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Food Security in Volatile Climate: Role of Weather Index Insurance

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Food Security in Volatile Climate: Role of Weather Index Insurance

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FOOD SECURITY

"Food security exists when all people at all times have physical or economic access to sufficient safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life"

(The definition of food security adopted by the World Food Summit in November 1996)

4 Pillars of Food Security (FAO)

- The availability of sufficient food supplies either through domestic production or imports to meet food demand

Food Access

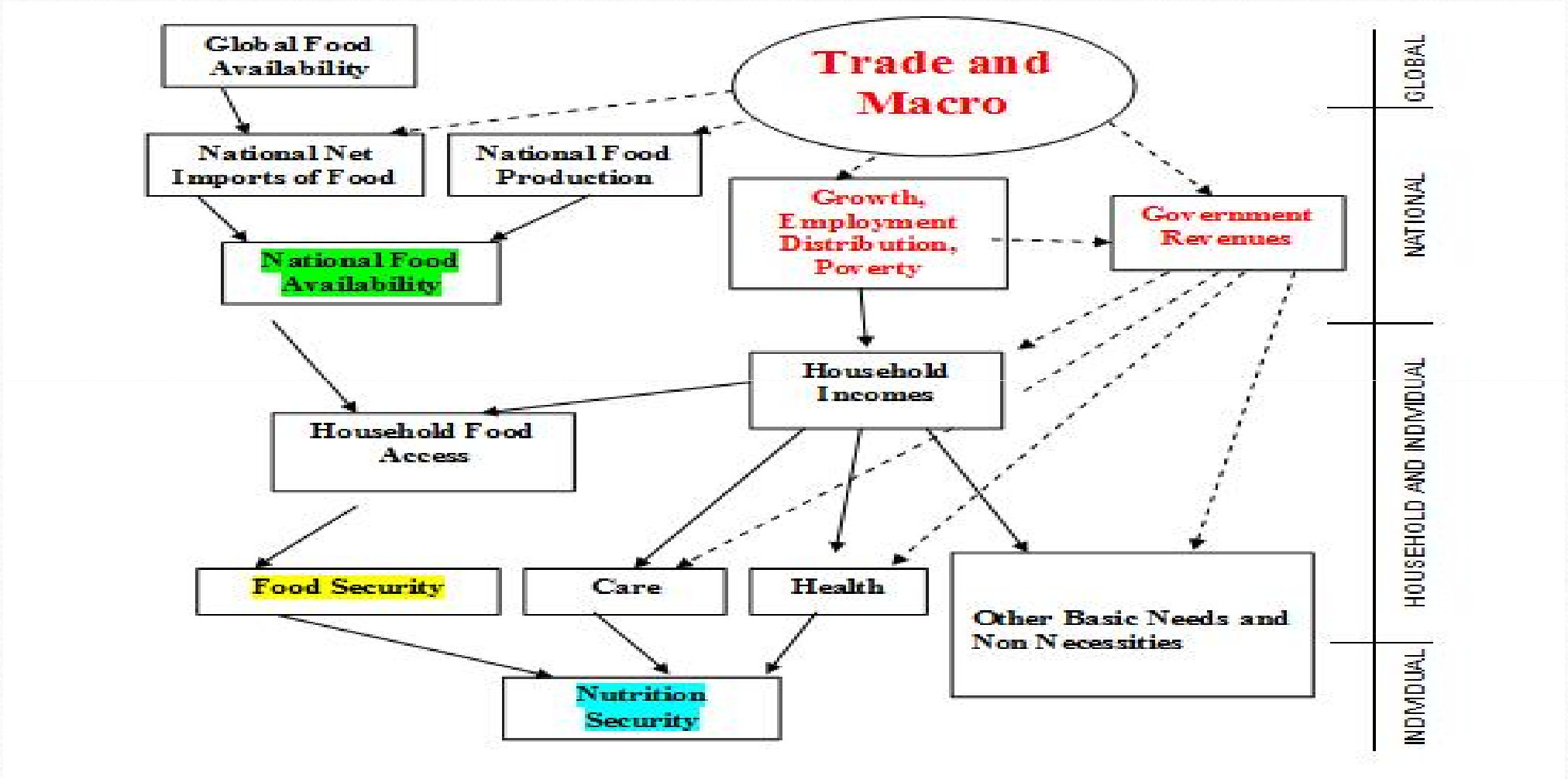
- Access by individuals to adequate resources to produce or to acquire appropriate foods for a healthy diet

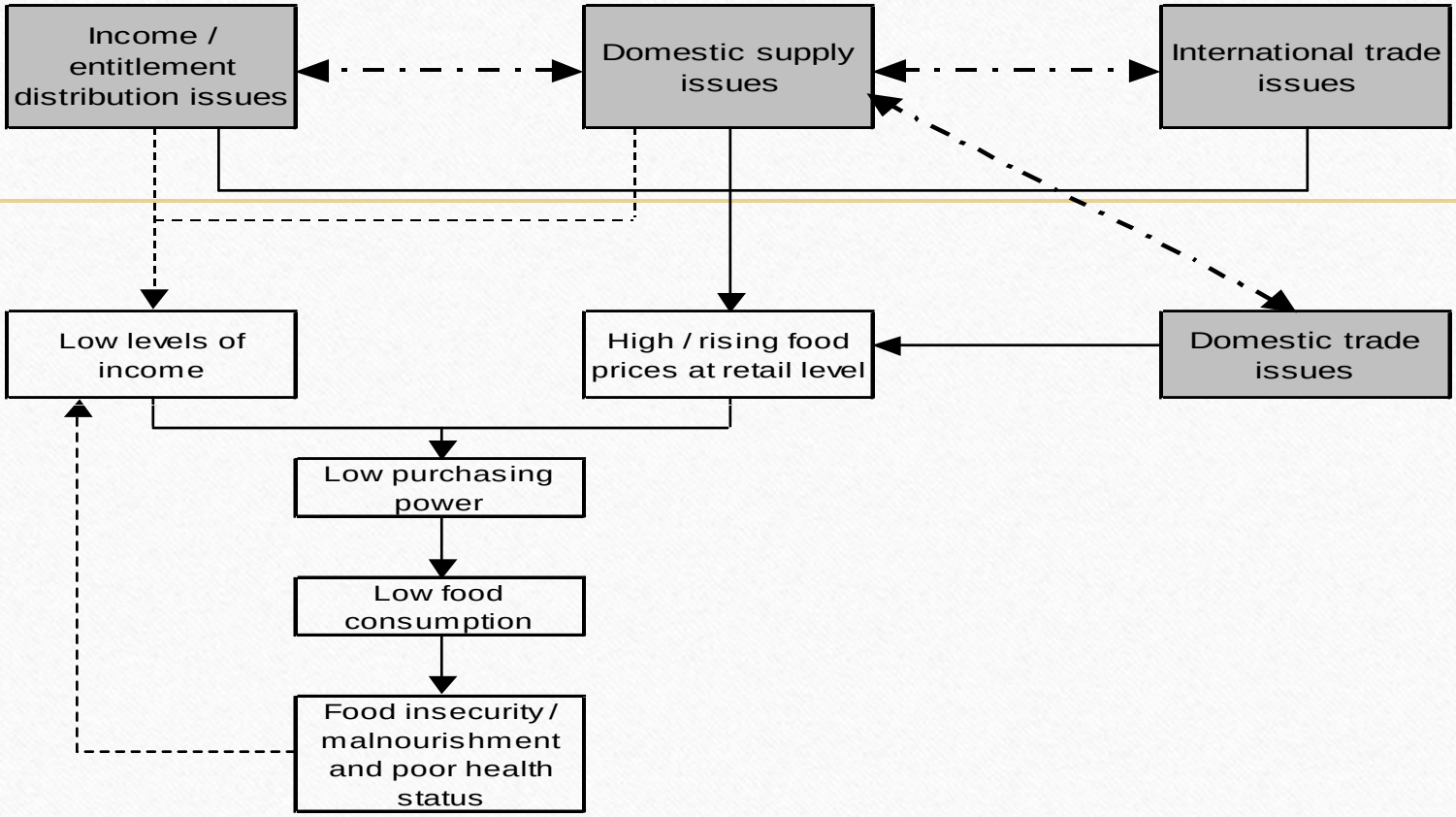
Stability

- Access to food ar all times
- Should not risk access to food due to sudden shock (such as economic or climatic crisis) or cyclical events (seasonal foods insecurity)

Utilization

- Utilization of food through adequate diet, clean water, sanitation and health care to reach a state of nutritional well being where all physiological needs are met


Global Food Availability
Trade and Macro
National Net Imports of Food
National Food Production
Growth, Employment Distribution, Poverty
Government Revenues
National Food Availability
Household Incomes
Household Food Access
Food Security
Care
Health
Other Basic Needs and Non Necessities
Nutrition Security
GLOBAL
NATIONAL
HOUSEHOLD AND INDIVIDUAL
INDIVIDUAL



Food security at the household level

- This chart (adapted from Smith, 1998) shows the different channels through which trade (and other macroeconomic factors) can influence food security. Domestic production and imports determine domestic , or national, availability (component 1 of our definition). Economic growth that generates inclusive employment and income opportunities is crucial for access to food (component 2). Government revenues can be used to implement policies and investments supporting several different aspects of food security, such as agricultural R&D (components 1 and 4) and basic health services and water and sanitation systems (component 3). What counts most for development in the end, though, is all of these policies' impacts at the individual level (labeled "nutrition security", which is somewhat different from "food security").

Food Availability

- **Factors:**

  - Domestic production
  - Import capacity
  - Food stocks
  - Food aid

Food Availability

Proposed Approach:

- Family-scale vegetable and fruit gardens – source of nutrient-rich foods
- Promote and support small livestock and poultry ventures, aquaculture projects
- Reducing post-harvest and storage losses, increasing the availability of seasonal micronutrient-rich foods and optimize the use of resources at household level.

Food Accesses
(Physical and economic access to food)

- **Factors:**
  - Purchasing power
  - Income of population
  - Transport and market infrastructure
  - Market Accessibility

Food Accesses

- **Proposed Approach:**

- Developing local food processing facilities
- Improving marketing, packaging, transport and storage facilities
- Improving various market linkages
- Securing Livelihood activities

Food Utilization

Factors

- Hygiene and manufacturing practices applied in: primary agricultural production, harvesting and storage; food processing; transportation, retail, households
- Diet quality and diversity: meeting needs in terms of energy, macro- and micronutrients

Food Stability
(Stability of supply and access)

Factor

- Weather variability
- Price fluctuations
- Political factors
- Economic factors

Key risk associated with food stability

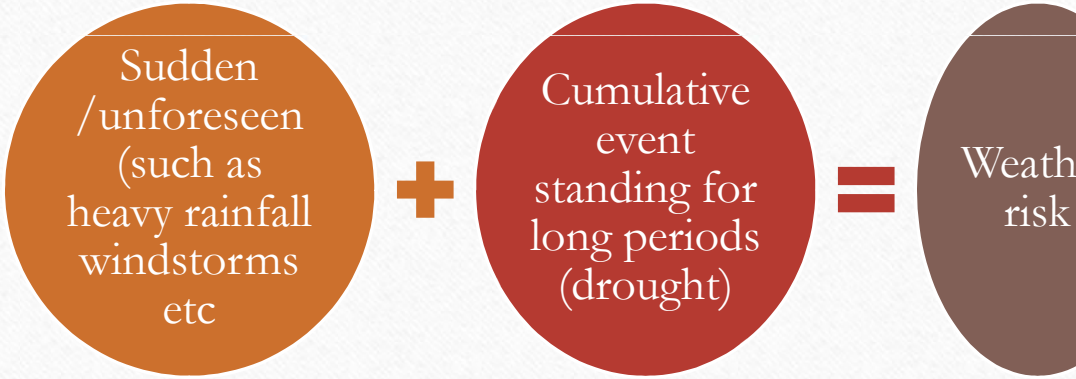
Risk	Factors	Effect
Weather risk	Rainfall or temperature variability or extreme events	Lower yield, loss of productive assets or income
Biological risk	Pest, disease	Lower yield and loss of income
Price risk	Low prices, market supply and demand volatile	Lower prices and loss of income
Labour and health risk	Illness, death, injury	Loss of productivity, loss of income, increased costs
Policy and political risks	Regulatory changes, political upheaval, disruptions of markets	Changes in costs, taxes and market access

- Weather Risk
- Weather Index Insurance
  - Existing Practices
  - Current Scenario (Global, Indian)
- Proposed Approach

Weather risk

The impacts of a given weather event differ according to the **specific agricultural system**, **variable water balances**, **type of soil and crop**, and availability of other risk management tools (such as irrigation)

Additionally, the negative impacts of weather events can be aggravated by **poor infrastructure** (such as poor drainage) and mismanagement



Main weather related risk affecting food security

Drought (rainfall deficit)	• Crop varieties adapted to mean rainfall and water balance • Rain-fed agriculture predominates globally • Annual or multiannual • Key risk to livestock
Excess rainfall and flood	• Excess rainfall causes direct damage and indirect impacts • Riverine, flash, coastal floods • Watershed management, drainage, irrigation have impact on flood
High temperatures	• Impact on evapotranspiration and related to drought • Seasonality and vulnerability to crop stages
Low temperatures	• Frost (short-term low temperatures, early and late season damages) • Freeze (winterkill) • Growing degree days (lack of warmth during season)
Wind	• Cyclonic severe events (hurricane or typhoon) • Frontal windstorm • Local windstorm and tornado

- In India, weather index insurance was introduced to farmers in 2003. In 2007, the national government adopted it as an alternative to crop-yield index insurance.
- By 2012, up to 12 million farmers, growing 40 different crops over 15 million hectares, were insured against weather-related losses.
- Despite its potential, weather index insurance can fail to benefit farmers if the information available to the insurance company does not reflect the reality in the fields.

INDEX BASED WEATHER INSURANCE IN DEVELOPING MARKETS

- Traditional crop insurance for smallholder economies is extremely challenging
  - Main constraints for traditional products, based on individual loss assessments:
    - *Poor rural insurance infrastructure and capacity*
    - *Operationally difficult for small farmer agriculture*
    - *Loss adjustment, availability of farm level data*
    - *Moral hazard*
    - *Adverse selection due to asymmetric information*
    - *High monitoring and administrative costs*
- Agricultural production risk needs reinsurance
  - Covariant risks (e.g. drought) are an inherent characteristic

Multi-peril Crop Insurance	VS	Index-Based Weather Insurance
⊙ High Administrative Costs ⊙ Moral Hazard ⊙ Adverse Selection		⊙ Rainfall is a proxy for damage ⊙ Objective triggers and structured rules for payouts ⊙ Improved correlation between need and provision

Table 1: The Indian weather index insurance market

Agricultural Year	Farmers insured	Sum Insured (USD millions)	Commercial premium volume (USD millions)[1]	Claims paid (USD millions)	Claim payments as a multiple of commercial premiums
2003-04	1,000		<0.1	<0.1[2]	
2004-05	11,300		0.2	0.1[2]	
2005-06	112,500		1.6	0.2[2]	
2006-07	181,900		1.6	1.0[2]	
2007-08[3]	678,425	398	33.1	23.9	72%
2008-09[3]	375,100	208	18.6	14.2	77%
2009-10[3]	2,278,407	1,093	99.9	62.0	62%
2010-11[3]	9,278,000	3,174	258.9	125.0	48%

Note: 1. Commercial premium includes both farmer premium and government premium subsidies.
2. Kharif season only.
3. WBCIS only.

Thank You