

# Food First in Africa: promise, potential and progress

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# Content

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- Megatrends in agriculture
- Global food security
- Why is Africa lagging behind (IAC study)
- A way forward



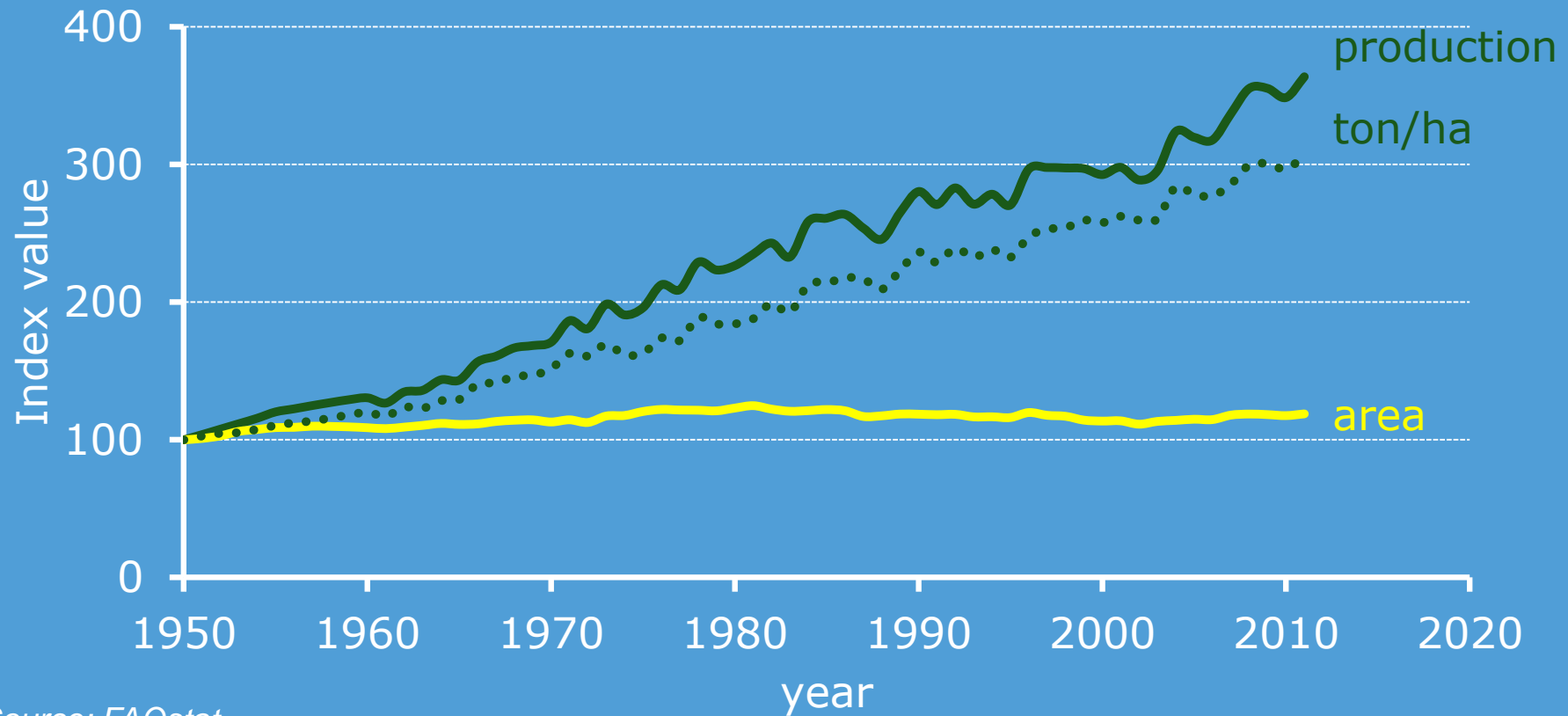
# Megatrends in agriculture





*...Global Food Security ...*

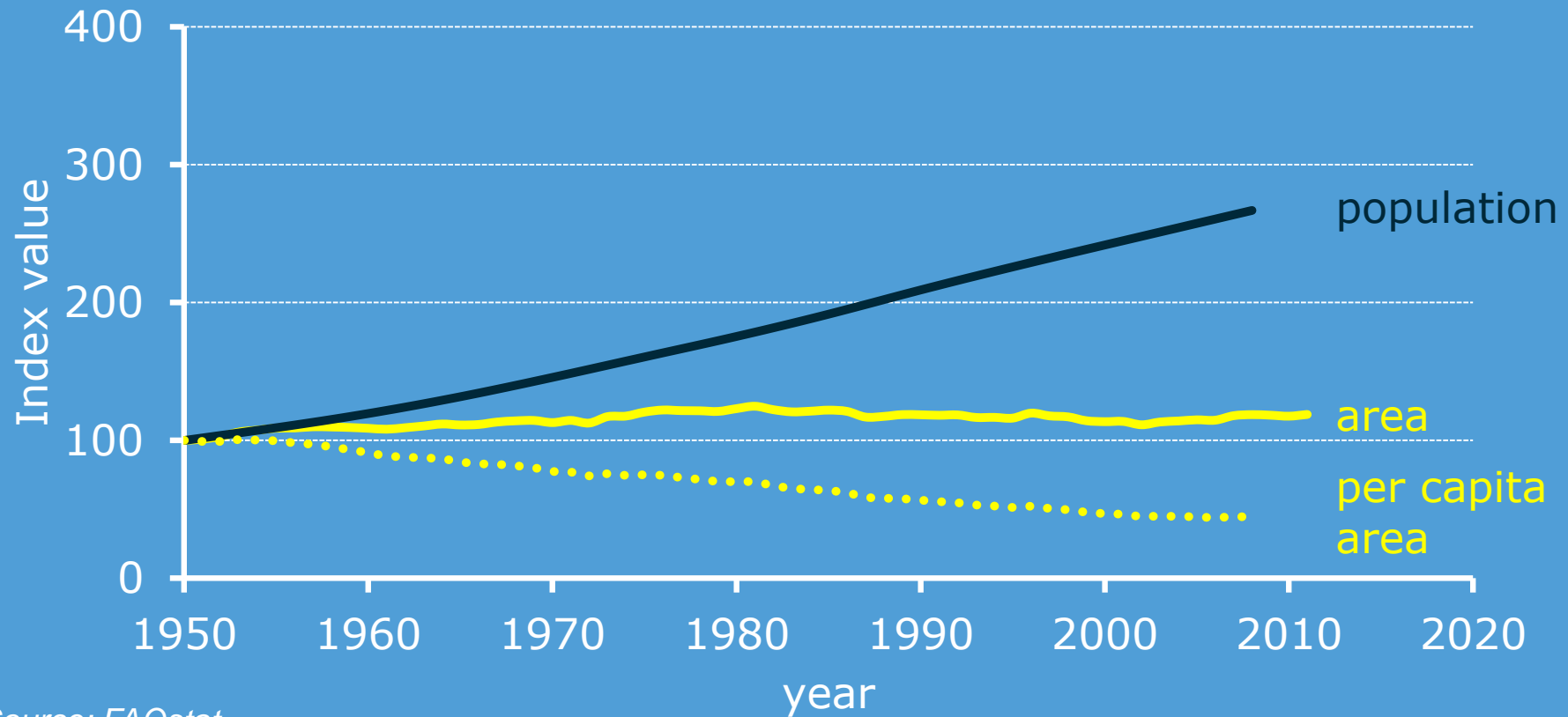
# Global grain productivity (1950 – 2010)



Source: FAOstat



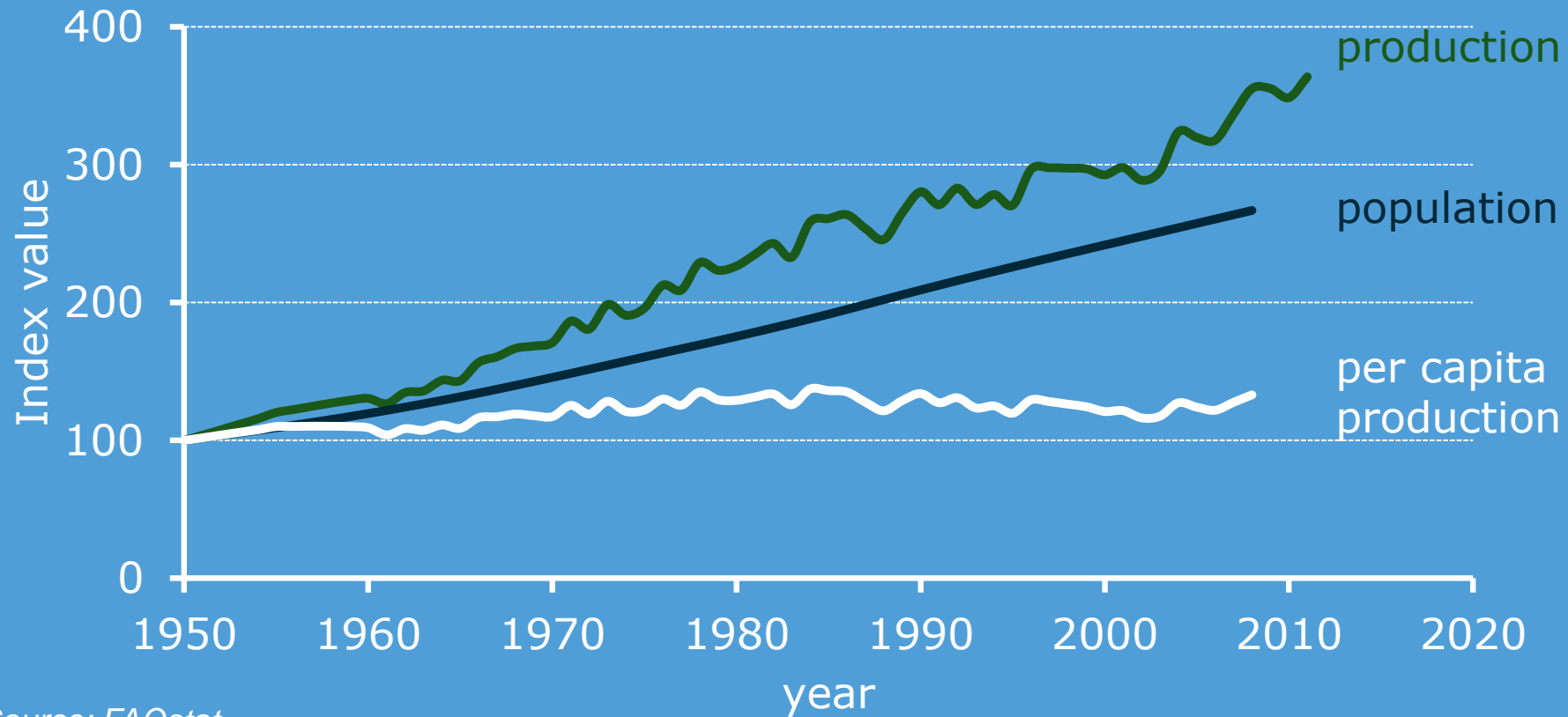
# Global grain acreage (1950 – 2010)



Source: FAOstat



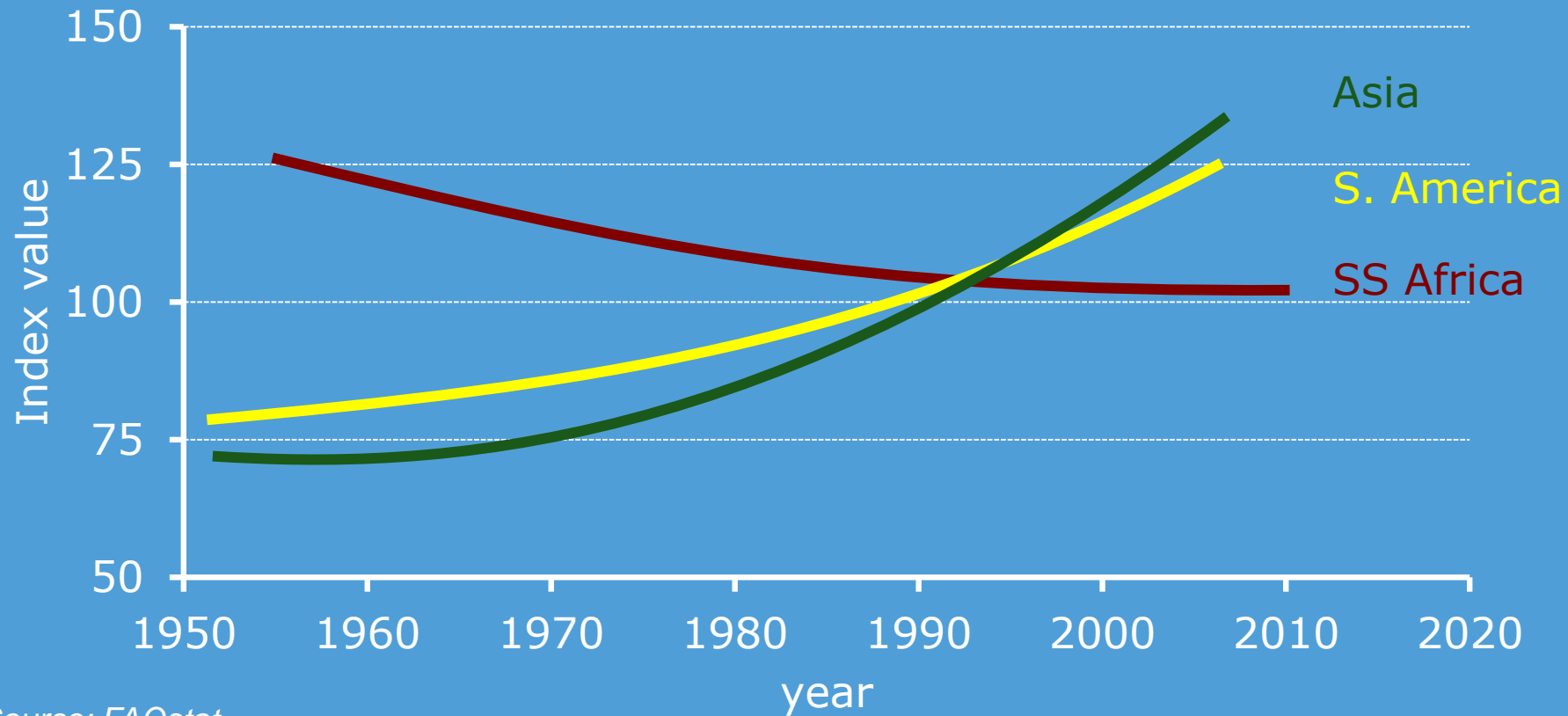
# Global grain production (1950 – 2010)



Source: FAOstat



# Food availability per capita (1960 – 2000)



Source: FAOstat

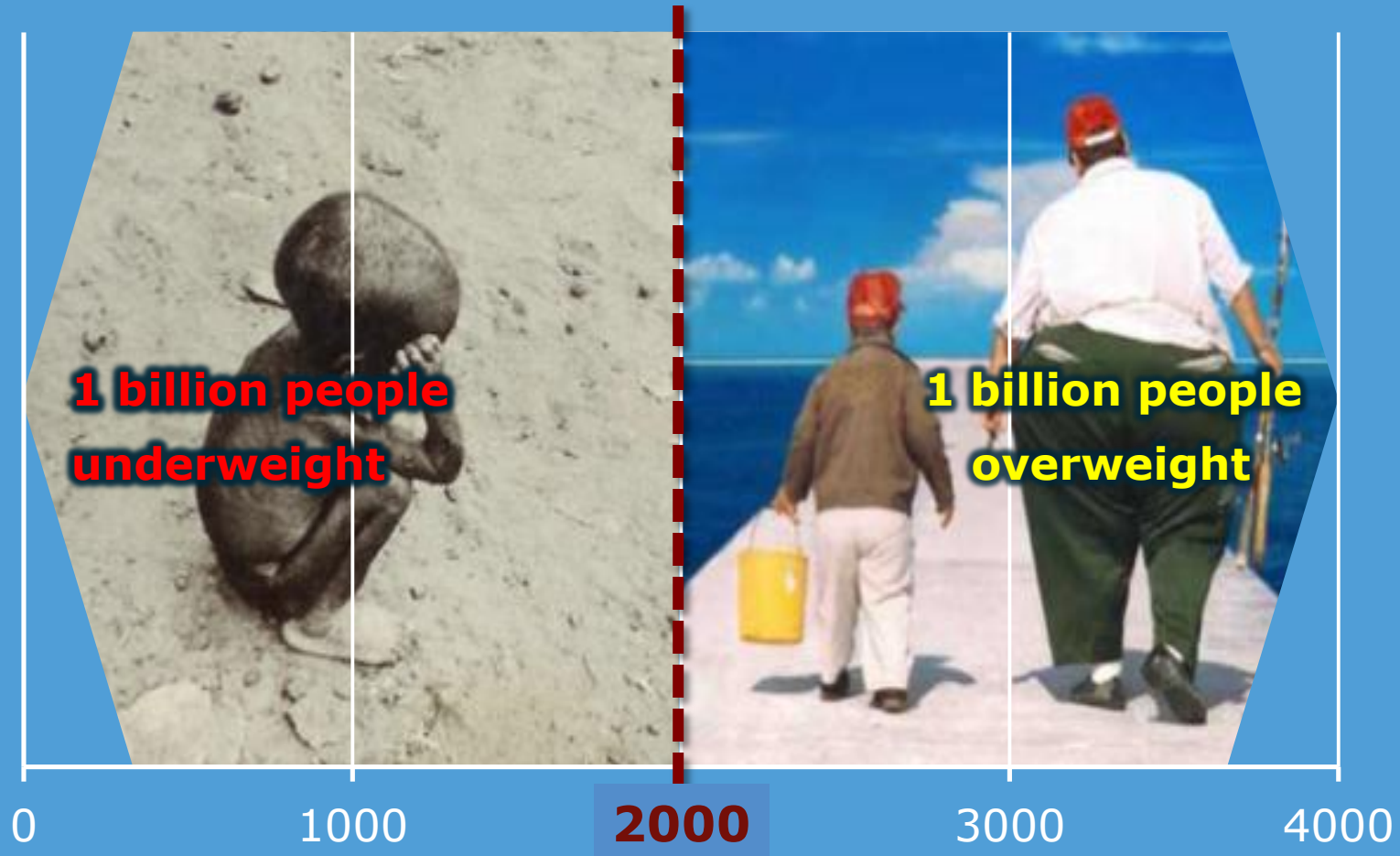




# Global diets

kcal per person.day

need

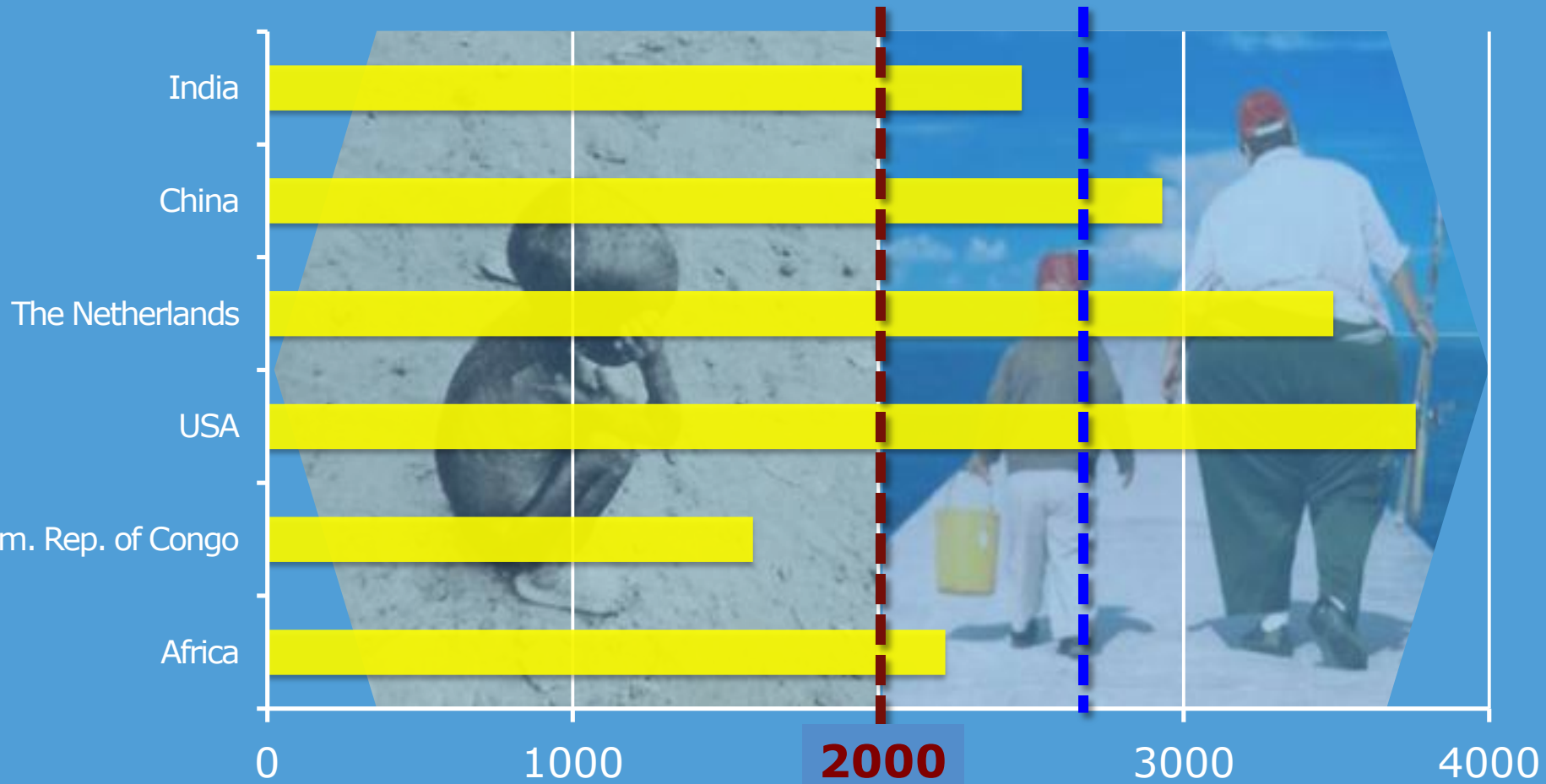


# Global diets

kcal per person.day

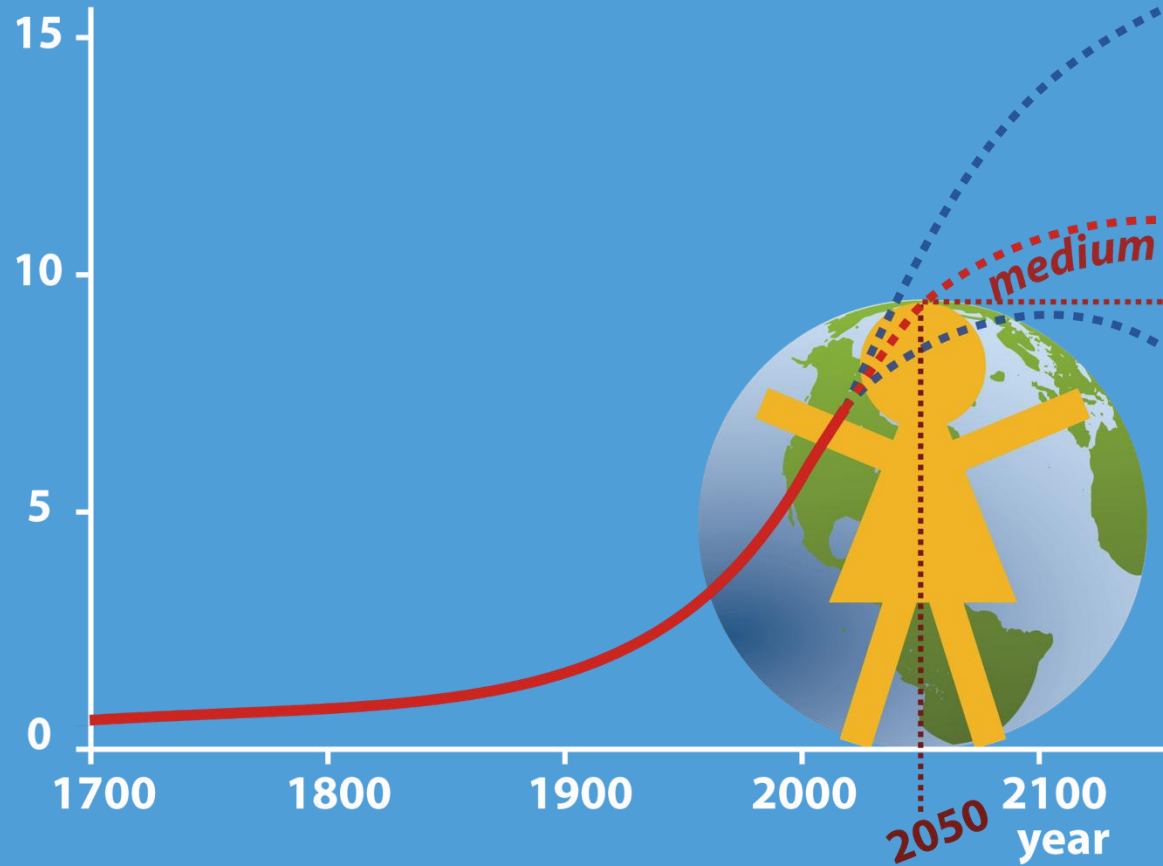
need

world

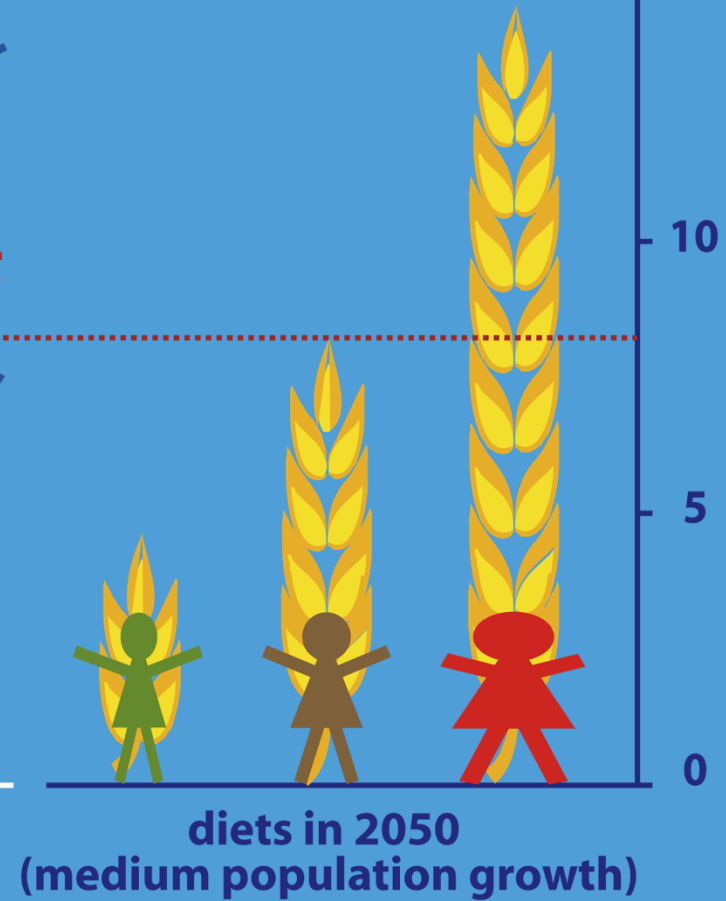


$$\text{Demand} = \text{Population} \times \text{Diet}$$

Population  
(billions)

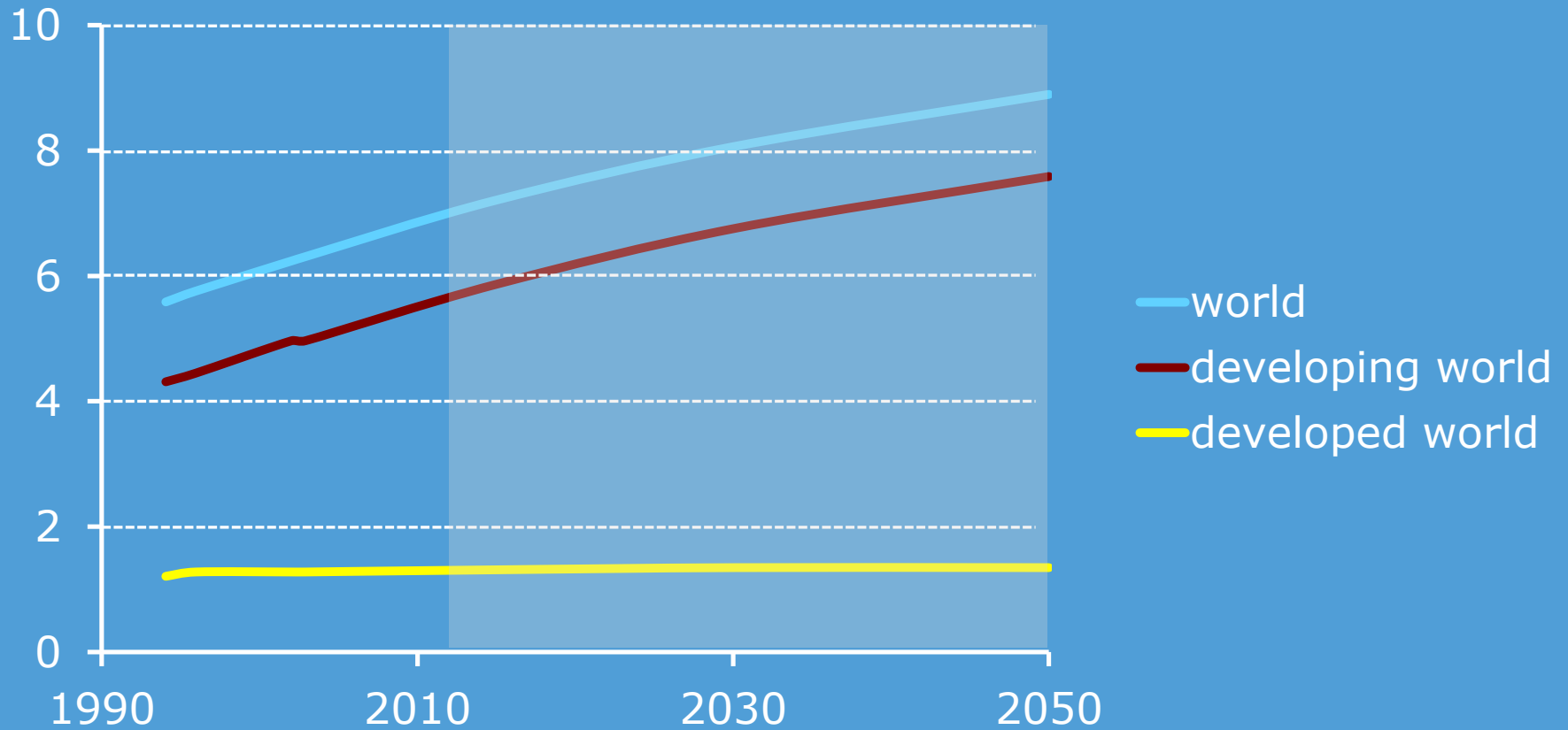


Gton grain eq. per year



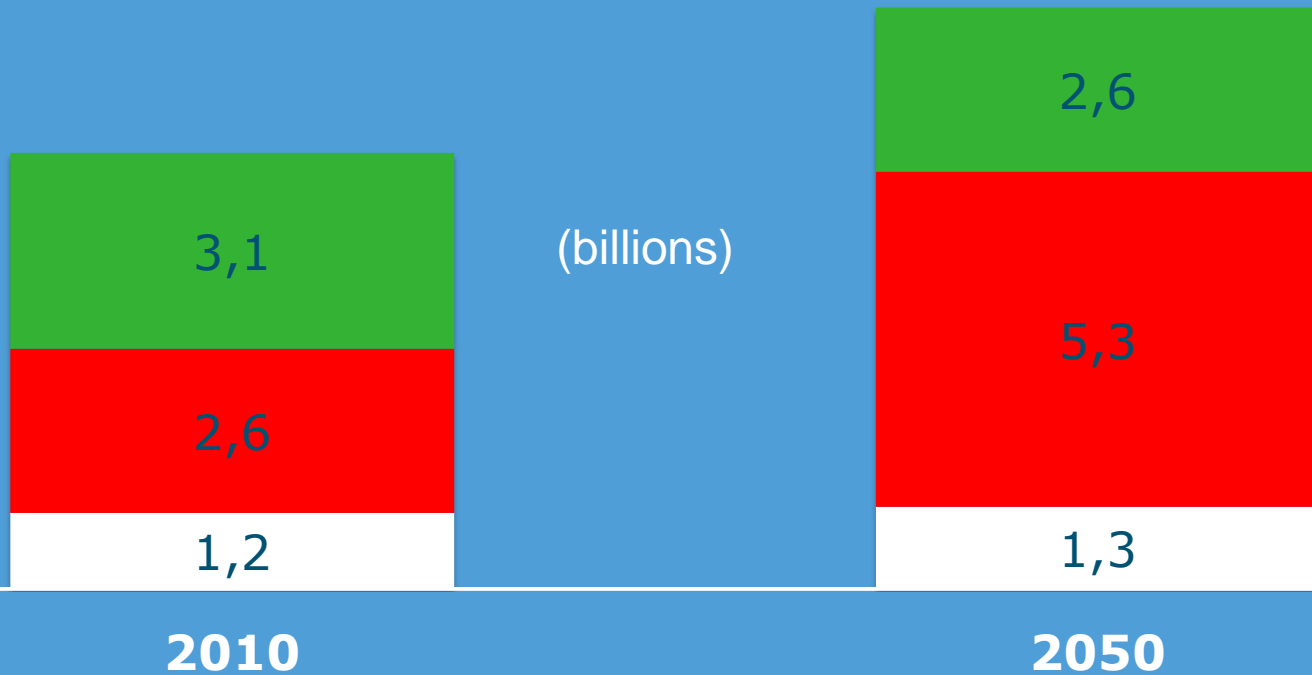
# World population

(x billion people)



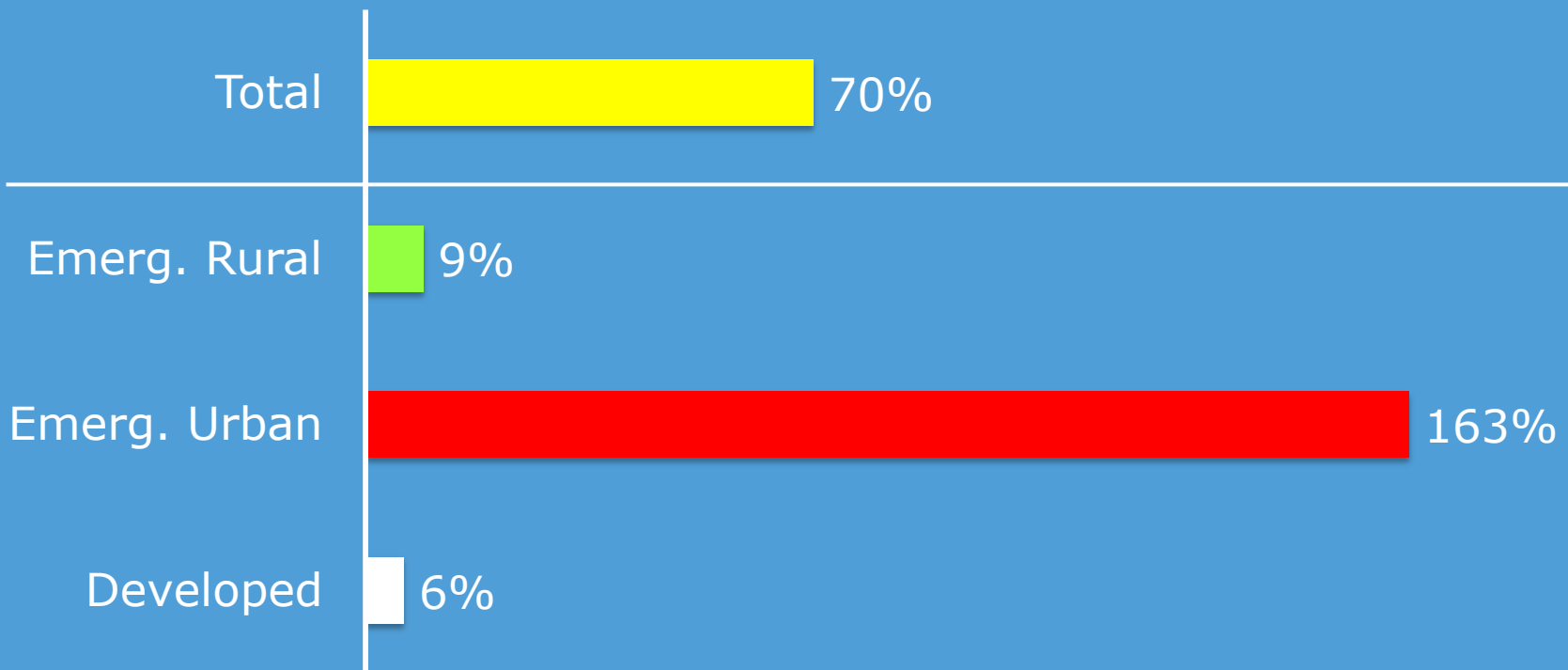
# Global population

■ Developed   ■ Emerg. Urban   ■ Emerg. Rural

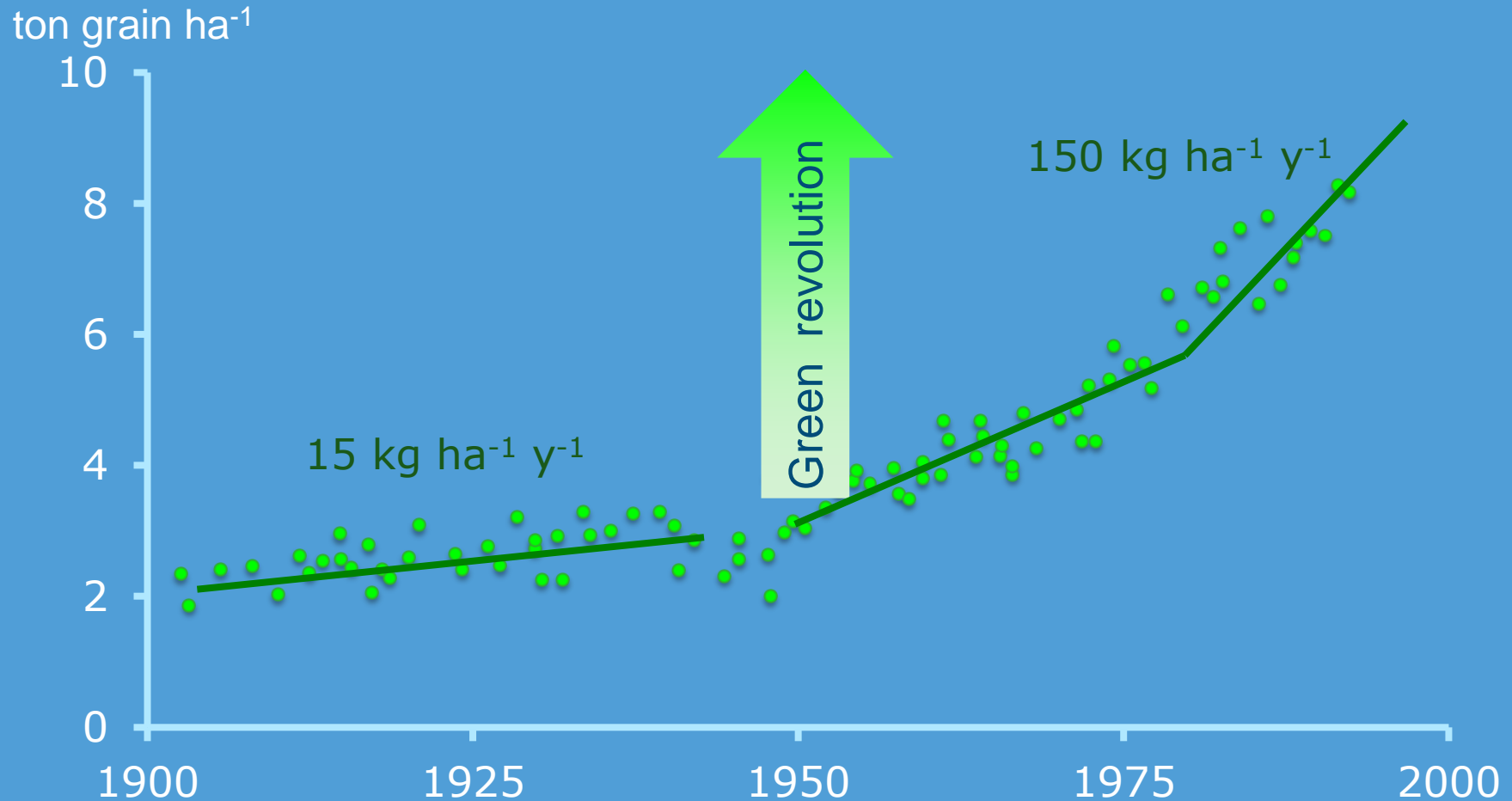


# Food demand

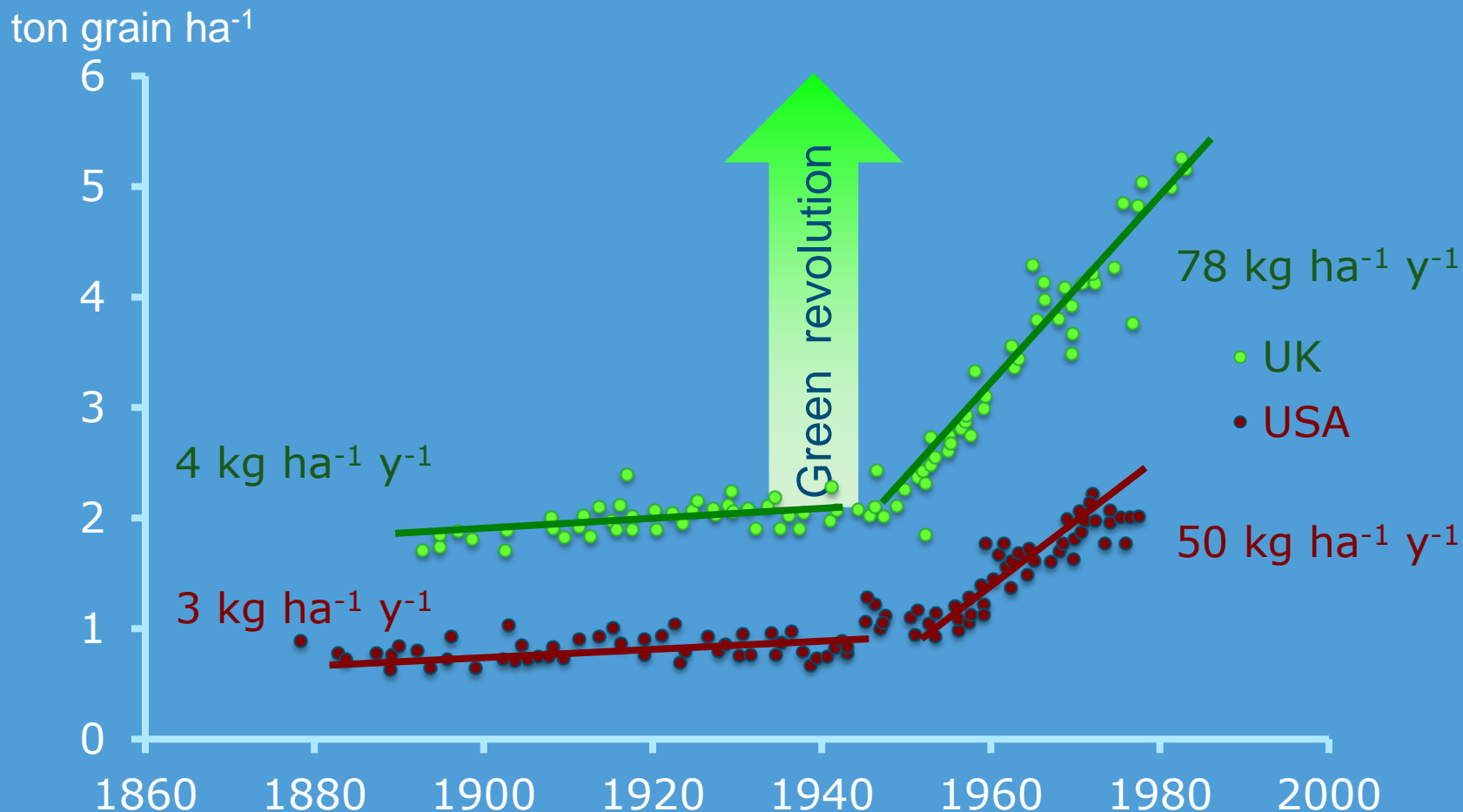
## % increase 2050 vs 2010



# Discontinuities wheat yields (NL)

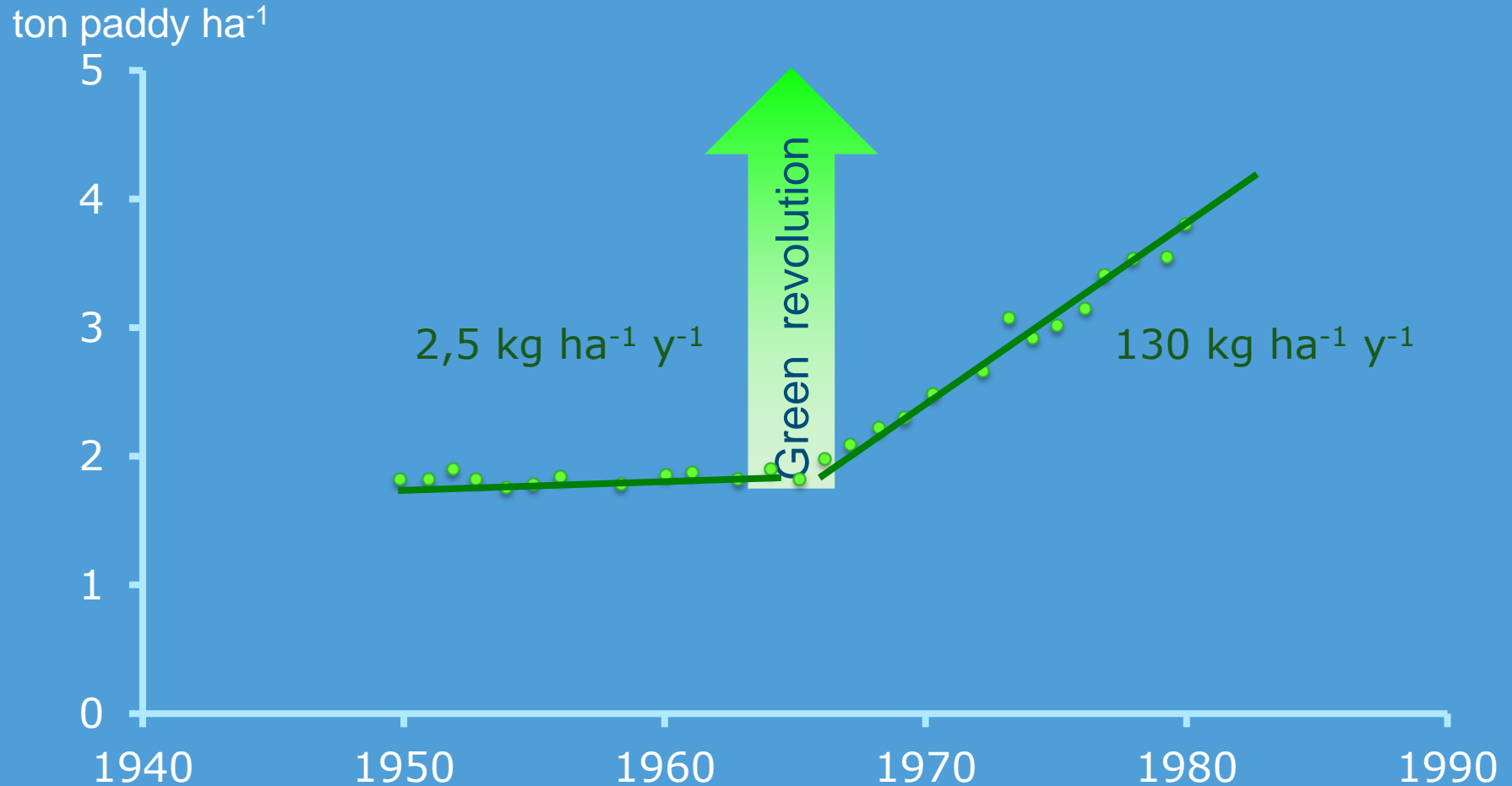


# Discontinuities wheat yields (UK & USA)





# Discontinuities paddy yield (Indonesia)



# Green revolutions

- Production ecological principles → towards potential production
  - integrated soil and water management
  - control of pests, diseases and weeds
- Plant breeding → short straw varieties (harvest index increased) → higher proportion harvestable product
- Presence of functioning institutions
- Political will
- Functioning markets

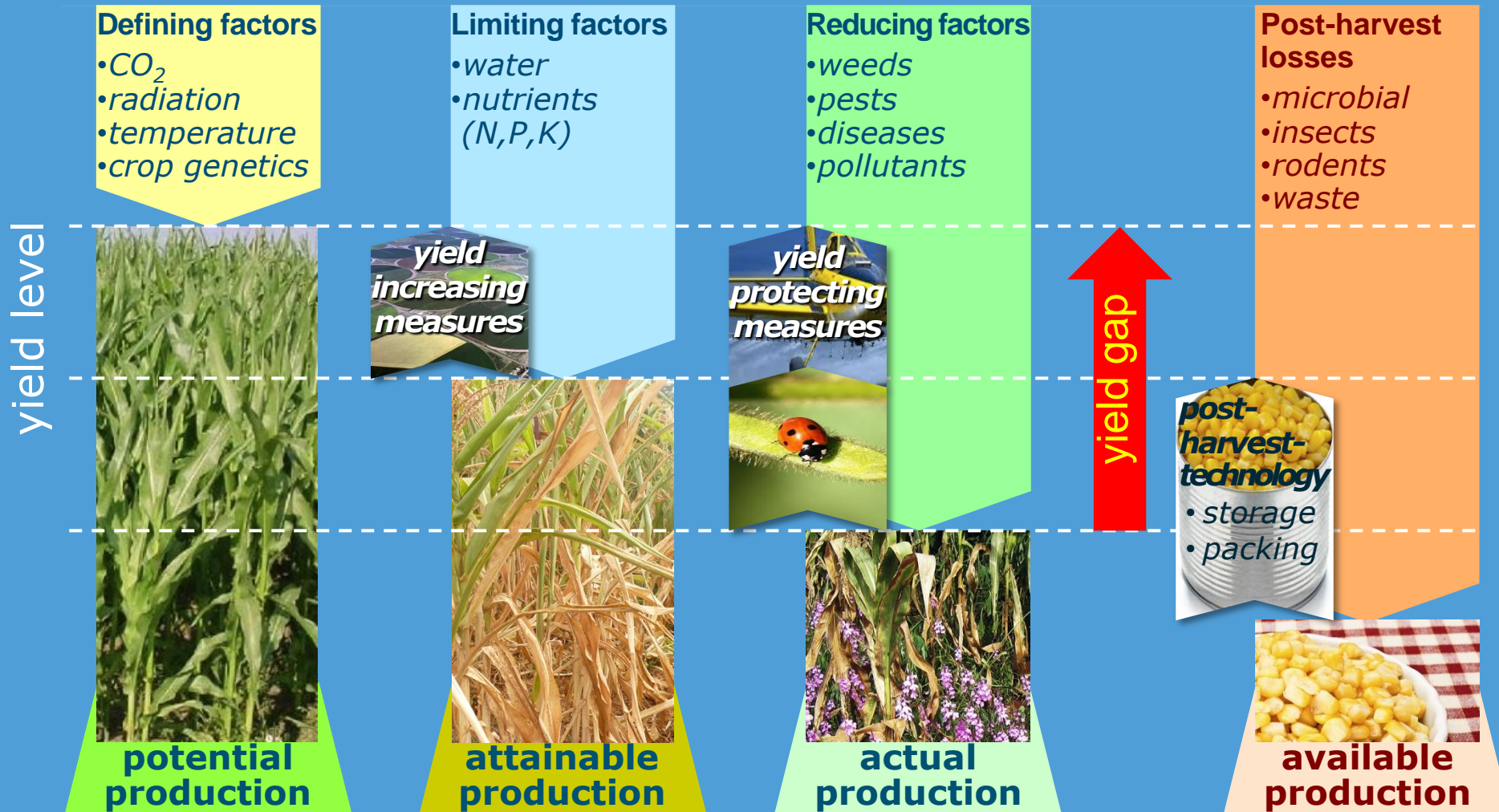


# Needs for new green revolutions

- Demographic reasons (population growth)\*
- Changes in diet (more animal proteins)
- Shortage of good agricultural land
- Safeguard biodiversity
- Environmental reasons (degradation/pollution)
- Bio-based economy\*
- Climate change



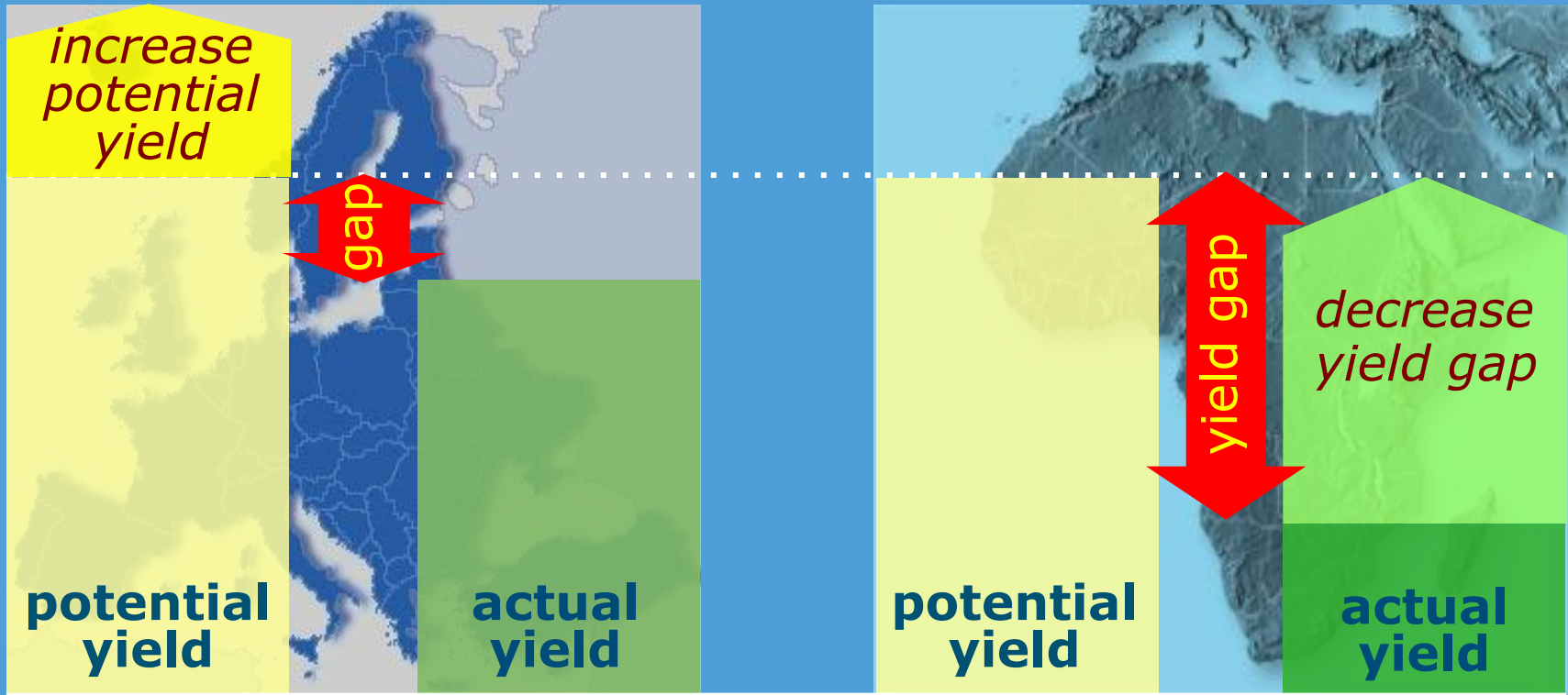
# Production-ecological principles & practice



PRODUCTION SITUATIONS



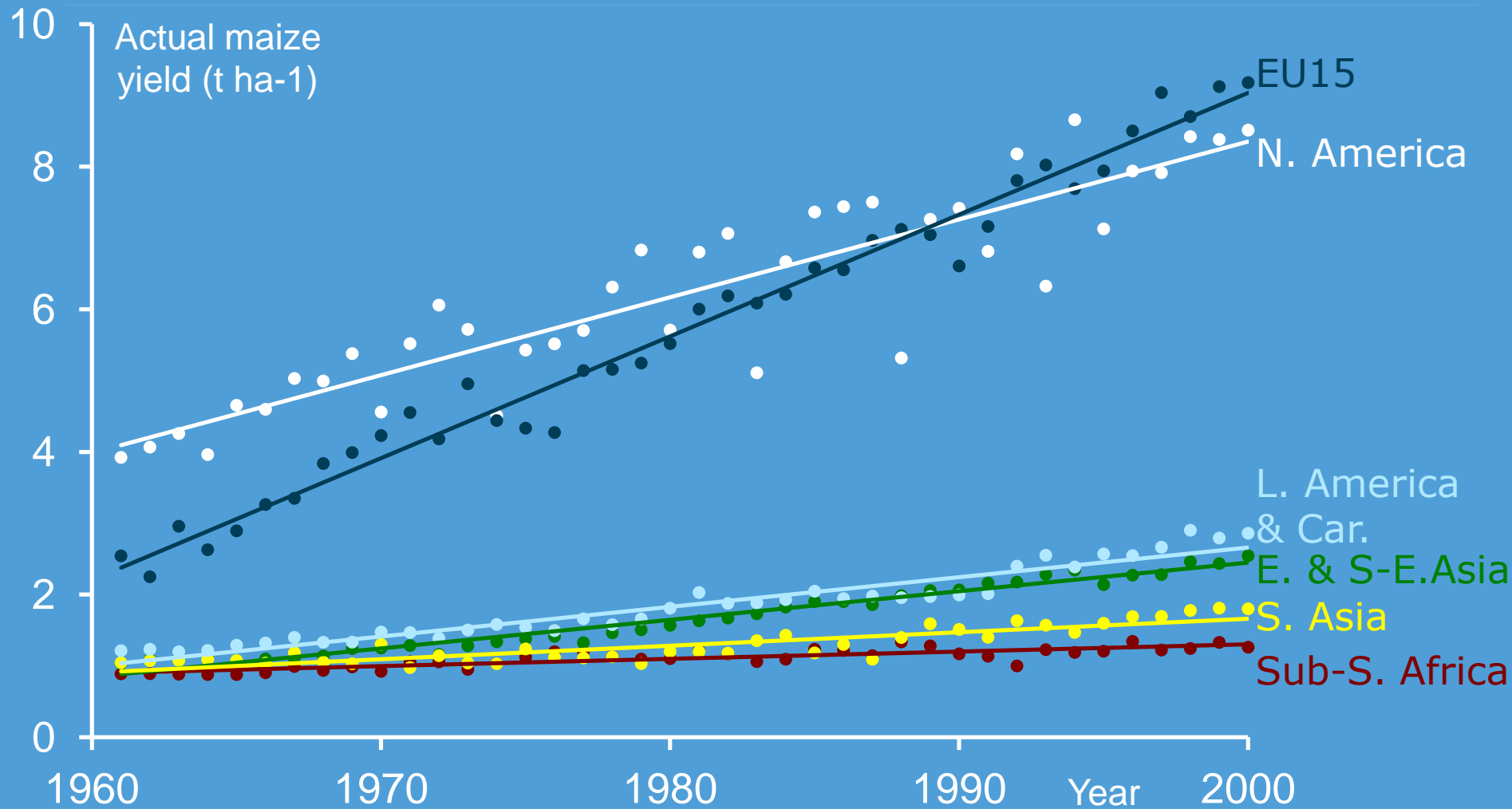
# Two strategies





*...Why is Africa lagging behind ?...*

# Africa: Maize yield/ha stagnates



# Why is Africa lagging behind?

Study by Inter Academy Council

“ Realizing the promise and potential of African agriculture ”

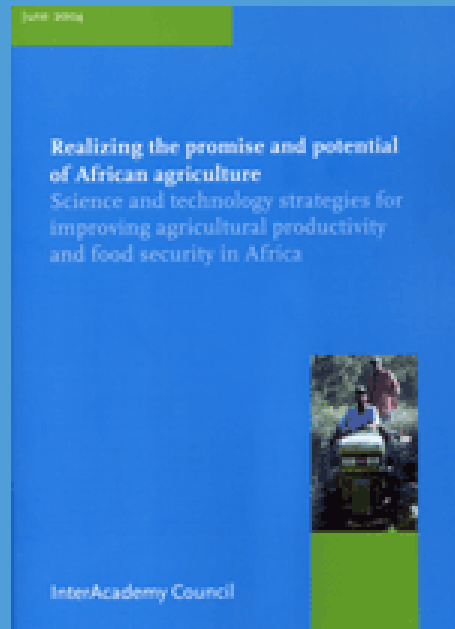


*“I request the IAC a report providing a technological strategic plan to provide substantial increase in agricultural productivity in Africa”*

*Kofi Annan, March 2002*



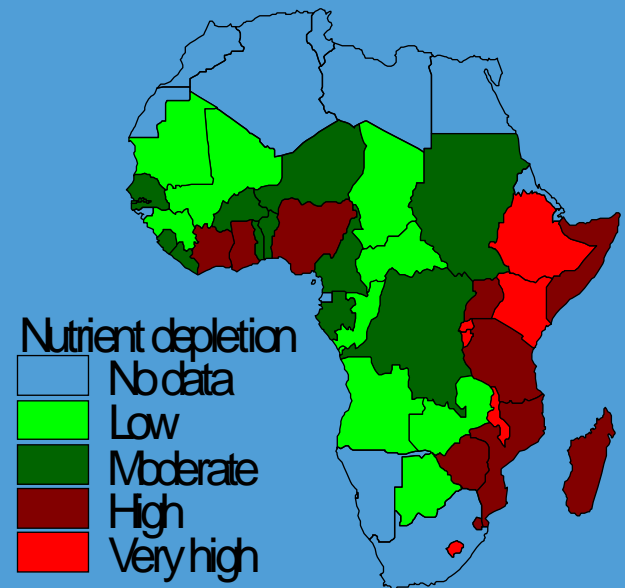
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# Study results (1) Problems of Africa

- Weathered soils
- Erratic rainfall
- Endemic plant and animal diseases
  - Poor resource base,
  - Vulnerable environment
- Absence of dominating food crops
- Multitude of farming systems
  - Need for many different technologies



# Study results (2) Problems of Africa

- Dominant role for women – limited access to resources
- Land and Labor productivity low

→ How to become competitive?

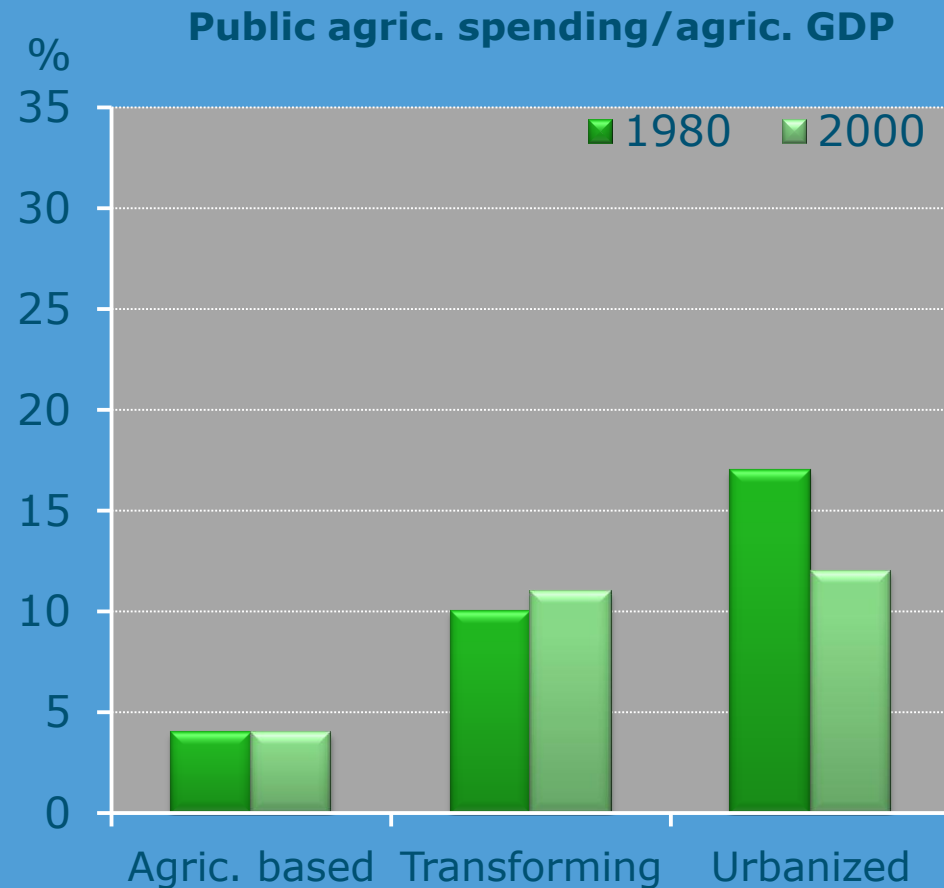
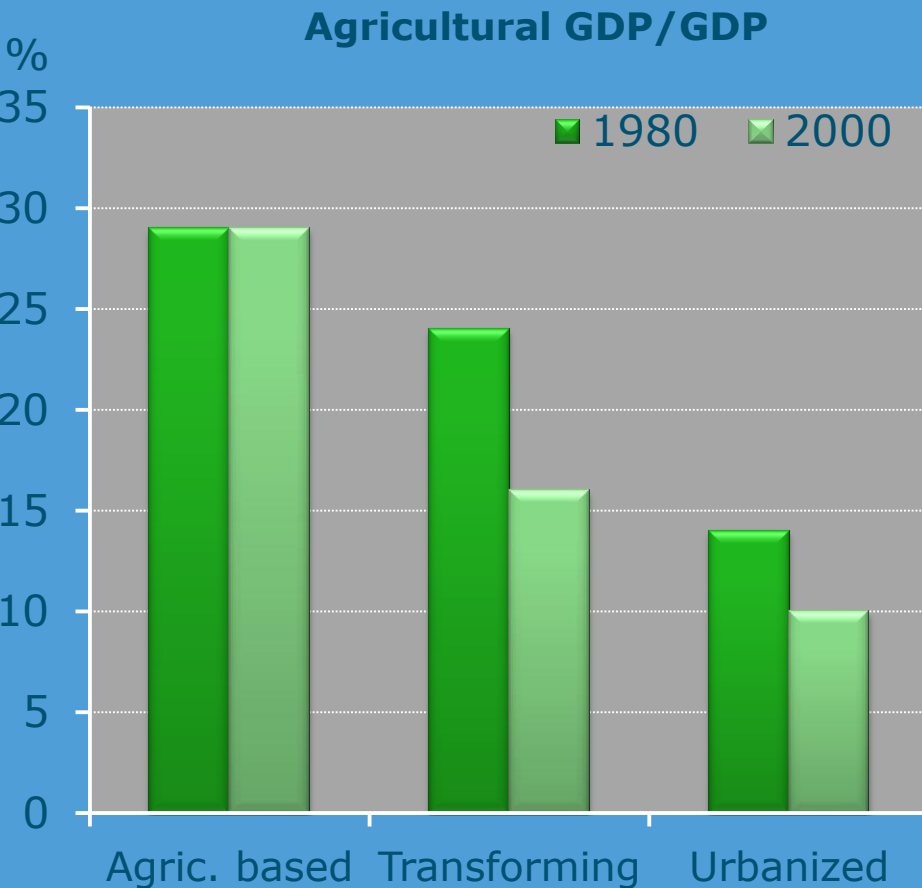
- Lack of investment in agricultural research
- Lack of knowledge infrastructure
- Lack of functioning academic institutions
- Brain drain

→ Need for investment in research and education



# GDP & Investments in agriculture

*Public spending on agriculture lowest in agriculture based countries while their share of agriculture in GDP is highest*



# Study results (3) Problems of Africa

- Not functioning local and regional markets
- Land entitlement inappropriate
- No stimulating political and economic environment
- Inadequate capacity to impact global policy formulation
- Lack of good governance

→ Need for renewal of institutional arrangements





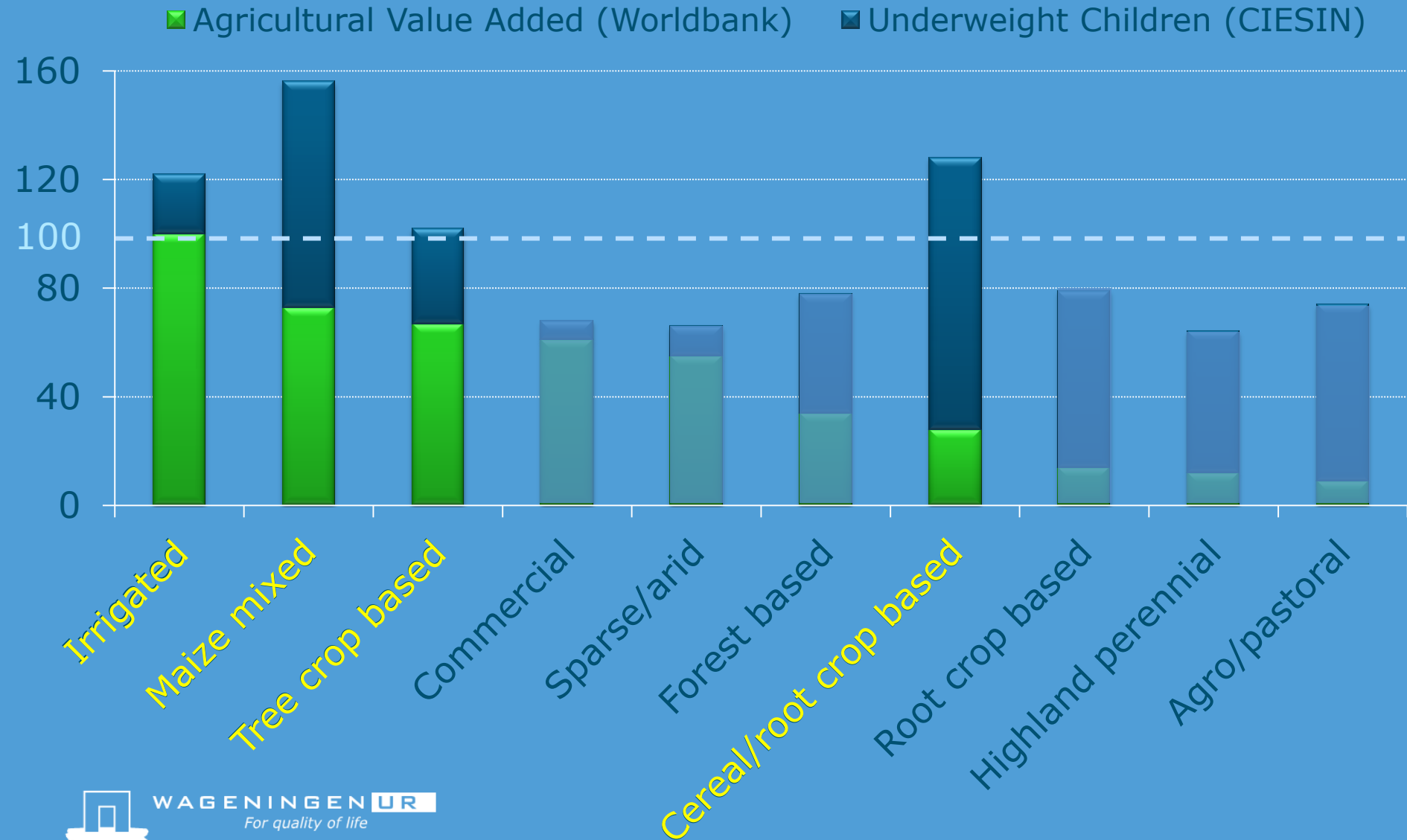
*...A way forward ...*

# IAC report: Strategic Recommendations

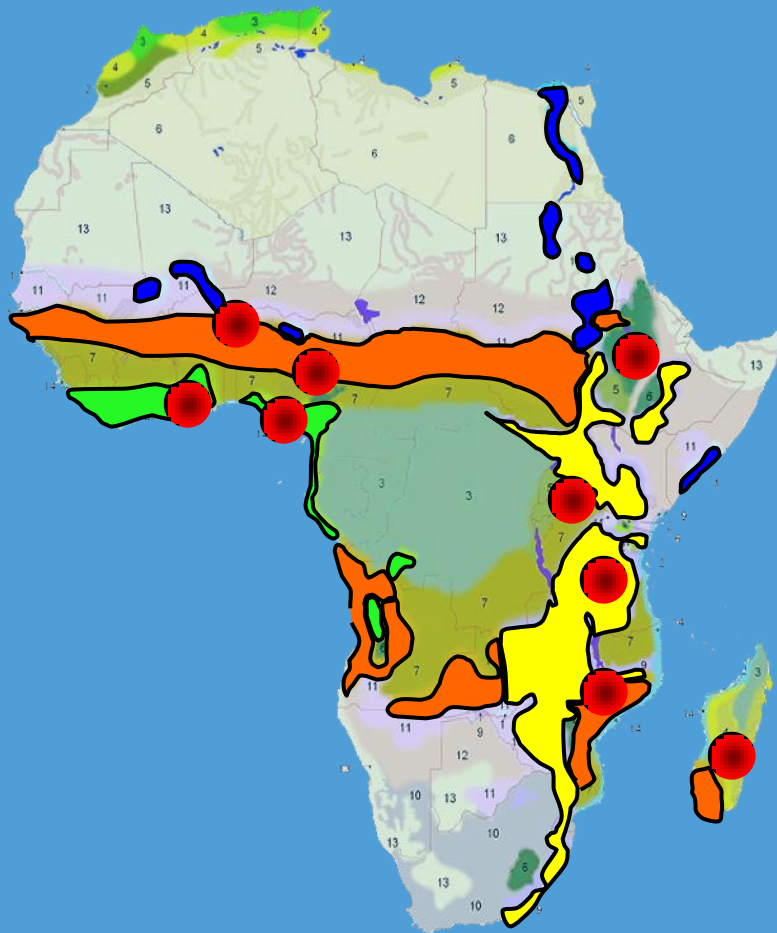
- Technology options that can make a difference (11)
- Building impact-oriented research, knowledge and development institutions (5)
- Creating and retaining a new generation of agricultural scientists (5)
- Markets and policies to make the poor prosperous and food secure (5)
- Increase investments in agriculture and infrastructure








# IAC report: Priorities on 4 farming systems



# Priority Farming Systems

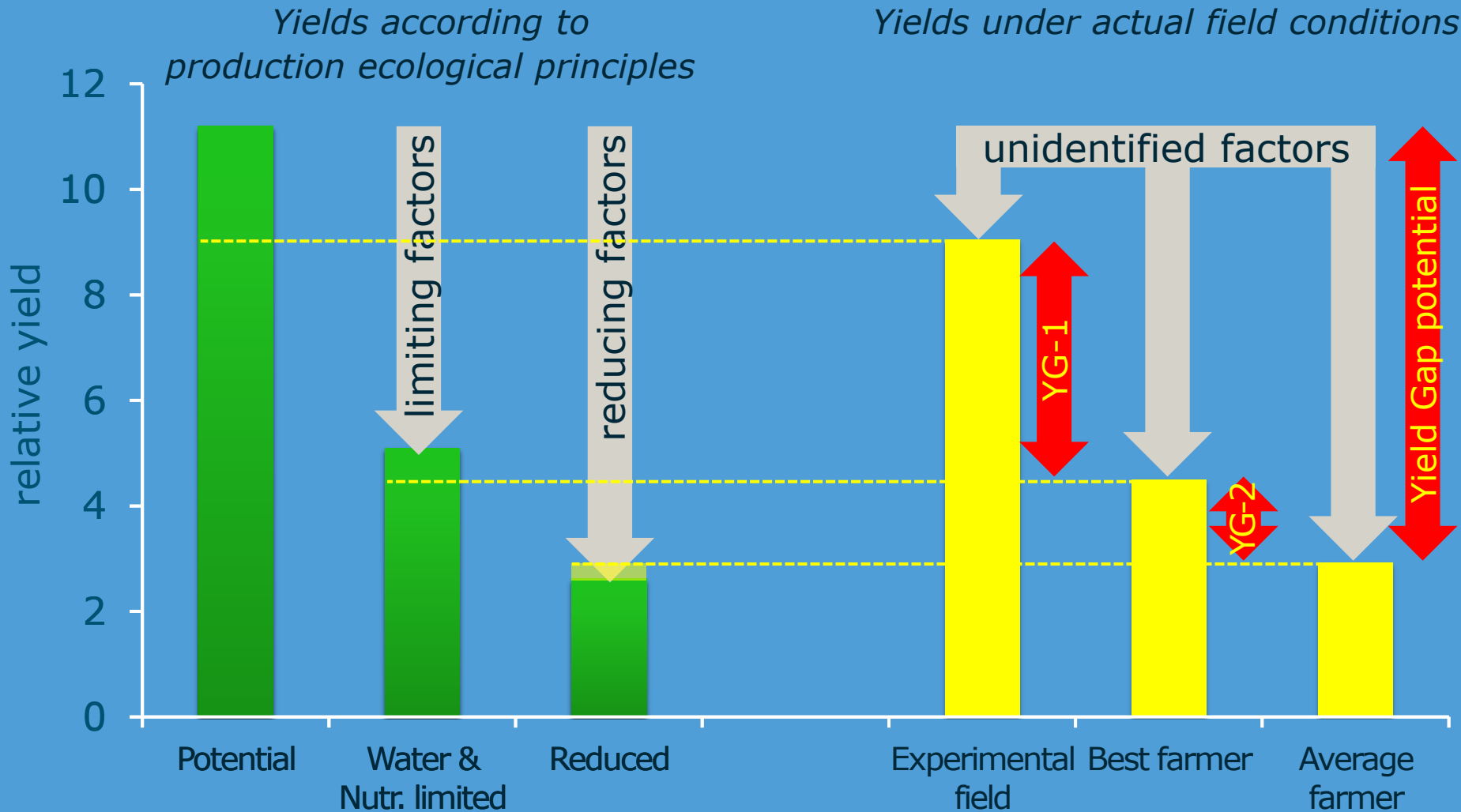


-  Irrigated system
-  Maize mixed system
-  Tree crop based system
-  Cereal root crop mixed system
-  Hunger Hotspot (CIESIN)





# IAC report: *A Production Ecological Approach*



# IAC report: Invest in institutions

- Design and invest in national agricultural science systems that involve farmers in education, research and extension.
- Encourage institutions to articulate science and technology strategies and policies
- Increase agricultural research investment on average to at least 1.5 percent of agricultural gdp in African nations in 2015
- Cultivate African centres of agricultural research excellence.
- Strengthen CGIAR



# IAC report: Create new scientists

- Broaden and deepen political support for agricultural science.
- Mobilize increased and sustainable funding for higher education in science and technology, minimizing dependence on donor support.
- Focus on current and future generations of agricultural scientists.
- Reform university curricula
- Strengthen science education at primary and secondary school levels.



# IAC report: Interventions related to marketing

- Increase investments in rural infrastructure
- Strengthen capacity to expand market opportunities
- Reduce barriers to increased African trade with OECD countries
- Improve data generation and analysis related to agriculture, food, and nutrition security and vulnerability
- Institute effective intellectual property rights regimes to encourage the private sector and facilitate public-private partnerships.



# Impact of IAC-report: Alignment in studies

- World Development Report 2008
- International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD)
- MDG: Halving the Hunger: it can be done
- Multi-country agricultural productivity programme for Africa (MAPP)
- OECD Promoting Pro-Poor Growth: Agriculture (POVNET)
- FAO The State of Food and Agriculture (2005): Agricultural Trade and Poverty



# A New Green Revolution

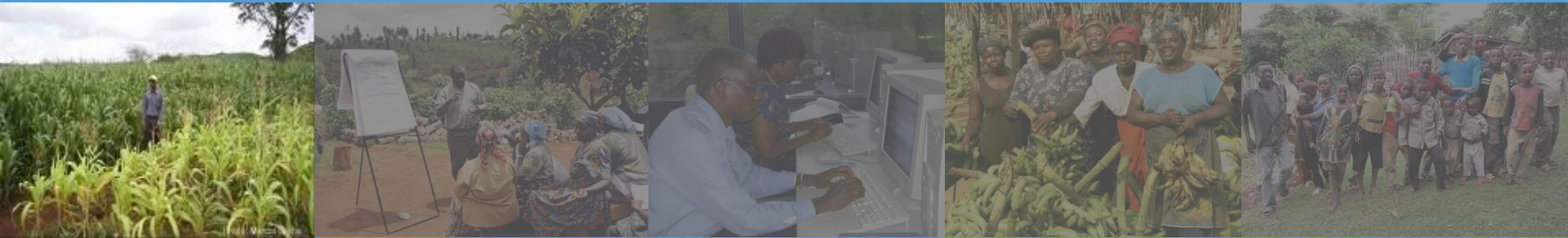


*AGRA programs develop practical solutions to significantly boost **farm productivity** and **incomes for the poor** while **safeguarding the environment**.*



# Implementation IAC report

- Technology options that make a difference
  - PASS program AGRA
  - Soil health program AGRA and other programs
  - Integrated programs, leapfrogging to new technologies (production ecology)
  - Improved ecological literacy, no ecological dogmatism



# Implementation IAC report

- Building impact oriented research, knowledge and development institutions
  - Strengthening FARA and national programs
  - Many private-public institutions
  - Global Challenge program Sub Sahara Africa





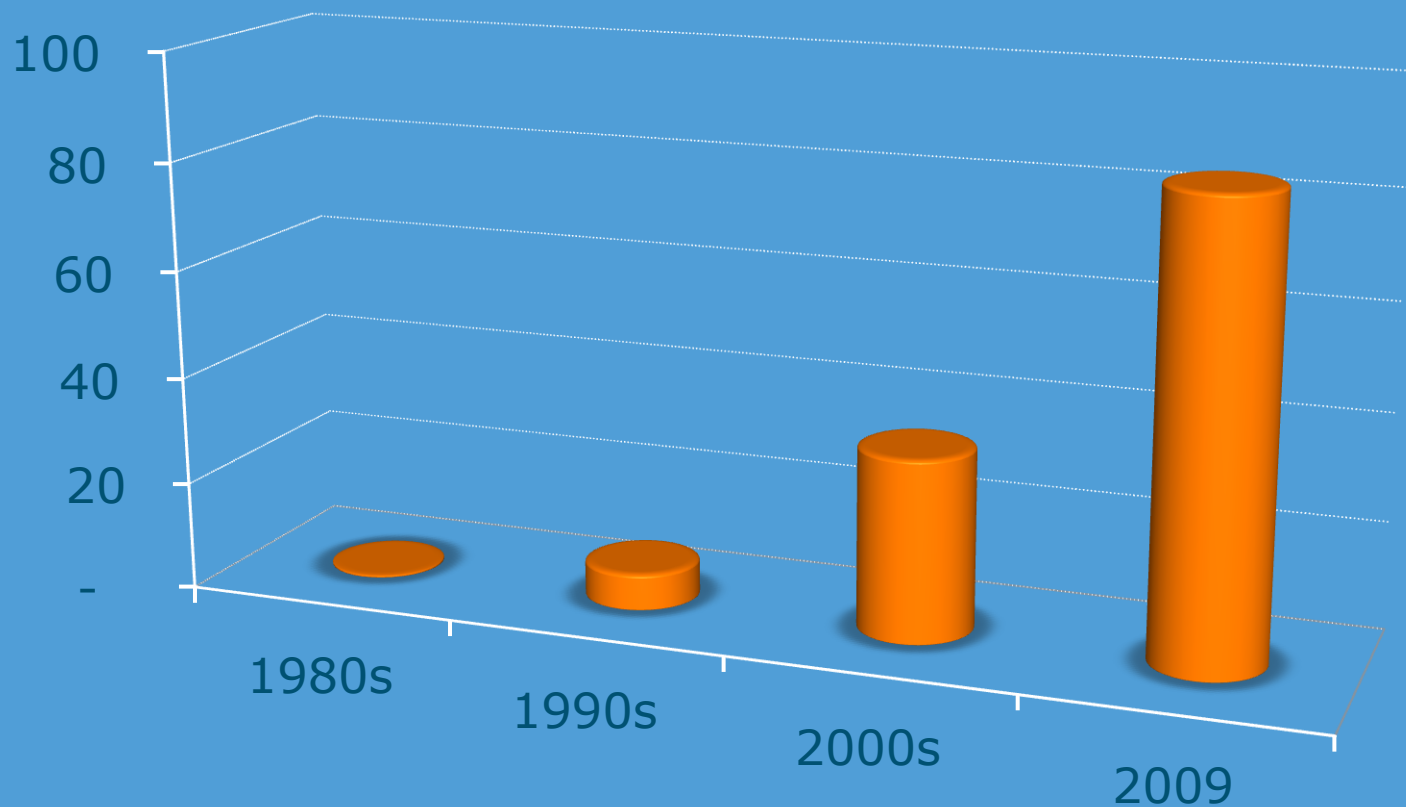
# Implementation IAC report

- Markets to make the poor prosperous and food
  - SecureCommitment African Union
  - Strengthening regional and local markets
  - Markets oriented programs AGRA



# Progress in Ethiopia - investments

Trends in agri. investment capital (billion Birr)

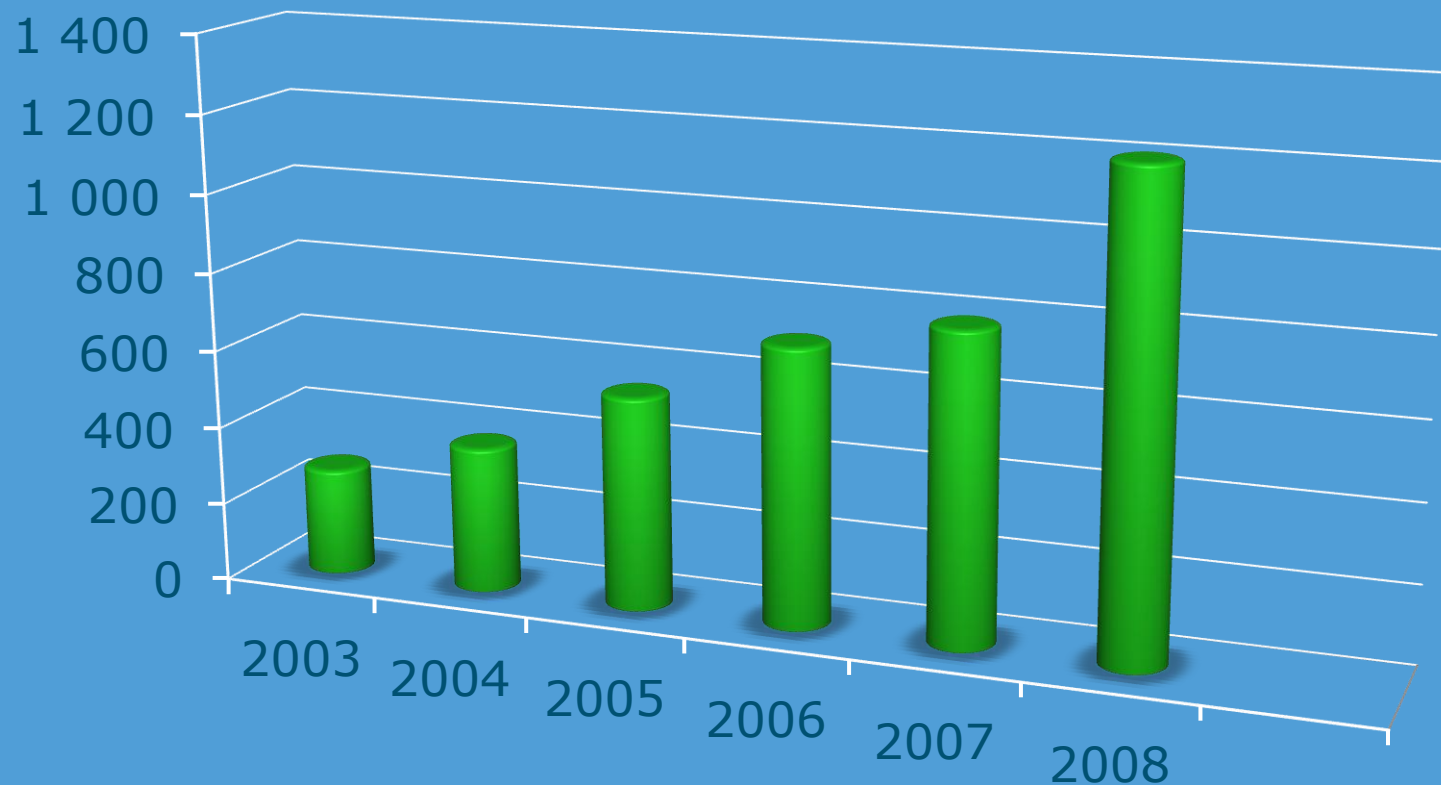


Source: Dr. A. Tsegaye, 2012



# Progress in Ethiopia - returns

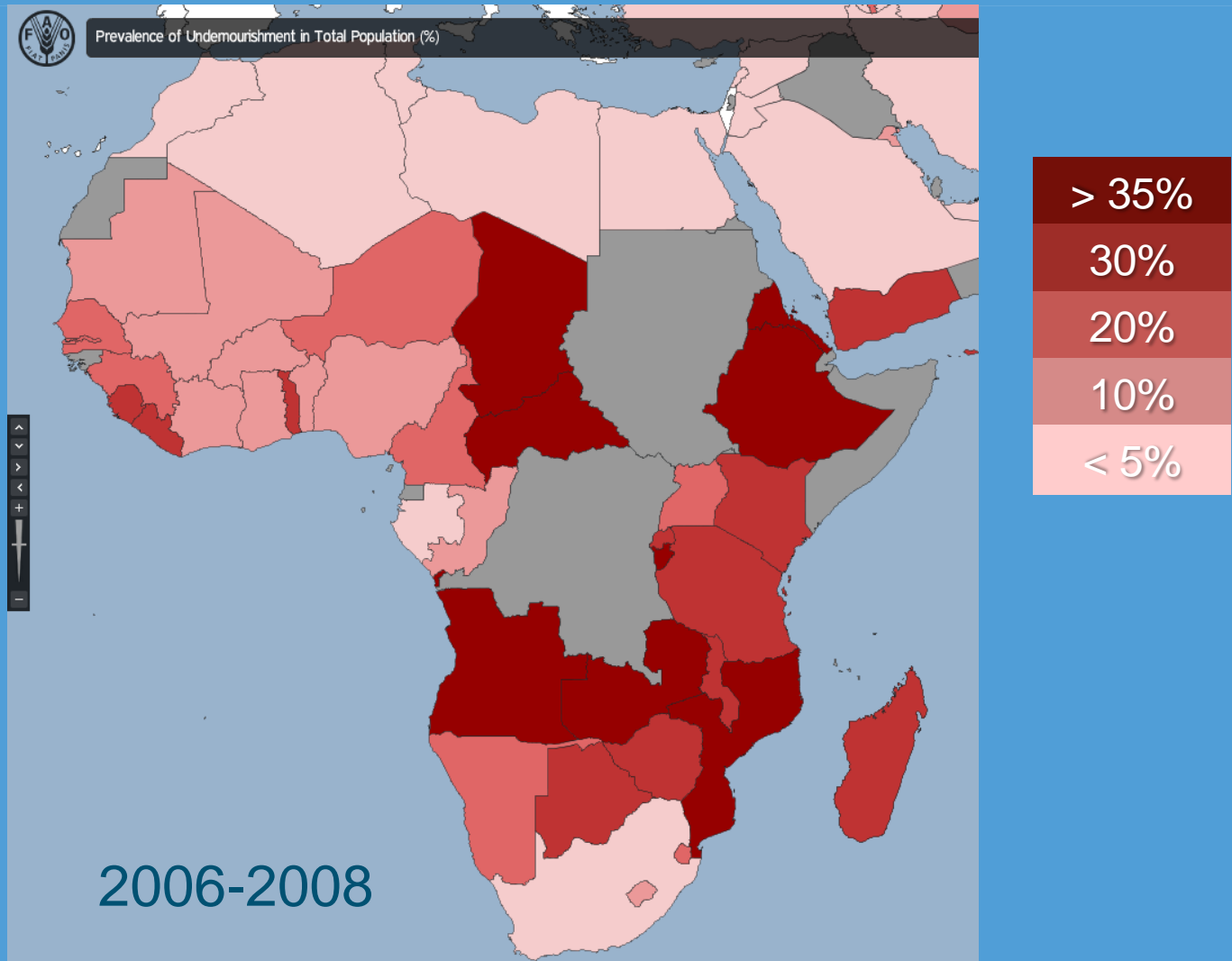
Trends in agricultural export value (x1000 USD)



Source: Dr. A. Tsegaye, 2012



# Undernourishment (% of total population)



# Follow-up activities

- IFDC programs on integrated soil fertility management including market development for input provision and sale of produce
- CAADP political commitment of African governments: African-led and African-owned initiative focus on
  - soil fertility
  - marketing
  - agricultural research
  - food supply and hunger
- AAA stimulation of entrepreneurship
- Strengthening food security programs in various countries: USA, DFID, The Netherlands





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