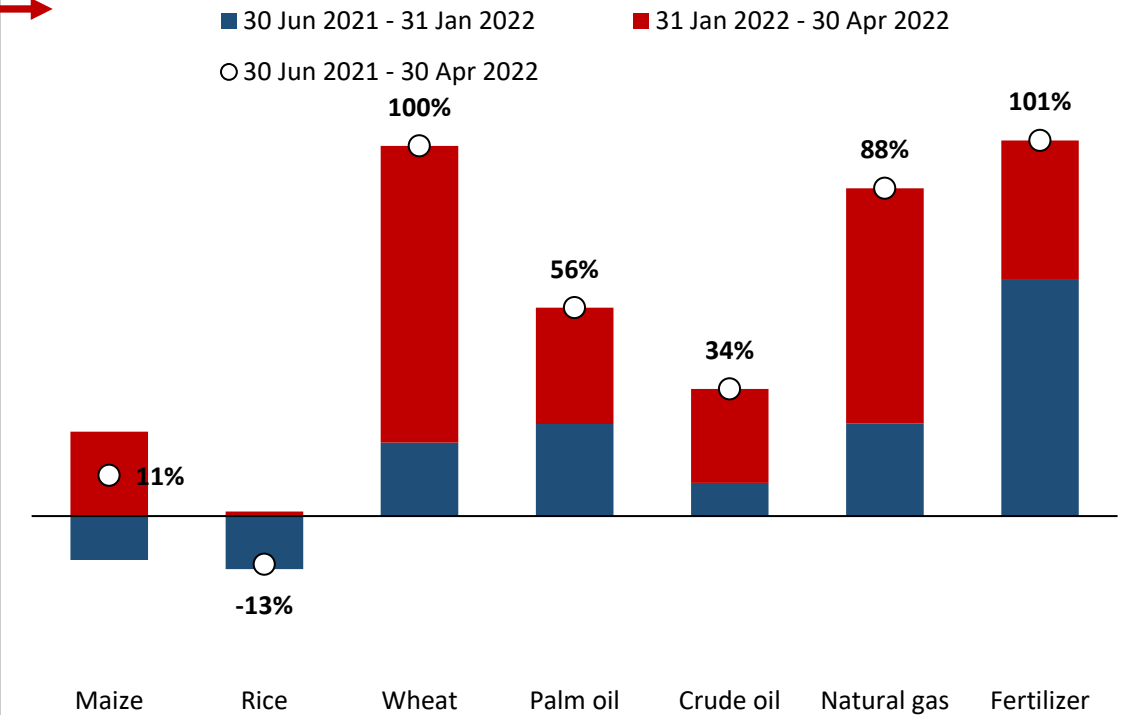
Impact Channel Considerations



World Price Shocks

Global data

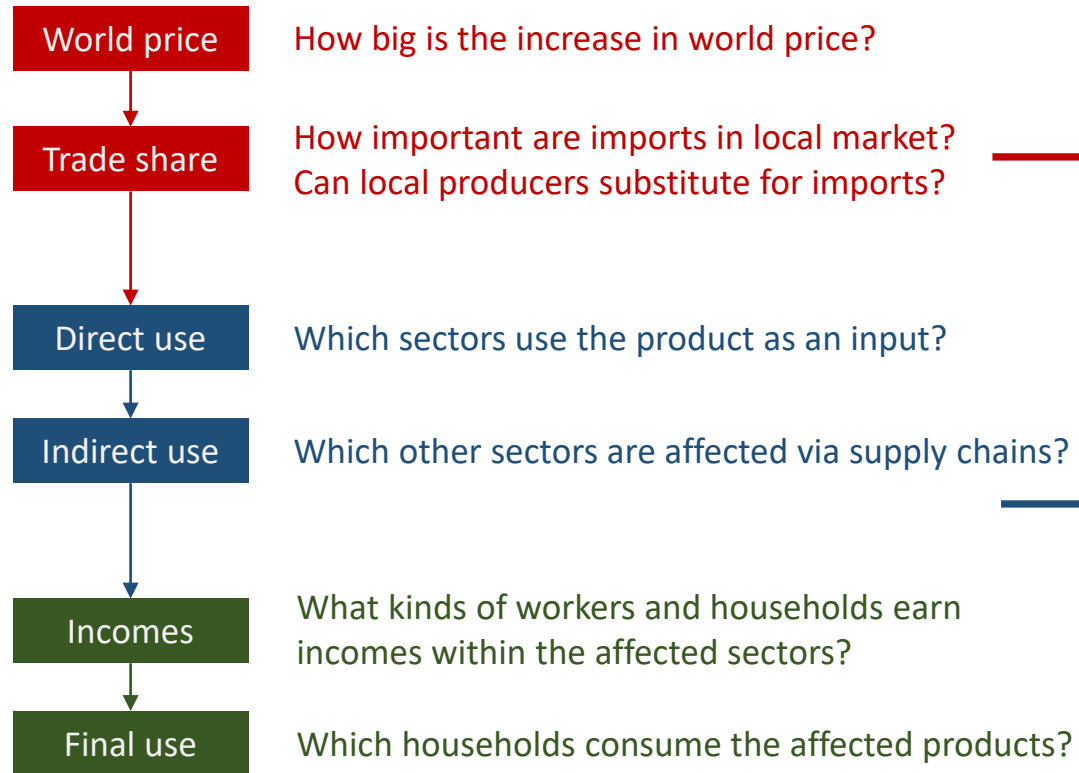
Change in real world prices (June 2021 to April 2022)



Source: World Bank Pink Sheets

Shocks | World Food, Fuel and Fertilizer Prices

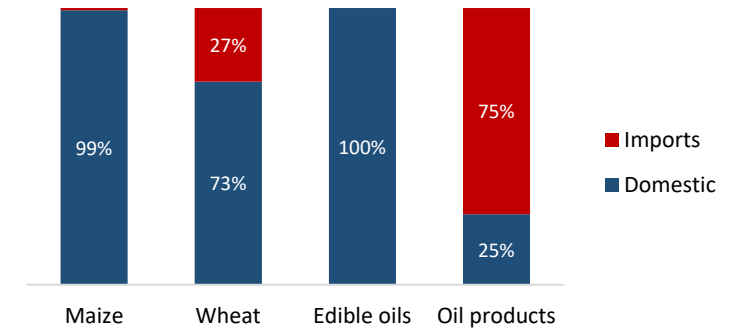
Impact Channel Considerations



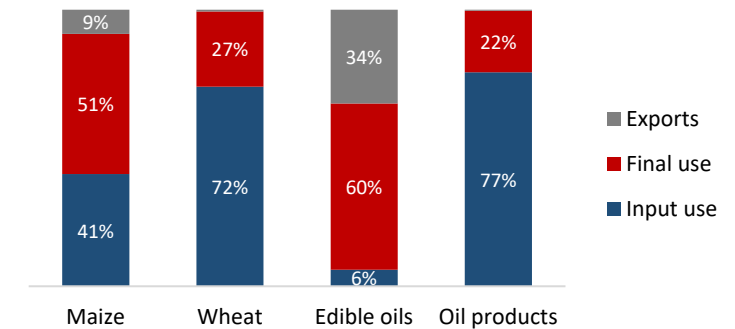
Supply and Demand

Zambia data

Supply
(% by source)



Demand
(% by use)

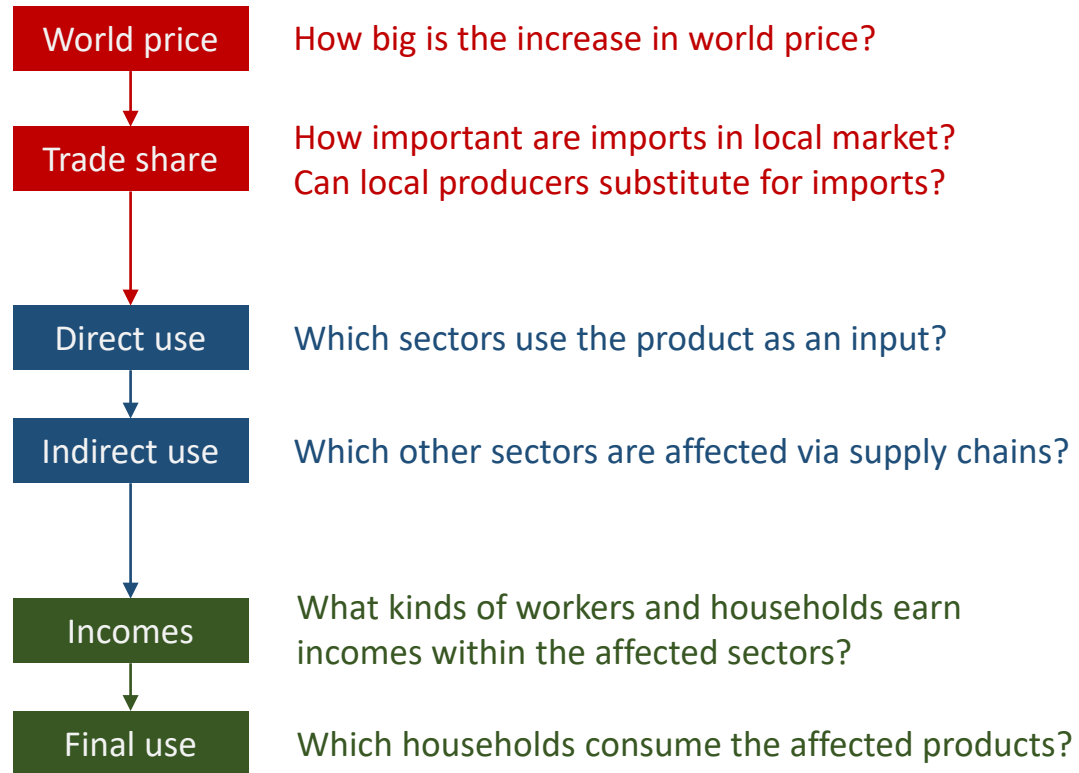


Products' share of the value of total demand throughout the economy

1.3% + 0.2% + 0.2% + 4.1% + Others = 100%

Shocks | World Food, Fuel and Fertilizer Prices

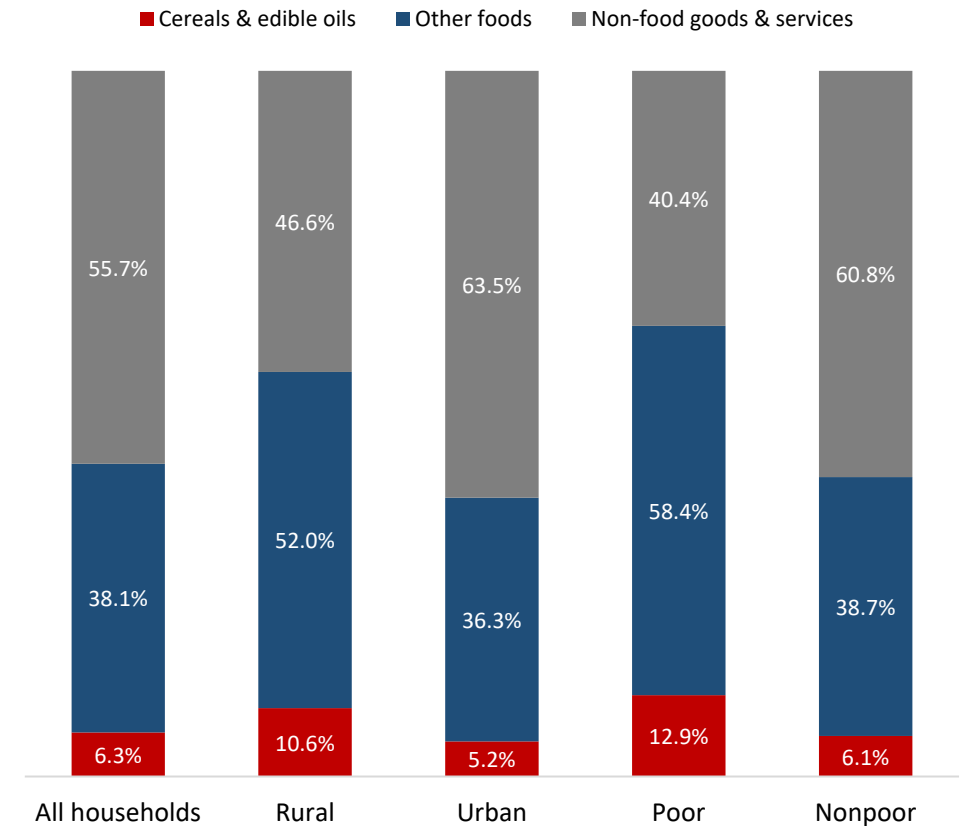
Impact Channel Considerations



Consumption Baskets

Zambia data

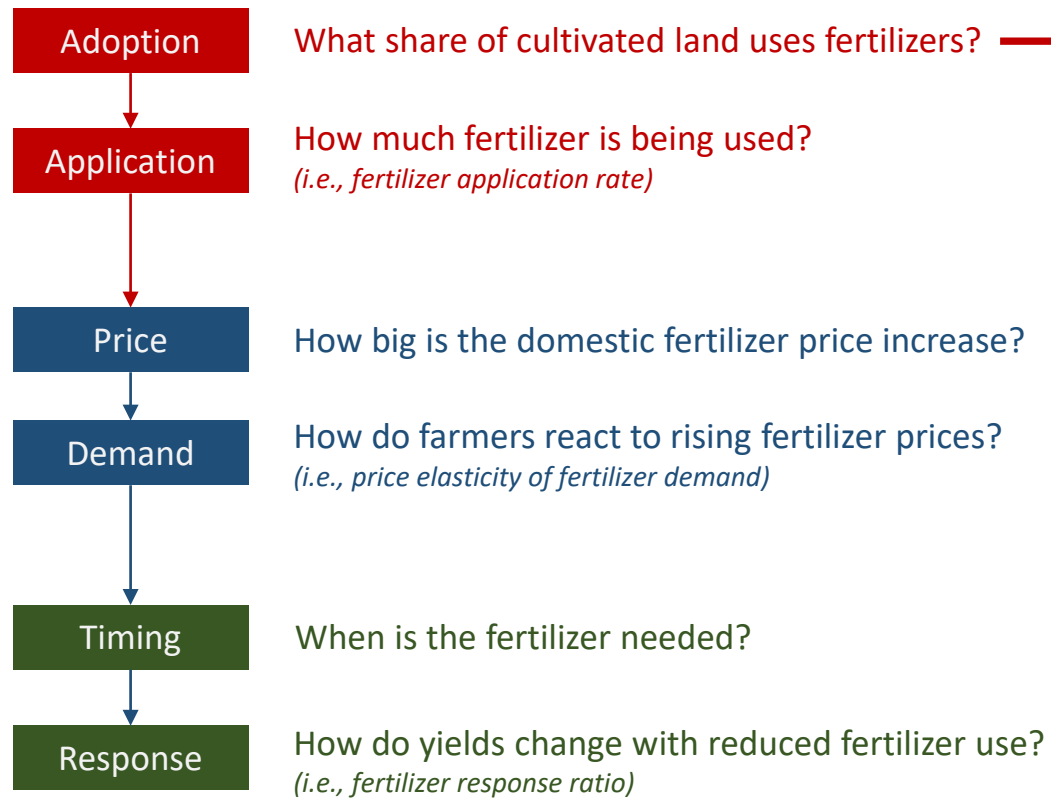
Composition of household consumption spending



Source: IFPRI Zambia RIAPA Model

Shocks | Fertilizer Response (crop productivity effect)

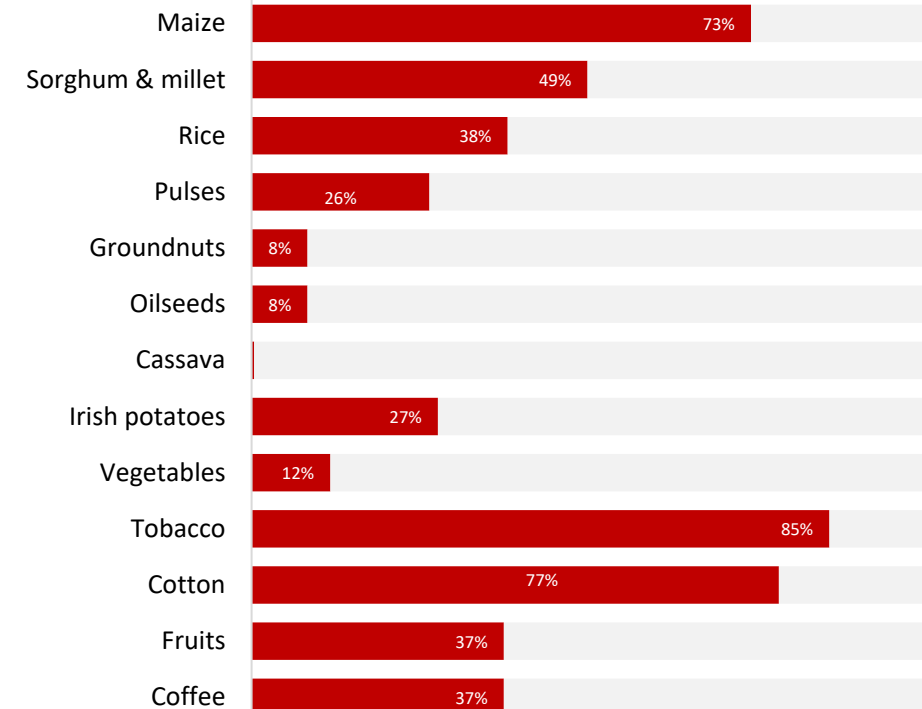
Impact Channel Considerations



Fertilizer Adoption Rate

Zambia data

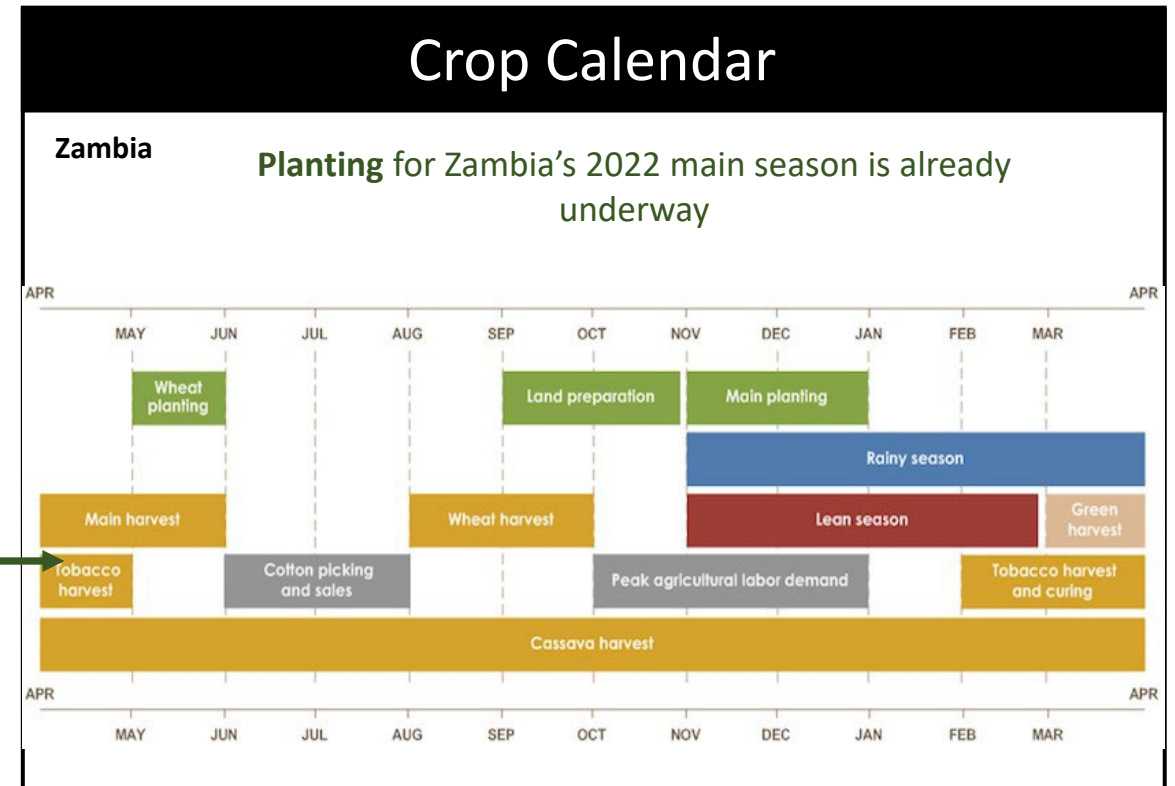
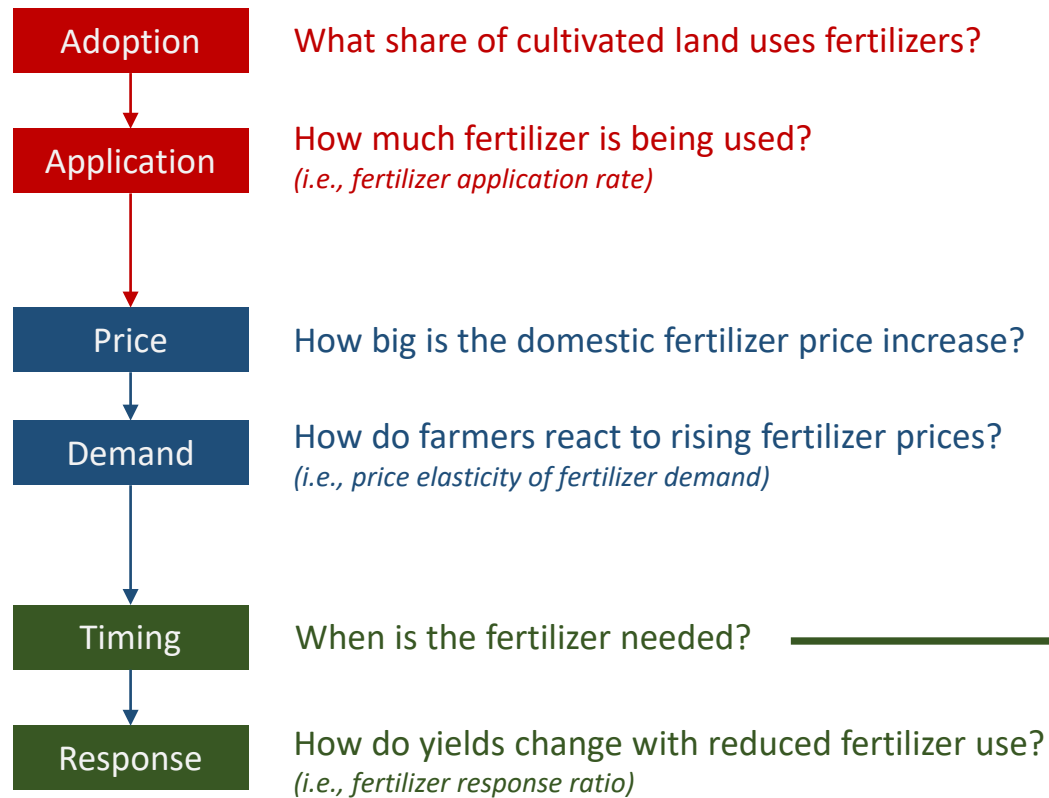
Share of cultivated land using fertilizer



Source: Rural Agricultural Livelihood Survey 2019, IAPRI, Zambia

Shocks | Fertilizer Response (crop productivity effect)

Impact Channel Considerations



Results | GDP and Employment

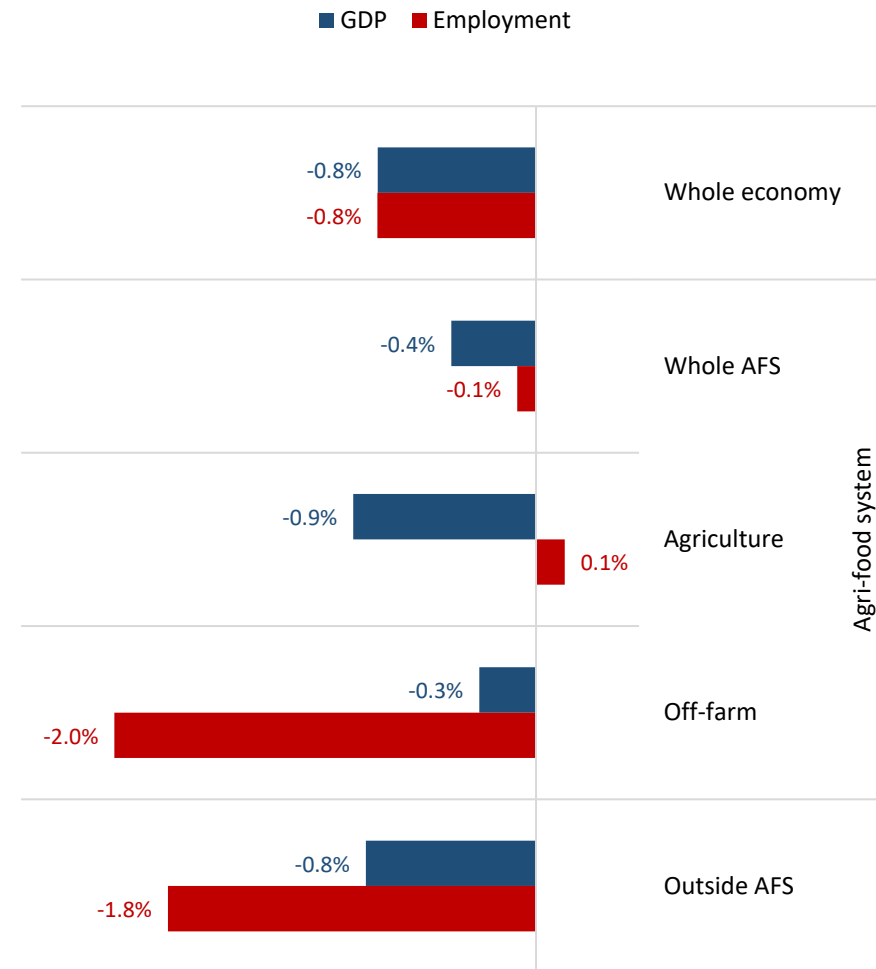
• National GDP and employment declines

- Negative terms-of-trade shock
(i.e., negative effect of higher import prices outweighs positive effect of higher export prices)
- Rising import costs reduces spending on domestically produced goods
- Falling production leads to job losses
- Impacts occur throughout the economy

• Agri-food system GDP and employment also fall

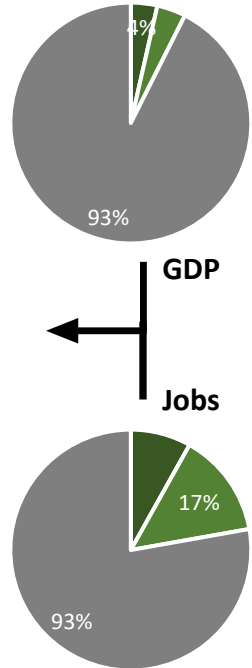
- GDP declines more in primary agriculture and less so in off-farm agri-food sectors (e.g., processing, trading)
- Larger job losses in off-farm within agri-food system
 - Rising prices increase cost of food processing and food related services and lower demand for them
- More job losses outside of the agri-food system
 - Mainly in labor intensive services

Change in GDP and employment due to food, fuel and fertilizer shocks (%)



Contribution to total change

- Agriculture
- Off-farm
- Outside AFS



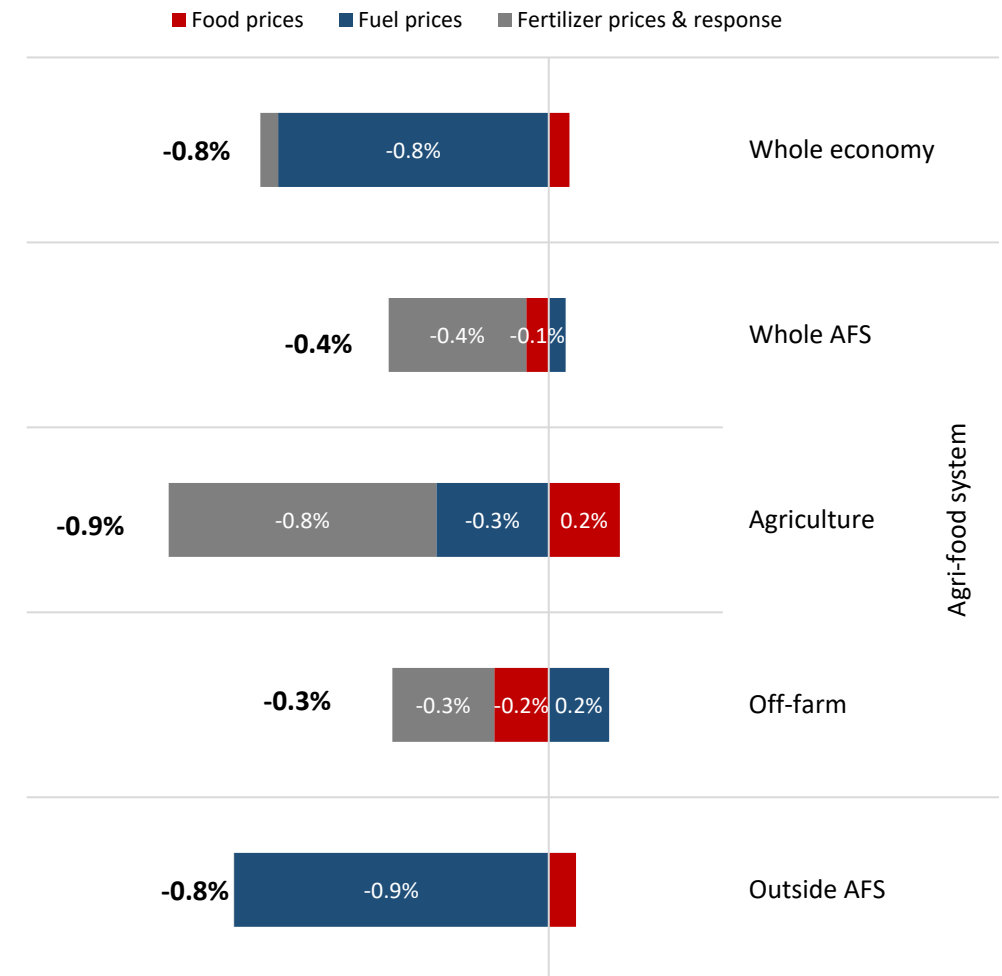
Note: Model results are for 2022. Employment includes farmers, paid and non-paid workers, and self-employed persons.

Source: IFPRI Zambia RIAPA Model

Results | Drivers of GDP Losses

- **Fuel shocks cause the decline in national GDP**
 - Modestly negative impact of fertilizer shocks offset by a small positive effect from rising food prices
- **Agri-food GDP losses driven by fertilizer and food price shocks**
 - Fertilizer shocks directly affect primary agricultural production
 - Disrupts downstream processing via supply chains
 - Zambia exports maize and oil seeds, and agriculture benefits from rising world prices for these commodities
- **Larger GDP losses outside the agri-food system driven more by higher fuel prices**
 - Higher transaction costs
 - Lower consumer demand

Percentage change in real GDP due to food, fuel and fertilizer shocks (%)

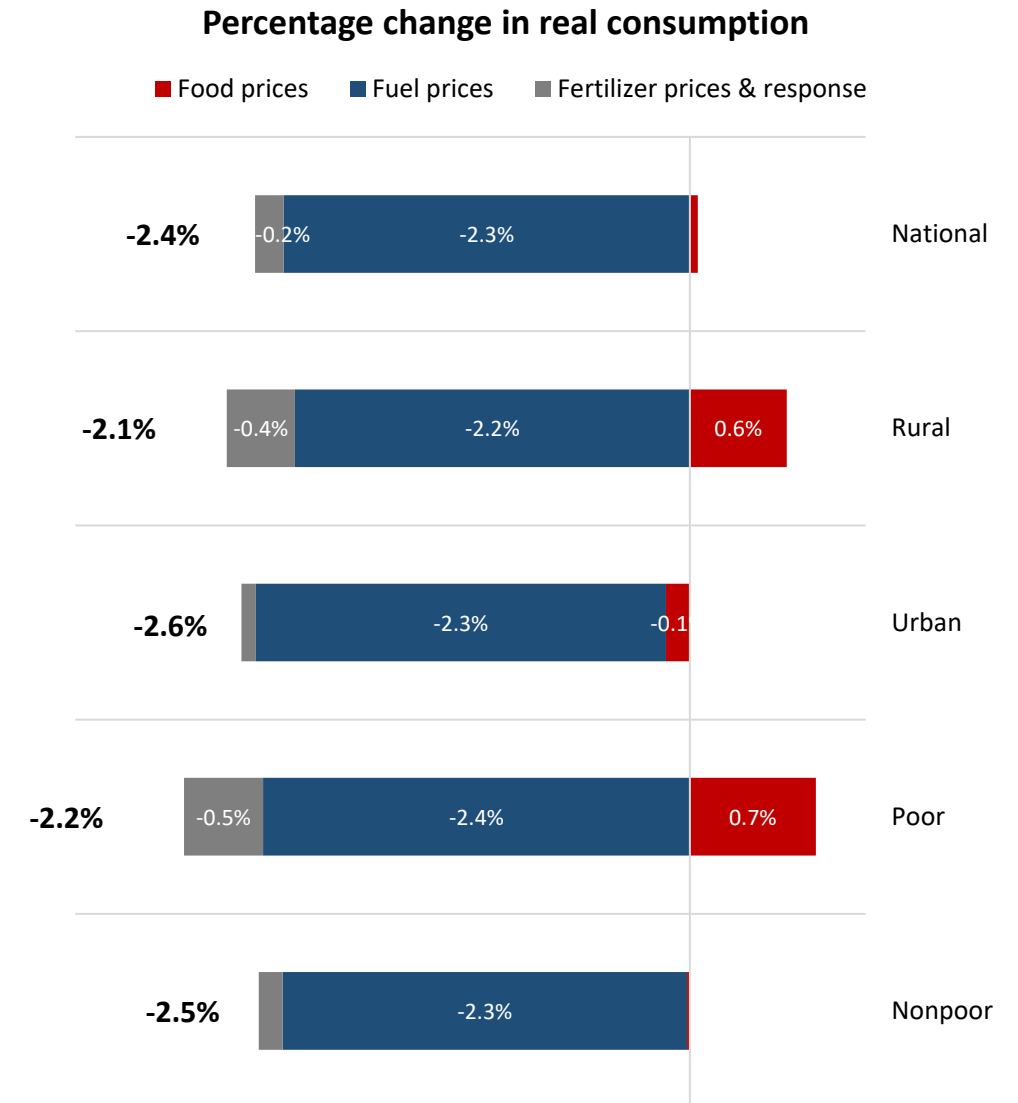


Notes: About 20 percent of the effect on agriculture GDP under “fertilizer prices and response” is directly from rising fertilizer, while the remaining 80 percent is from the productivity shock caused by lowering the use of fertilizer.

Source: IFPRI Zambia RIAPA Model

Results | Household Consumption

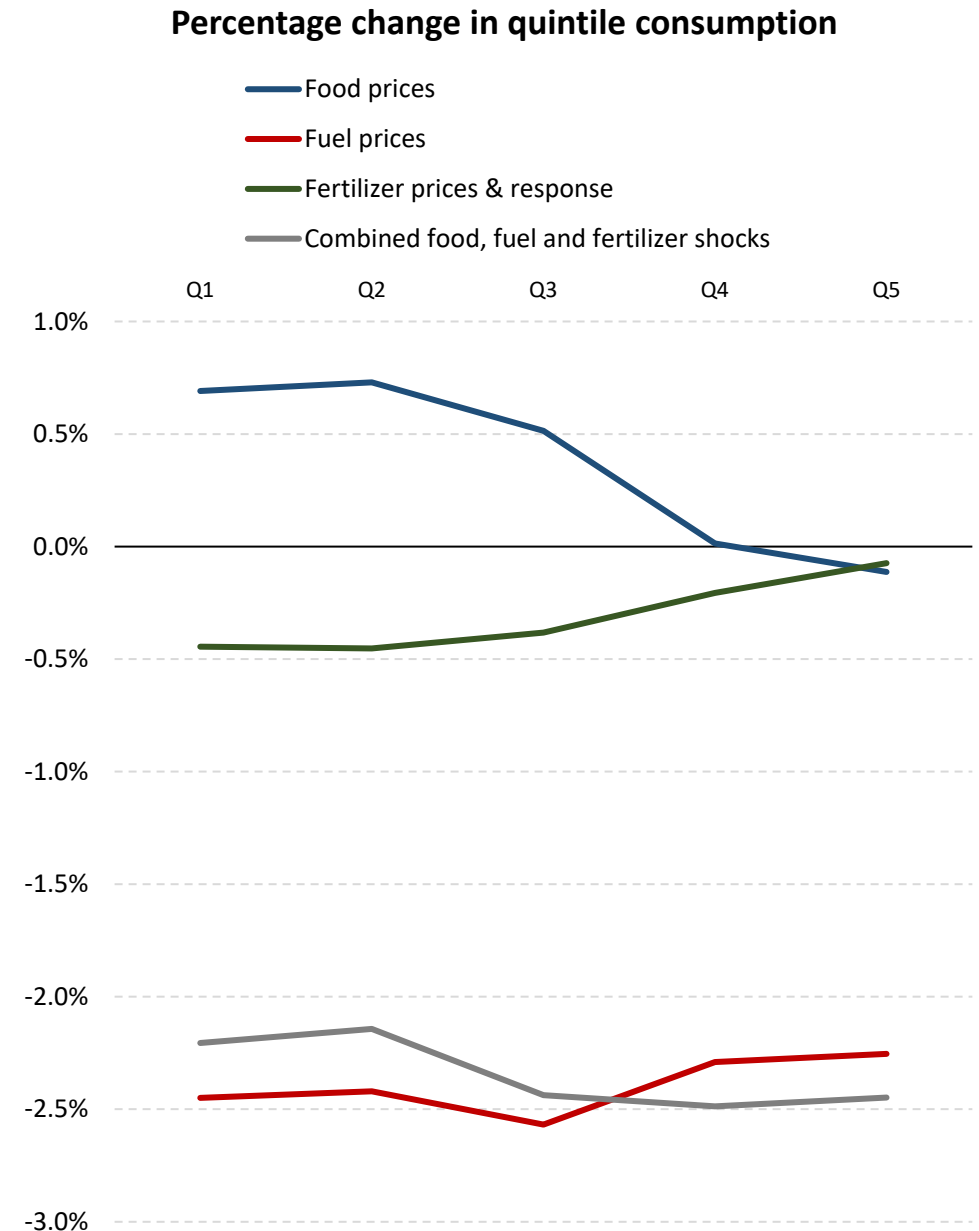
- **Household consumption falls significantly**
 - Larger than GDP losses as households are hit twice by rising prices and falling incomes
- **Importance of shocks differs across population groups:**
 - **Fuel shocks** affect all households and are more important for urban and nonpoor households
 - Earn more income outside the agri-food system
 - More import-intensive consumer basket
 - Consume products with larger transaction cost margins
 - Led to larger consumption fall among urban households
 - **Fertilizer shocks** important for rural and poor households
 - Rely more on farm incomes that are negatively affected by declines in agricultural production
 - Consume more domestically-produced foods
 - **Food prices** have some positive effects
 - Positive income effect from increase in export crop production offsets the negative effect of higher food prices for rural households
 - However, grains from rising food prices are offset by the reduces in consumption led by higher fuel and fertilizer prices



Source: IFPRI's Zambia RIAPA Model

Results | Changes in Inequality

- **Differential effects on poor/nonpoor households drive changes in inequality:**
 - **Fuel shocks** affect all households and cause relatively larger consumption losses for households in the third quintile
 - **Fertilizer shocks** affect lowest quintile and have little effect on the richer households in top quintile, causing inequality to increase
 - **Food prices** benefit poor households in the first three low quintiles with little impact on the richer household quintiles
 - Most of them are rural households benefiting from increase in crop production
- **Overall, inequality is largely not affected**
 - But poverty still increased



Source: IFPRI Zambia RIAPA Model

Results | Poverty

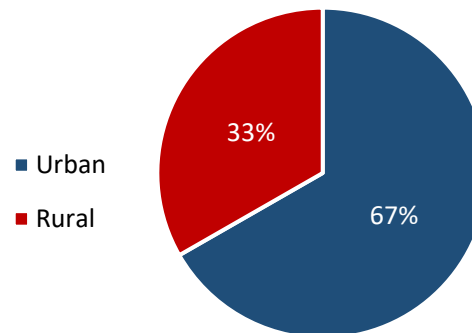
• Poverty rises

- Headcount rate up 0.9% points
- 160 thousand more people pushed into poverty
- Fuel shocks are the dominant factor for rising poverty among urban households

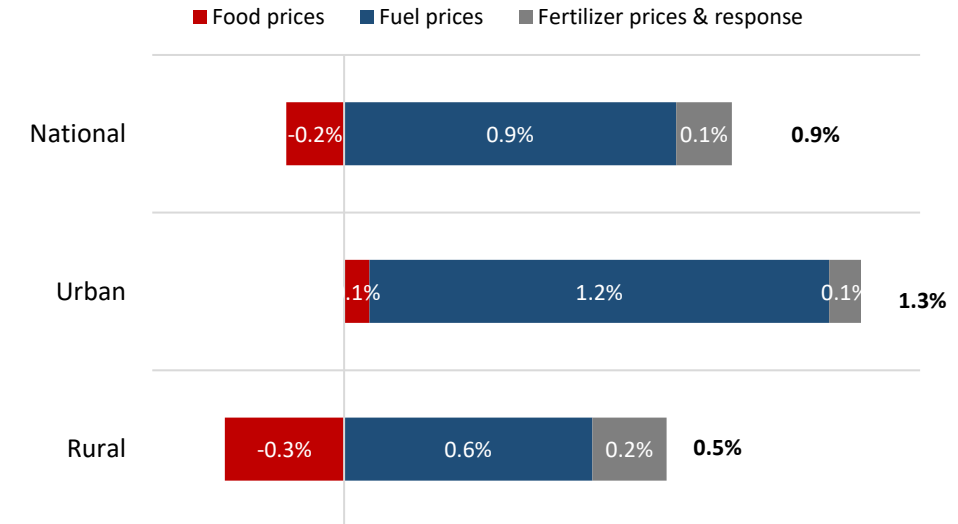
• Larger increase in poverty in urban areas

- Two-third of expanded poor population
 - Consume more energy intensive products and services
 - Rising food prices negatively affect urban poor
- Driven mainly by fuel shocks

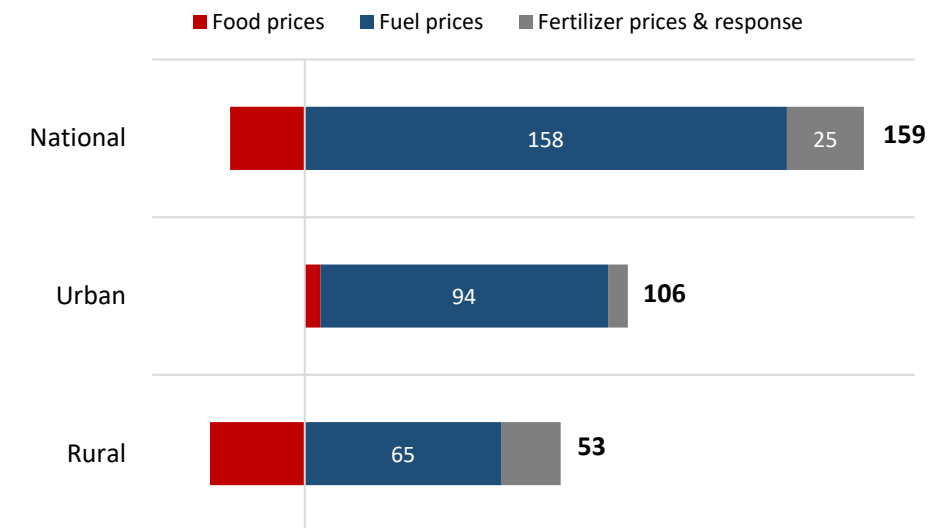
Share of population falling into poverty



Change in poverty headcount rate (%-point)



Change in poor population (1000s)

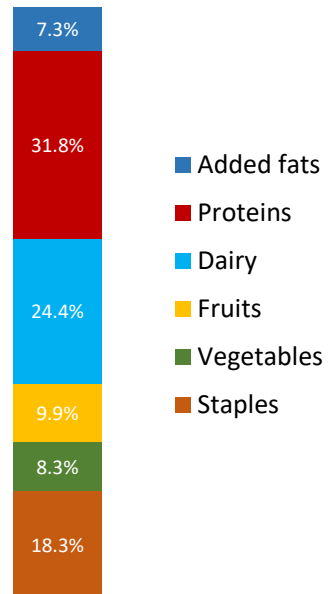


Source: IFPRI Zambia RIAPA Model

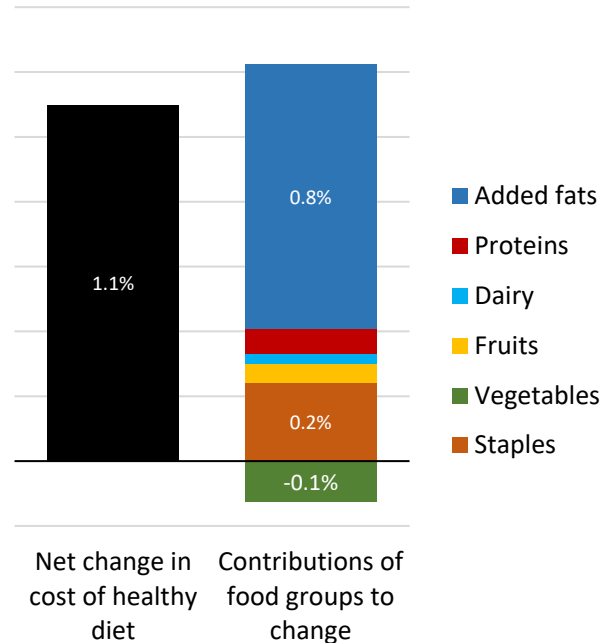
Results | Diet Quality

- **Food, fuel and fertilizer shocks together increase the cost of a healthy reference diet**
 - Reference diet is the EAT-Lancet's "healthy" diet thresholds for the six major food groups
 - Rising prices for edible oils (in added fats) push up the real costs for many food groups, while falling incomes reduce demand for vegetables and thus, lower their costs slightly

Shares of six food groups in total cost of a healthy diet prior to the crisis

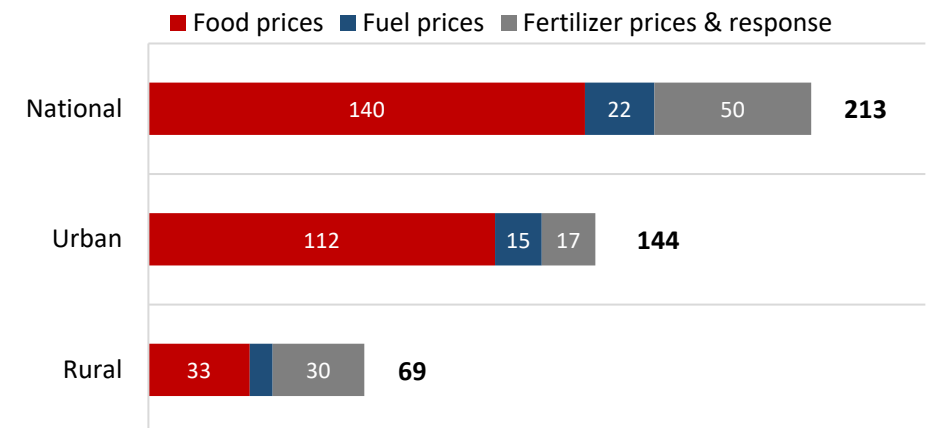


Shares of six food groups in total cost of a healthy diet prior to the crisis



- **Rising food prices and falling incomes cause diet quality to worsen for many households**
 - Prior to the crisis, few households had consumption levels and diversity needed for a healthy diet
 - Rising food prices become a dominant factor in diet quality deteriorated; together with other two shocks, they cause 213 thousand people to become deprived in at least one additional food group
 - Urban households account for more of the deterioration in diet quality

Number of people to become deprived in at least one additional food group (1000s)



Headlines

- **Food, fuel and fertilizer shocks lead to a reductions in GDP and employment in Zambia**
 - Agri-food system adversely affected, alongside the broader economy
 - Agriculture is particularly at risk to fertilizer shocks, esp. if it leads to lower fertilizer use in the current season
- **Poor urban households are especially vulnerable**
 - Affected more by rising fuel prices in increase in poverty
 - Affected more for diet quality deterioration by rising food prices
- **Next steps**
 - Evaluate policy options available to governments and development partners to mitigate impacts on food systems, poverty, and food insecurity (e.g., cash transfers, food aid, fertilizer subsidies, fiscal support, etc.)

