CGIAR | National Policies and Strategies for Food, Land and Water Systems Transformation

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

Kwaw Andam, Xinshen Diao, Paul Dorosh, Angga Pradesha & James Thurlow

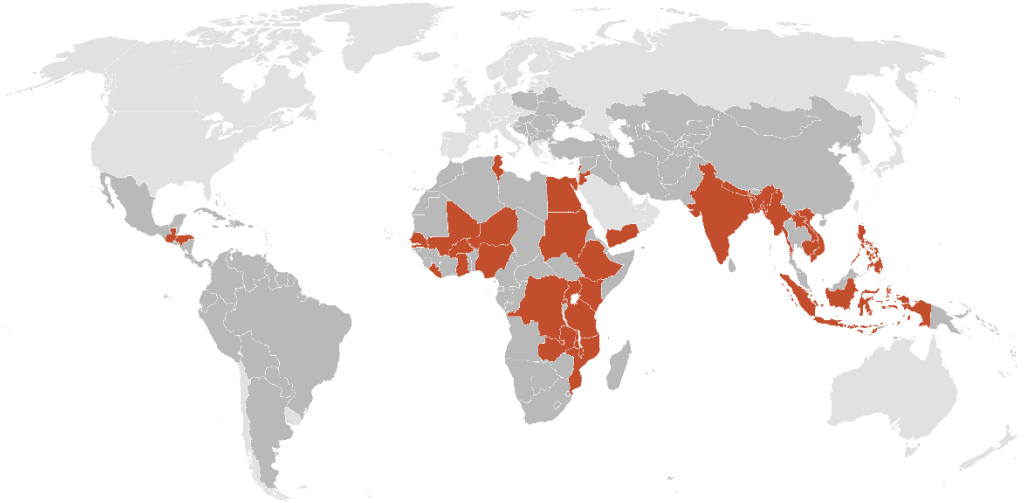
International Food Policy Research Institute

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 Nigeria case study benefitted from working with IFPRI's Nigeria country program, the CGIAR's "National Policies and Strategies" initiative, and national partners.

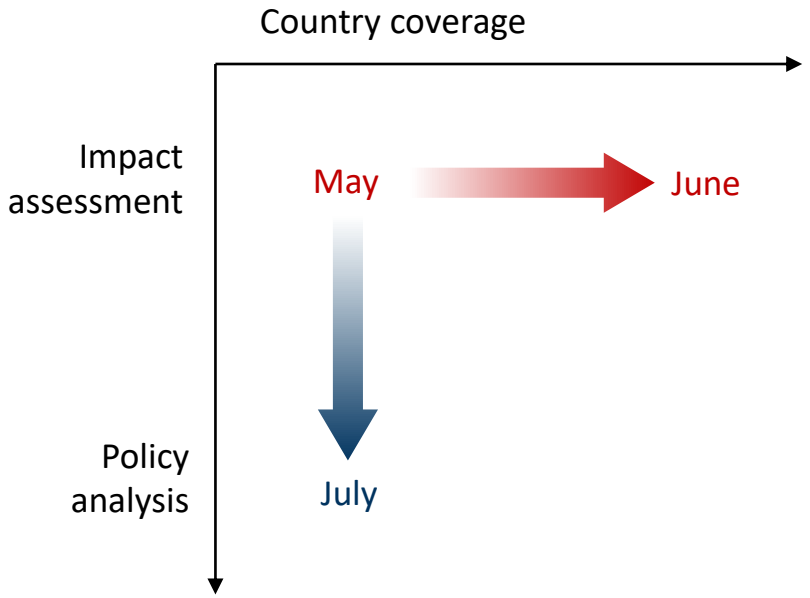
Overview

- **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

Countries with IFPRI RIAPA models



- **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



Shocks | World Food, Fuel and Fertilizer Prices

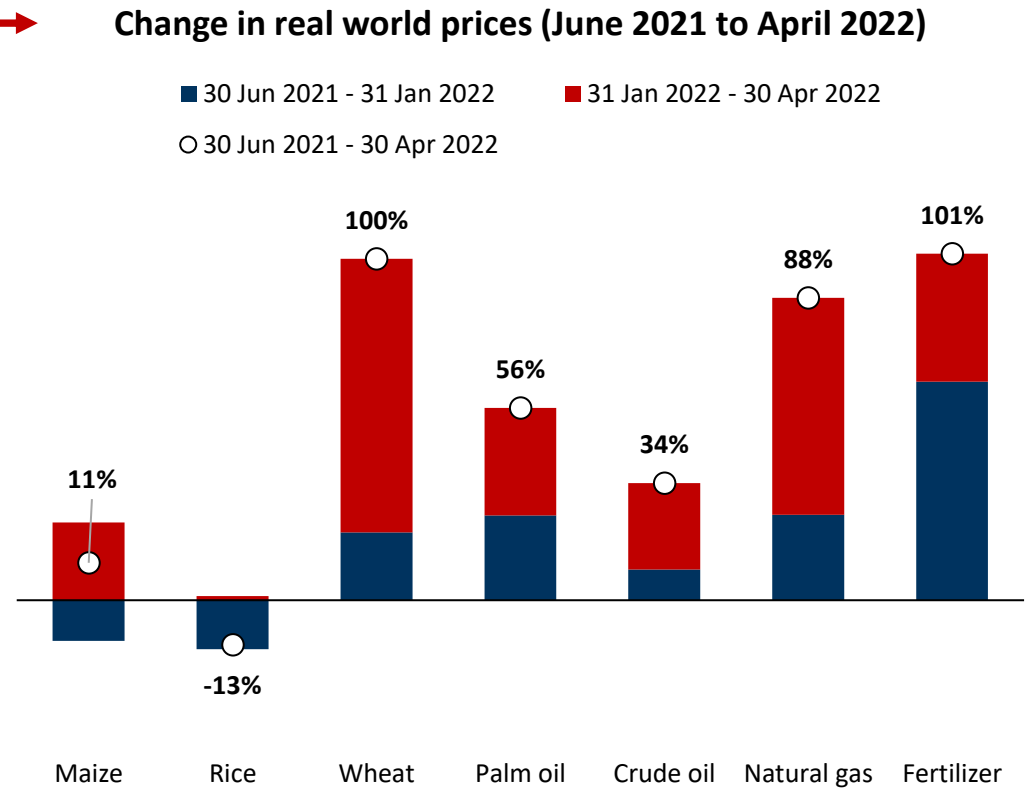
National Policies and Strategies for Food, Land and Water Systems Transformation

Impact Channel Considerations

World price	How big is the increase in world price?
Trade share	How important are food and fertilizer imports in local market? How important is the windfall revenue from oil exports for the government?
Direct use	Which sectors use the affected products as inputs?
Indirect use	Which other sectors are affected via supply chains?
Incomes	What kinds of workers and households earn incomes within the affected sectors?
Final use	Which households consume the affected products?

World Price Shocks

Global data



Source: World Bank Pink Sheets

Shocks | World Food, Fuel and Fertilizer Prices

National Policies and Strategies for Food, Land and Water Systems Transformation

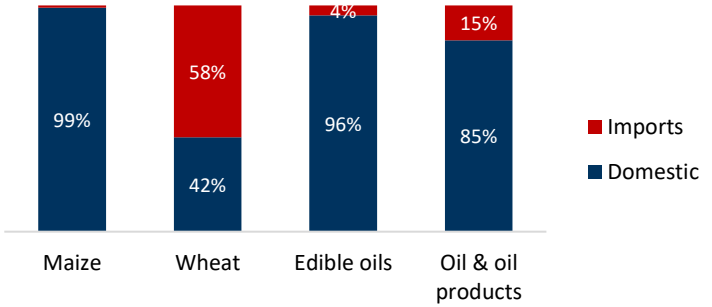
Impact Channel Considerations

- **World price** — How big is the increase in world price?
- **Trade share** — How important are food and fertilizer imports in local market? How important is the windfall revenue from oil exports for the government?
- **Direct use** — Which sectors use the affected products as inputs?
- **Indirect use** — Which other sectors are affected via supply chains?
- **Incomes** — What kinds of workers and households earn incomes within the affected sectors?
- **Final use** — Which households consume the affected products?

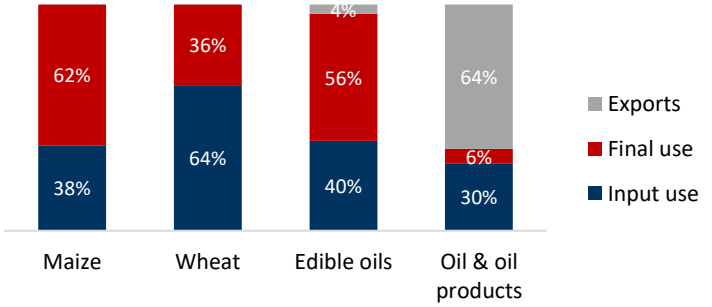
Supply and Demand

Nigeria data

Supply (% by source)



Demand (% by use)



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

0.7% + 0.2% + 0.8% + 7.1% + Others = 100%

Source: IFPRI Nigeria RIAPA Model

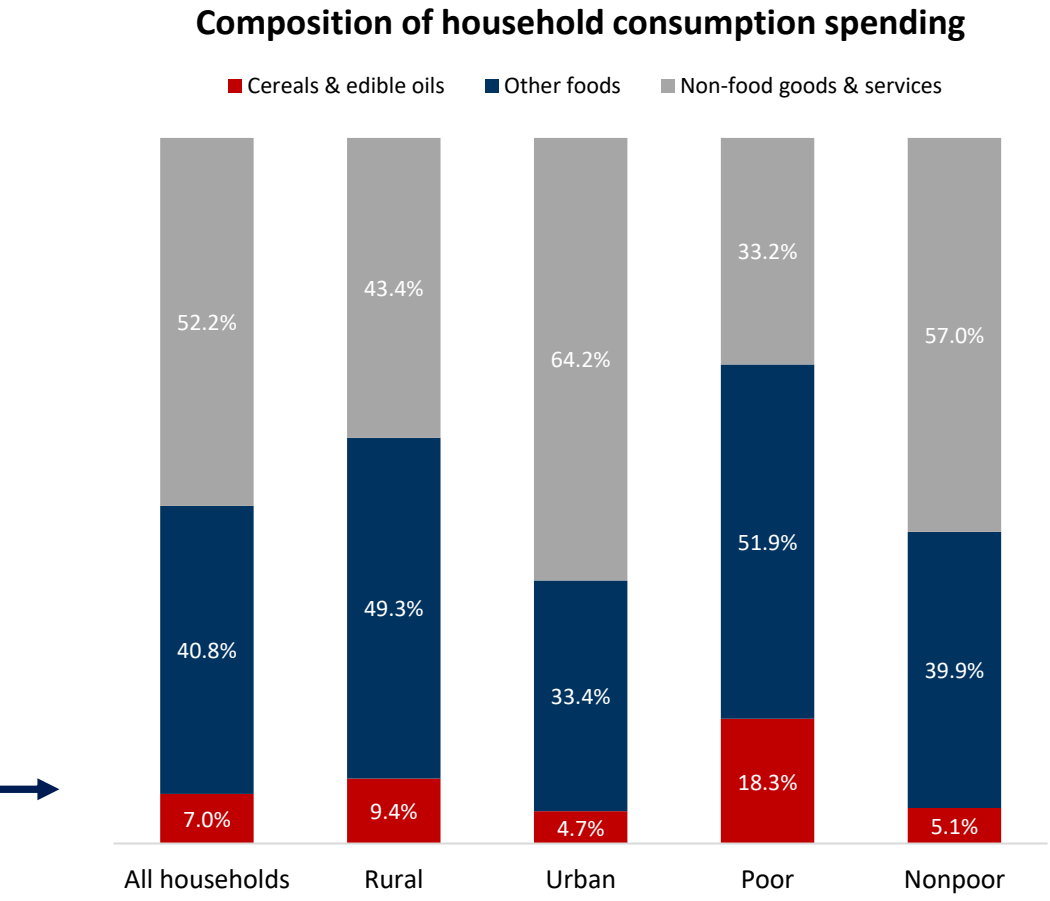
Shocks | World Food, Fuel and Fertilizer Prices

Impact Channel Considerations

- **World price** — How big is the increase in world price?
- **Trade share** — How important are food and fertilizer imports in local market? How important is the windfall revenue from oil exports for the government?
- **Direct use** — Which sectors use the affected products as inputs?
- **Indirect use** — Which other sectors are affected via supply chains?
- **Incomes** — What kinds of workers and households earn incomes within the affected sectors?
- **Final use** — Which households consume the affected products?

Consumption Baskets

Nigeria data



Source: IFPRI Nigeria RIAPA Model

Shocks | Fertilizer Response (crop productivity effect)

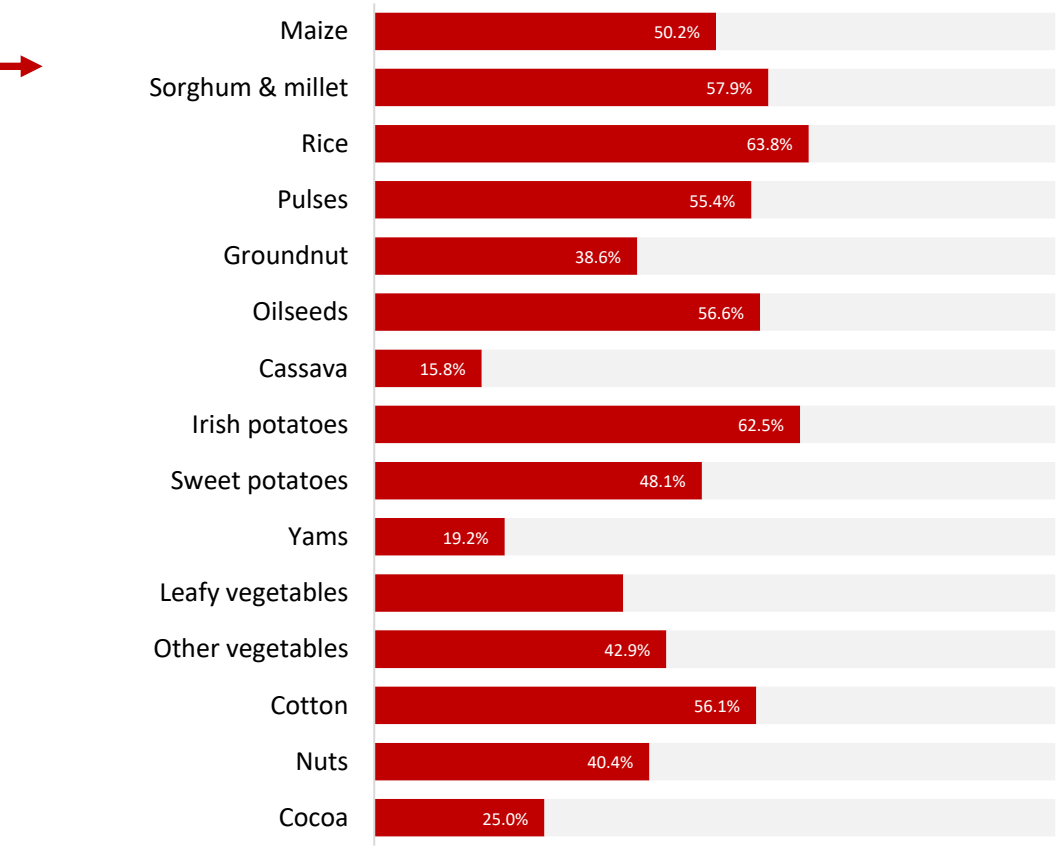
Impact Channel Considerations

- **Adoption** — What share of cultivated land uses fertilizers?
- **Application** — How much fertilizer is being used? *(i.e., fertilizer application rate)*
- **Price** — How big is the domestic fertilizer price increase?
- **Demand** — How do farmers react to rising fertilizer prices? *(i.e., price elasticity of fertilizer demand)*
- **Timing** — When is the fertilizer needed?
- **Response** — How do yields change with reduced fertilizer use? *(i.e., fertilizer response ratio)*

Fertilizer Adoption Rate

Nigeria data

Share of cultivated land using fertilizer



Source: IFDC FUBC survey, and Living Standards Monitoring Survey (LSMA-ISA)

Shocks | Fertilizer Response (crop productivity effect)

National Policies and Strategies for Food, Land and Water Systems Transformation

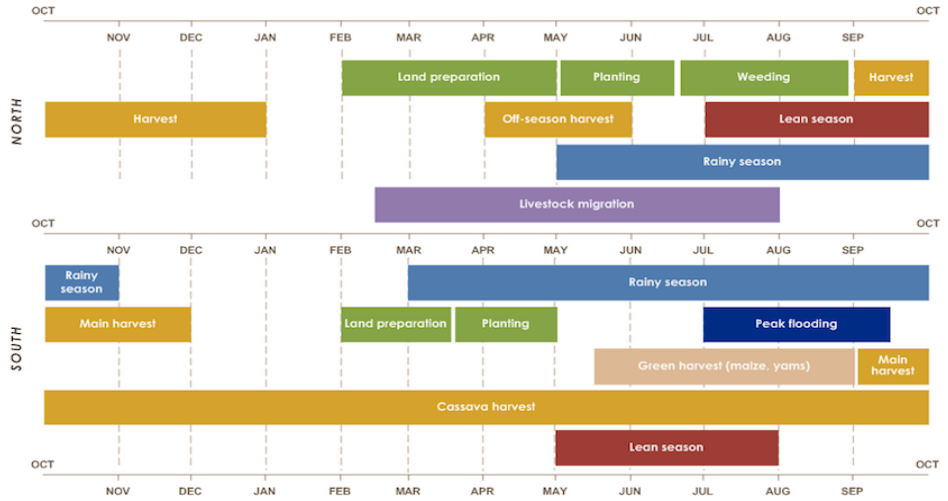
Impact Channel Considerations

- **Adoption** — What share of cultivated land uses fertilizers?
- **Application** — How much fertilizer is being used? *(i.e., fertilizer application rate)*
- **Price** — How big is the domestic fertilizer price increase?
- **Demand** — How do farmers react to rising fertilizer prices? *(i.e., price elasticity of fertilizer demand)*
- **Timing** — When is the fertilizer needed?
- **Response** — How do yields change with reduced fertilizer use? *(i.e., fertilizer response ratio)*

Crop Calendar

Nigeria

Planting for Nigeria's main 2022 season is already



Source: FEWSNET Nigeria

Results | GDP and Employment

National GDP and employment are not greatly affected by the world price shocks

- Positive terms-of-trade effect from windfall oil revenues caused by higher oil prices

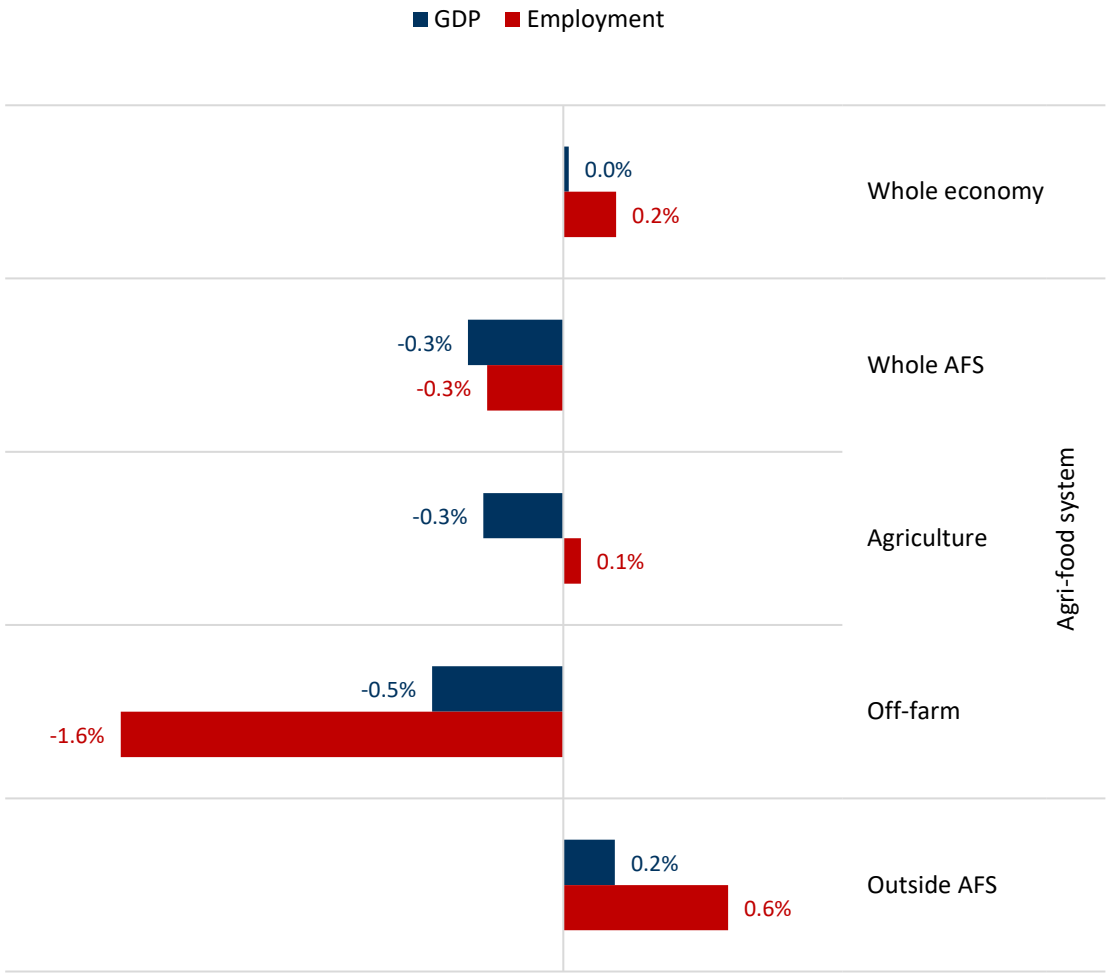
  (i.e., positive effect of higher oil export prices outweighs negative effect of higher food, fuel and fertilizer import prices)

- Leads to higher public spending on capital goods, and some job creation in construction
- Rest of the economy (outside oil and construction) is negatively affected, but overall GDP losses are small

Agri-food system GDP and employment fall

- GDP declines in both primary agriculture and off-farm agri-food sectors (e.g., processing, trading)
- Larger GDP declines and job losses in the off-farm agri-food system, especially in food-related services, incl. trade and transport

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



Source: IFPRI Nigeria RIAPA Model

Results | Drivers of Differential GDP Impacts

Fertilizer and food shocks reduce national GDP

- But effects are small and compensated by the positive fuel shock (i.e., higher oil export prices)

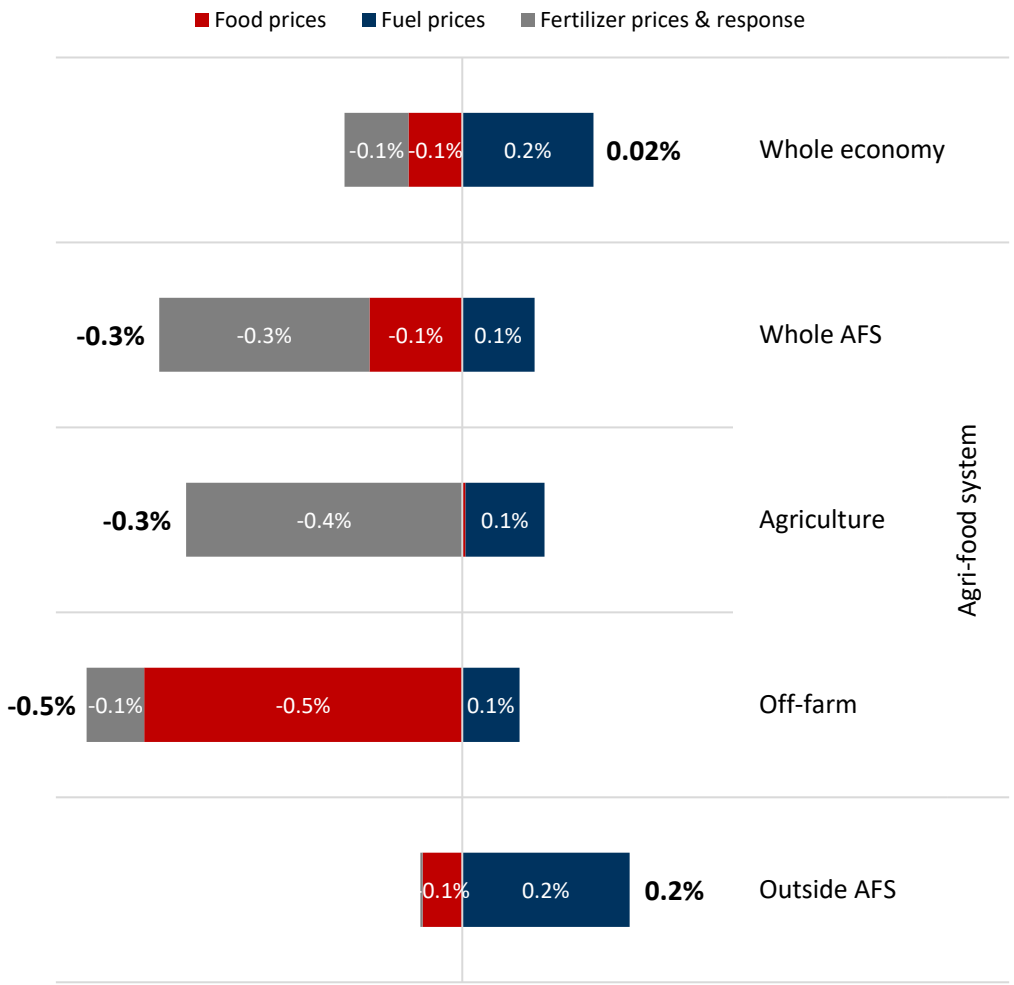
Agri-food GDP losses mostly driven by fertilizer shocks

- Fertilizer directly affects primary agricultural production, with some disruptions to supply chains
- Negative effect of fertilizer shocks is still relatively small, because of generally low fertilizer adoption rates and the cushion provided by domestic fertilizer production
- Off-farm agri-food sectors are mainly affected by higher food prices, which raises input costs for food processing

GDP gains outside the agri-food system are driven by higher fuel prices

- Windfall revenues for the government creates demand for capital goods and construction

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



Source: IFPRI Nigeria RIAPA Model

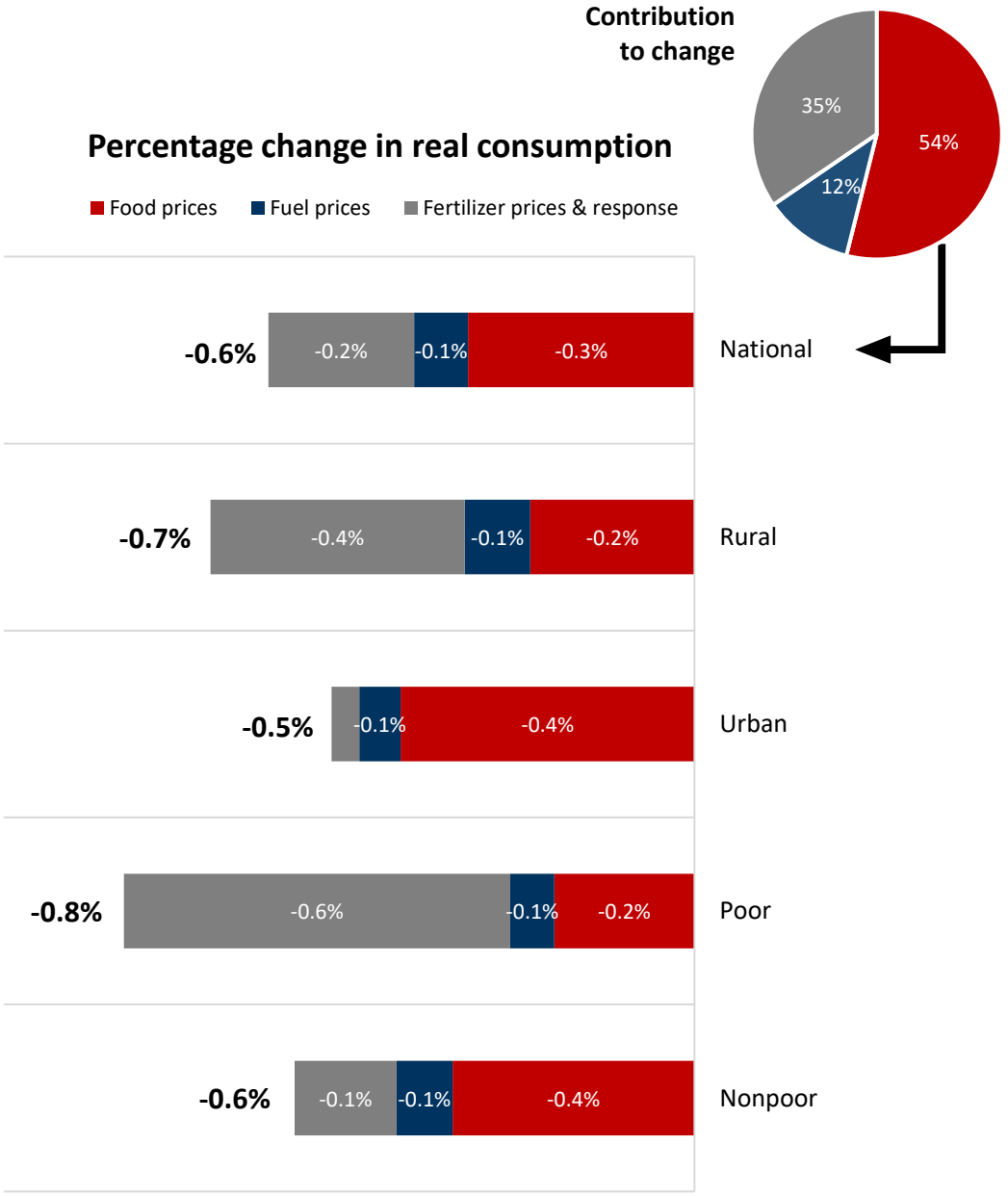
Results | Household Consumption

Household consumption falls slightly

- Households do not benefit from rising oil prices (i.e., windfall revenues accrue to the government)
- Higher food prices account for more than halve of the total consumption losses experienced by households

Importance of shocks differs across population groups:

- **Fertilizer shocks** important for rural and poor households
  - Rely more on farm incomes
  - Consume more domestically-produced foods
- **Food price shock** important for urban and nonpoor households
  - More import-intensive food consumption basket
- **Fuel shock** adversely affects all households, but effect is small
  - Higher petroleum import prices raises transaction costs and prices on most marketed products, affecting all households



Source: IFPRI Nigeria RIAPA Model

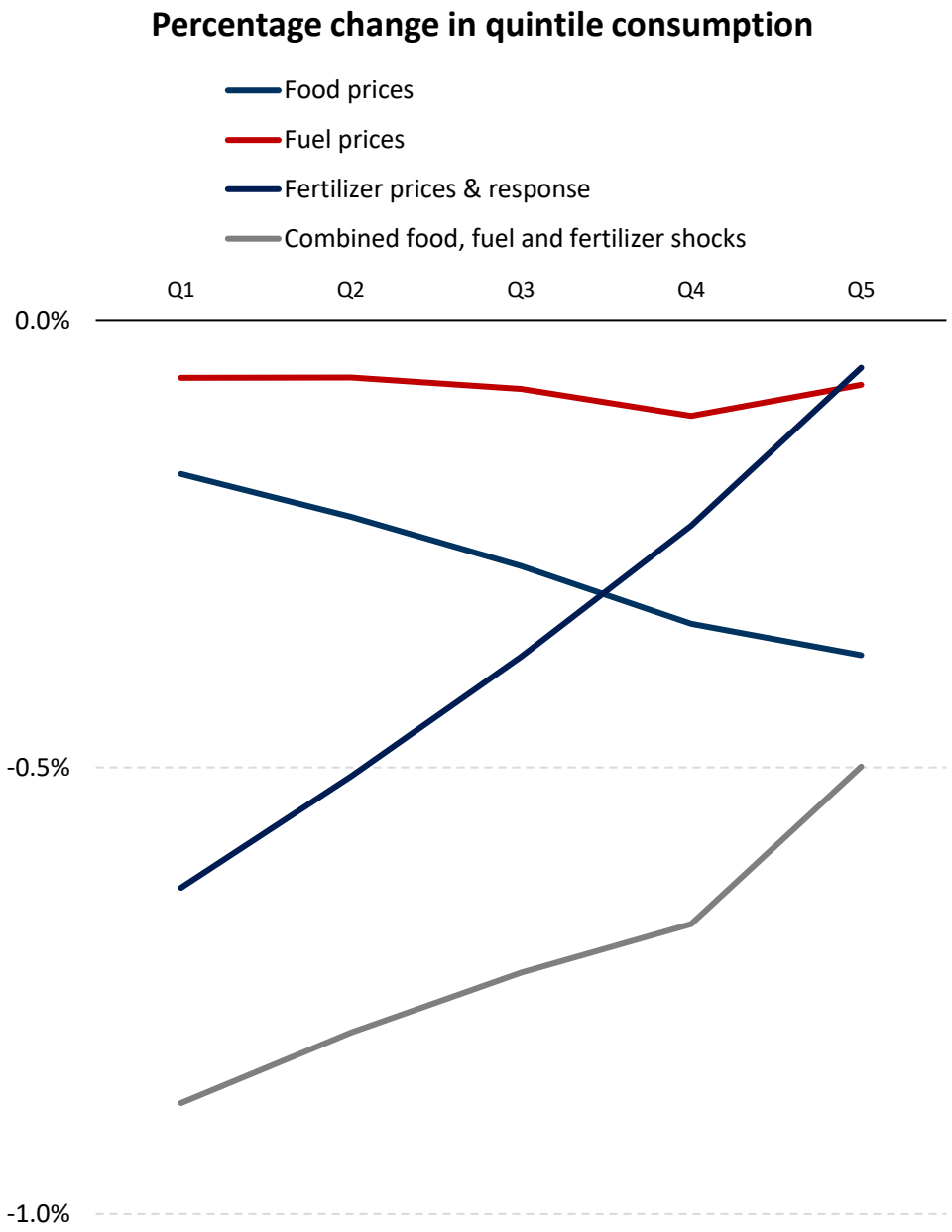
Results | Changes in Inequality

Differential effects on poor/nonpoor households causes changes in inequality:

- **Fertilizer shocks** affect lowest quintile more than top quintile, causing inequality to increase significantly
- **Food prices** have larger impact on richer households, because they consume more imported foods (or products that use imported inputs)
- **Fuel shocks** have modest effect that is similarly felt across all household groups

Overall, inequality rises

- Largest consumption losses for households in the lowest two quintiles, which include those below the poverty line (i.e., national poverty headcount rate is 53%, which falls within Quintile 3)



Source: IFPRI Nigeria RIAPA Model

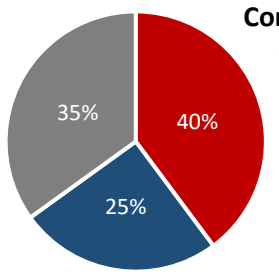
Results | Poverty

Small increase in poverty rates

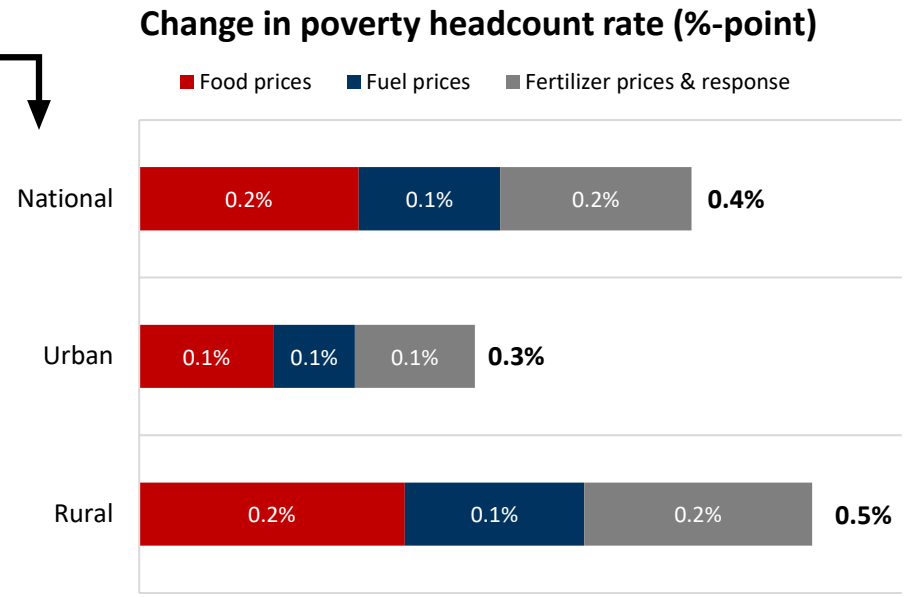
- National headcount rate rise 0.4% points
- Large population means close to 800,000 more people are pushed below the poverty line
- Most affected households live far below the poverty line, whereas those near the poverty line are less affected

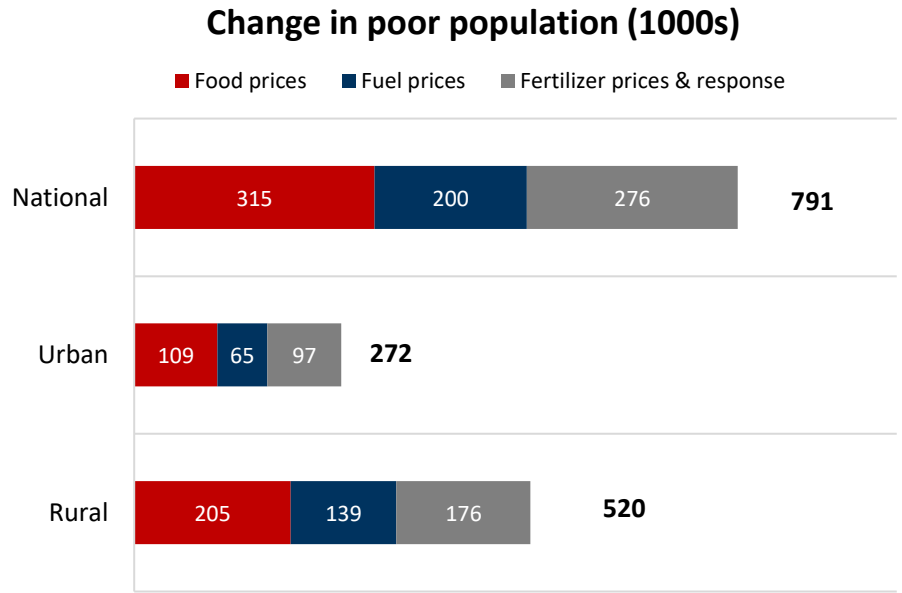
Larger increase in poverty in rural areas

- Two-third of expanded poor population
  - Half the population still live in rural areas
  - Larger increase in rural poverty headcount rate
- More contributions from food and fertilizer shocks

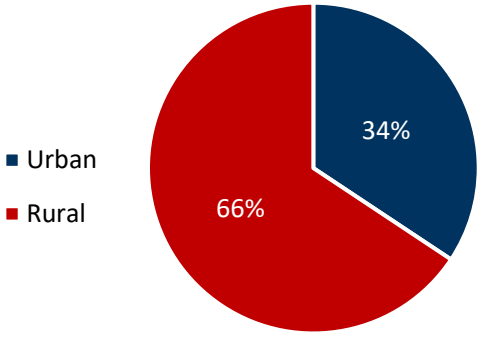


Contribution to change





Share of population falling into poverty



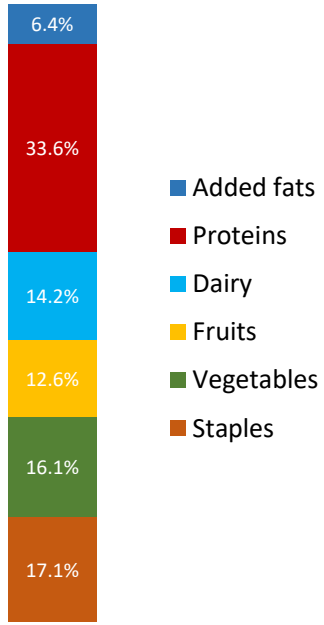
Source: IFPRI Nigeria RIAPA Model

Results | Diet Quality

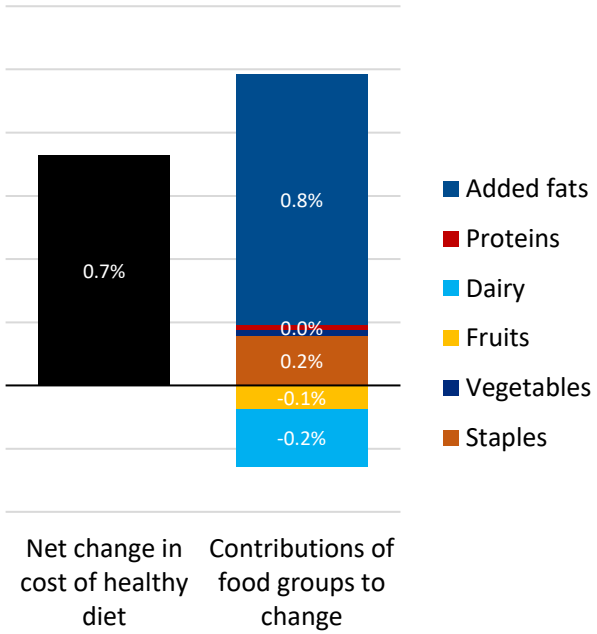
Food, fuel and fertilizer shocks together increase the cost of a healthy reference diet

- Reference diet is the EAT-Lancet's "healthy" diet thresholds for the major food groups
- Mainly driven by rising prices for edible oils (added fats) and cereals (staples)

Food group share in cost of healthy diet

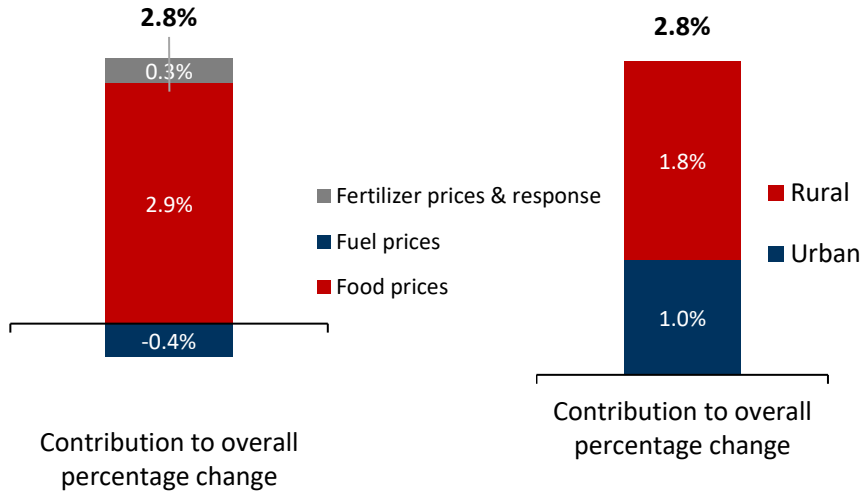


Change in the real cost of a healthy reference diet (%)



- **Rising food prices and falling incomes worsen diets**
  - Prior to the crisis, few households had consumption levels and diversity needed for a healthy diet
  - Crisis increases population with inadequate diets and widens the gap between current household consumption and a what is required for a healthy diet
  - Rural households account for more of the deterioration in diet quality

Increase in total gap between consumption and a healthy diet



Note: ReDD Index

Changes in diet quality are measured using the Reference Diet Deprivation index, which compares household-level consumption across six major food groups to the cost of a healthy or nutritionally-adequate diet. ReDD is a multi-dimensional gap measure and can be interpreted in a similar way as the poverty gap measure. See here.

Source: IFPRI Nigeria RIAPA Model

Headlines

Together, food, fuel and fertilizer shocks do not greatly affect GDP and employment in Nigeria

- Food and fertilizer shocks cause total GDP to fall slightly, but this is offset by windfall revenues from higher oil export prices
- Agri-food system is adversely affected by high fertilizer prices in agriculture and high food prices for its off-farm components
- However, negative effect on agriculture remains small, because fertilizer adoption rates are relatively low, and domestic fertilizer production cushions the effects of higher import prices

Poor and rural households are more vulnerable

- Larger income losses and increases in poverty (esp. number of poor people)
- Larger contribution to the deterioration in diet quality

Next steps

- Evaluate policy options available to Nigeria's government and development partners, including using oil revenues to mitigate impacts on households, esp. the rural poor

CGIAR

National Policies and
Strategies for Food,
Land and Water Systems
Transformation