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Quality Information and Improved Access: Keys to Achieving SDG2

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Progress and Commitment

- *Rates of hunger and poverty declining*
- *Agriculture-Nutrition linkages*
- *Stunting rates coming down, but still high*
- *Global Commitment in SDG 2*
- *Global Food Security Act signals US support*

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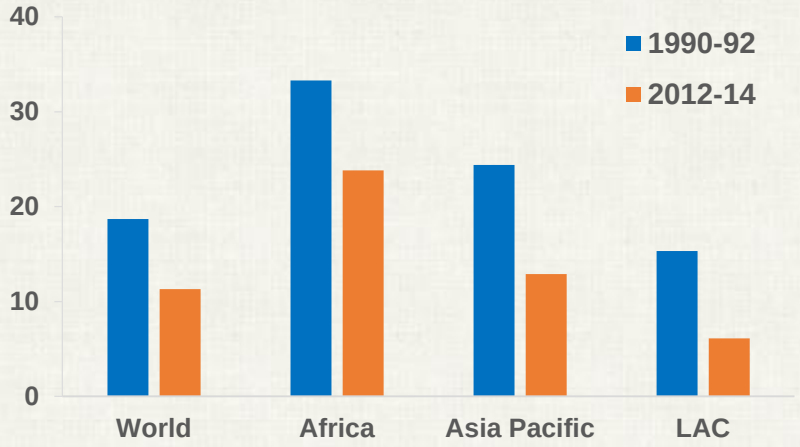
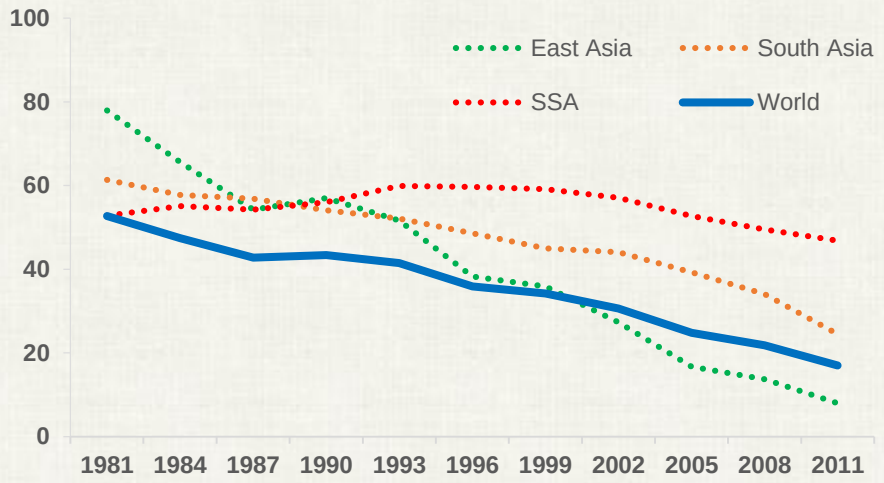
Poverty and hunger declining –but Africa lags

Prevalence of undernourishment (%)



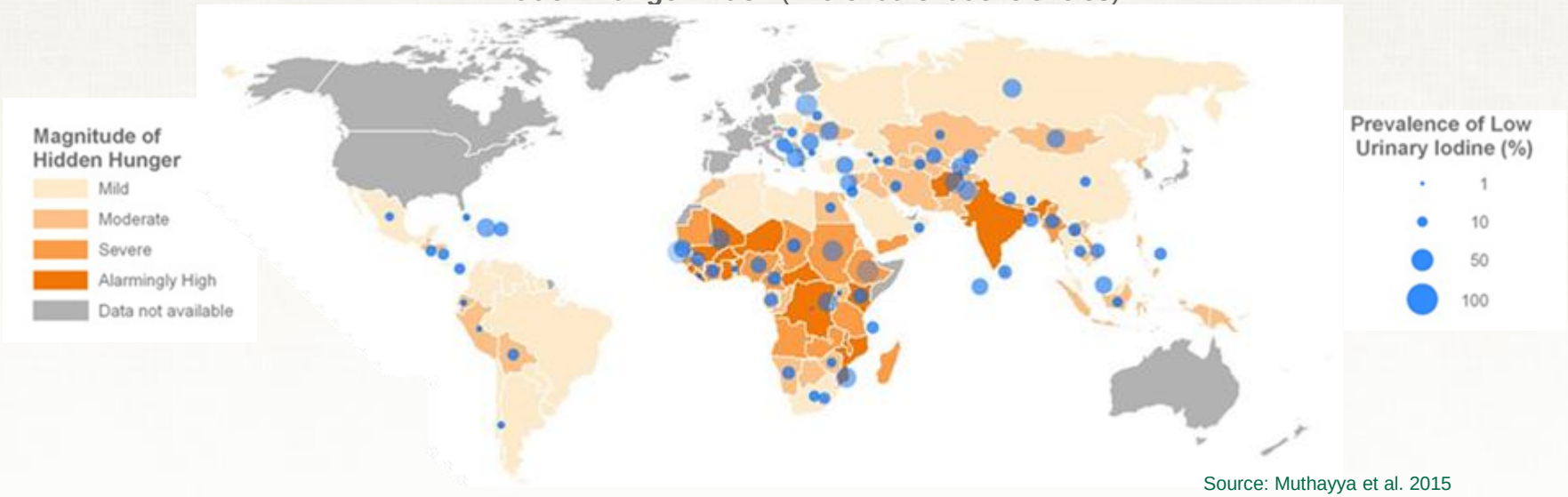
Source: FAO 2015

Prevalence of poverty (US $1.25/day, 2005 PPP), (%)



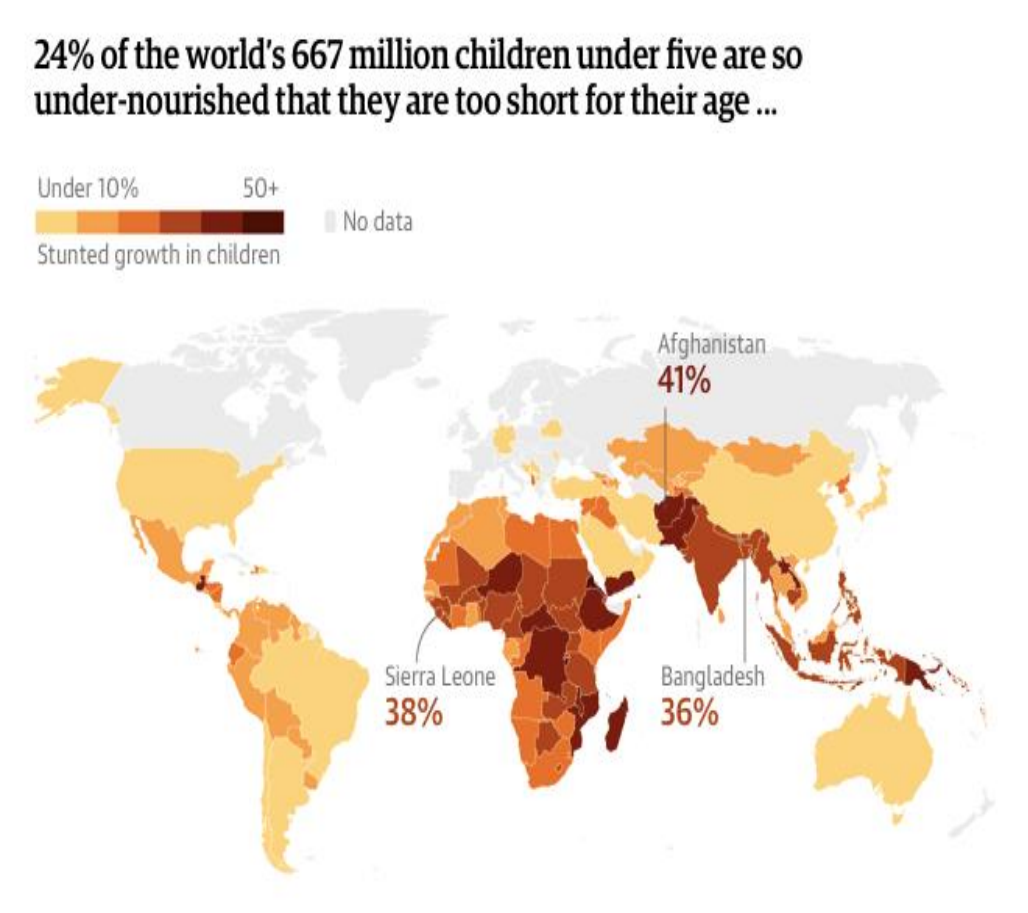
Source: PovCalNet 2015

Hidden Hunger Index (micronutrient deficiencies)



Source: Muthayya et al. 2015

24% of the world's 667 million children are stunted



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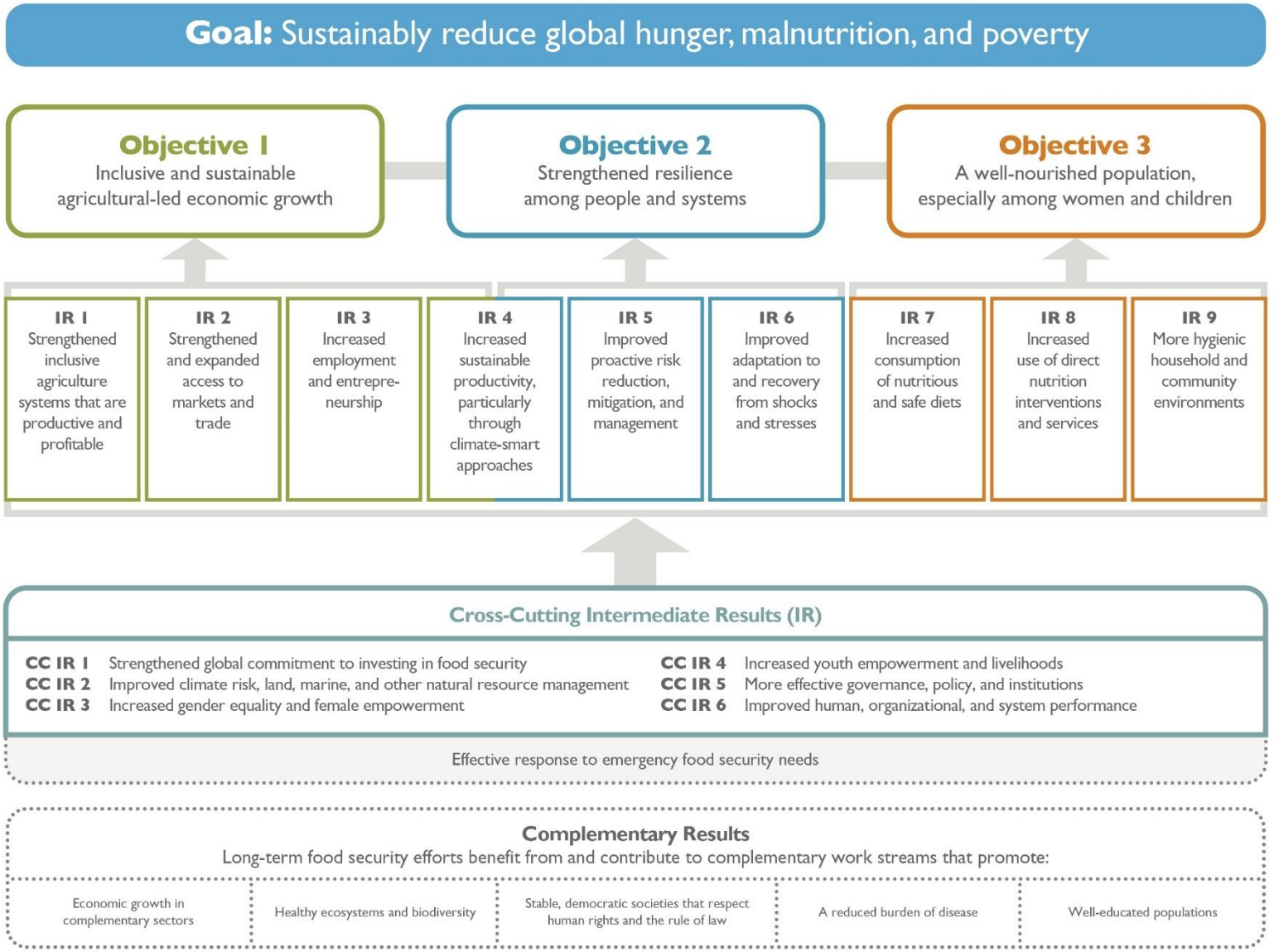
GFSA Results Framework



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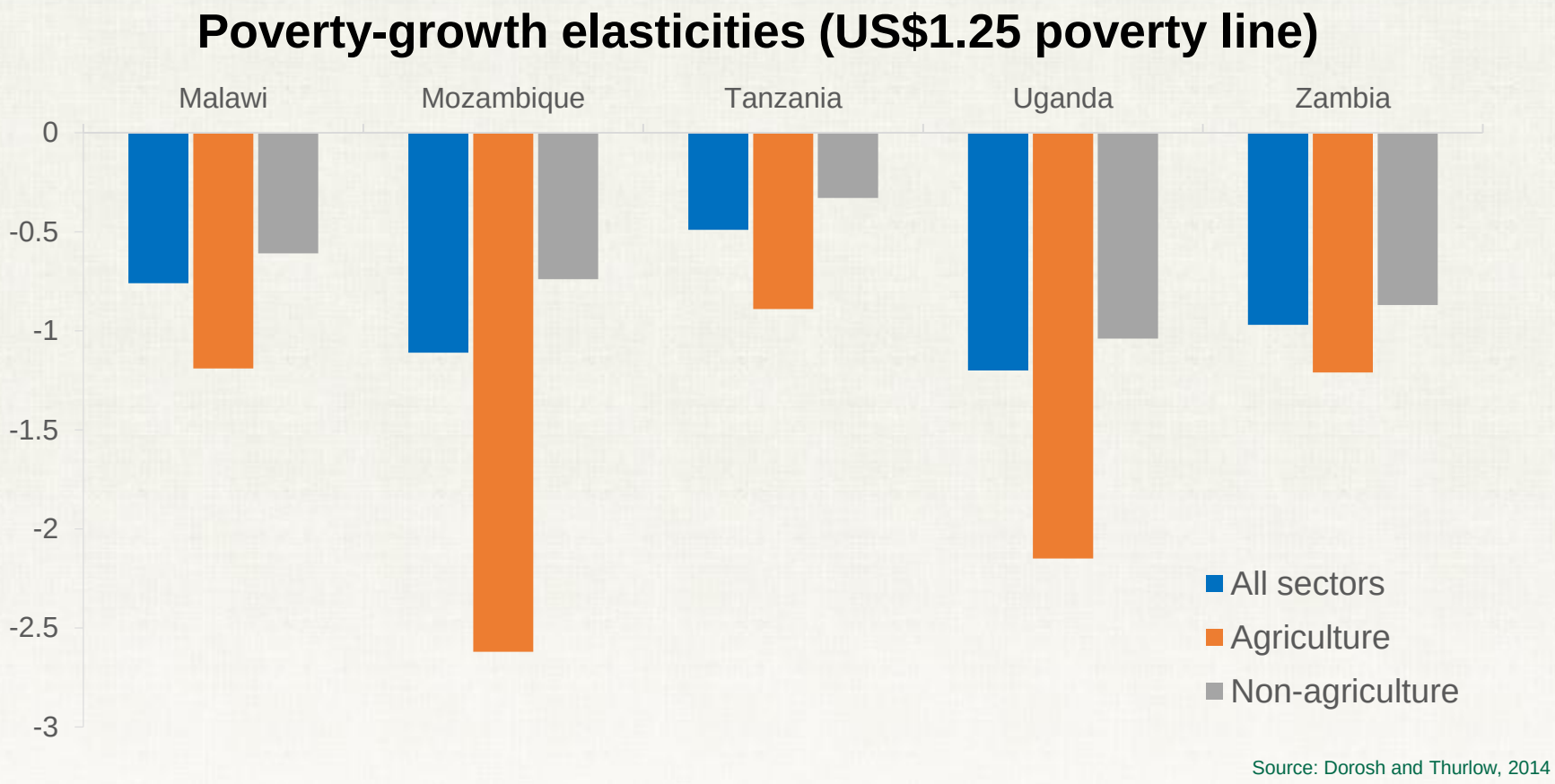
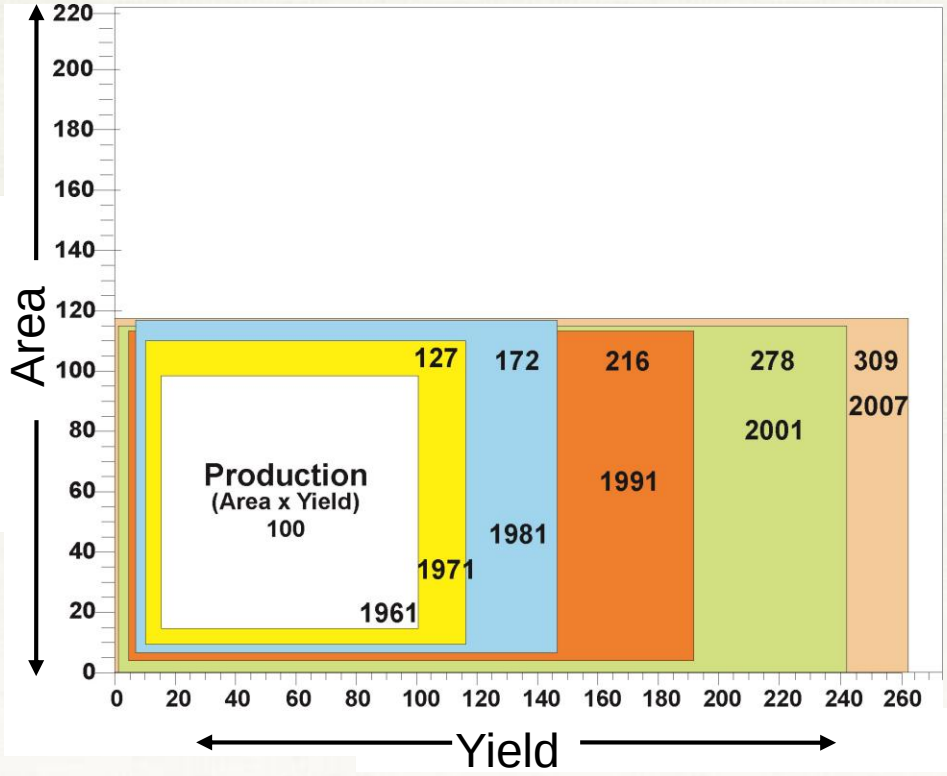
Agricultural growth is poverty-reducing



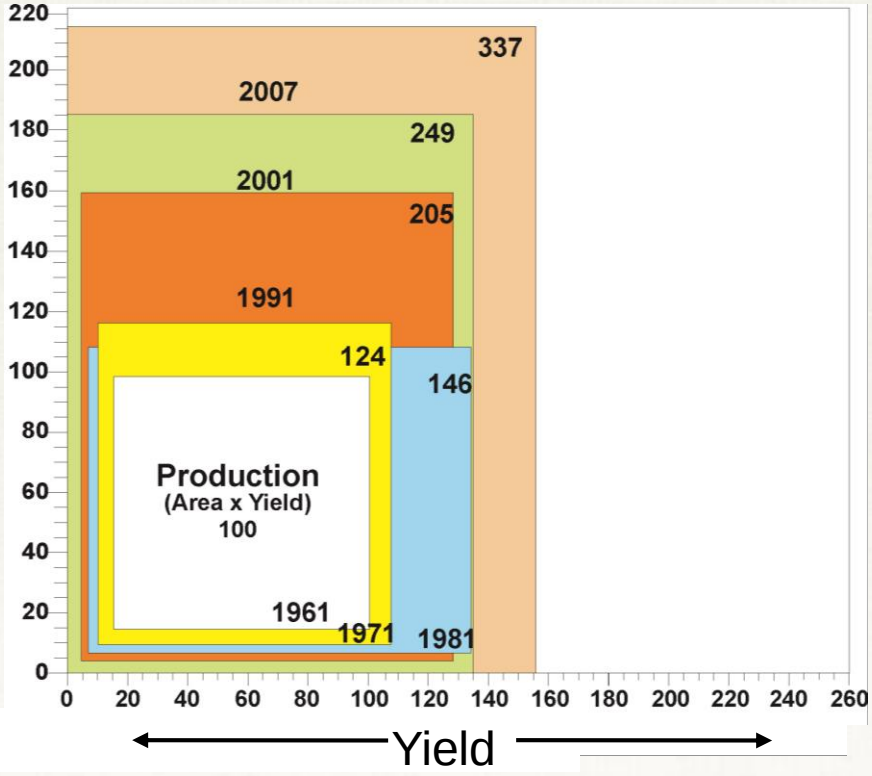
Source: Dorosh and Thurlow, 2014

Agricultural growth continues to be more poverty-reducing than non-agricultural growth

Intensification vs. Extensification



South Asia



Sub-Saharan Africa

From: Cassman et al 2013

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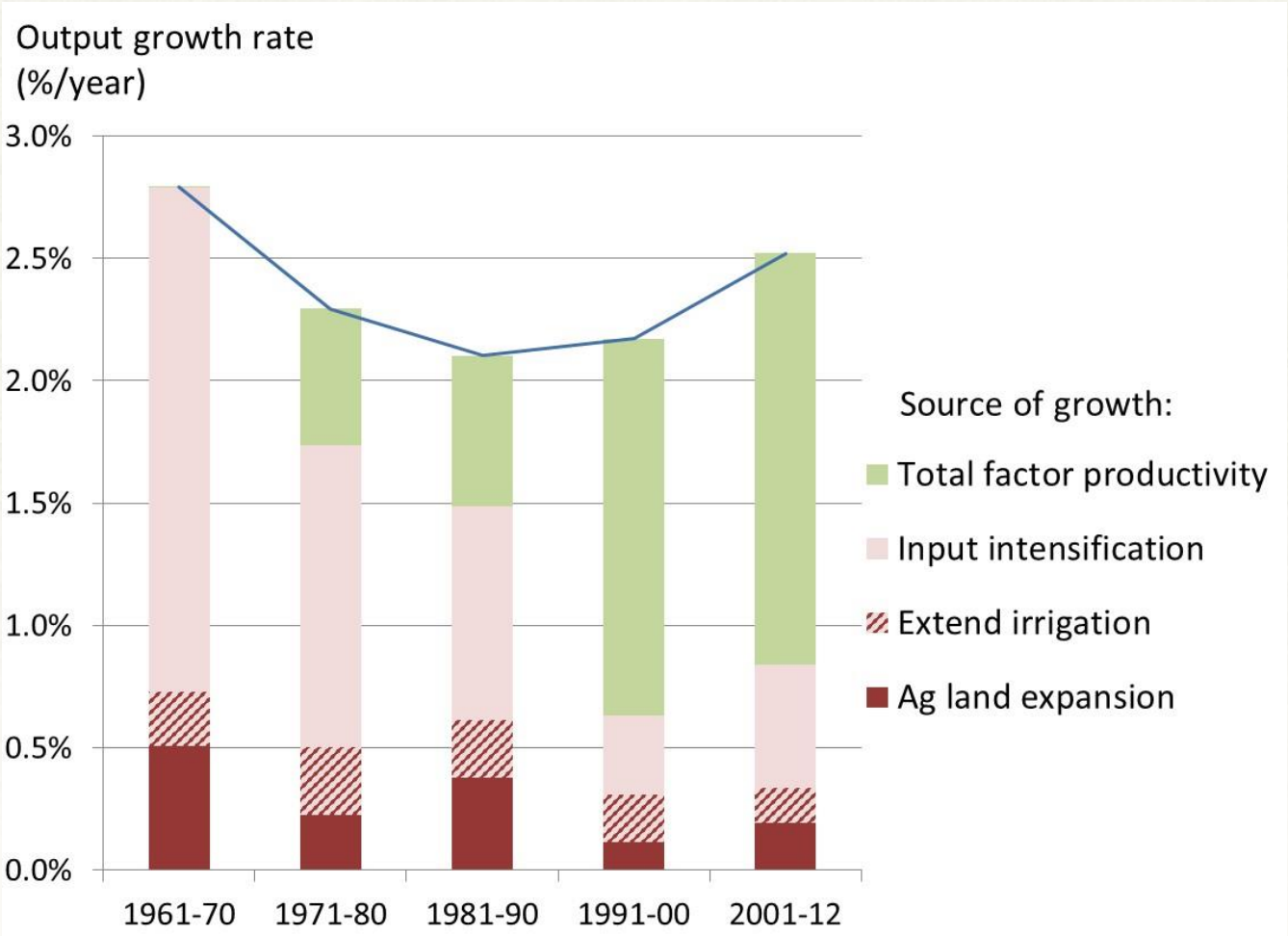
TFP now accounts for most agricultural growth



Source: Economic Research Service

Theme I: Advancing the productivity frontier

- Examples of research opportunities
  - ➢ Increasing genetic gains: opportunities to use cutting edge-genomics and big data
  - ➢ Closing the yield gap
  - ➢ Improve quality of food and feed
  - ➢ Improve market efficiency
  - ➢ Add post-harvest value to agricultural products
  - ➢ Identify policies to increase food system productivity

High yielding heat tolerant maize hybrids released within 3 years

Theme II: Reducing, Managing, and Mitigating Risk for Resilience

- Challenge:
  - Recurrent crisis leaves vulnerable individuals and communities in a cycle of hunger, poverty, and malnutrition.
- Examples of research opportunities
  - ➢ Abiotic and Biotic stresses
  - ➢ Food Safety
  - ➢ Diversifying farming, economic and livelihood opportunities
  - ➢ Effective financial services and social protection systems

Fall Army Worm

Cassava Brown Streak Virus

Index Insurance

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Stress Tolerant Maize during El Niño

SC513

Murewa, Zimbabwe

CZH132018

Peter Setimela

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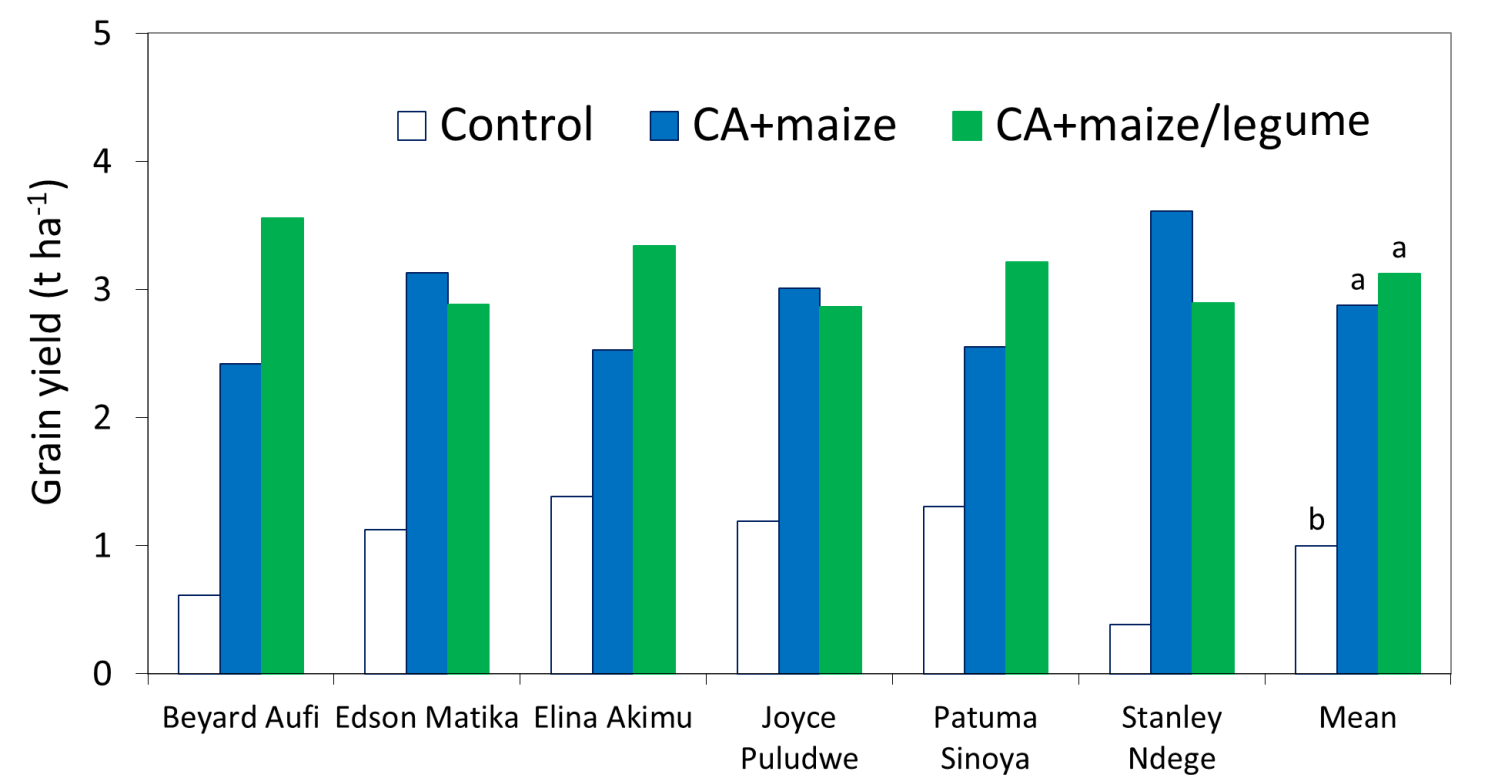
Conservation agriculture (CA) systems during El Niño



2 t ha^{-1} yield benefit of conservation agriculture in Malawi

Drought tolerant varieties make better use of residual soil moisture

Theme III: Improved knowledge of how to achieve human outcomes

- Challenge:
  - Understanding how human behavior, development context, and enabling environment influence the progress of food-insecure households and communities.
- Examples of research opportunities
  - ➢ Pathways from agriculture to nutrition
  - ➢ Supporting information access, dissemination, and use
  - ➢ Policy analysis, political economy and decision research, research on policy impact
  - ➢ Empowering decision-making, especially among women, to foster positive change

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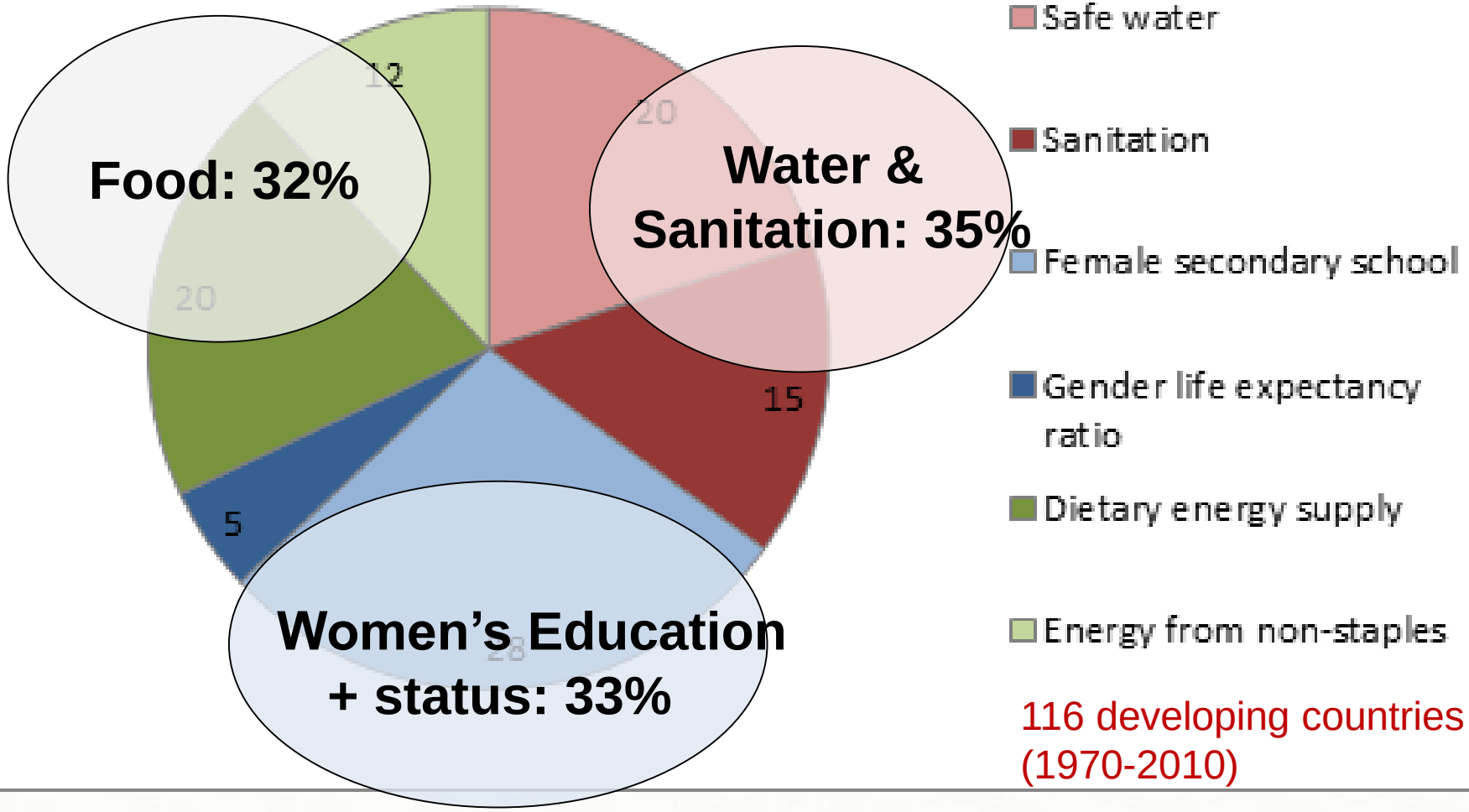
Contribution of Different Sectors to Improving Nutrition Globally



Source: Smith and Haddad, 2013

Nutrition-sensitive Pathways

- Food access from own production
- Income from own production
- Food prices linked to supply and demand
- Women's status and control over resources
- Women's time through participation in agriculture
- Women's health and nutrition from participation in agriculture

Ruel and Alderman, 2013

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Nutrition-Sensitive Agriculture approaches

- Target production of **nutrient-rich foods**, ideally those that include nutrients lacking in diet
- Include **behavior change communication** component specifically aimed at consumption of target crops
- Ensure target food **availability and affordability** in local markets and support consumption education
- Measure outcomes, including **intermediate targets** such as **consumption** and **market availability**
- Opportunities for **improved hygiene/food safety**

Evidence for impacts on nutrition

Masters , Pray, Ayoub 2017

Beyond food prices relative to incomes, other data reveals systemic impacts on nutrition:

- Barnwell et al. 2017 find that modern variety (MV) introduction led to a large declines in infant mortality, using DHS data on 600,000 births in 37 developing countries
- Masters et al. 2014 find that agricultural productivity drives establishment of towns and cities, which in turn improves nutrition of children who remain in rural areas (Darrouzet-Nardi and Masters 2015)

Pathways by which agricultural research have increased resilience of farm households include:

- Development of food markets and other services that allow "nutrition smoothing" against seasonal and annual shocks (Darrouzet-Nardi and Masters 2017, Mulmi et al. 2016).

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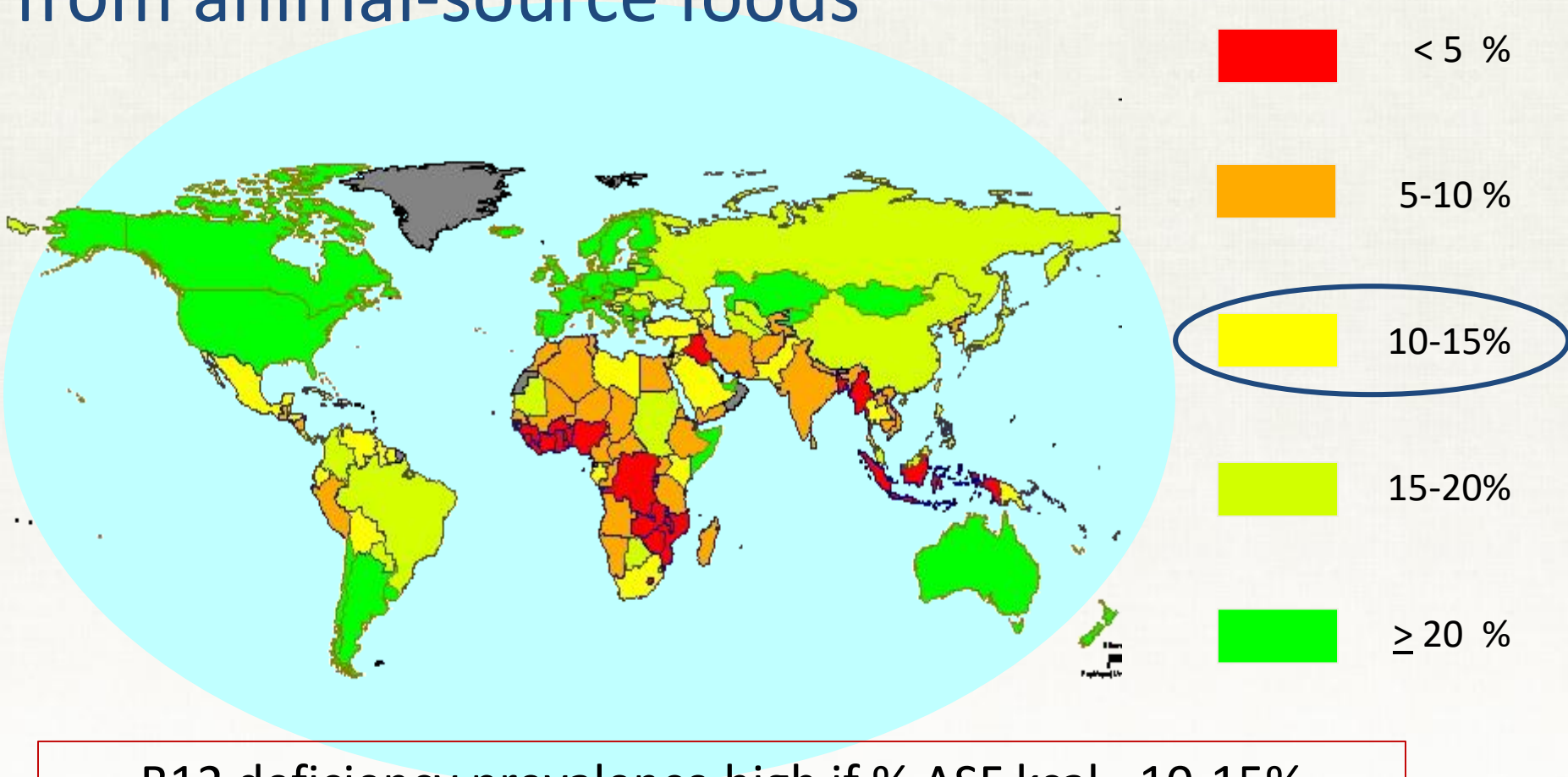
Importance of Diet Quality

% energy in food supply from animal-source foods



B12 deficiency prevalence high if % ASF kcal =10-15%

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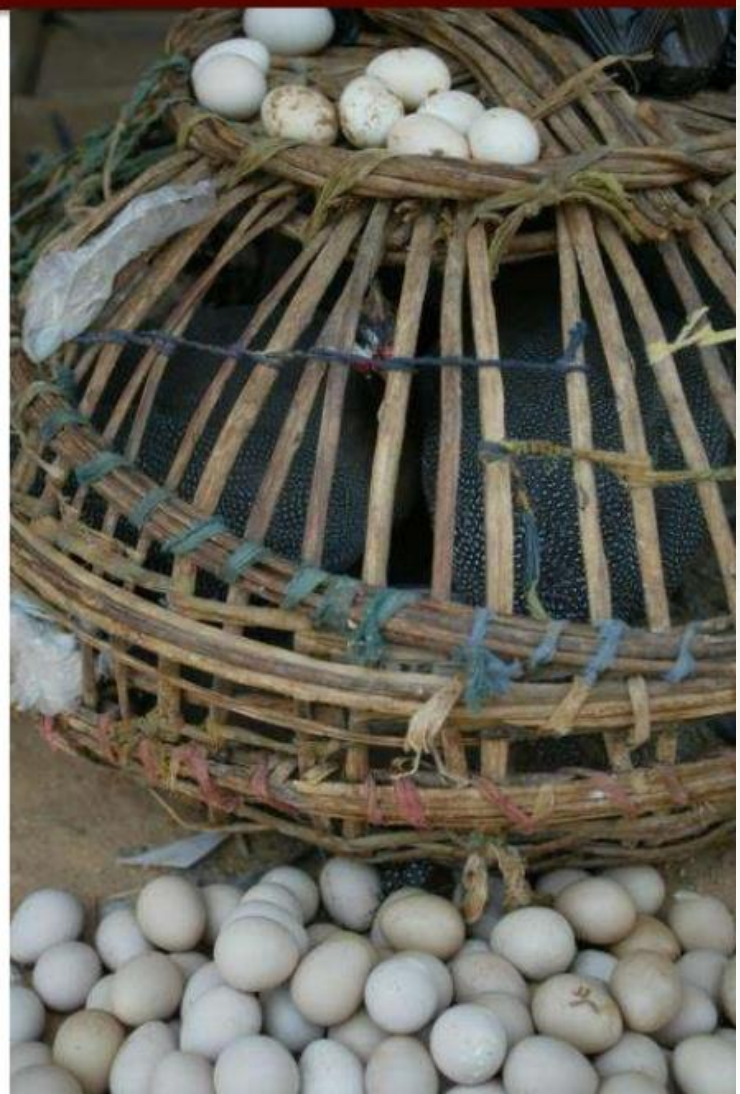
Sources and sales of animal products

- 90% of animal products are produced and consumed in the same country or region
- Most are produced by smallholders
- Over 70% of livestock products are sold 'informally'
- 500 million smallholders produce 80% of the developing World's food. 43% of the workforce are women



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Still needed: Irrigation, Mechanization, Fertilizer

Credit: Documentation Center of Cambodia (DC-Cam) /Makara Ouch

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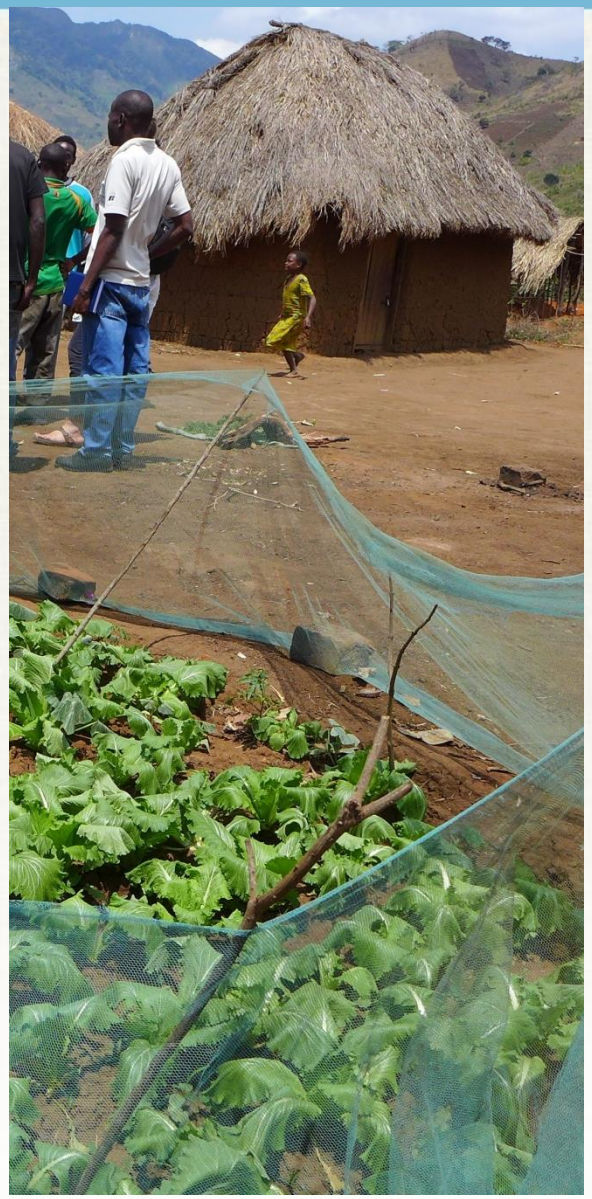
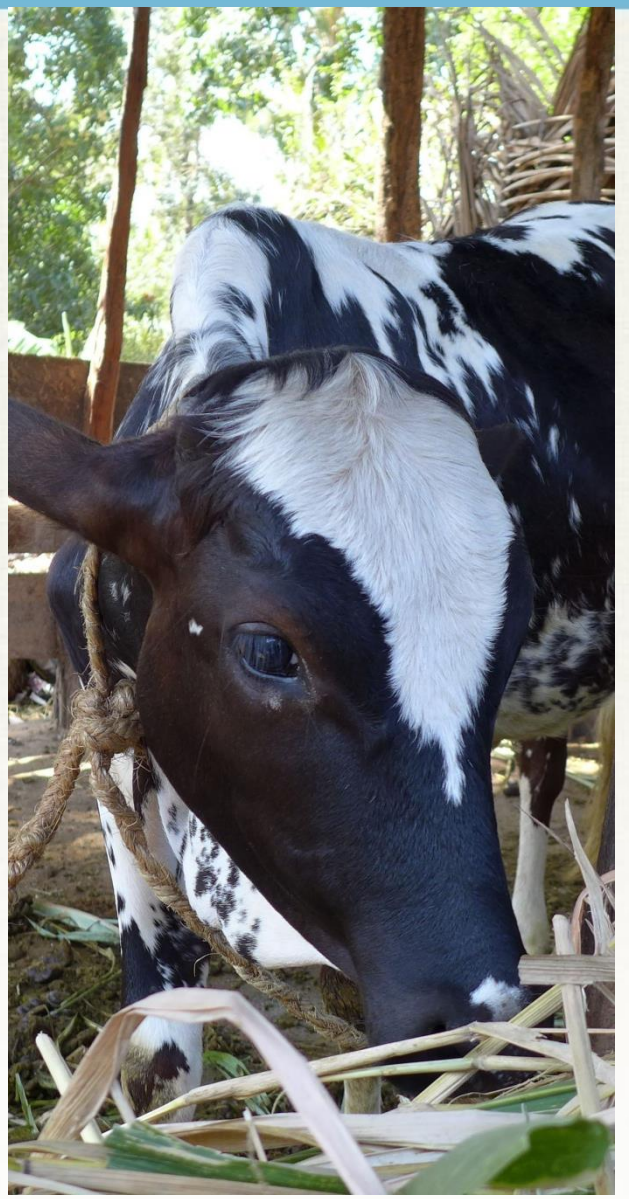
What Small Scale Irrigation can look like





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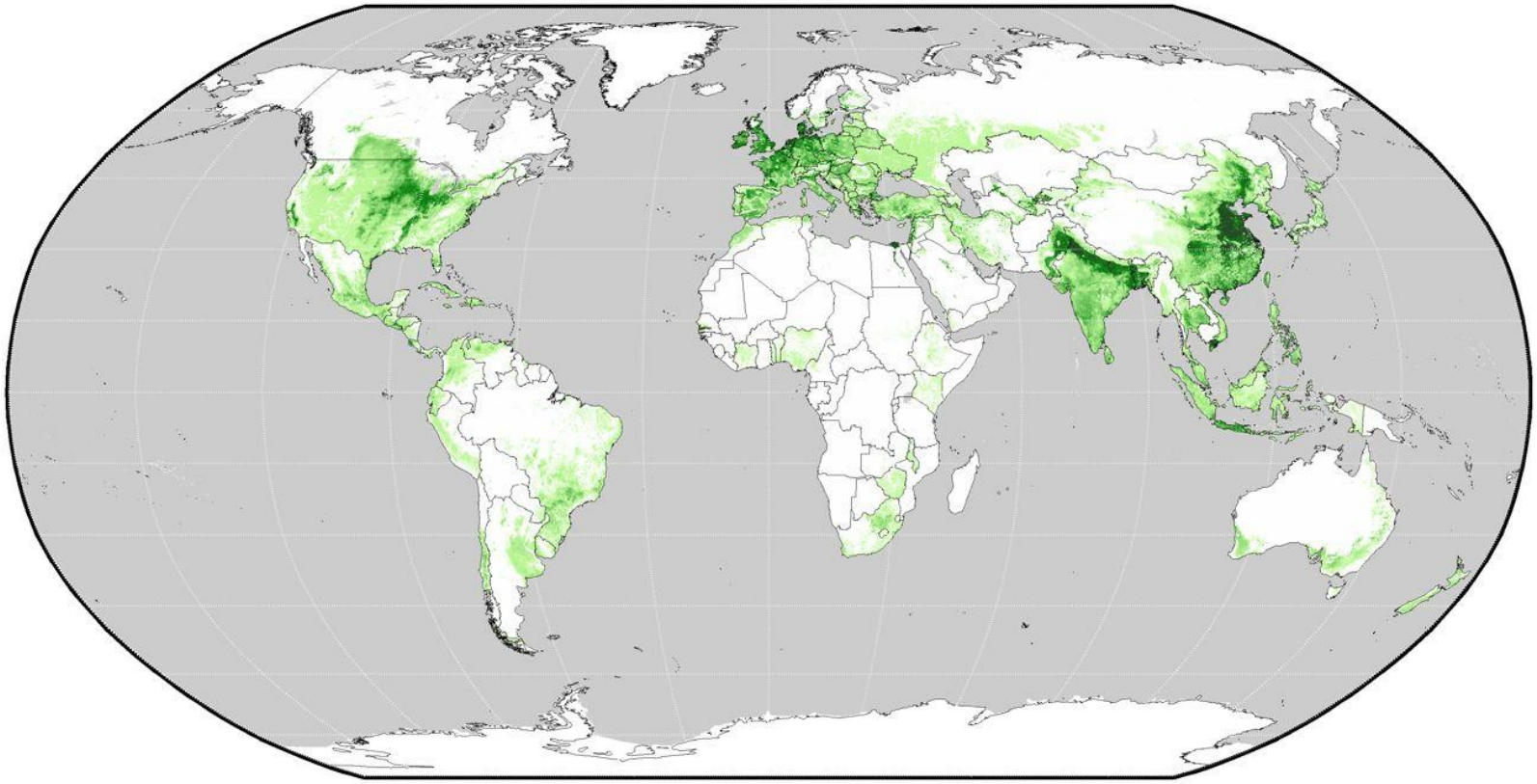
The Nitrogen Fertiliser Problem

Overuse and uneven availability



global nitrogen consumption (kg N / grid cell ha)

0 50 100 150

Mueller et al 2012, *Nature* **490**: 254-257

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Sustainable Intensification: Information/Choices Key!

Feeding the Future

Photo: Borlaug Foundation

- ✓ Accessing new science for climate resilient crops and livestock
- ✓ Reduce yield gaps—resource use efficiency
- ✓ Choices/info for farmers esp. women (weather, prices, advice)
- ✓ Diversification –growing demand for high nutrition/value foods
- ✓ Policies, infrastructure enable capitalization and market access
- ✓ Measure gains-drive investment

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Please See our Feed the Future Website

www.feedthefuture.gov