



Leverhulme Centre for Integrative
Research on Agriculture and Health

Time to move from evidence to action in agriculture and health

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LSHTM Nutrition Group

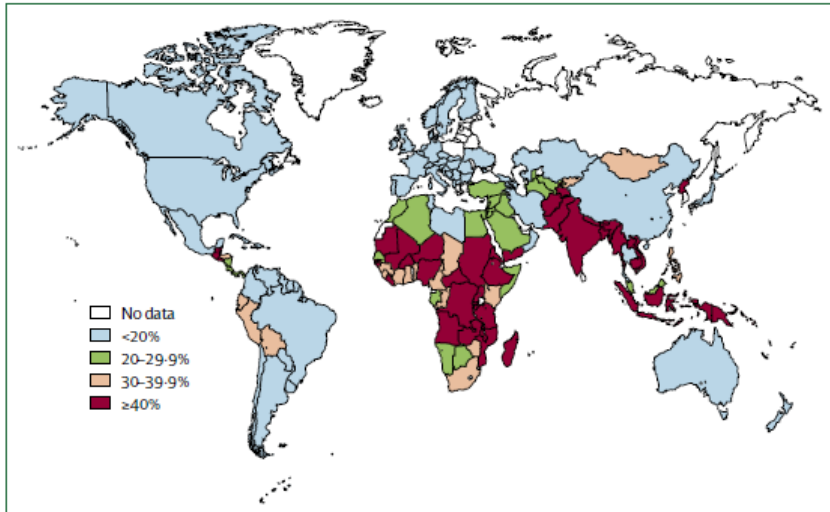
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1. Undernutrition MDG targets have not been met and new threats have emerged



Undernutrition



- 52m children under 5y wasted
- 165m children under 5y stunted
- 45% of all deaths in under 5y
- 3.1m deaths under 5y/annum

Short-term

- ↑ risk of mortality
- ↑ susceptibility to infections/morbidity

Long-term

- Educational achievement
- Work capacity
- Economic productivity



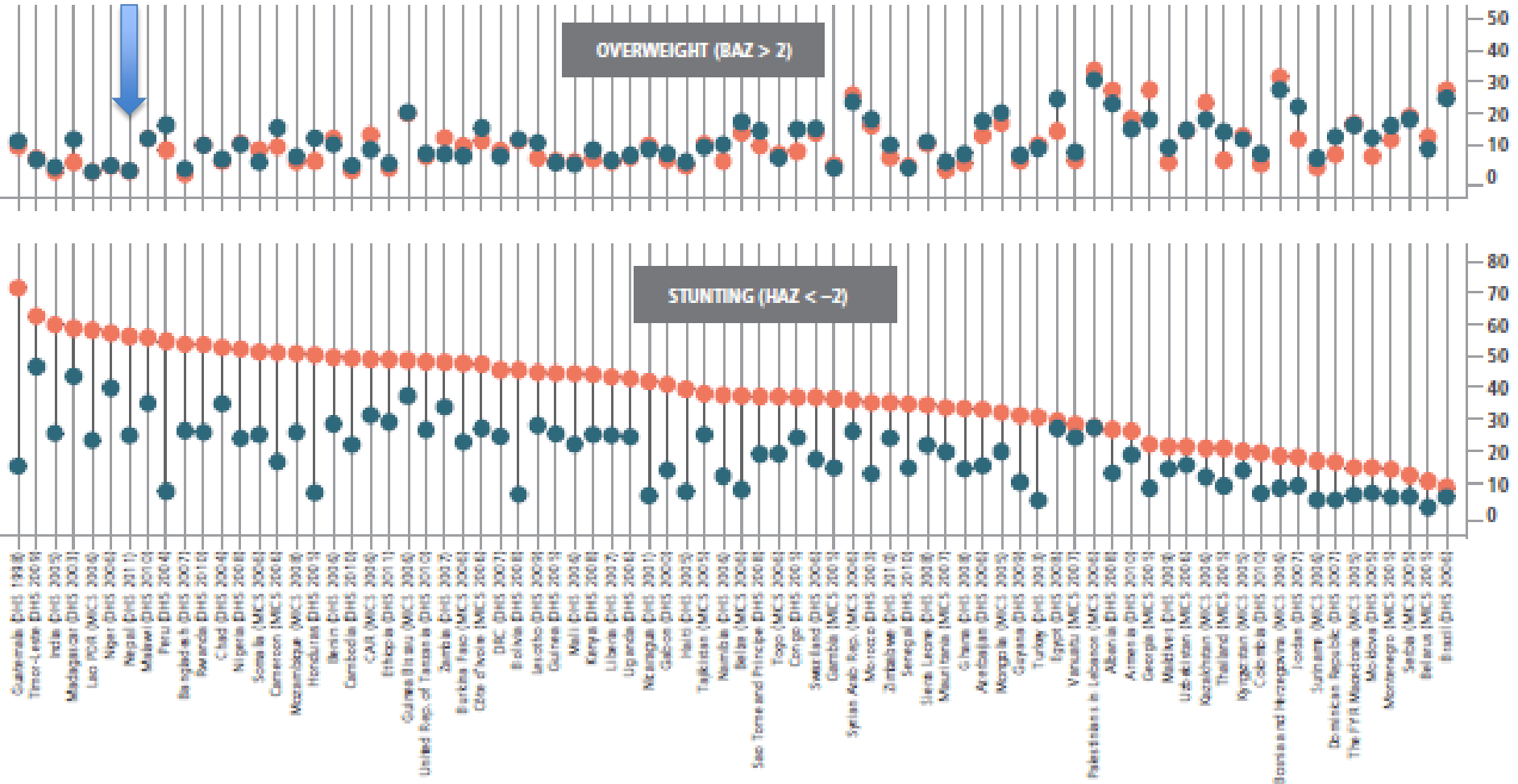
Under 5 stunting/overweight (%)

NEPAL

Wealth quintiles: ● Q1 ● Q5

OVERWEIGHT (BAZ > 2)

STUNTING (HAZ < -2)

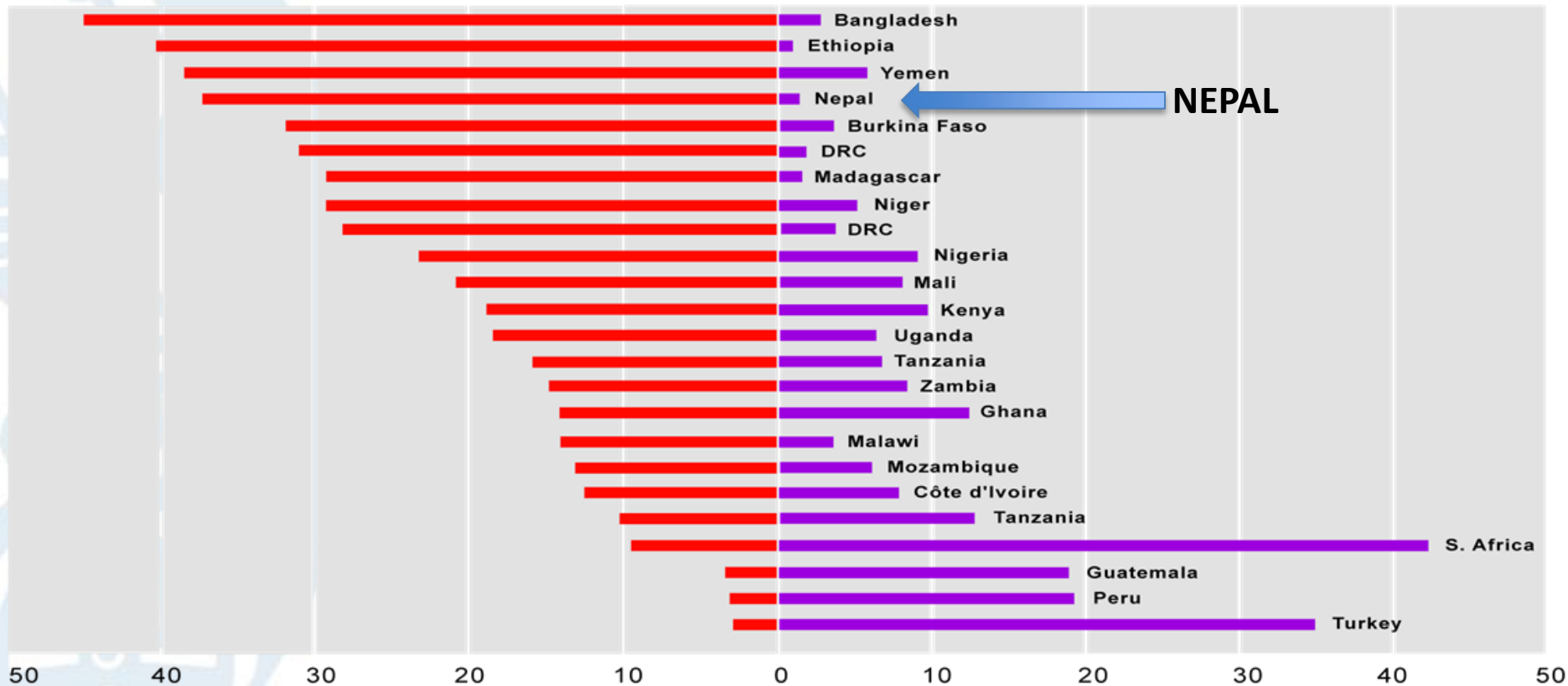


(Black et al, Lancet 2013)

Adult double burden (women)

Underweight females BMI ≤ 18.5

Obesity females BMI ≥ 30



(World Health Organisation Global BMI Database)



Risks of being born small

“We now know that poor fetal growth and small size at birth are followed by increased risk of coronary heart disease, stroke, hypertension, type 2 diabetes and osteoporosis. This has led to the hypothesis that these disorders originate through unbalanced nutrition *in utero* and during infancy”



Increasing burden of NCDs

- 2 out of 3 deaths are attributable to NCDs
- 4/5 of NCD deaths are in LMICs
- Age-specific NCD death rates are nearly two-times higher in LMICs than in rich countries
- Total numbers of NCD deaths are rising globally as population ages and risk factors globalise
- Change in food systems is a major risk factor
- Double burden places huge strain on health system and on families

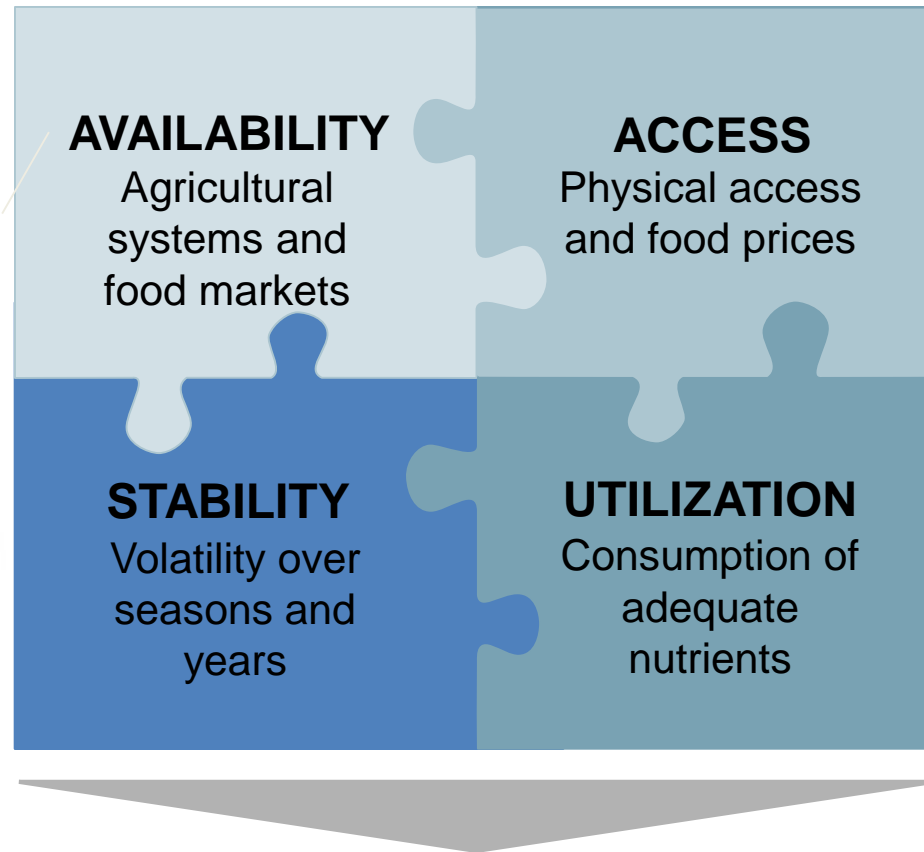
(Beaglehole et al, Lancet 2011)

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2. Agriculture and food systems are critical for food and nutrition security (in theory!)





Food and nutrition security

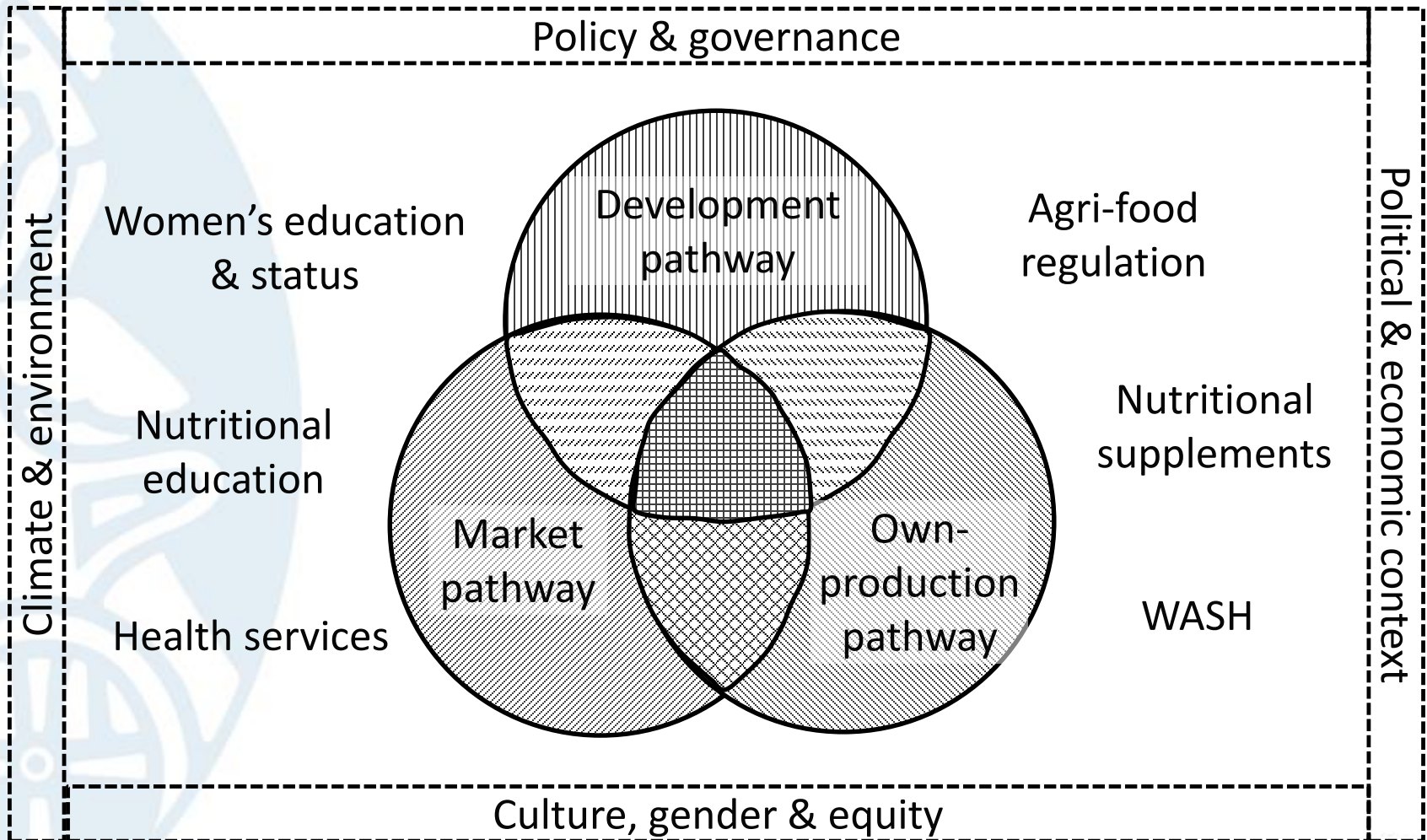


Pathways of impact

- **General development:** growing agricultural & non-agricultural productivity per person, growing real incomes, human & other resources shift from agriculture to other sectors, dietary shifts, cultural changes, governance, public goods & services, education, health, WASH etc.....
- **Market:** Prices, quality, composition, availability
- **Own-production:** producers have increased access to own produced food (quantity and quality), increased incomes of producers



Interactions and overlaps



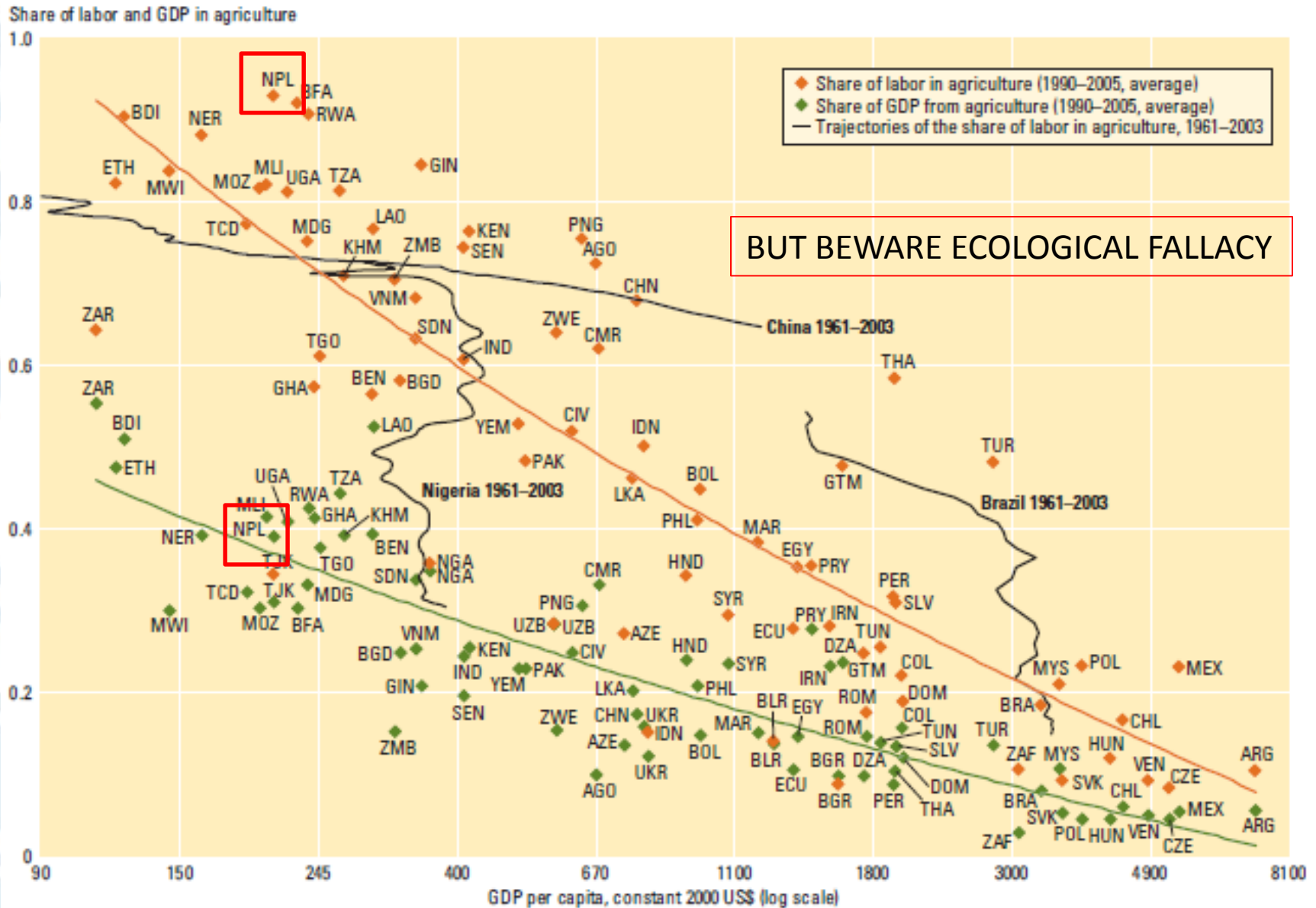
(Slide from: Prof. Andrew Dorward SOAS)



3. There is (some) evidence to support these intuitive pathways



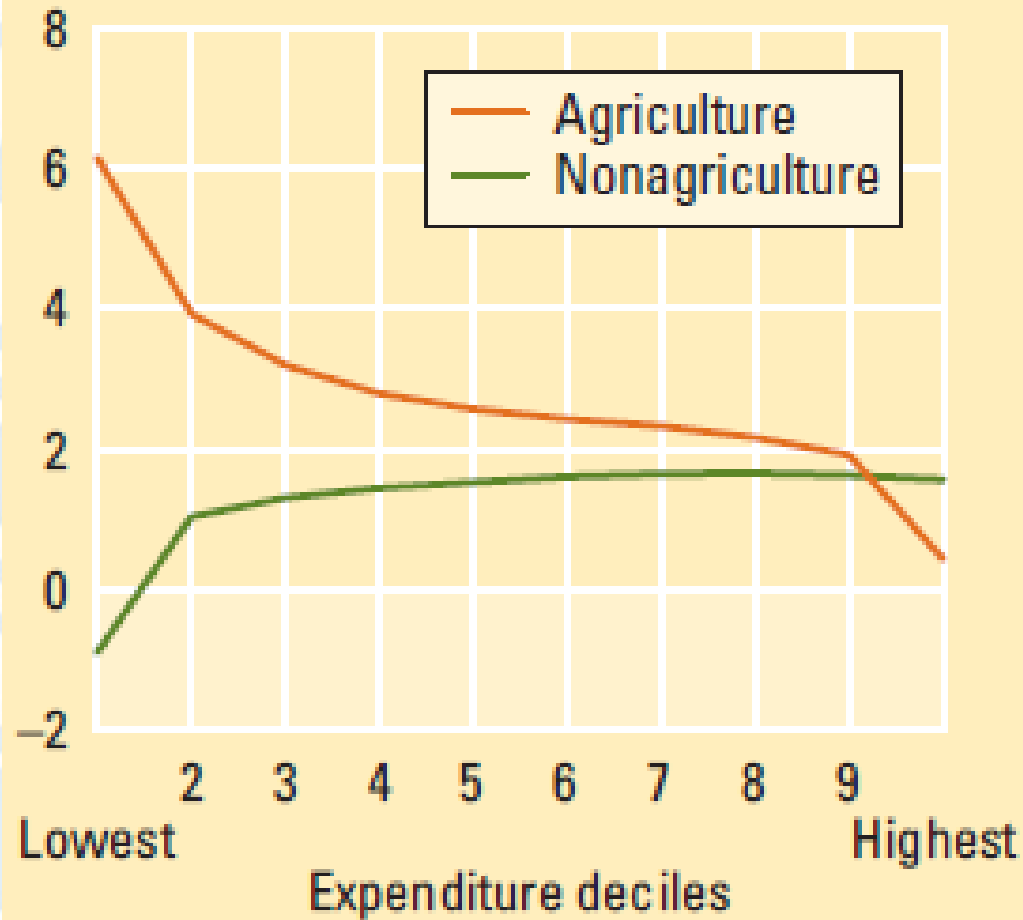
Development changes role of agriculture



(World Development Report, 2008)

Agriculture growth is pro-poor

Expenditure gains induced
by 1% GDP growth, %



1% GDP growth in agriculture sector increased expenditure among poor at least 2.5 times as much as 1% growth in other sectors (42 countries 1981-2003)

But not all countries are the same! Need diagnostics to identify contexts in which agriculture is pro-poor



Food prices affect consumption

Food groups	Country wealth category	
	Low income(n=1412)	High income (n=1124)
Fruit and vegetables	-0.72 (-0.77 to -0.66)	-0.53 (-0.59 to -0.48)
Meat	-0.78 (-0.83 to -0.73)	-0.60 (-0.66 to -0.54)
Fish	-0.80 (-0.85 to -0.74)	-0.61 (-0.67 to -0.55)
Dairy	-0.78 (-0.84 to -0.73)	-0.60 (-0.66 to -0.54)
Cereals	-0.61 (-0.66 to -0.56)	-0.43 (-0.48 to -0.36)
Fats and oils	-0.60 (-0.65 to -0.54)	-0.42 (-0.48 to -0.35)
Sweets, confectionery, and sweetened beverages	-0.74 (-0.82 to -0.65)	-0.56 (-0.65 to -0.48)
Other	-0.95 (-1.01 to -0.90)	-0.77 (-0.83 to -0.71)
All food groups combined	-0.74 (-0.79 to -0.69)	-0.56 (-0.61 to -0.50)

(Green et al, BMJ 2013)





Can agriculture interventions promote nutrition?

Agriculture and nutrition evidence paper

March 2014



- Robust evidence of a positive impact of biofortified crops on child micronutrient status
- Limited and mixed evidence of impact of home gardening, aquaculture, livestock production and cash crops
- Significant methodological weaknesses in existing evidence base



4. There are multiple policy options available in agriculture and food systems to strengthen nutrition



FOOD TRANSFORMATION AND CONSUMER DEMAND

Food processing, retail and demand

Policy options include:

Labelling Regulation
Advertising Regulation
Fortification Policy



MARKET AND TRADE SYSTEMS

Exchange and movement of food

Policy options include:

Trade Policy
Infrastructure
Investment
Agribusiness Policy



FOOD ENVIRONMENT

DIET QUALITY

Diversity - Adequacy - Safety



AGRICULTURAL PRODUCTION

Production for own consumption and sale

Policy options include:

Agriculture Research Policies
Input Subsidies, Extension Investments
Land and Water Access

CONSUMER PURCHASING POWER

Income from farm or non-farm sources

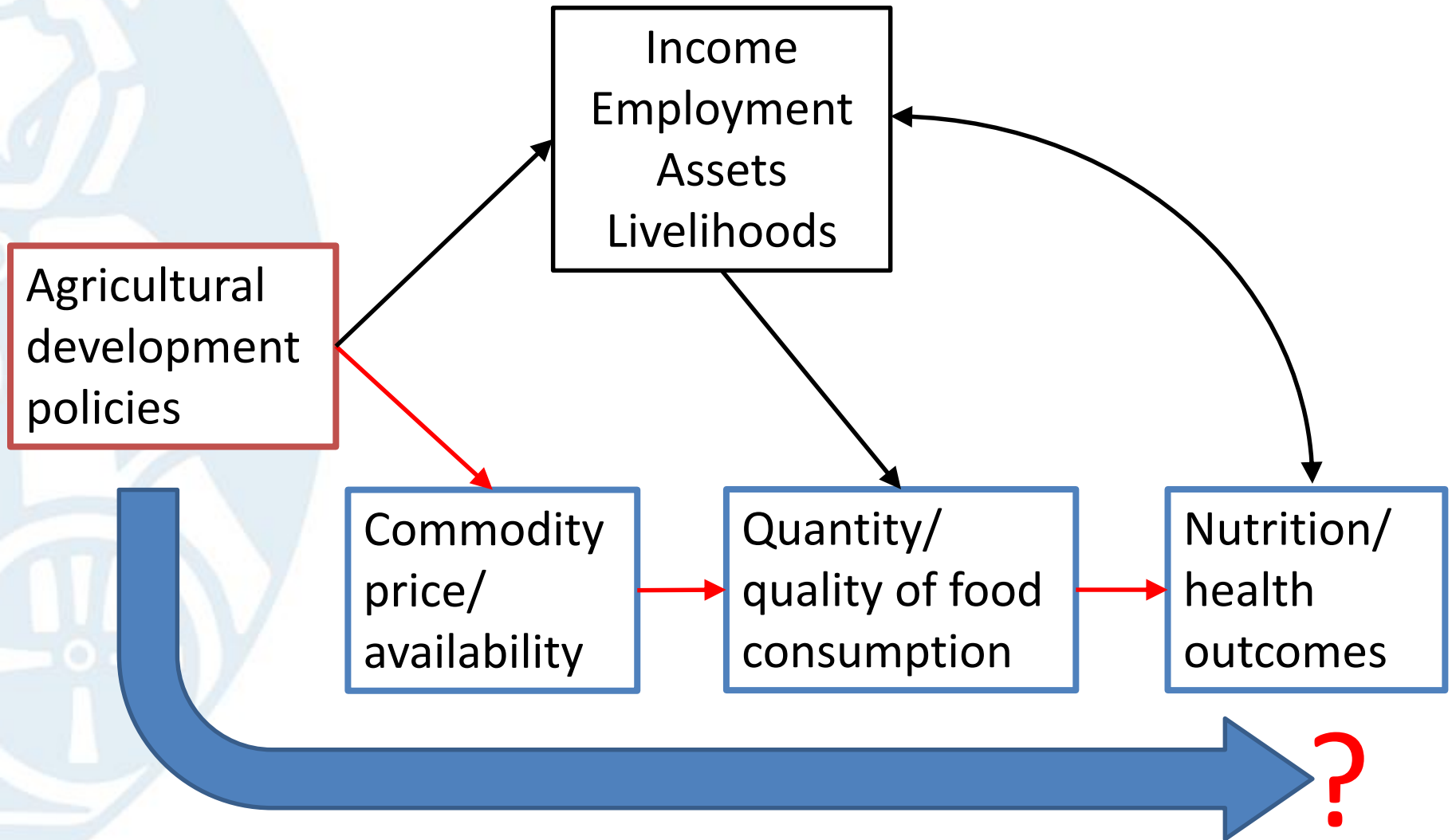
Policy options include:

Work Guarantee Schemes
Cash Transfers
School Feeding
Consumer Subsidies



Global Panel
on Agriculture
and Food Systems
for Nutrition

How strong is policy evidence?



Systematic review of evidence

- Do agricultural development policies that directly affect the price of food, influence rates of undernutrition and / or nutrition-related chronic diseases?
- Commodity policies
 - Output price, input subsidy, irrigation and water, crop technology, land reform, mechanisation
- Trade policies
 - Trade liberalisation, export, cash crop, foreign direct investment, procurement
- Public distribution systems
 - Consumer subsidy and distribution, marketing support, food aid

(Dangour et al, BMJ Open 2013)

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Key findings

- 1 study reported on undernutrition
 - Increase in price of staples PDS India had no effect on child weight (*ex post*)
- 3 studies reported on NCDs
 - Increase in price of staples PDS Egypt decreases women's BMI (*ex post*)
 - Removal of EU policy that maintains high price of fruit and vegetable would reduce CVD and cancer incidence and increase life expectancy (*ex ante*)
 - Removal of US farm subsidy for grain would reduce adult weight (*ex ante*)
- Surprising paucity of evidence
- Need health outcomes in agricultural policy evaluation

5. Huge research and capacity development efforts are underway



Nutrition Innovation Lab

over-arching research

1. Empirically documenting **agriculture-to-nutrition pathways**
2. Measuring effectiveness of **nutrition governance**
(policy processes)
3. Exploring **neglected biological pathways** impede nutrition
(aflatoxins, gut microbiome, arsenic, etc.)

Feed the Future Innovation Lab

For Collaborative Research on Global Nutrition



USAID
FROM THE AMERICAN PEOPLE

DFID's ag-nutrition research

- New technologies: e.g. zinc-rich rice and wheat (with HarvestPlus, A4NH and others in CGIAR)
- Interventions research: agricultural interventions for nutrition outcomes (with BMGF)
- Mobile technologies: mNutrition
- Food safety: aflatoxins
- Climate change: Agriculture Model Intercomparison and Improvement Project (AGMIP)
- Food choice: drivers of food choice in poor countries



immana

Innovative Metrics and Methods for Agriculture and Nutrition Actions

Accelerate the development of a robust and coherent evidence base to underpin effective policy and investment in agriculture for improved nutrition and health.

www.lcirah.ac.uk/immana



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IMMANA Workstreams

1. Competitive research grants (2 rounds) for the development of the best new interdisciplinary metrics and methods filling the key knowledge gaps
2. Post-doctoral Fellowships (4 rounds) for emerging leaders
3. Agriculture, nutrition and Health Academy, a global network to link researcher groups and ensure rapid sharing, development and use of best approaches



Opportunities for funding

Research Grants

- 6-8 grants/round
- £250,000/grant
- Concept memo due:
21st November 2014
- Final proposal due:
20th February 2015

Postdoc Fellowships

- 6 fellowships/year
- One year duration
- Concept memo due:
10 January 2015
- Final proposal due:
10 March 2015





LANSA

Leveraging Agriculture for
Nutrition in South Asia

- How can agriculture and agri-food systems contribute to improved nutrition in South Asia?
- Research areas:
 - Enabling environments
 - Agri-food value chains
 - Pro-nutrition interventions
- www.lansasouthasia.org



Free online training modules

- Programming for Nutrition Outcomes module
- Agriculture, Nutrition and Health module
- “Certificates of participation” available soon
- Find out more:
 - Google: “Programming for nutrition outcomes”
 - Email: nutrition_course@lshtm.ac.uk
 - Google: “Agriculture nutrition and health module”
 - Email: agriculture-health@lshtm.ac.uk



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6. Huge policy efforts also underway



ICN2 Second International Conference on Nutrition

better nutrition better lives

19-21 November 2014, Rome, Italy



Food and Agriculture
Organization of the
United Nations



World Health
Organization

Rome Declaration on Nutrition recognises that:

- “food and agriculture systems, including crops, livestock, forestry, fisheries and aquaculture, need to be addressed comprehensively through coordinated public policies, taking into account the resources, investment, environment, people, institutions and processes with which food is produced, processed, stored, distributed, prepared and consumed;”
- and that “responsible investment in agriculture including small holders and family farming and in food systems, is essential for overcoming malnutrition”

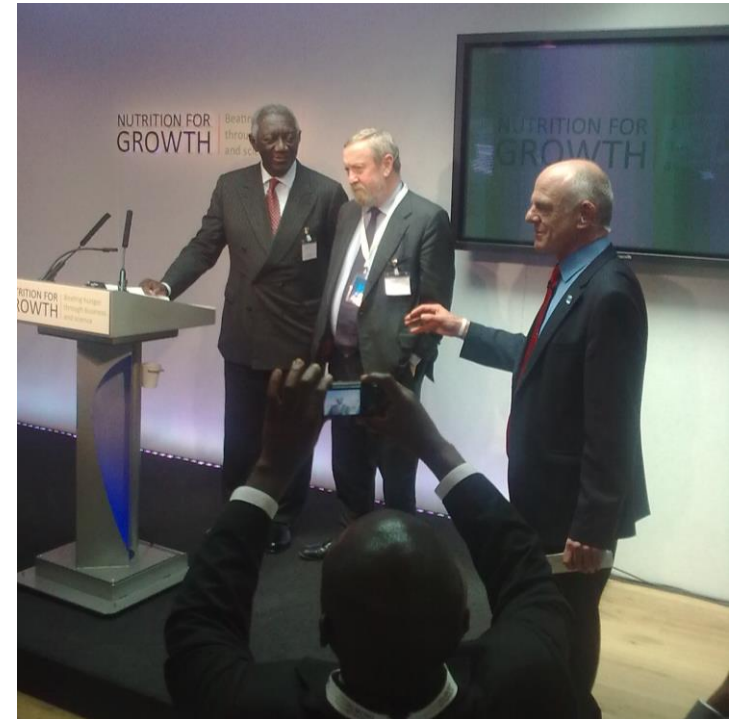
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Global Panel on Agriculture and Food Systems for Nutrition

- Independent group of influential experts with a commitment to tackling global challenges in food and nutrition security
- Aims to provide effective guidance to decision-makers, particularly governments, on generating nutrition-enhancing agricultural and food policy and investment in low and middle-income countries
- www.glopan.org

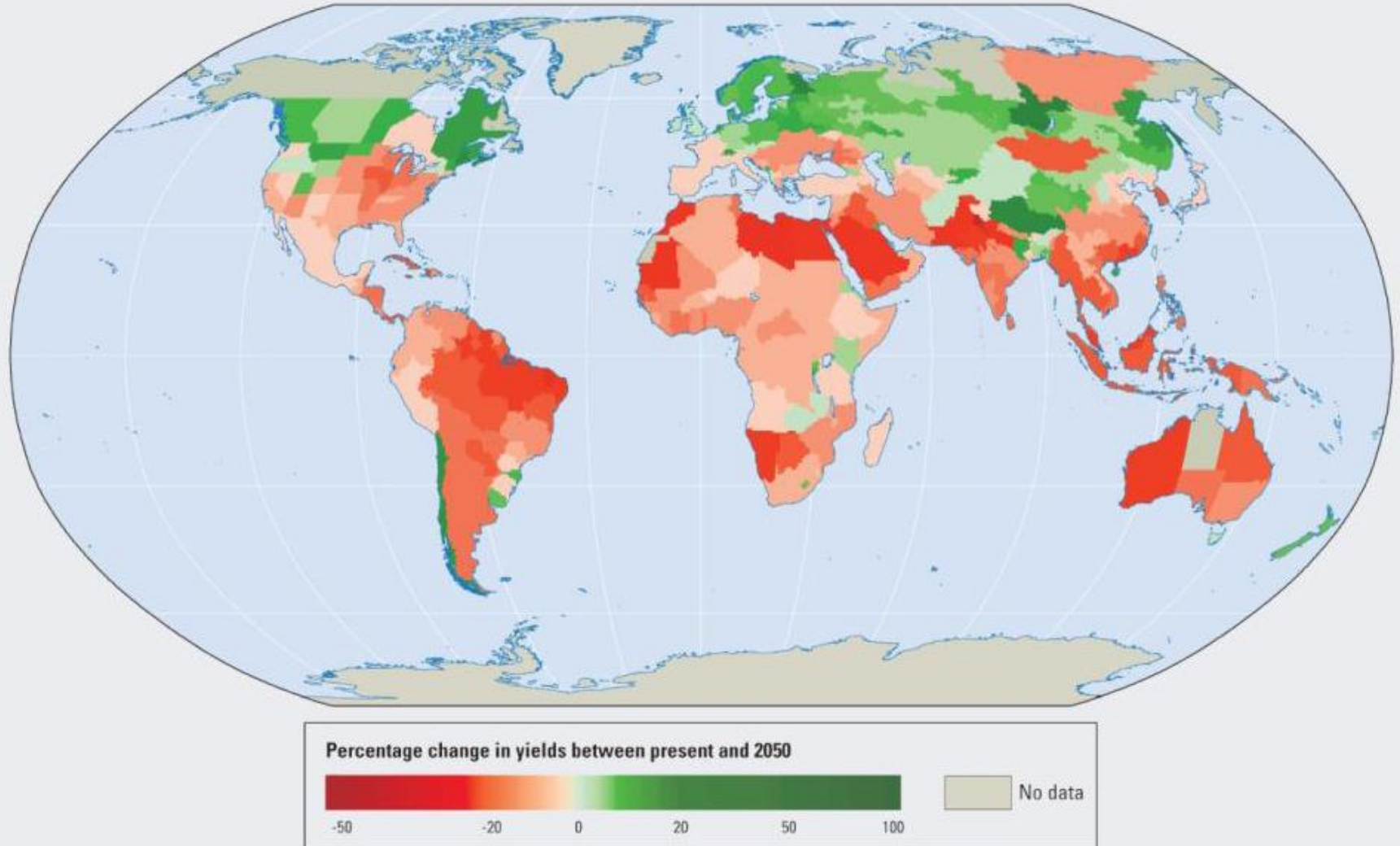


BILL & MELINDA
GATES foundation

6. But there are threats on the horizon

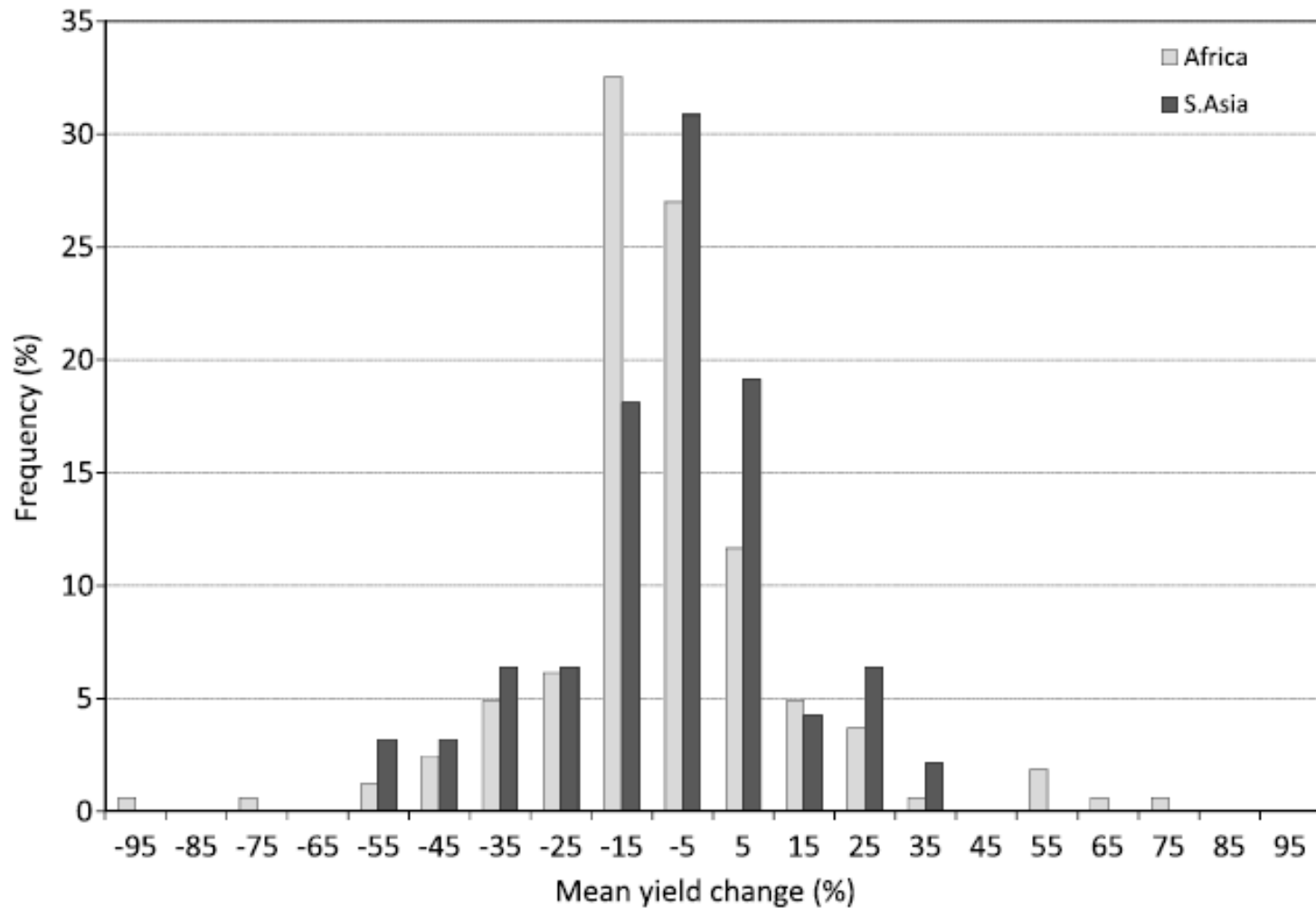


Impact of climate on crop yields by 2050



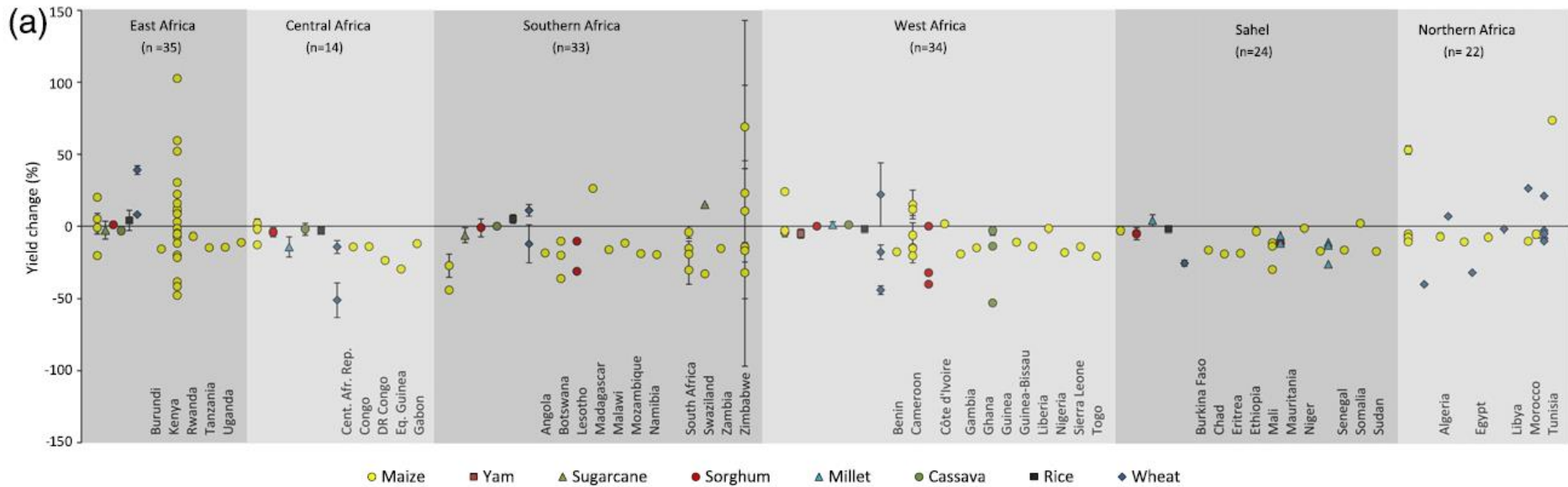
(World Development Report, 2010)

Mean projected yield changes (%)



(Knox et al. 2012)

But not all crops are the same



- Africa: wheat -17%; sorghum -15%; millet -10%; maize -5%
- S. Asia: maize -16%; sorghum -11%; rice 0%
- Climate change will result in shifts in nutrient content of diets
- Climate change affects nutrient content of staples

(Knox et al, 2012; Myers et al, Nature 2014)

7. Challenges and opportunities lie ahead



Policy challenges

- Convincing the health policy community that agriculture is important
- Convincing the agricultural policy community that health is important
- Generating robust policy evidence
- Forging partnerships across Ministries
- Innovation in thinking and problem solving
- Bold inter-sectoral policy making



Policy opportunities

- ICN2 may spur renewed interest and action in agriculture for nutrition
- Draft post-2015 development goals recognises role of agriculture in producing food
- Sustainable development goals have a focus on agricultural yield, economic incentives for farming and environmental impacts
- Opportunity to build evidence for effective policies
- The goal is great and it's time to get moving!

