

The Future of Agriculture

Changes in the Structure of World Agricultural Production & Demand



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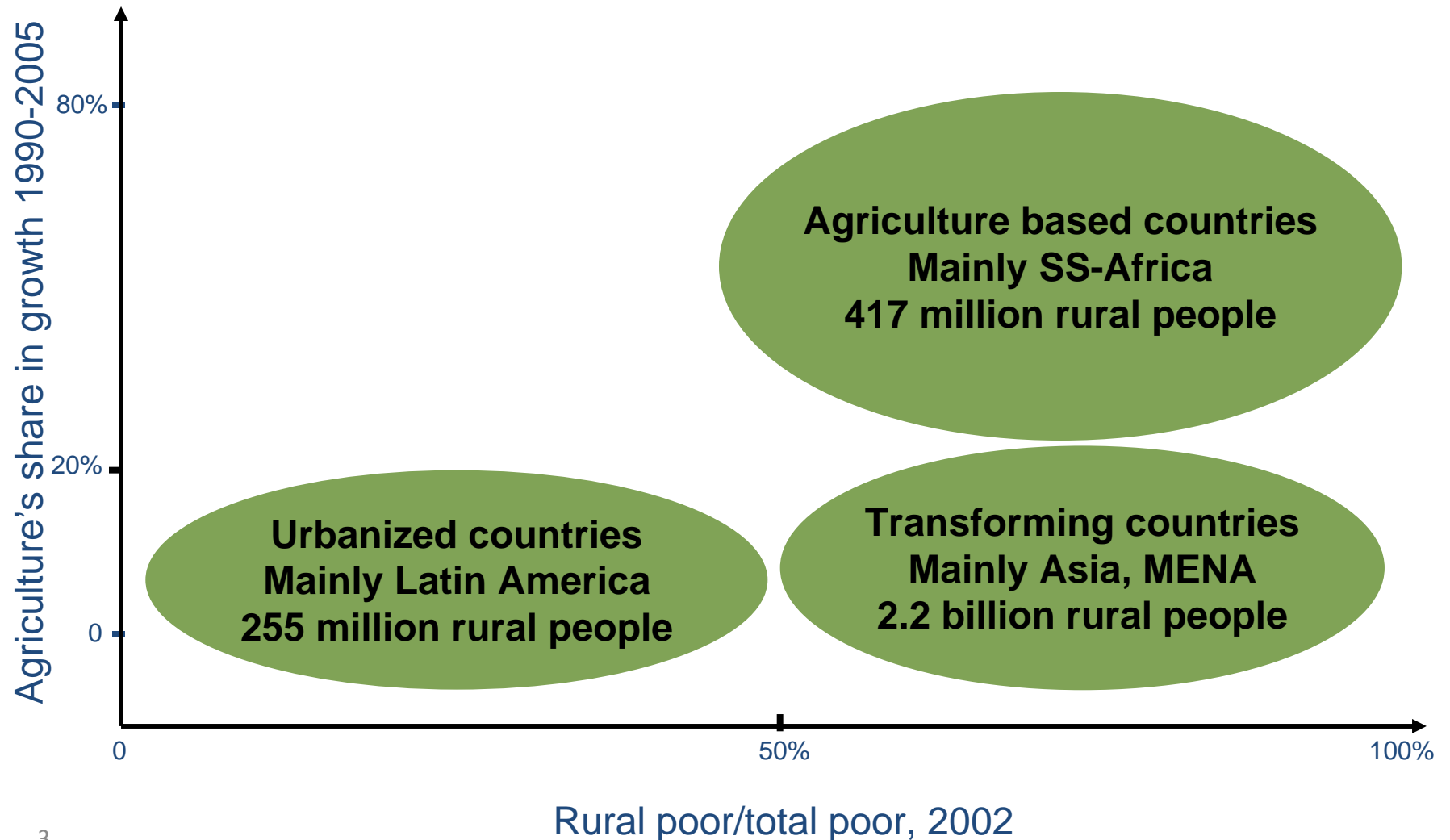


75% of the world's poor are rural and most are involved in farming



In the 21st century, agriculture remains fundamental for poverty reduction, economic growth, and environmental sustainability

The three worlds of agriculture



Three Functions of Agriculture for Development

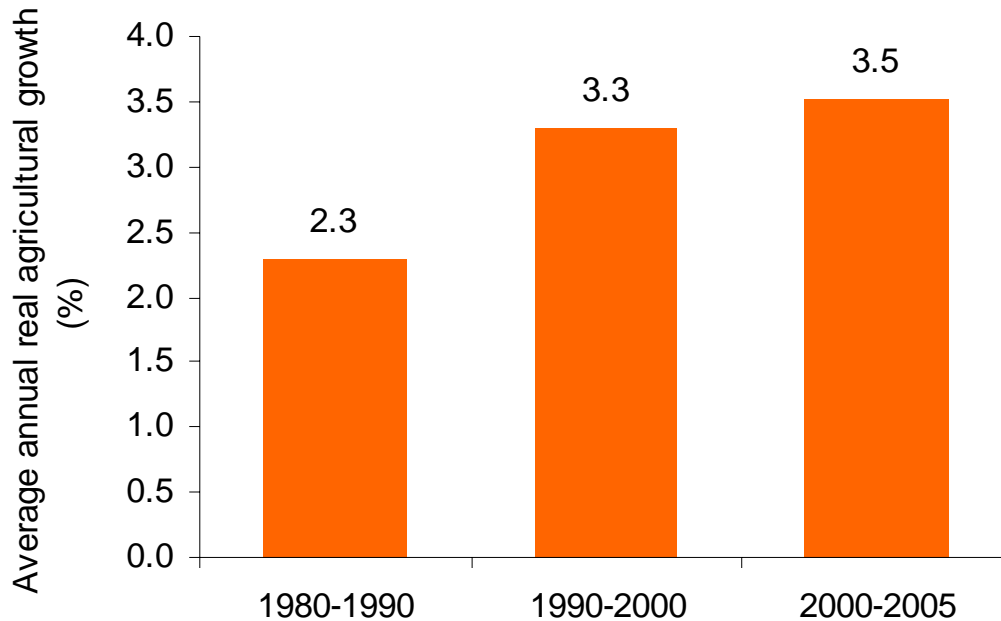
1. Lead sector for growth
2. Lead sector for poverty reduction
3. Major impact on natural resources

1. A trigger for overall growth

Success: China, India, Vietnam

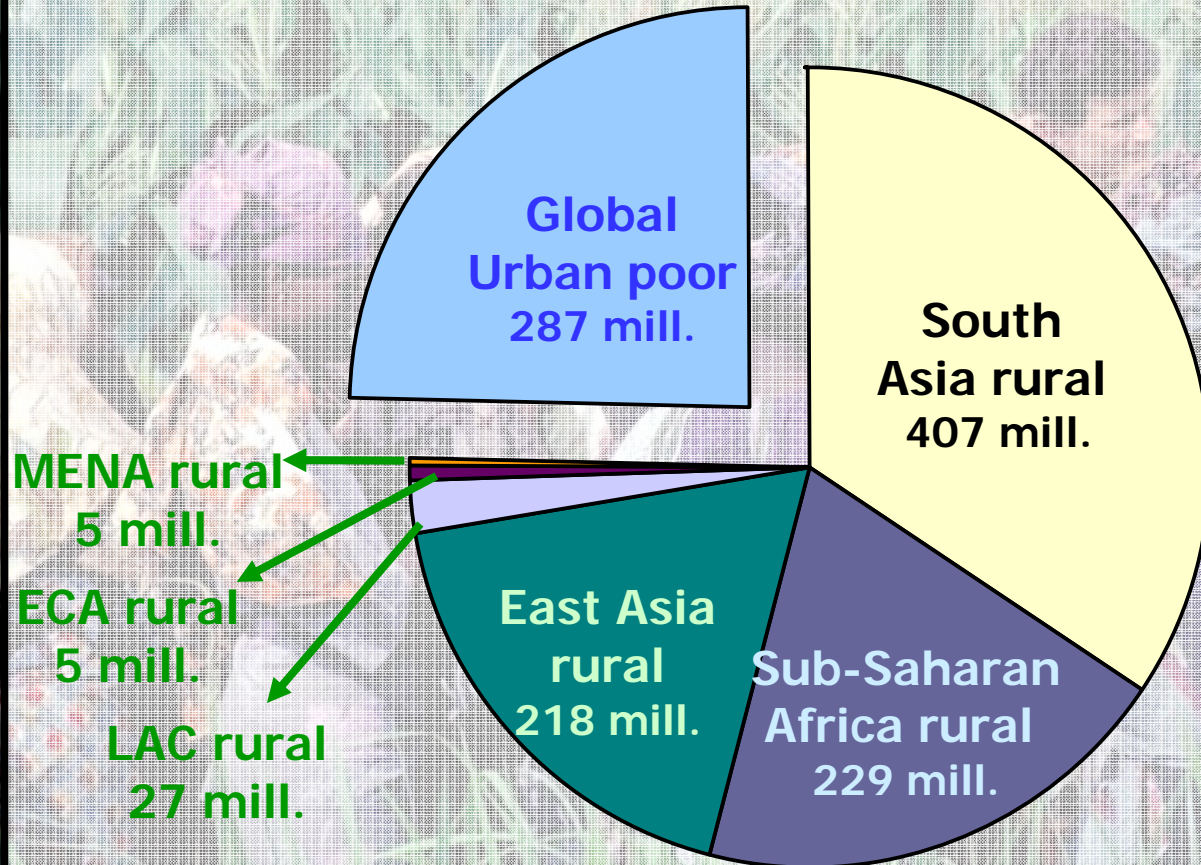
- Large sector for GDP growth
- Affordable food and wage competitiveness
- Comparative advantage in trade
- Strong growth linkages

Accelerating agricultural growth in Africa



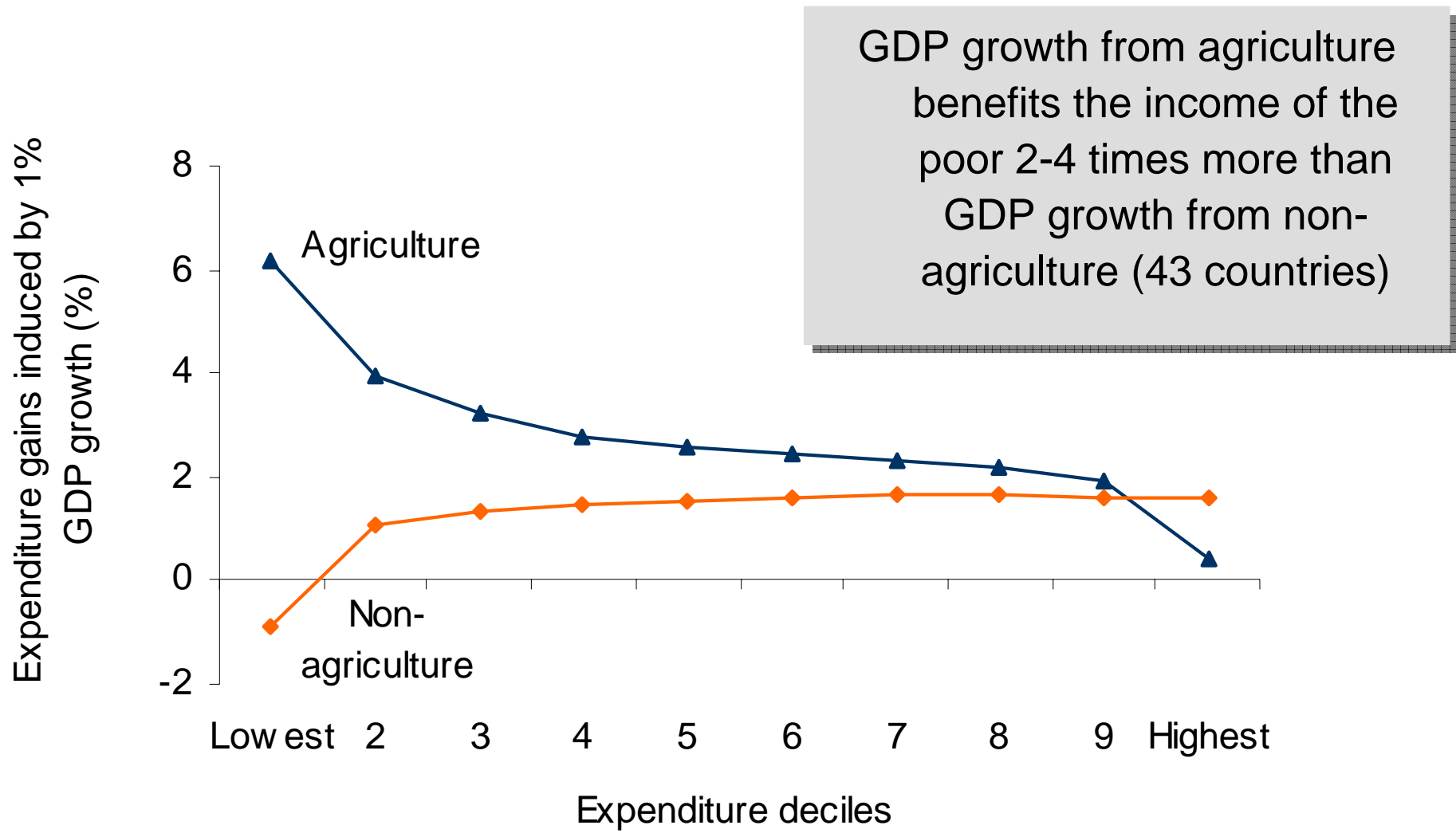
2. A source of livelihoods

Global extreme poverty 2002, \$1.08 a day



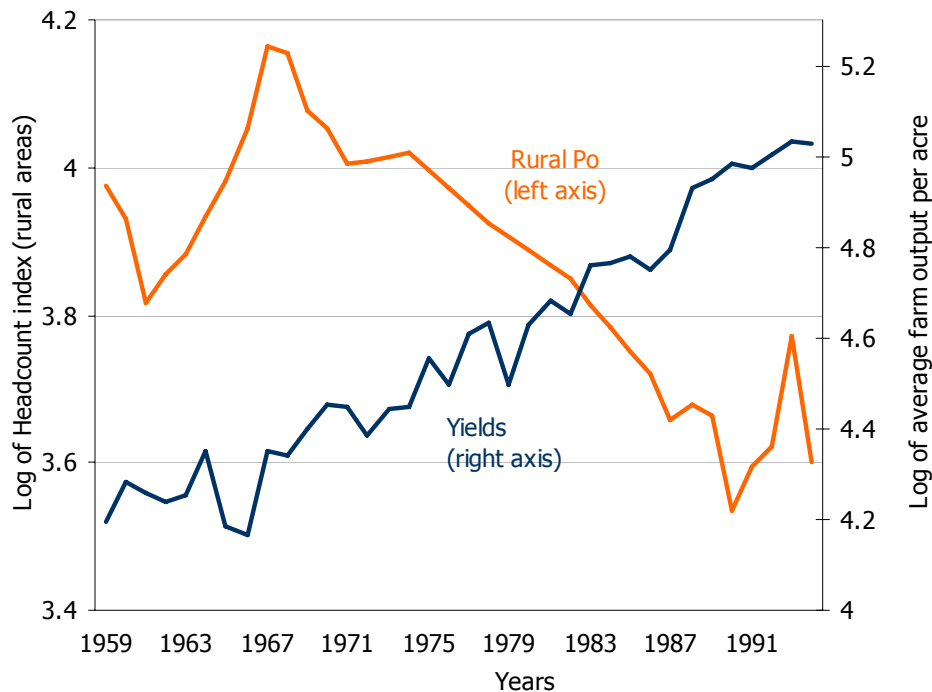
- 2.5 billion people depend directly on agriculture
- 800 m smallholders
- 75% of poor are rural and the majority will be rural to about 2040

Growth from agriculture is especially effective for poverty reduction

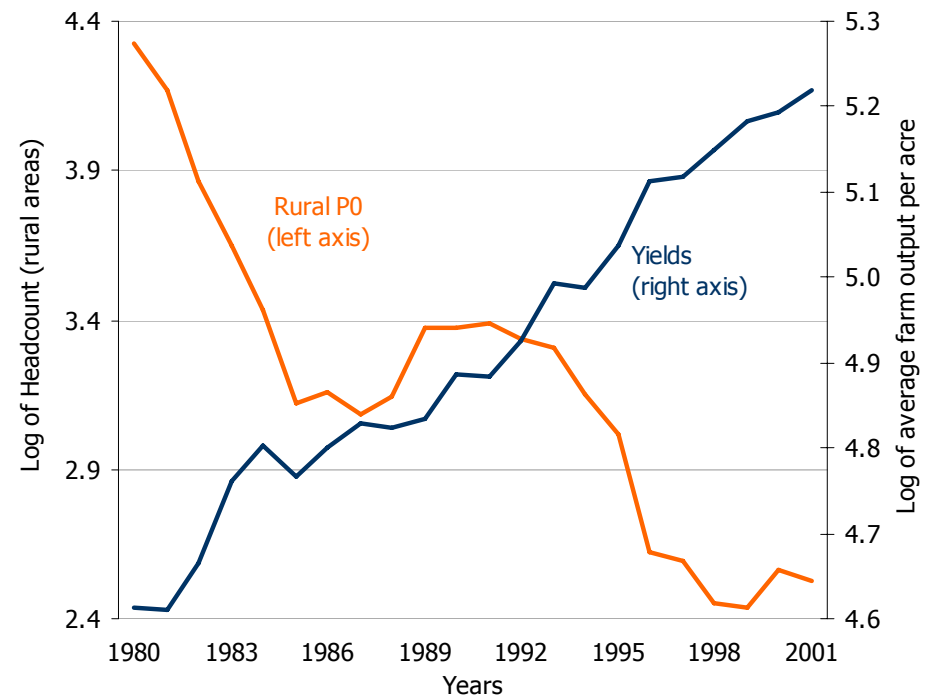


Agricultural productivity growth has driven poverty reduction in Asia

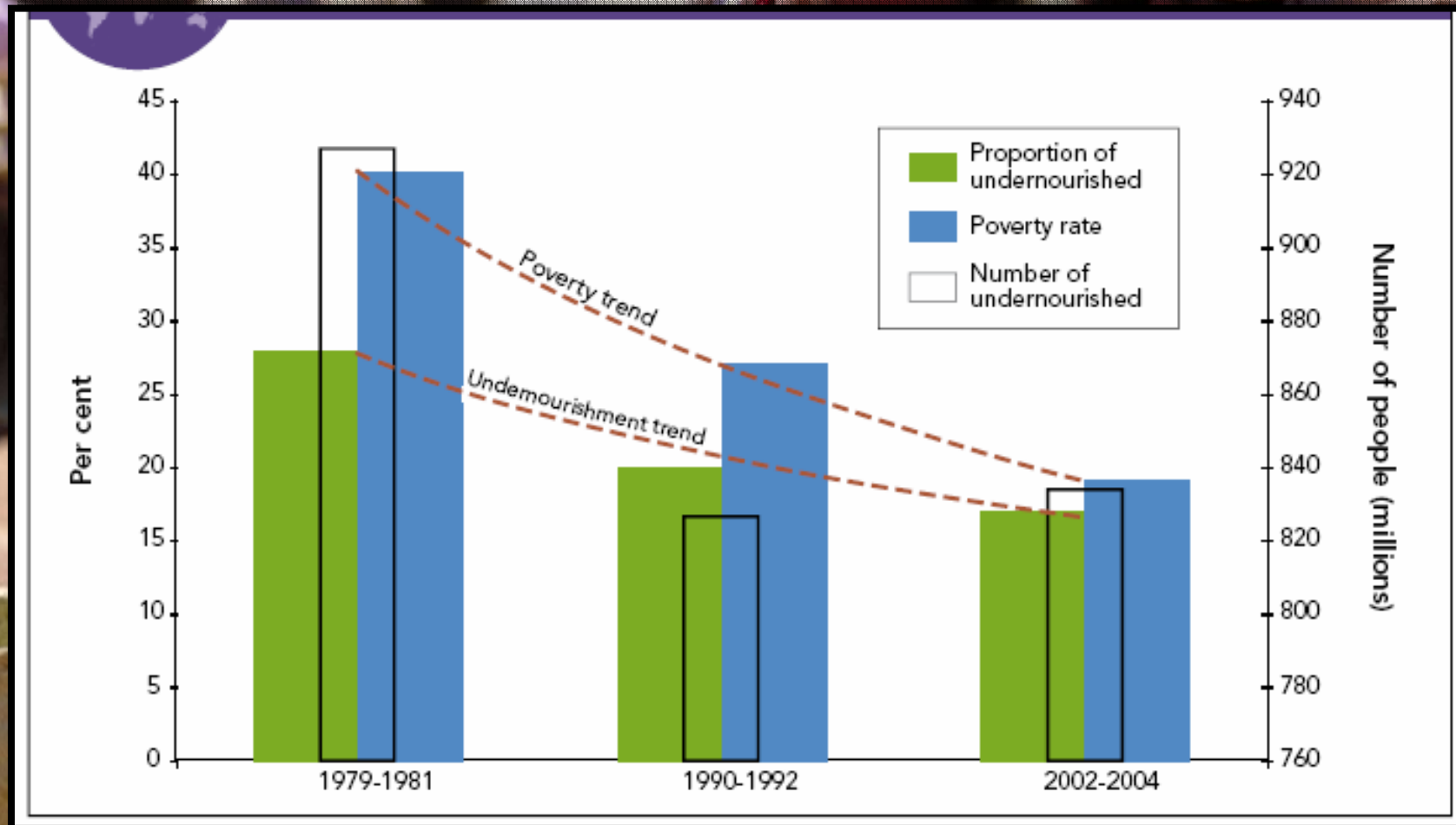
Headcount index and average farm yields
Rural India 1959-1994



Headcount index and average farm yields
Rural China 1980-2001



Lower Poverty and Less Undernourishment



Source: Poverty rates—Ravallion, Chen and Sangraula (2007); undernourishment rates—FAO (2006).

Note: Dotted lines are logarithmic trends in poverty and undernourishment rates.

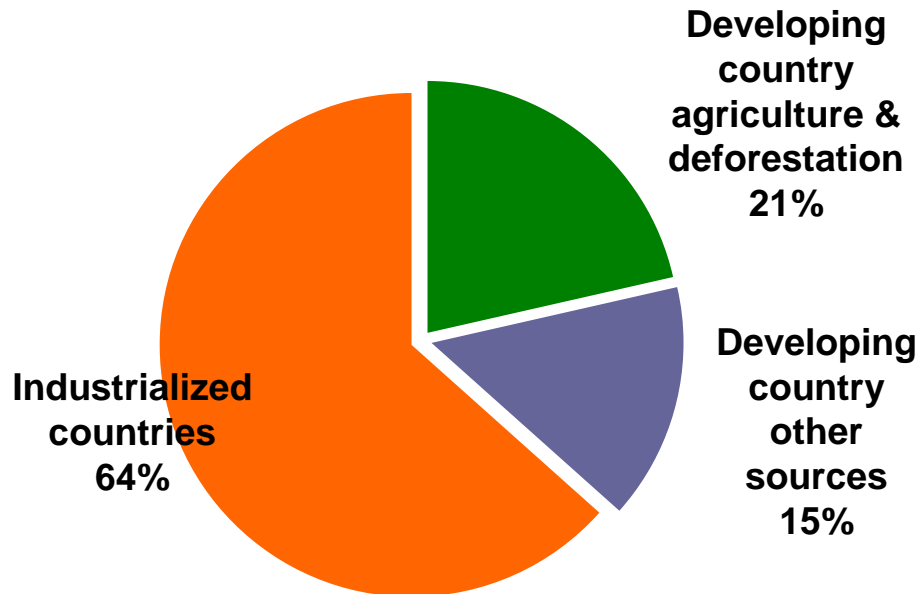
3. Better natural resource management

Important user of natural resources:

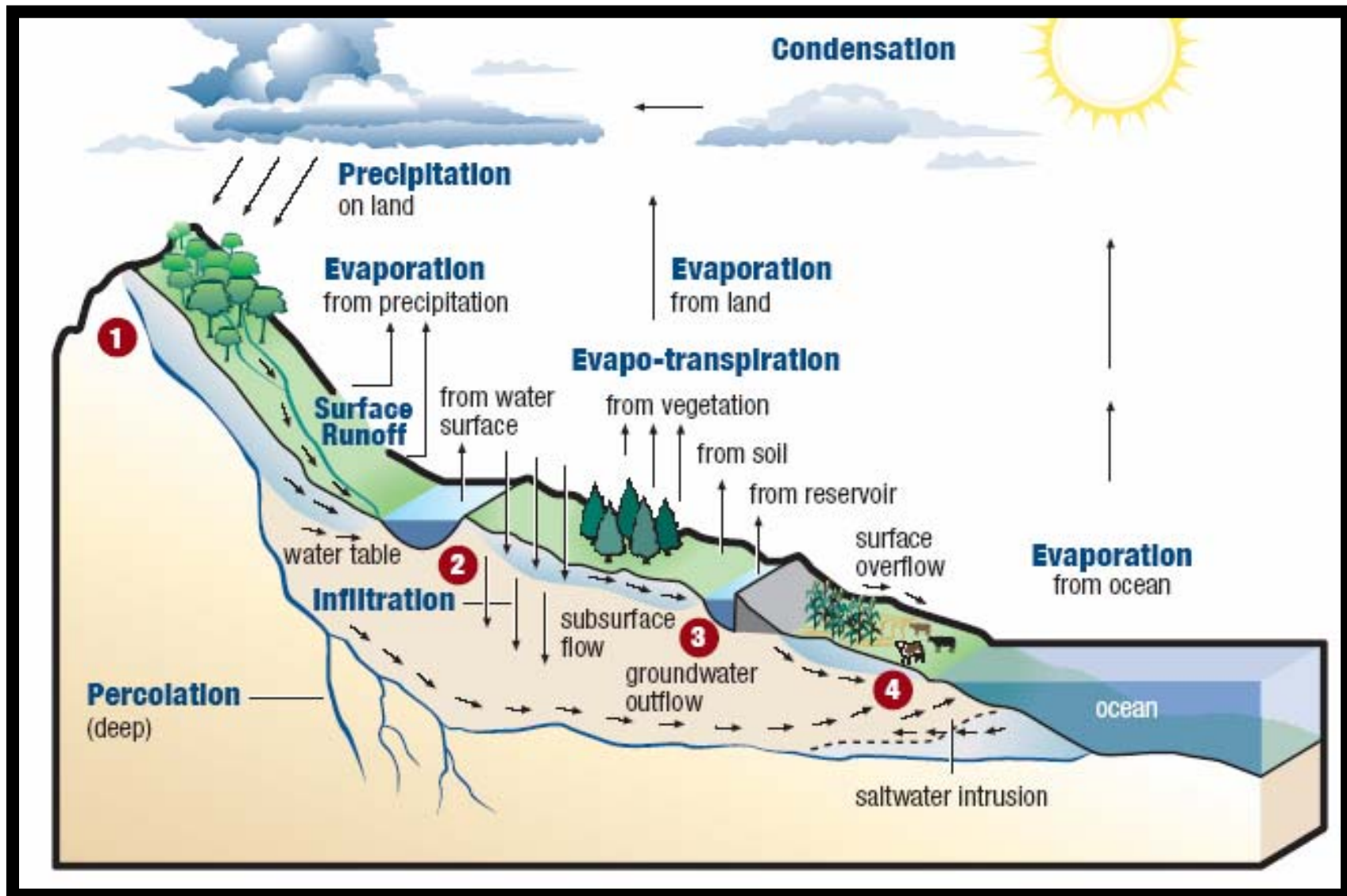
- 80% of fresh water resources
- 40% of land area
- 21+ % of greenhouse gas emissions

Many Opportunities:
Sustainable farming systems and environmental services (conservation farming, agroforestry, managing landscapes for climate resilience)

Contributions to greenhouse gas emissions



The Big Picture - Production Landscapes with Environmental Services (\$\$\$)



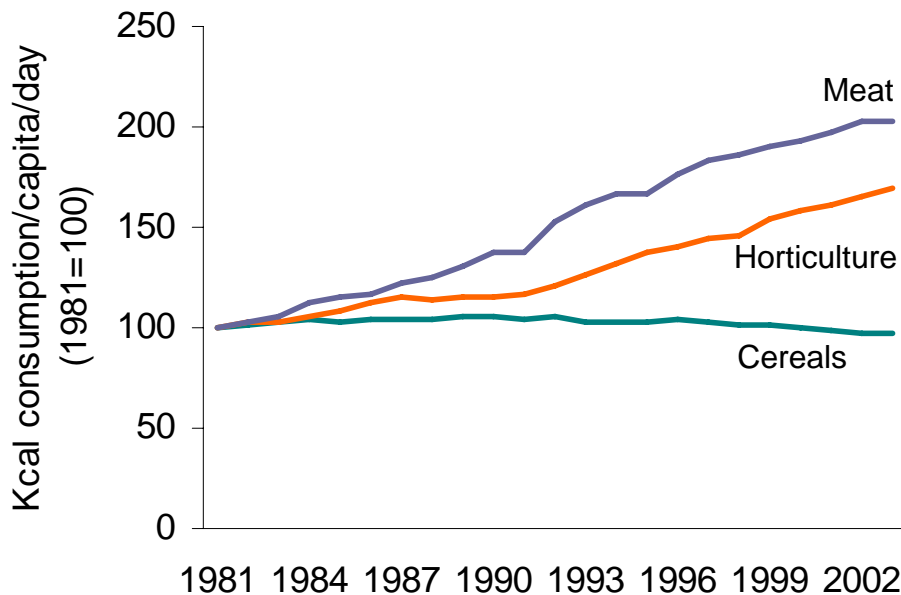
Improved opportunities

- Technological innovations:
 - Intensification technologies e.g. conservation farming, precision farming, improved and resilient varieties – NERICA rice, Bt cotton
 - Information technology
- Stronger producer organizations
- Weather and price risk insurance (Malawi)
- Public-private-CSO partnerships

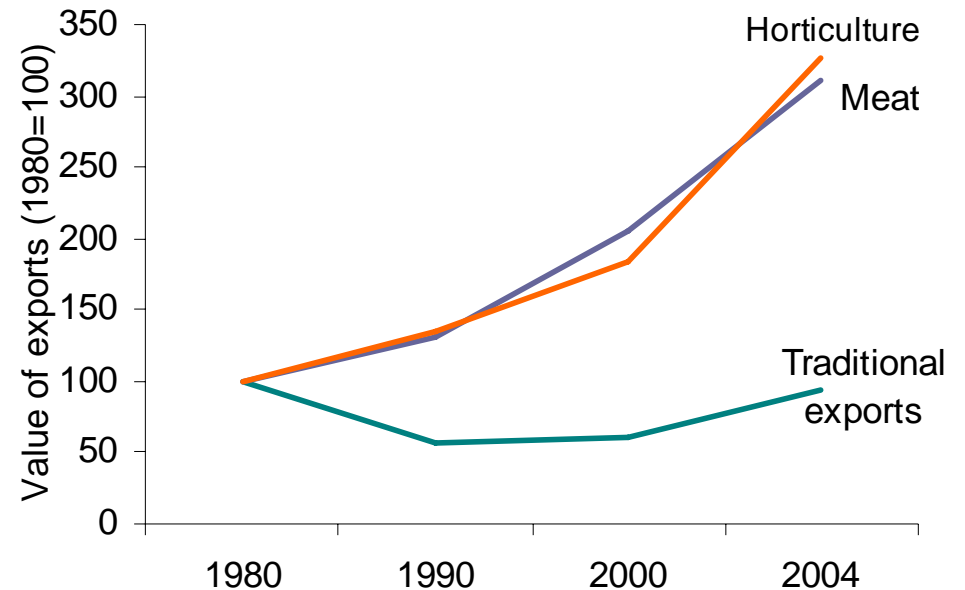
Improved Opportunities

Changing diets – a new agriculture of high value products and non-traditional exports

Developing country consumption



Developing country exports



Improved Opportunities

New Demand – Emerging Markets

e.g. **Functional Foods: Nutrients + health benefits!**

Box 2. Small but Growing Functional Food Market in Developing Countries

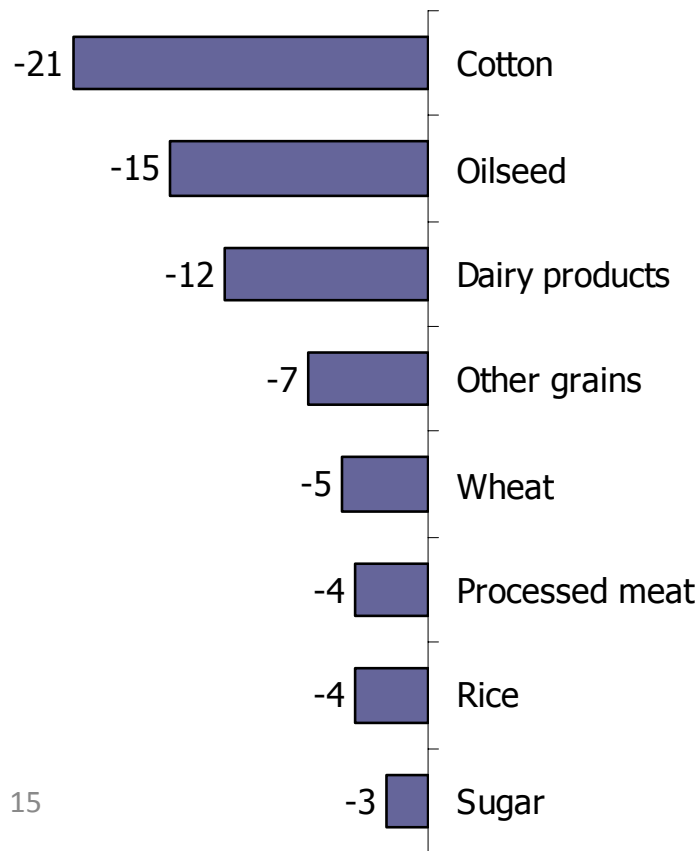
- **China:** The total functional foods market is approximately US\$6 billion per year, which is expected to double by 2010.
- **India:** With its strong tradition of eating healthy foods, India ranks among the top ten nations in buying functional foods and the market size is expected to nearly double in the next five years.
- **Brazil:** The sector is relatively young, growing rapidly and has significant room for further growth. Sales value is projected to reach US\$1.9 billion by 2009, which translates into a growth rate of 29 percent per capita spending on functional foods during this period.
- **Peru:** The sector for health foods, in general, is still in early stages, but has potential for growth because of rich biodiversity in roots and tubers containing diverse sugars and carbohydrates, which can respond to the demand for low-fat and sugar-free products.
- **Russia:** The value of functional foods market was estimated at US\$75 million in 2004, with an annual growth of 20 percent expected. The dairy industry took the lead in the functional foods movement and the largest growth is expected in this sector.

Source: Sun 2006; Ismail 2006; Benkouider 2005; Gutierrez 2004; Drujinina 2005; Spiridovitch 2005.

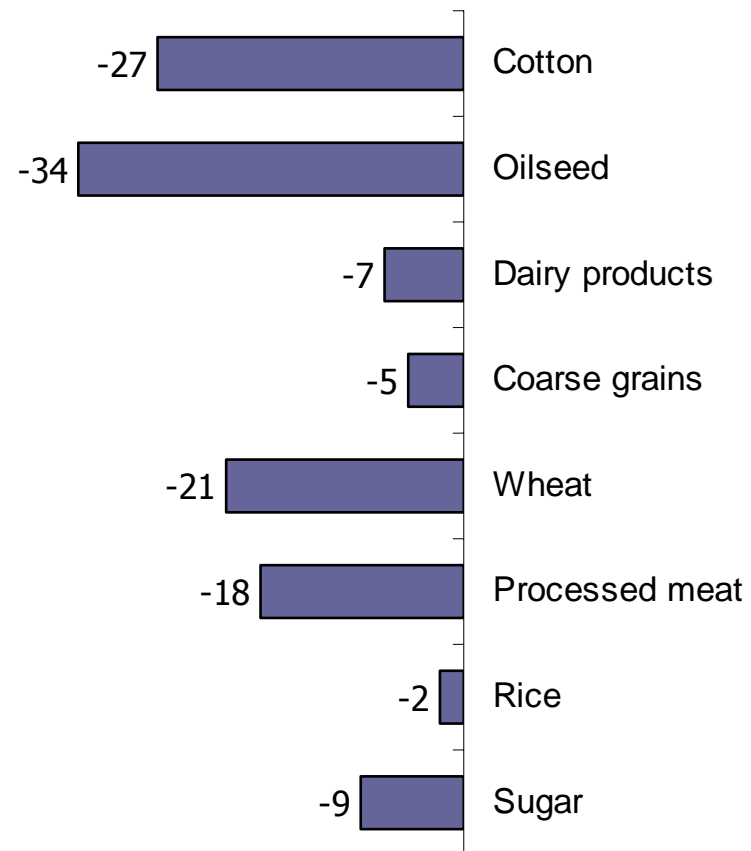
But Major Challenges

Global trade distortions remain pervasive

Real international commodity prices have been suppressed by current global trade policies (% of price)



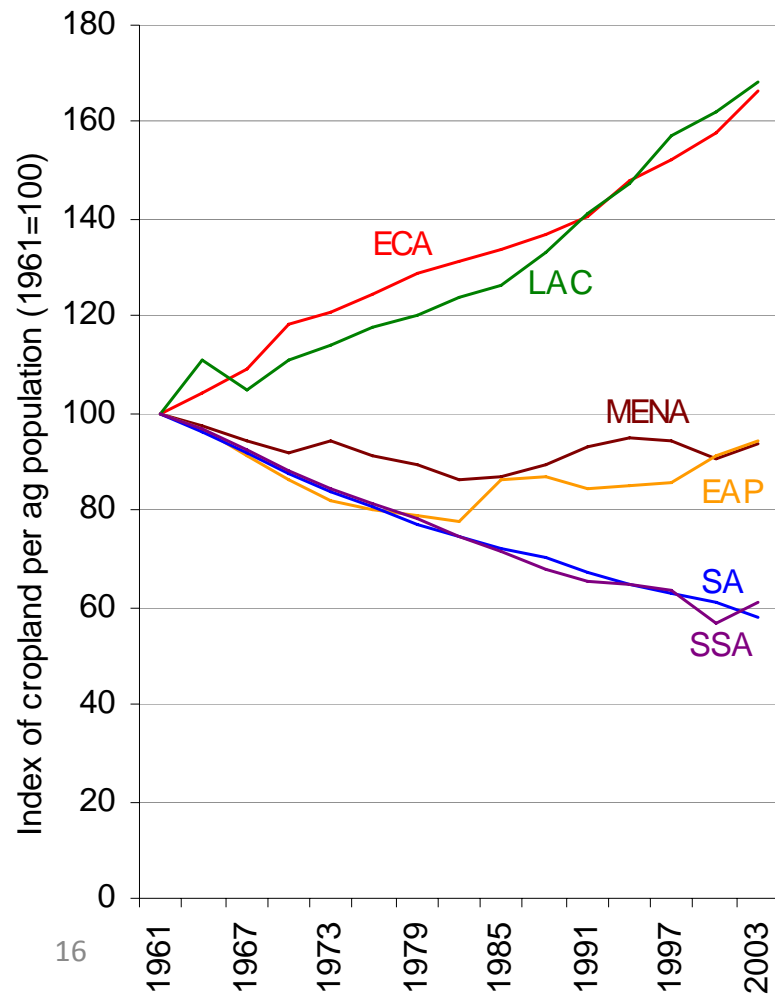
Trade share losses to developing countries due to current global trade policies (% point loss to developing country trade shares)



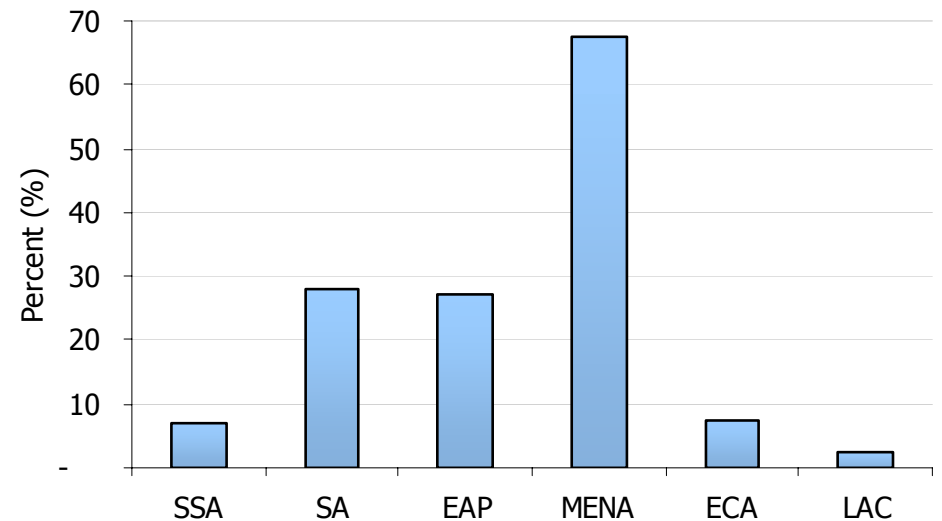
Challenges

Increasing land and water constraints

Cropland per capita of agricultural population



% of population in absolute water scarcity

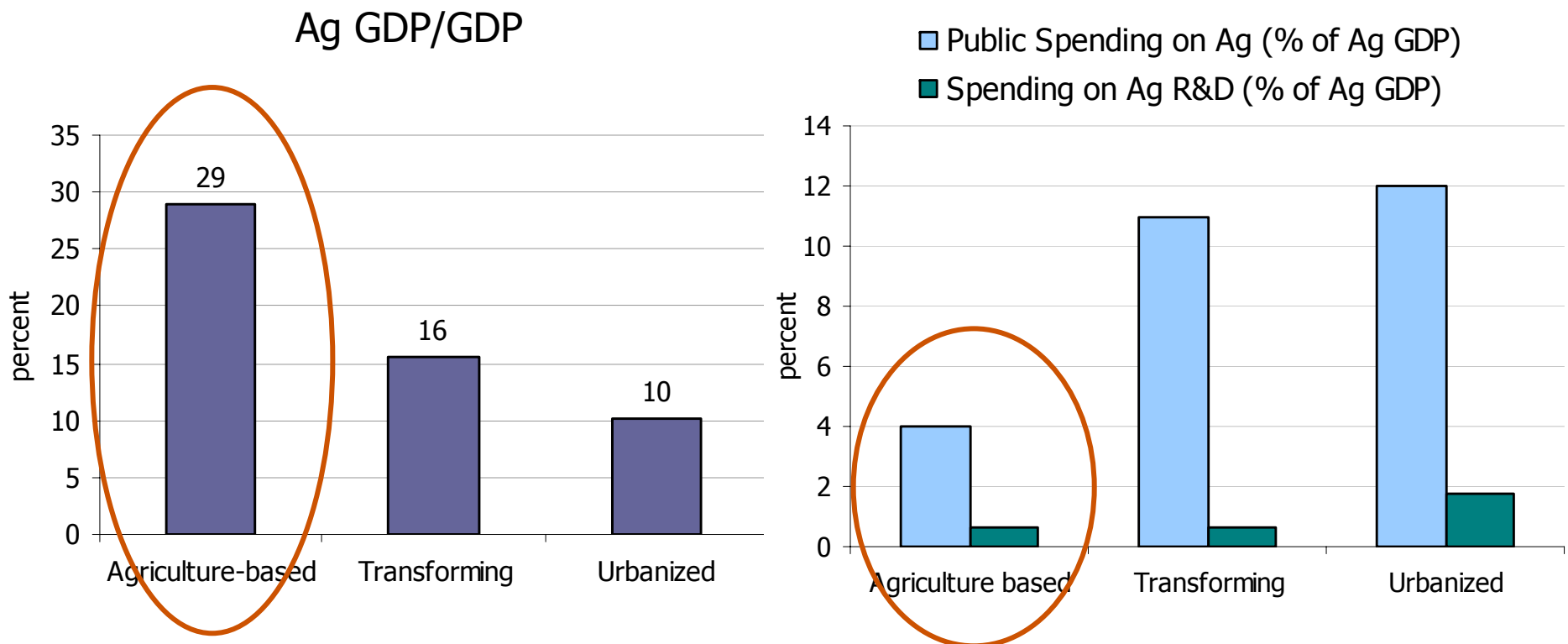


Challenges

- **Making growth pro-poor**
 - Connecting smallholders to new markets
 - Improving assets of the poor, especially women
- **Weaknesses in governance**
 - New state roles, coordination, decentralization
 - Global governance issues (trade, standards, animal health, biodiversity, climate change, donor support)

Challenges

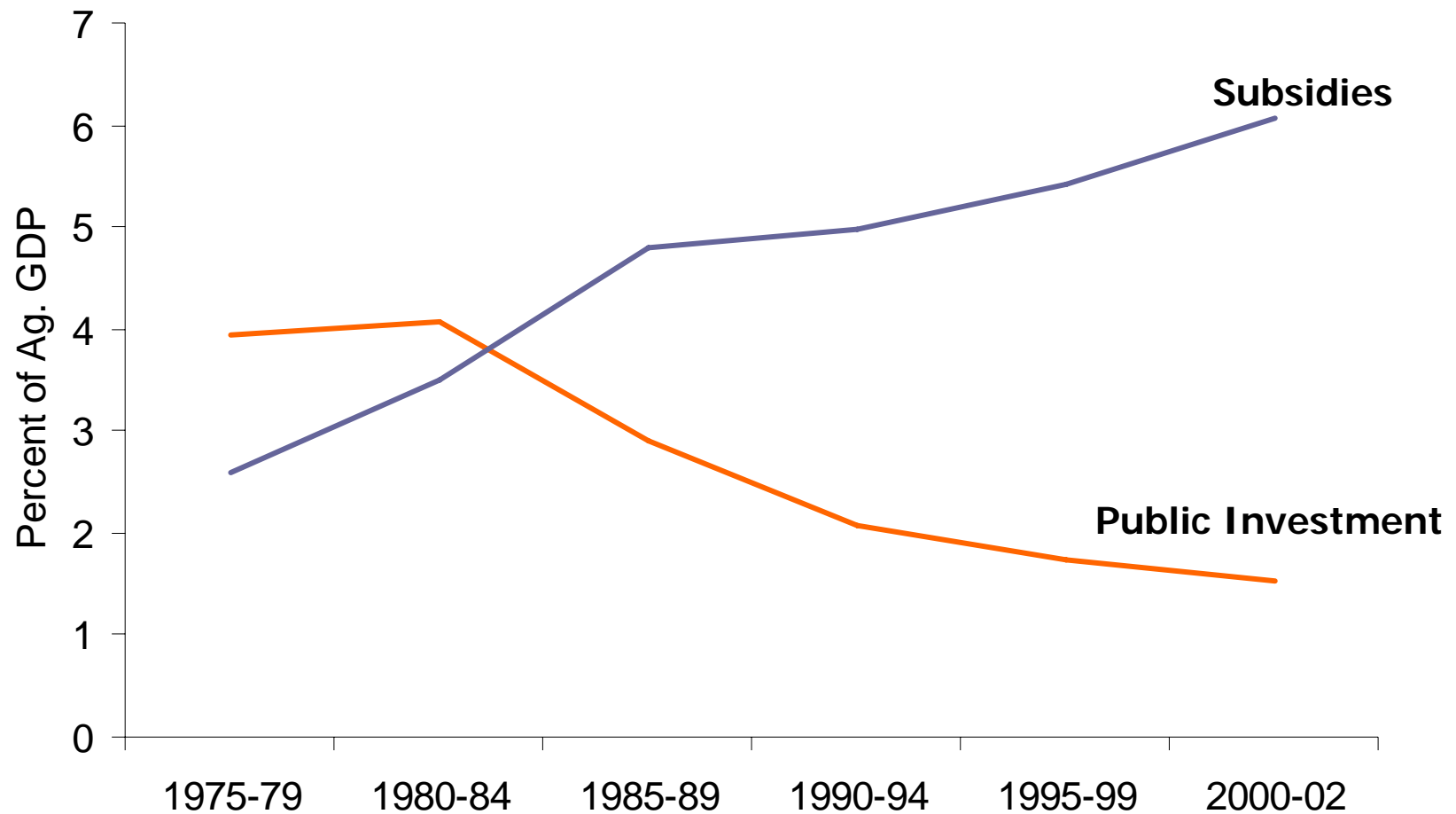
Agricultural-based countries spend too little on agriculture (and R&D)



But quality of existing spending often poor

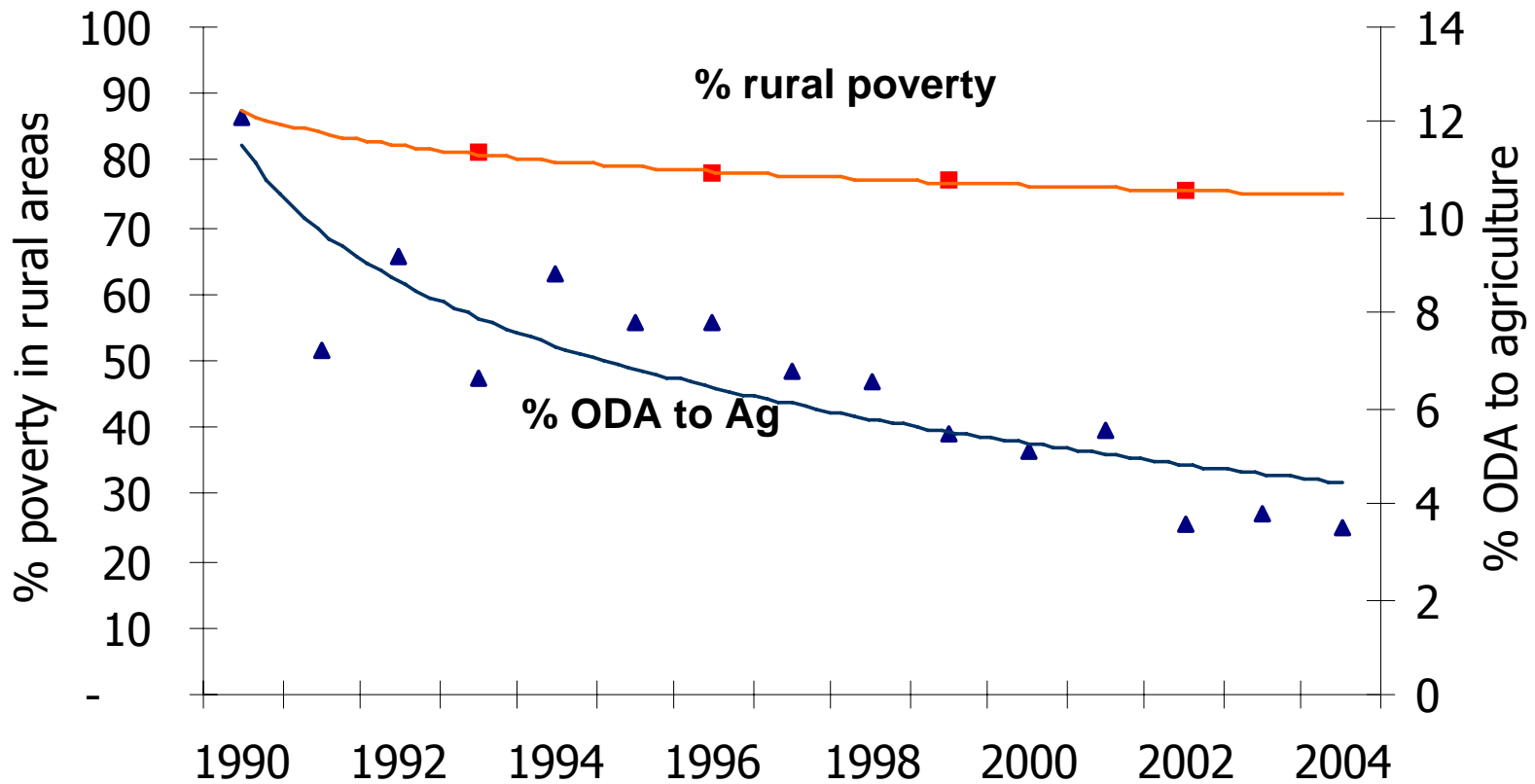
Challenges

“Misinvestment” is also pervasive



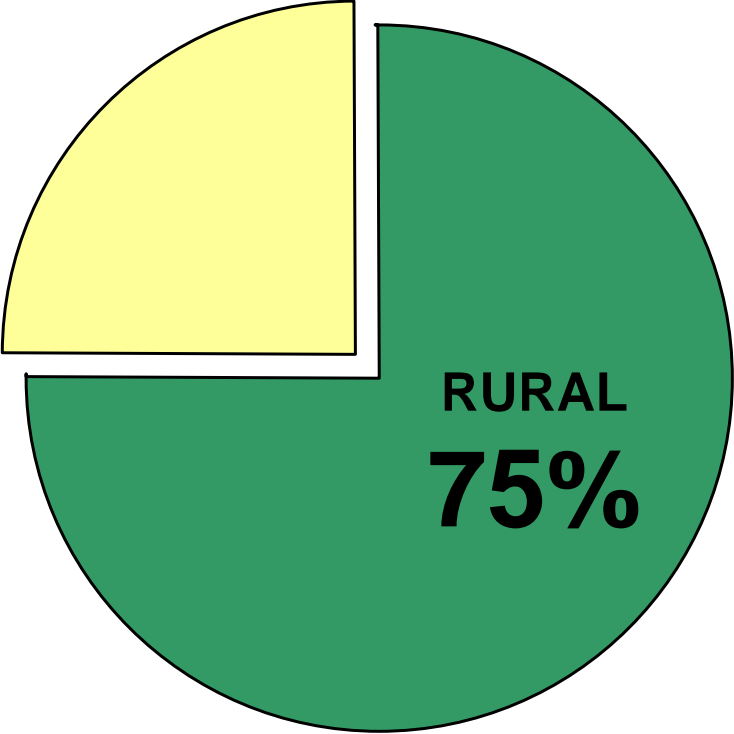
Challenges

Donor support to agriculture also declined despite MDG to halve poverty



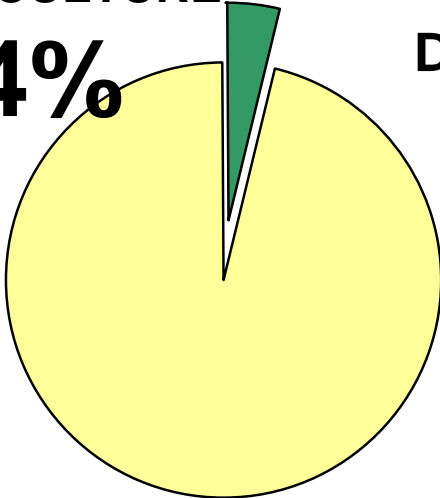
Reality vs Action

WORLD POOR



AGRICULTURE

4%

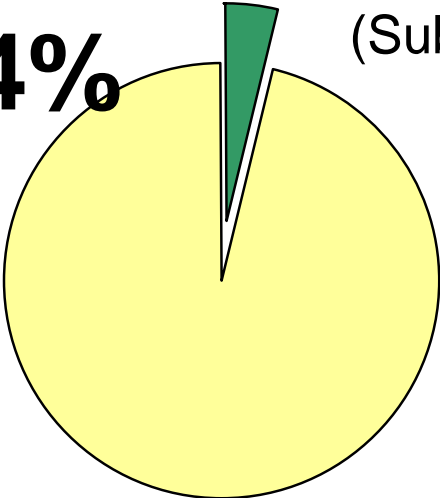


OFFICIAL DEVELOPMENT ASSISTANCE

(12% in 1990)

AGRICULTURE

4%



PUBLIC SPENDING
(Sub-Saharan Africa)

Donor Support to Agriculture 1980-2007

Early 1980s

Official development assistance
(ODA): 17%

World Bank lending: 30%

Early 1990s

Official development assistance
(ODA): 12%

World Bank lending: 15%

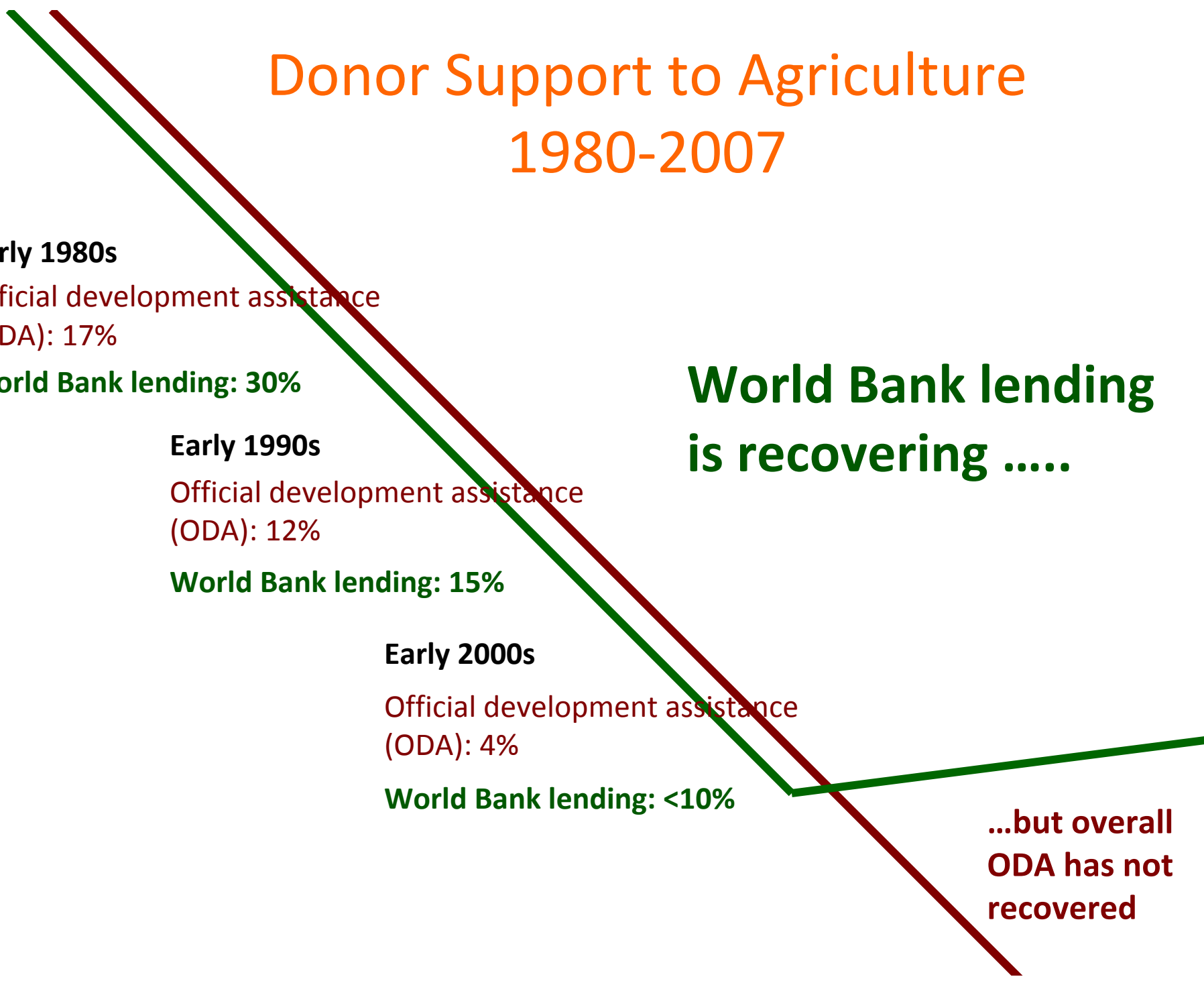
Early 2000s

Official development assistance
(ODA): 4%

World Bank lending: <10%

**World Bank lending
is recovering**

**...but overall
ODA has not
recovered**

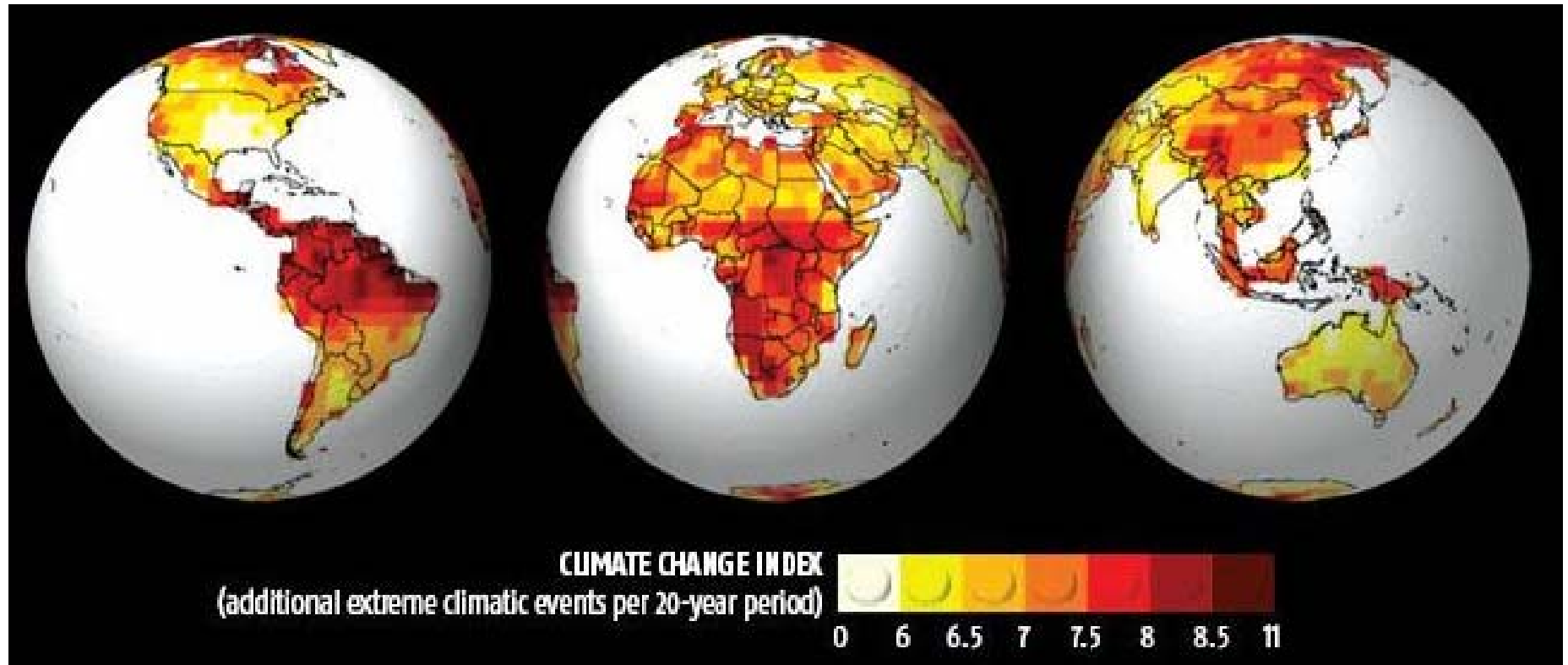


So, what should we do?

Agriculture remains fundamental for development

1. Accelerate **smallholder productivity increases for agricultural growth** and **food security** in Africa
2. Follow a **comprehensive approach to reduce sectoral disparities** and poverty in transforming countries of Asia
3. Enhance **sustainability and environmental services** from agriculture
4. Pursue **multiple pathways out of poverty**: smallholder farming, labor market, rural non-farm employment, migration
5. Improve the **quality of governance** in agriculture at local, national, and global levels

Increase in frequency of extreme events likely



Baettig, Wild, and Imboden (2007) A climate change index: Where climate change may be most prominent in the 21st century. *GEOPHYSICAL RESEARCH LETTERS*, VOL. 34.

Projected Climate Change Impacts on Agriculture

- Reduction in crop yields and agriculture productivity
- Increased incidence of pest attacks
- Limits on the availability of water
- Exacerbation of drought periods
- Reduction in soil fertility
- Lower livestock productivity and higher production cost
- Lower availability of human resource and lower labor productivity

Adaptation = Good Development

- Promoting growth and diversification
- Investing in research and development, education and health
- Creating markets in water and environmental services (carbon, biodiversity, hydrology)
- Enhancing resilience to disasters and improving disaster management
- Promoting risk management and risk-sharing, including social safety nets

Food Prices: The Stakes Are High

- Recent increase in food prices may have already:
 - pushed 100 million more people into poverty
 - set back the fight against poverty by 7 years
 - risked losing recent gains in reducing malnutrition, which threatens this -- and future -- generations
- Already hunger and malnutrition are the underlying causes of death of over 3.5 million children every year.
- Not a temporary phenomenon – high food prices are expected to stay high in the medium term (above 2004 levels through to 2015).

Why have food prices risen?

Fundamentals: Supply and Demand

INCREASING DEMAND:

- Sustained **food demand from emerging markets**, especially demand for protein and fresh fruits and vegetables – e.g., Russia, China and India
- **Diet changes**, from grain to more diversified diet, meats and dairy with higher derived demand for grains and oilseeds
- **Biofuel mandates** => demand shift, particularly in the United States (corn-based ethanol), and Europe (rapeseed for biodiesel), Argentina (soybeans for biodiesel)

Agricultural commodity prices
S&P/GSCI



Source: Thomson Datastream

Why have food prices risen?

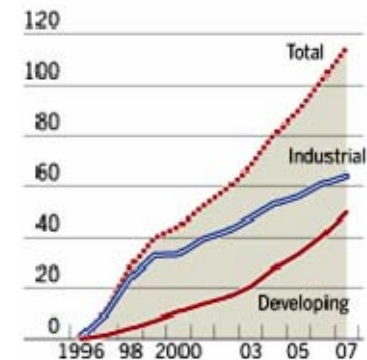
**Fundamentals:
Supply and Demand**

DECREASING SUPPLY:

Low stocks for grains due to:

- **Shortfalls in grain production** due to droughts in Australia, Canada, Eastern Europe
- **Disappearance of intervention stocks** in USA and EU due to policy reforms
- **Competition from biofuels**

Global area of biotech crops
Hectares (m)



Source: ISAAA

Why have food prices risen?



Other Causes

INCREASING PRODUCTION COSTS

Increasing costs of energy, fertilizer and other commodity dependent agricultural inputs

DECLINING DOLLAR

Declining dollar drives up prices of all commodities, including agro-commodities

SPECULATION AND INFLATION HEDGE

Inflow of funds causes commodities to diverge from trading on their fundamentals

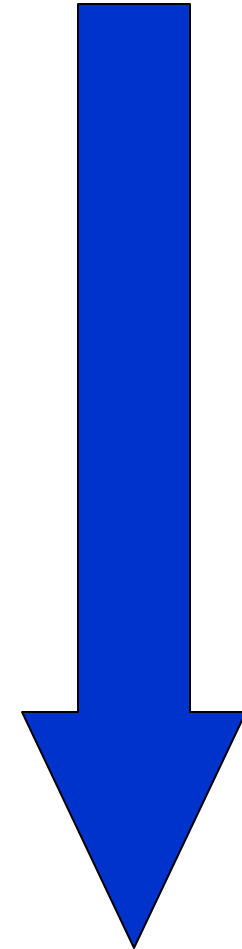
Food Prices: Major Policy Messages

- **Avoid short-term policies** to short-term food insecurity that have **difficult longer-term implications**
- Short-run policies require **planning exit strategies** in advance
- Different countries need **different policies**, depending on:
 - institutions, capacity
 - governance requirements
 - size of country and history of trade, etc.
- Promote **longer-term agricultural growth**

Food Prices: Short-Run Options

Better policy choices

- Reduce Food Grain Taxes/Tariffs
- School Feeding Programs
- Conditional Cash Transfers to the Poor
- Targeted Food Subsidies
- Cash for Work
- Food for Work and Food Aid
- Build-up Government Buffer Stocks for Distribution
- Food Rationing
- Price Controls
- Export Restrictions/Taxes
- Export Bans



Worse policy choices

Food Prices: World Bank Group Action

- **With UN system and others, identifying countries most in need** and provide rapid assessments, concessional financing and support
- Support **World Food Programme** call for \$755 million in emergency assistance
- Invest in **Policy and Analytical Work**
 - Analyses to better understand impact of biofuels
 - Policy reforms to reduce distorting subsidies and other trade barriers
 - Gender impact
 - Nutrition impacts
- Encourage constructive **policy responses in rich and poor countries**

Food Prices: World Bank Group Action

- **Global Food Crisis Response Program** approved May 29
 - **Umbrella** for providing rapid Bank support for a comprehensive response to the crisis
 - **Provides balance** between short run food stabilization and measures to ensure countries able to cope better in medium term, including longer term action and lending to enhance **agricultural productivity**
 - **\$1.2 billion** in total funding available
- Work with **CGIAR** for major scale-up of agriculture research



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