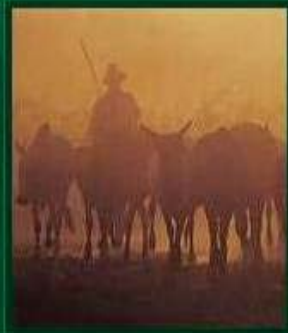




# **Sustainable Land Management in Sub-Saharan Africa**

Teunis van Rheenen  
Coordinator for Partnerships  
International Food Policy Research Institute

Agro Environ  
Wageningen UR, the Netherlands  
4 May 2012



### Food security, farming, and climate change to 2050

Addressing poverty is key to  
climate change adaptation



### Reflections on the Global Food Crisis

How did it happen? How has it  
hurt? And how can we prevent  
the next one?



### Investment for Poverty Reduction in Rwanda

Agricultural development strategies  
to promote inclusive growth



# IFPRI

INTERNATIONAL FOOD POLICY RESEARCH INSTITUTE

## **IFPRI's VISION**

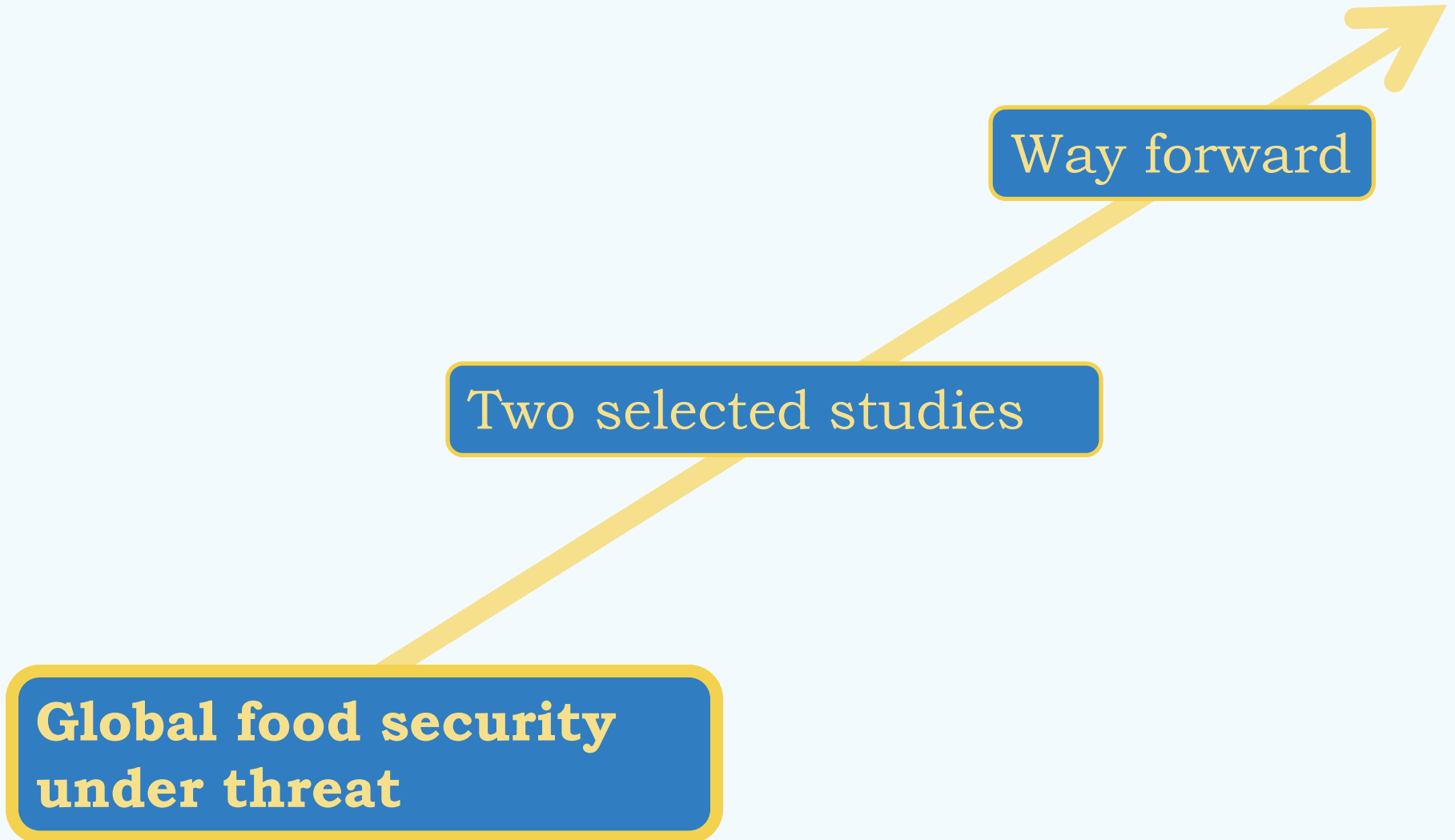
A world free of  
hunger and  
malnutrition

## **IFPRI's MISSION**

To provide policy  
solutions that reduce  
poverty and end  
hunger and  
malnutrition

- **Data collected in the field**
- **Multidisciplinary**
- **Collaboration with 500+ local, national, regional, and international institutions**

# **This presentation**



**Global food security  
under threat**

Two selected studies

Way forward

# Global food security under stress from complex web of factors...

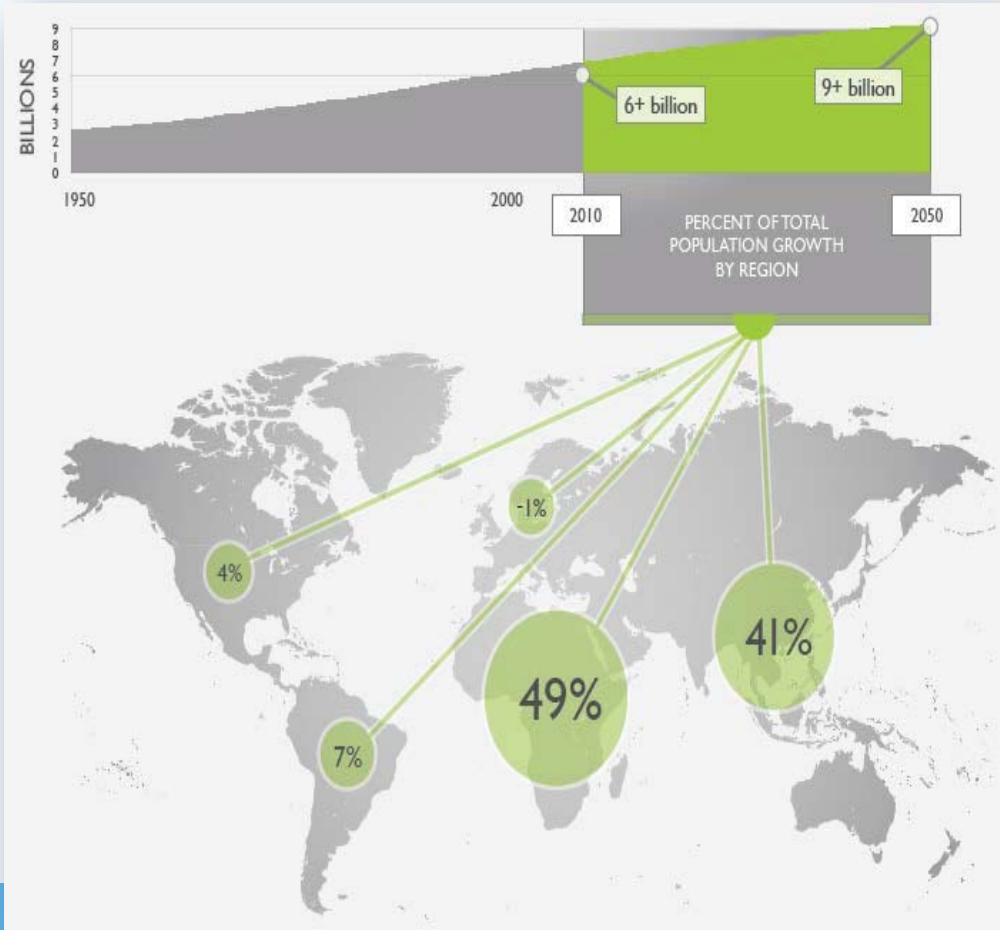
- **Population growth** and **demographic changes**
- Rising **energy prices/biofuel** expansion
- High and volatile **food prices**
- Increasingly limited **natural resources**
- **Climate change** to further threaten food and nutrition security
- **Poverty, hunger, and undernutrition** continue to be major challenges

## ... and Policy Challenges

- Agricultural growth has a huge potential to reduce poverty
- This potential is underexploited because of:
  - ✓ Lack of evidence-based policies
  - ✓ Underinvestment in agriculture and rural development
  - ✓ Limited political influence of smallholder farmers
  - ✓ Weak science and technology policies that limit development and adoption of ag. technologies
  - ✓ Poorly performing and missing institutions and markets

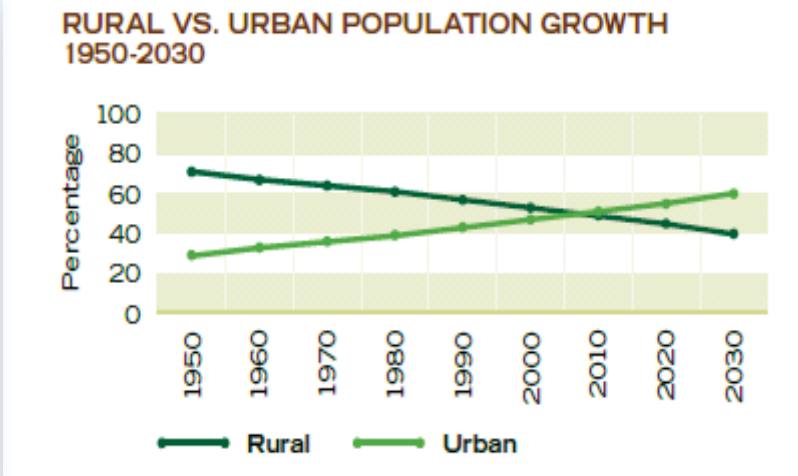
# Population growth and demographic changes

## Global population growth and percent of growth by region, 2010-2050



Source: Global Harvest Initiative 2011

## Rural vs. urban population growth, 1950-2030



Source: CropLife International 2010

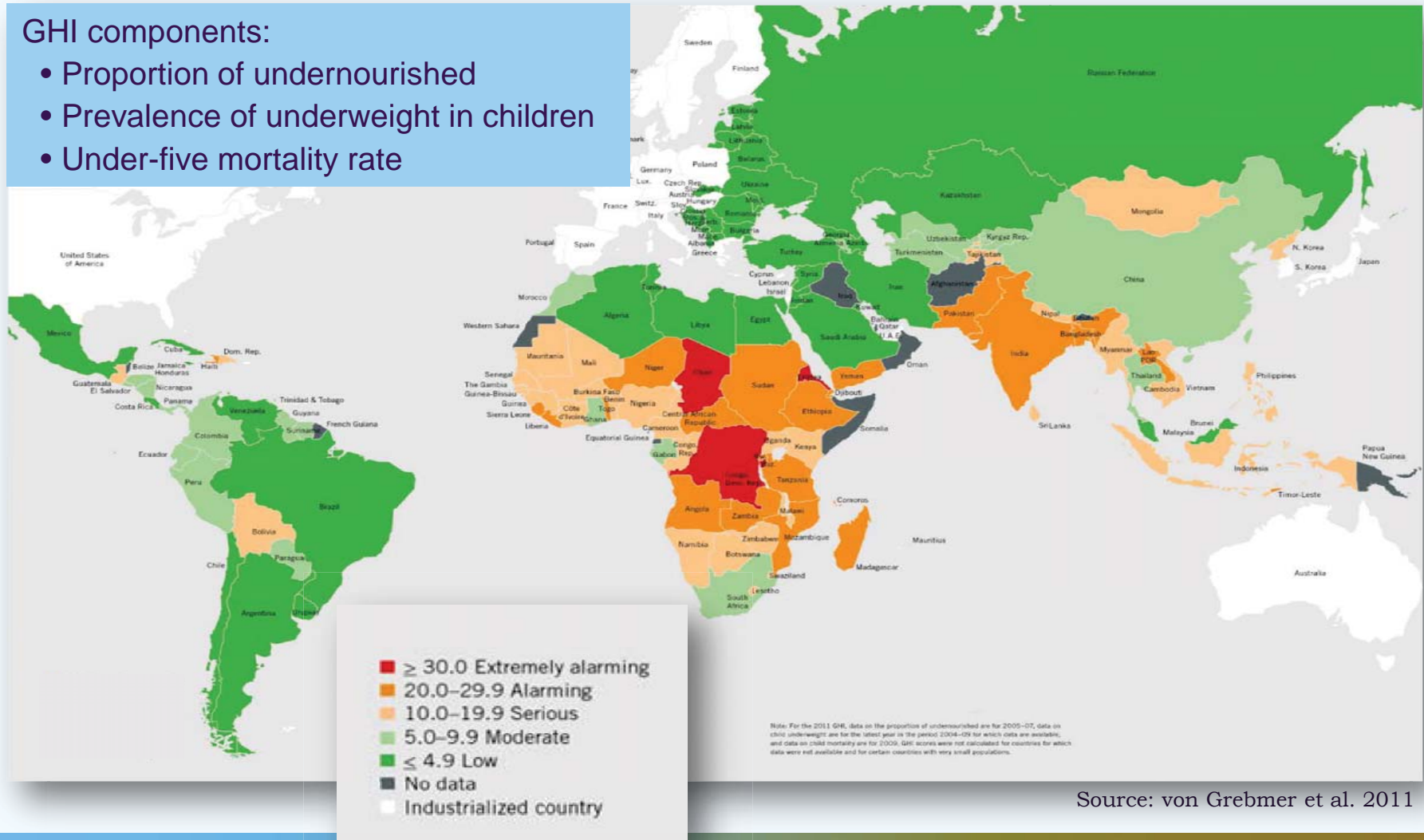
**Larger and more urban population will demand more and better food**

Source: Fan 2011b

# 26 countries have **extremely alarming/** **alarming** levels of hunger (2011 GHI)

GHI components:

- Proportion of undernourished
- Prevalence of underweight in children
- Under-five mortality rate



Source: von Grebmer et al. 2011

Source: Fan 2011b

# Top 15 SSA countries with **extremely alarming/** **alarming** levels of hunger (2011 GHI)

---

Democratic Rep. Congo	<b>39.0</b>
Burundi	<b>37.9</b>
Eritrea	<b>33.9</b>
Chad	<b>30.6</b>
Ethiopia	<b>28.7</b>
Central African Republic	<b>27.0</b>
Comoros	<b>26.2</b>
Sierra Leone	<b>25.2</b>
Angola	<b>24.2</b>
Zambia	<b>24.0</b>
Niger	<b>23.0</b>
Mozambique	<b>22.7</b>
Djibouti	<b>22.5</b>
Madagascar	<b>22.5</b>
Liberia	<b>21.5</b>

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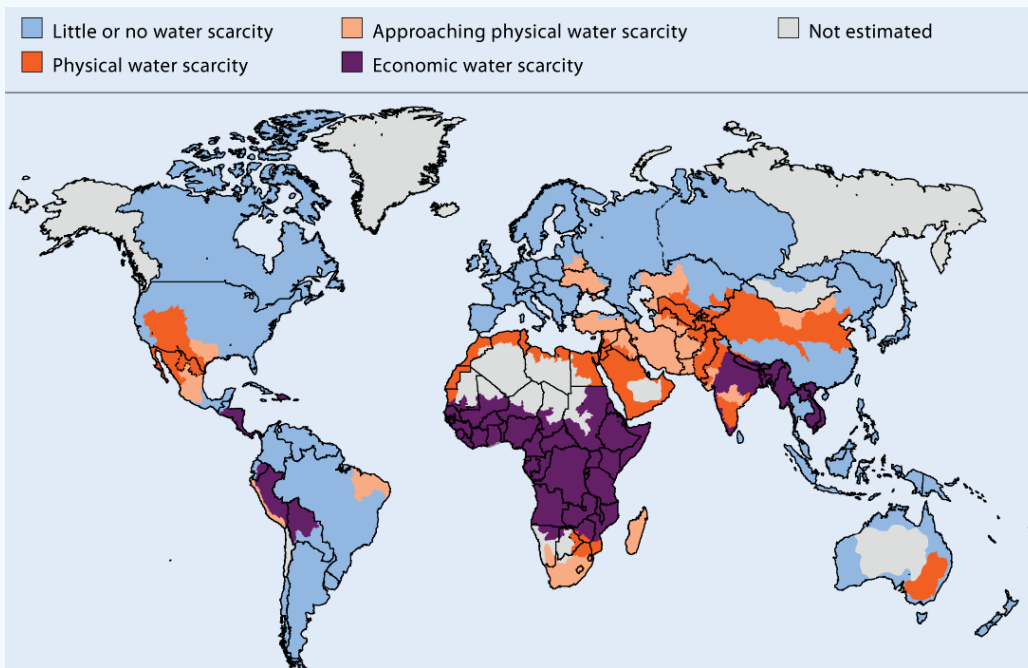
# Climate change will affect agriculture and food security

- **Lower agricultural yields and production** due to
  - Higher temperatures and changes in precipitation patterns
  - Extreme events e.g. droughts, floods, cyclones
- **Lower availability of agricultural land** due to
  - Sea level rise
- **Higher food prices**

**Developing countries will bear most of the costs: 75-80%**

# Growing natural resource scarcities will threaten food security...

## Physical and economic water scarcity



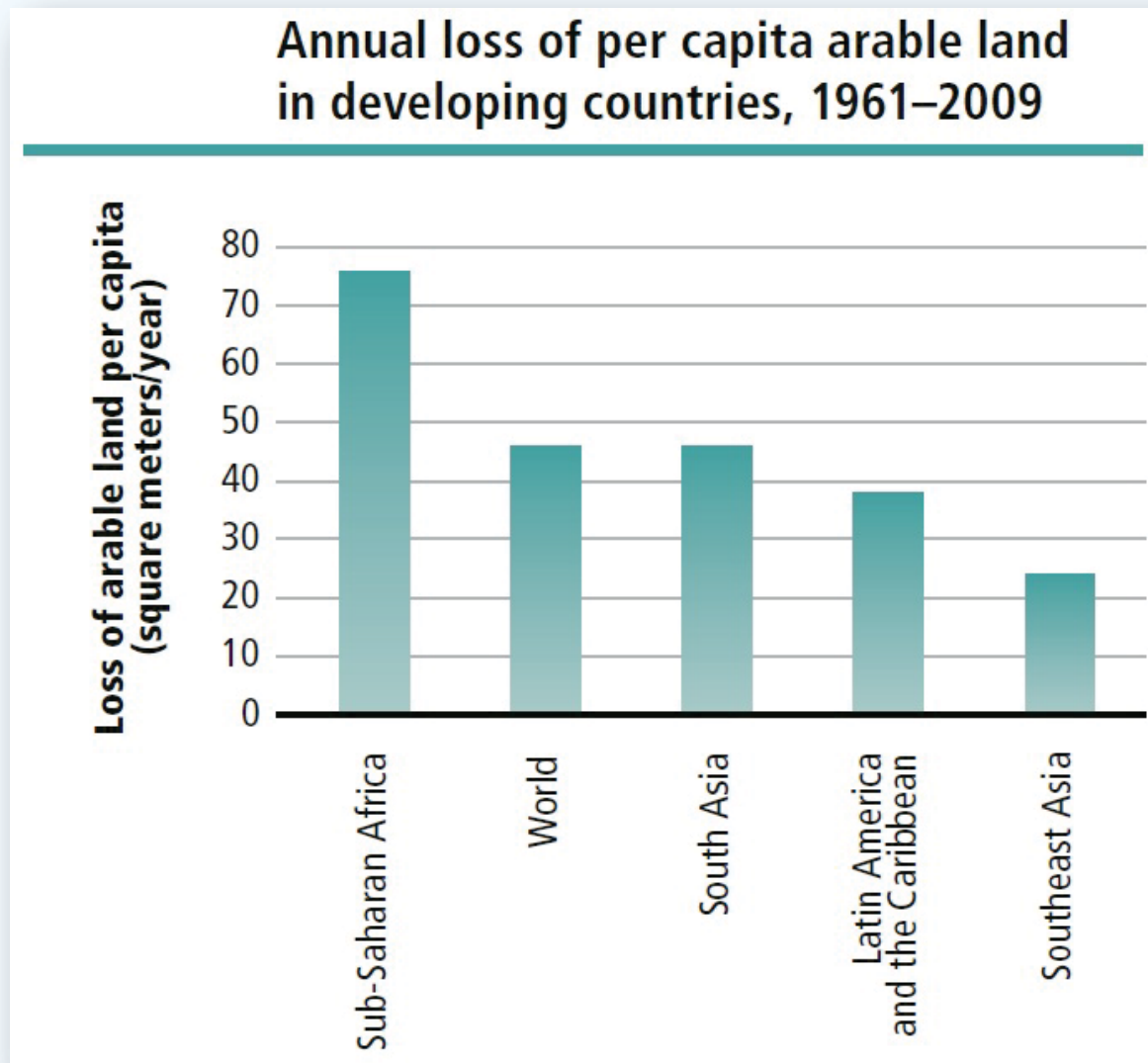
With “business as usual,” high water stress by 2050 puts at risk globally:

- **52% of population**
- **49% of grain production**
- **45% of GDP**

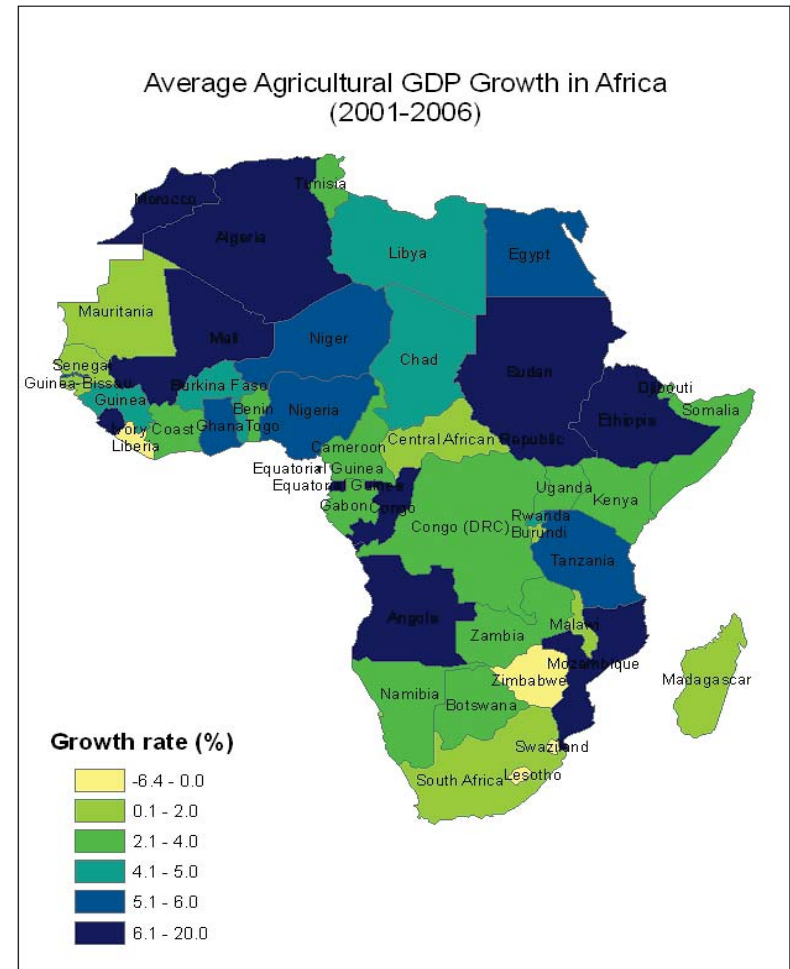
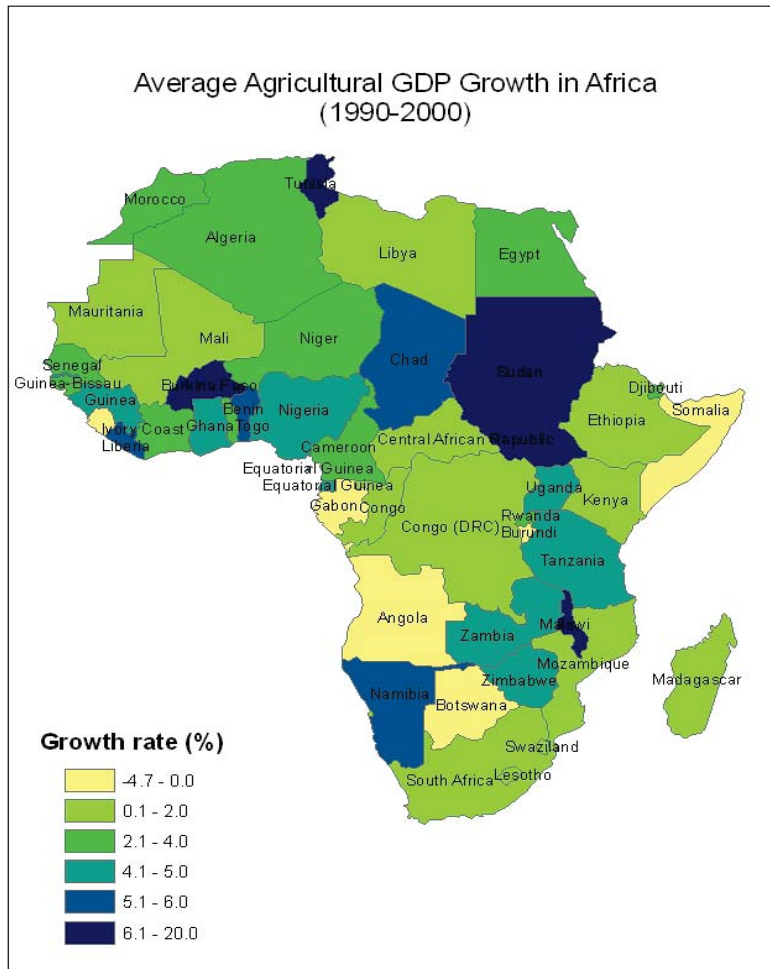
Source: Veolia Water and IFPRI 2011

Source: Fan 2012

# Annual SSA population growth of 2.3% has led to steepest arable land drop in world



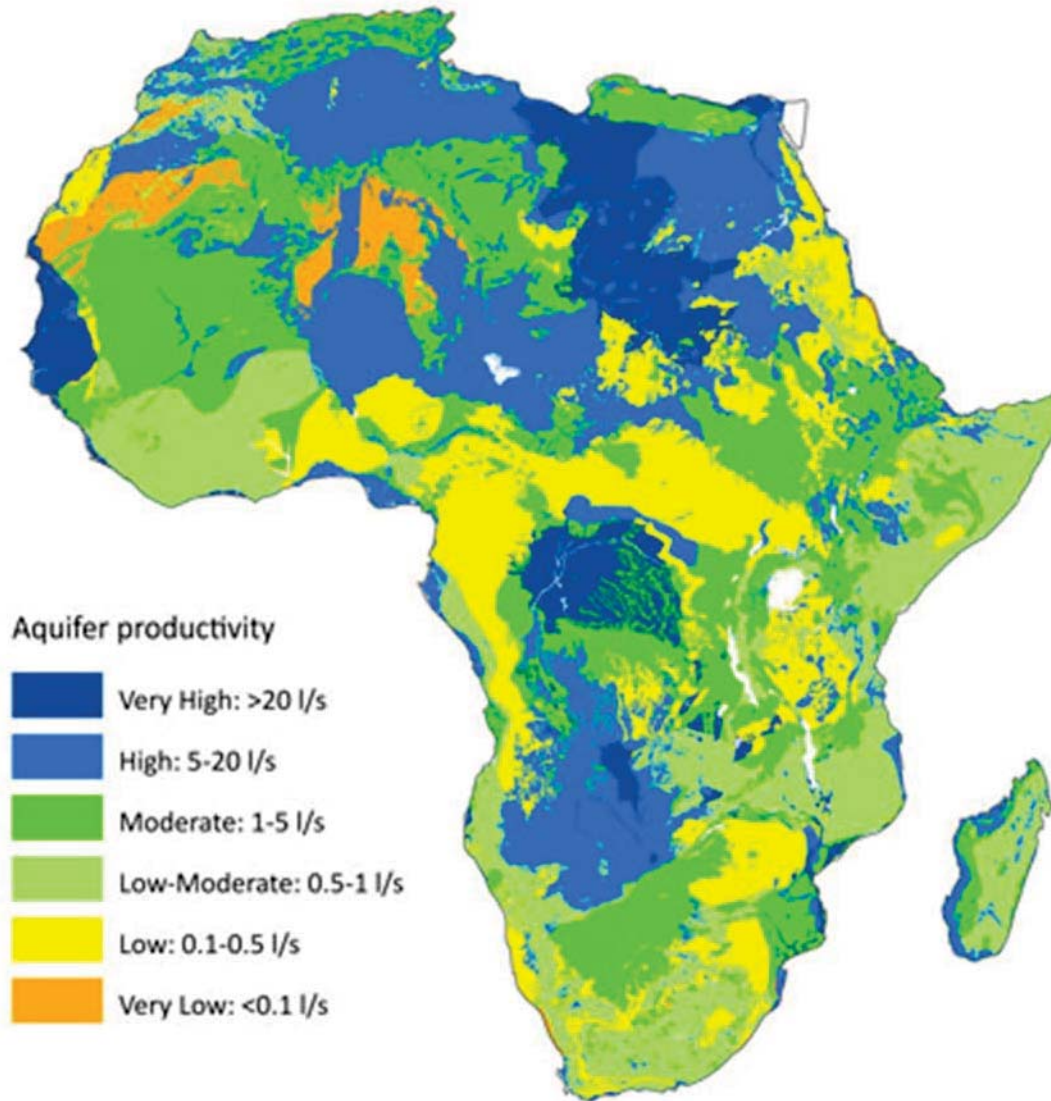
# While there is positive news.... agricultural growth is accelerating and spreading geographically



Source: IFPRI / Badiane and Ulimwengu

Data from national accounts / UN database: <http://data.un.org/Explorer.aspx?d=SNAAMA>

# Underground water reserves in Africa



British Geological Survey © NERC 2011. All rights reserved.  
Boundaries of surficial geology of Africa, courtesy of the U.S. Geological Survey.  
Country boundaries sourced from ArcWorld © 1995-2011 ESRI. All rights Reserved

# ... Problems persist Horn of Africa

**Crop & livestock loss**  
(3 consecutive poor rainy seasons)

+

**Poor governance** (Somalia)

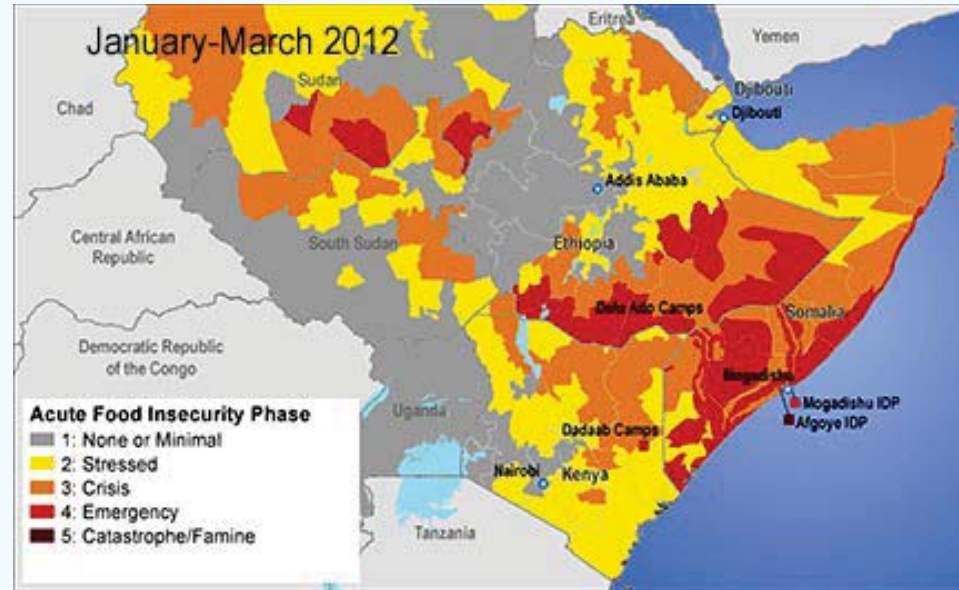
+

**Pre-existing refugee crisis**  
(e.g. Dadaab at full capacity pre-crisis)

=

**Increased malnutrition, deaths, and refugees**

**Immediate & long-term solutions to crisis needed  
urgently**



# Yet another emergency?

Sahel food crisis goes from bad to worse with “global indifference”



International Federation  
of Red Cross and Red Crescent Societies

Keyword

[Who we are](#)

[What we do](#)

[Get involved](#)

[News and media](#)

[Publications and reports](#)

You are here: [Home](#) / ... / [Time is running out to save young lives in the Sahel](#)

UN official: 'race against time' to avert disaster in Africa's drought-stricken Sahel



Photo: FAO/Giulio Napolitano

Time is running out to save young lives in the Sahel

Published: 18 April 2012 11:19 CET



Malnourished child at the nutrition recovery and education center in Djibo. Ollivier Girard / IFRC/p-BFA0308

THE PERCENTAGE OF FAMILIES SURVEYED IN NIGER WHO INDICATE THEY HAVE ALREADY REDUCED THEIR DAILY INTAKE OF FOOD :

**100%**

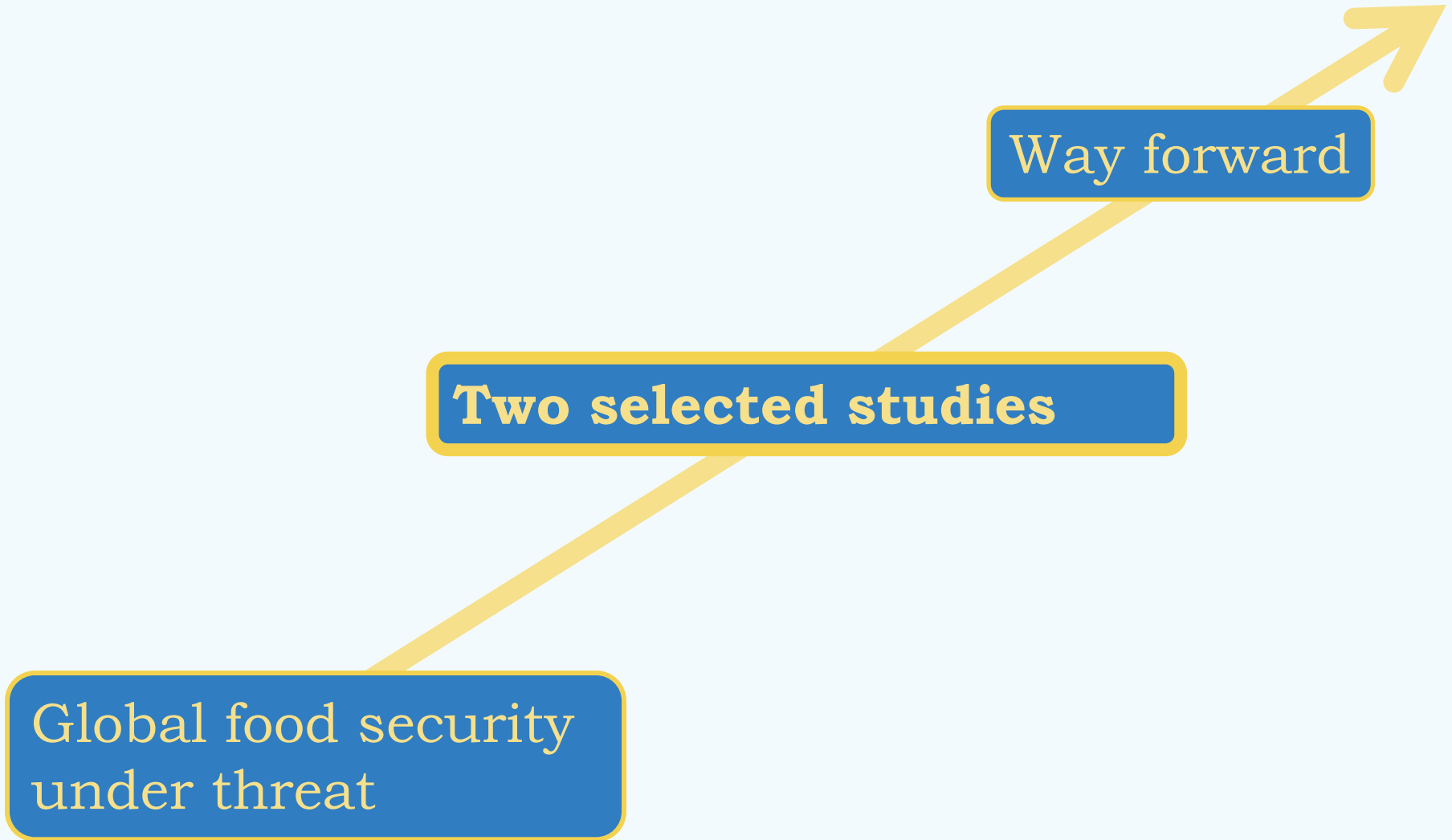
THE NUMBER OF PEOPLE ACROSS THE SAHEL WHO ARE VULNERABLE TO FOOD INSECURITY AND MALNUTRITION:

**15.6 MILLION**

THROUGHOUT THE REGION, PRICES OF BASIC FOOD STAPLES HAVE INCREASED SIGNIFICANTLY – UP TO

**50% HIGHER THAN NORMAL**

# **This presentation**



Global food security  
under threat

**Two selected studies**

Way forward

# Climate change (CC) and the poor in SSA

- The **poor and vulnerable** are most affected by CC.
- Empirical evidence shows that **integrated land and water management practices** are profitable and help farmers adapt to CC.
- Adoption of integrated practices is **low**.
- There is still weak understanding of **how land users respond** to CC in SSA.

# **Climate risk management through sustainable land management** (Nkonya et al. 2011)

## **Objective:**

To identify SLWM practices for upscaling and the conditions under which they are most likely to be successful

## **Case study countries:**

Kenya, Uganda, Nigeria, Niger

## **Use made of:**

GIS, Household survey data, Satellite imagery, Focus group discussions

# Reasons for not responding to climate change (%)

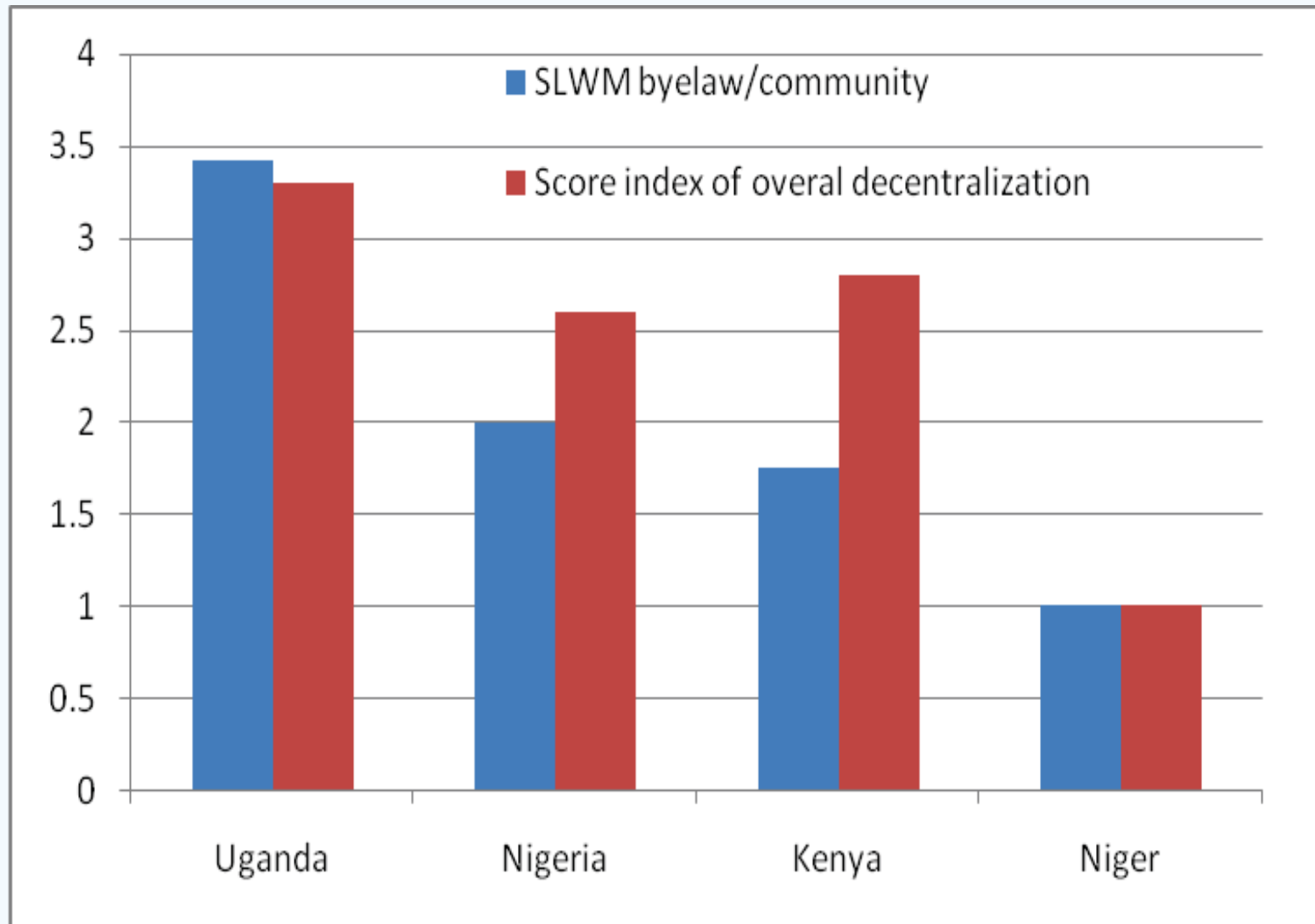
Reason	Kenya	Uganda	Niger	Nigeria	All Countries
<b>No money</b>	100	42	54	45	60
<b>No inputs</b>	46	12	21	7	22
<b>No information on appropriate adaptations</b>	22	33	2	15	18
<b>No access to credit</b>	14	4	18	27	15
<b>No access to land</b>	13	8	2	7	8
<b>Shortage of labor</b>	23	4	4		
<b>No water</b>	58				

***No money is important across countries... but reasons vary!***

Source: Nkonya et al. 2011

Notes: The total number of households surveyed equals 685. In Kenya, 122 hh were surveyed; in Uganda – 198; in Niger – 245; and in Nigeria – 120. The categories above are not discrete.

# Local institutions play a big role in adaptation to climate change



Sources: Nkonya et al. 2011; Overall decentralization from Ndegwa and Levy 2004; SLWM byelaws: focus group discussion results.  
Notes: SLWM: sustainable land and water management. Overall decentralization includes 12 performance and structural indicators of decentralization. The larger the index, the greater the performance of decentralization.

# Adoption rates of SLWM practices (% of households)

SLWM practices	Kenya	Uganda	Niger	Nigeria
<b>Irrigation</b>	3	2	4	3
<b>Integrated soil fertility management</b>	33	2	0	8
<b>Animal manure</b>	68	12	1	12
<b>Fertilizer</b>	36	6	0	45
<b>Crop rotation</b>	39	43	0	59
<b>Vegetative strips</b>	16	13	1	2
<b>Improved fallow</b>	5	2	1	6
<b>Mulching</b>	35	22	6	1
<b>Rotational grazing</b>	7	2	0	1
<b>Restricted grazing</b>	7	2	0	1
<b>Resting of grazing land</b>	5	3	3	0
<b>Water harvesting</b>	17	1	0	1

Source: Nkonya et al. 2011

Notes: The total number of households surveyed equals 685. In Kenya, 122 hh were surveyed; in Uganda – 198; in Niger – 245; and in Nigeria – 120. The categories above are not discrete.

# Country case studies offer success stories about adaptation strategies

## Kenya

- Strong ag R&D policies and enabling ag market environment offer incentives to farmers to adopt SLWM

## Uganda

- Decentralization and land tenure system contribute to stronger local institutions and improved community resource management

## Nigeria

- Irrigation development increases ag production and reduced production risks

## Niger

- Tree planting and protection policies give land users rights to own benefits from trees on their farms

# **Institutions for agricultural mitigation: Potential and challenges in four countries**

(De Pinto et al.)

## **Objective:**

To identify constraints that impede the design and implementation of policies for agricultural adaption and mitigation

## **Case study countries:**

Mozambique, Ghana, Morocco, Vietnam

# Findings from the country case studies (1)

Development challenges impeding agriculture adaptation and mitigation programs:

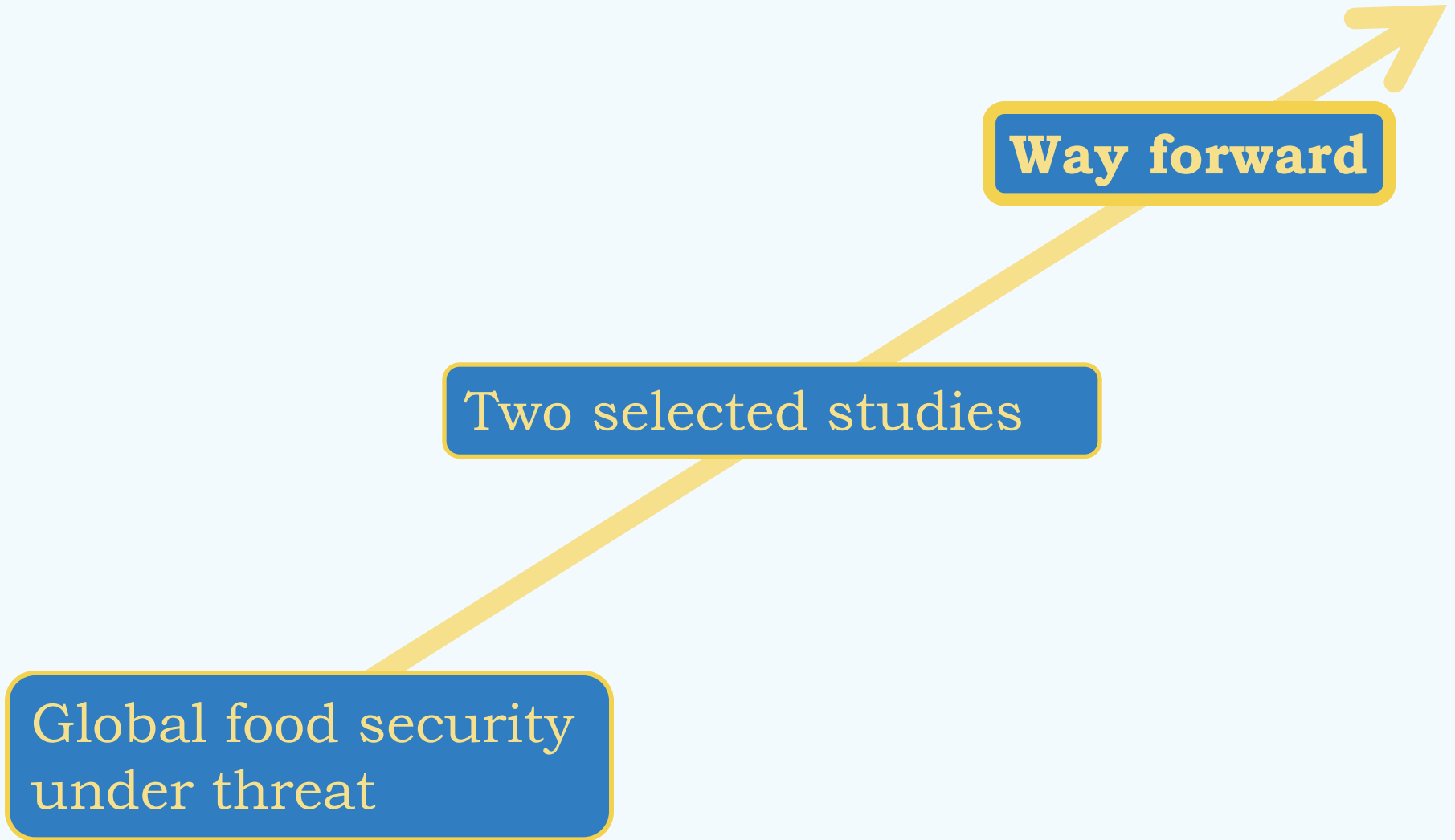
- Remote location of smallholder farmers
- Unfavorable infrastructure (i.e. roads)
- Lack of information systems (particularly extension services)
- Limited human capacity (low levels of education)
- Lack of quality inputs (i.e. seeds) in local markets

# Findings from the country case studies (2)

Constraints to the development of effective agriculture adaptation and mitigation programs:

- Governments tend to focus on crisis alleviation due to natural disasters and budgetary constraints
- Limited awareness of potential for ag mitigation through SLM practices and other strategies
- National level adaptation-related policies suffer from lack of consolidation and limited coordination between government sectors

# This presentation



Global food security  
under threat

Two selected studies

Way forward

# **Invest in capacity strengthening of local institutions for land management**

- Natural resource management bylaws are key to collective adaptation to climate change
- Bylaws are ineffective if not properly enforced
- Organizations operating at local level (i.e. government, NGOs, national producer associations) have potential to organize farmers
- Strong institutional linkages needed for effective decentralization

# **Integrate rural development approaches**

- Roads
- Education
- Agricultural extension
- CC & market information services
- Local government institutions

***All these need an integrated and collaborative approach cutting across ministries, departments and programs***

# Develop Smart Partnerships

- Country level partnerships that engage stakeholders in decision-making processes have the potential to:
  - Reduce transaction costs
  - Strengthen capacities at the community level
  - Build interest, trust and support
  - Generate greater coherence across national level SLWM policies and programs

# **CGIAR and IFPRI are changing the way business is done**

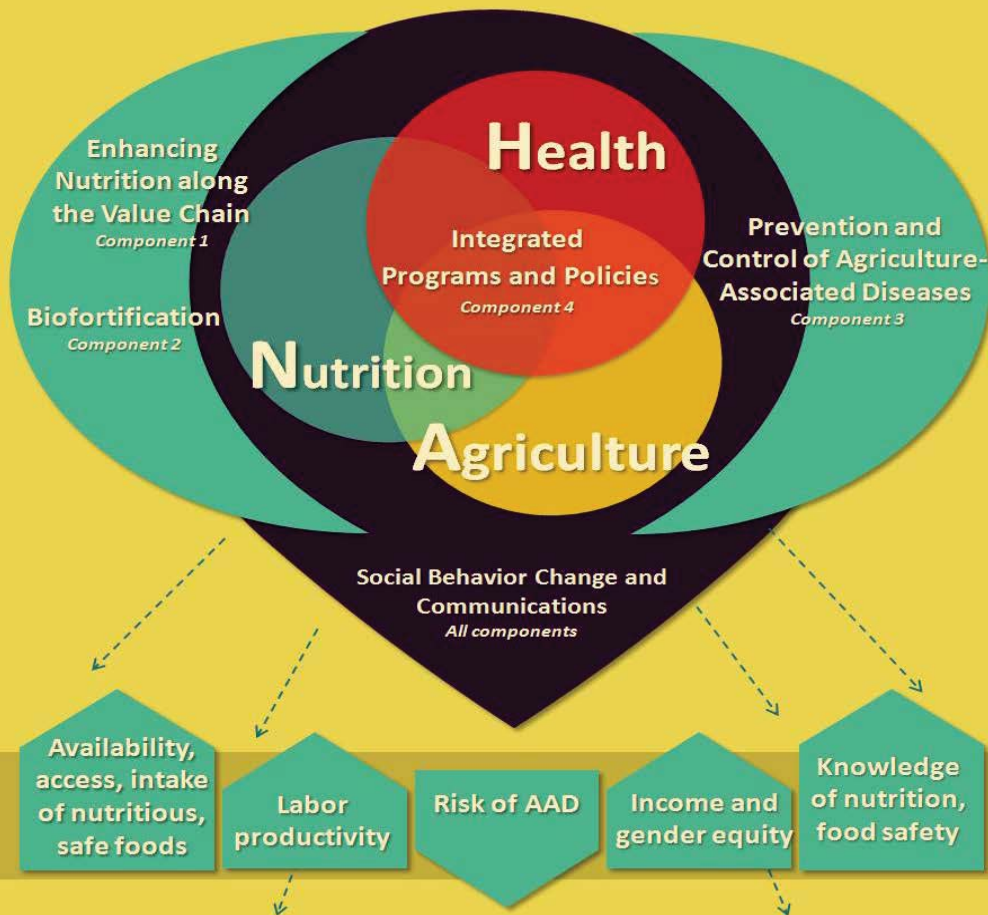
- New vision and strategic objectives
  - **Food for People, Environment for People, and Policies for People**
- Broadened research mandate to include nutrition and health
- Country-led approaches and inclusive partnerships
- Results-oriented strategy

# CRP2: Policies, Institutions, and Markets



# CRP4: Agriculture, Nutrition, and Health

ISSUE: Poor people suffer from undernutrition and ill-health, especially mothers and children under two



RESULT: A better nourished, healthier population, especially mothers and children under two

1. Enhancing nutrition along the value chain
2. Biofortification
3. Prevention and control of agriculture-associated diseases
4. Integrated programs and policies (agriculture, nutrition, and health)

Veel dank!

Many thanks!

# Sources

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