Global food security issues

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Food security definition

“Food security exists when all people, at all times, have access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life”

Food and Agricultural Organization of the United Nations
Components of food security

1. Availability (quantity and quality)
2. Access (quantity and quality)
3. Utilization
4. Stability
Components of food security ...

1. Availability (quantity and quality)
Components of food security ...

2. Access (quantity and quality)
Trade critical for food access

Rice Market Sheds in West Africa, Normal Year

Sorghum and Millet Market Sheds in West Africa, Normal Year

Source: S. Haggblade et al. 2012. Staple Food Market Sheds in West Africa. MSU IDWP #121
Checkpoints and associated delays and costs along main trucking routes

Source: 12ème Rapport de l'OPA/UEMOA, 10 août 2010, West Africa Trade Hub
Components of food security ...

3. Utilization
Conceptual Model for Ag-Nutrition Linkages

**Approaches**
- Trickle-down
- Magic food
- *Diet diversity*
- Gender lens

**Production**

**Off-farm**

**Own consumption**

**Food processing & advertising**

**Income**

**Non-food**

**Markets**

**Nutrition**

**Health**

**Sanitation**

**Nutrition Ed Demand creation**

**Consumption**
- Energy (quant)
- Nutrients (qual)

**Productivity**
- Short-run
- Long-run
Conceptual Model for Ag-Nutrition Linkages

**Approaches**
- Trickle-down
- Magic food
- Diet diversity
- **Gender lens**
Components of food security …

4. Stability

Annual Precipitation by Year
Lusaka, 1950-2002

World Bank World Price Indices for Grains and Energy (Pink Sheet) 2000-2011
World Bank Price Indices, 1/1960 – 7/2012 (Pink Sheet)
Maize prices in nominal USD, 1/1960 – 7/2012 (Pink Sheet)
Rice prices in nominal USD, 1/1960 – 7/2012 (Pink Sheet)

Note: Thai 5% broken

CV=0.21

CV=0.28

CV=0.21
Next Generation Challenges

1. Population growth and urbanization
2. Pressure on land, water and natural resources
3. Climate change
4. Food system governance
Next Generation Challenges

1. Population growth and urbanization
Demographics Drive Food Demand
Demographics for West Africa

Increases from 2010 to 2050

- Total population: double
- Urban population: triple
- Marketed food: 5-6 times
Urbanization changes type of food demand

![Diagram showing consumption, distribution packaging, and farming with projected growth from 2010 to 2050, with an increase of 6X for distribution packaging and 3X for farming.]
Changes in food system employment and training needs
Urban nutrition hazards

Diagram showing the relationship between income, urbanization, macro nutrients, and micro nutrients with default and preferred trajectories.
Next Generation Challenges

2. Pressure on land, water and natural resources
Distribution of farm sizes in smallholder farm sectors
The arithmetic of poverty

- Net return per person day in farming =
  - Area cropped \( \times \)
  - Number of crops per year \( \times \)
  - Yield per hectare \( \times \)
  - Price per unit of production –
  - Input costs per unit of product /
  - Number of days

+ 
- Non-farm income per person day
Next Generation Challenges

3. Climate change
Changes agro-ecosystem capacity and predictability

Source: S. Haggblade et al. 2012. Staple Food Market Sheds in West Africa. MSU IDWP #121
Next Generation Challenges

4. Food system governance
Food system governance

- Complex interactions, multiple levels of the system (household to global)
- Many countries have weak capability to analyze, design and implement food policies
Implications for universities

1. Increased demand for projections of trends for food security (Megatrends to micro plots)

2. Improved efficiency in food production, processing, distribution

3. Increased demand for food safety and health outcomes

4. ICTs and knowledge access (producers, consumers)

5. Global economies of scope in knowledge generation