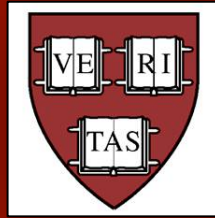


Global Food Policy and Food Security Symposium Series

Water and Agriculture in a Changing Africa: What might be done?

John Briscoe, Gordon McKay Professor of the Practice of
Environmental Engineering,
Harvard University

May 23, 2013
Stanford University



Water and Agriculture
in a Changing Africa:
Impressions from a practitioner
on what might be done

John Briscoe
Stanford University
May 2013

Story Line

1. My qualifications (or lack thereof) on the subject
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 - a) In rich and middle-income countries
 - b) In Africa
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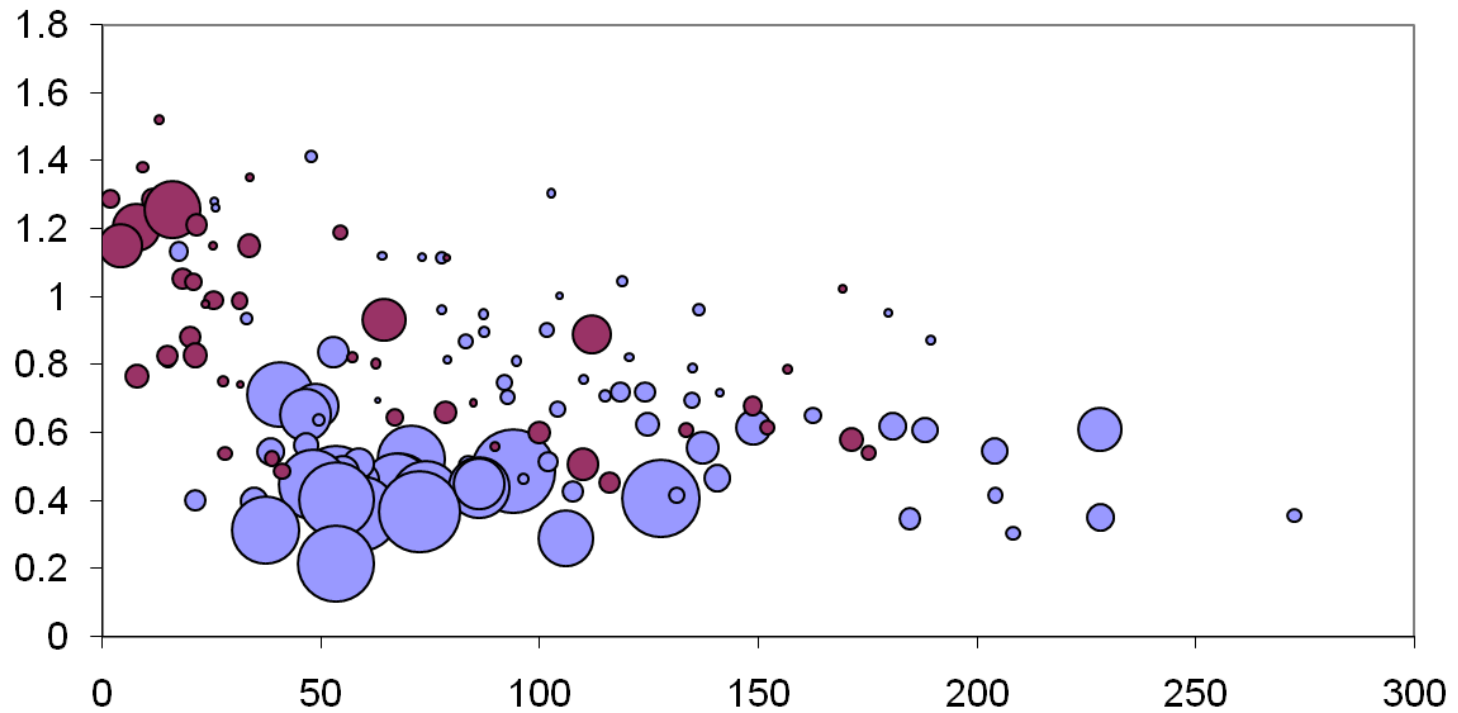
Some parts of the world have benign hydrology and others malign hydrology...

Rainfall Variability and GDP

Bubble Size = GDP per capita

(Blue = low interannual variability of rainfall)

**Monthly
Rainfall
Variability**
(coefficient of
variation)



Mean Annual Rainfall (cm)

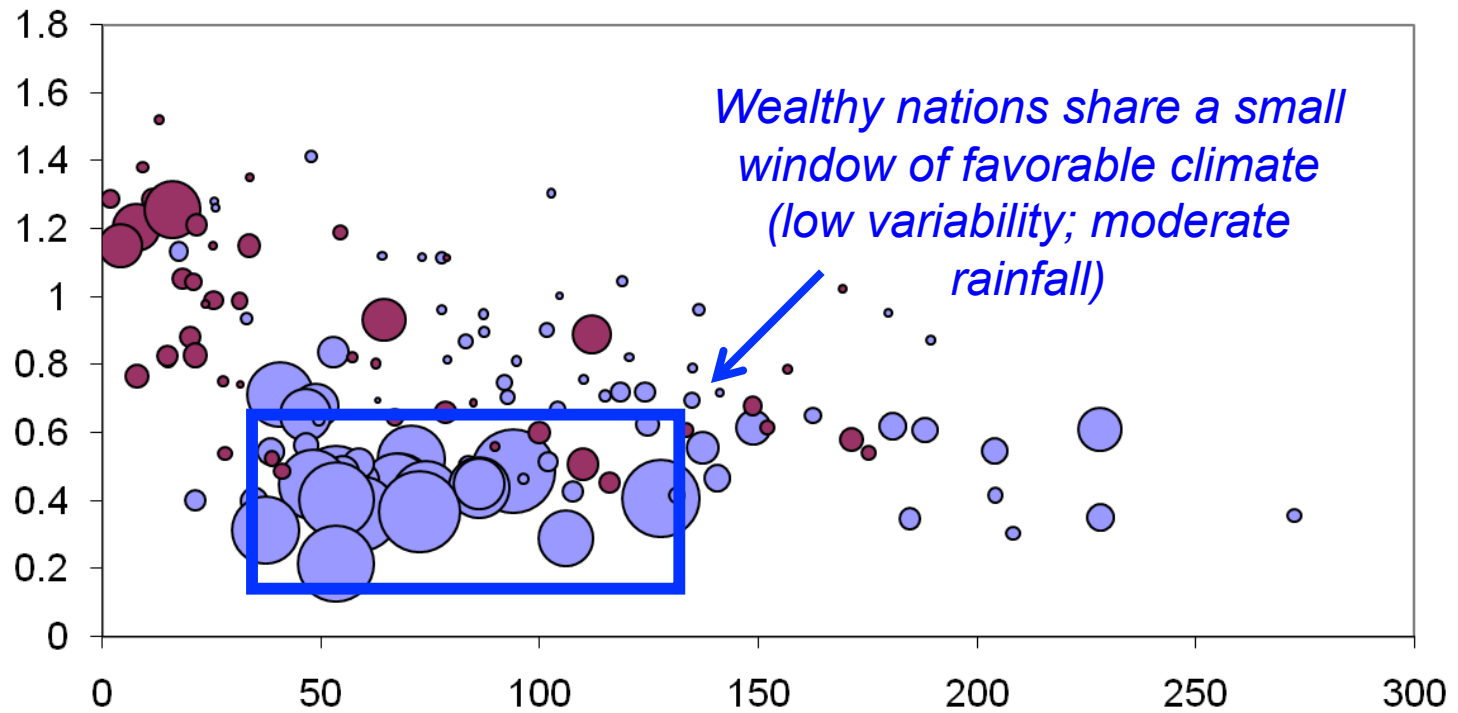
Source: Brown and Lall 2007

Rainfall Variability and GDP

Bubble Size = GDP per capita

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**Monthly
Rainfall
Variability**



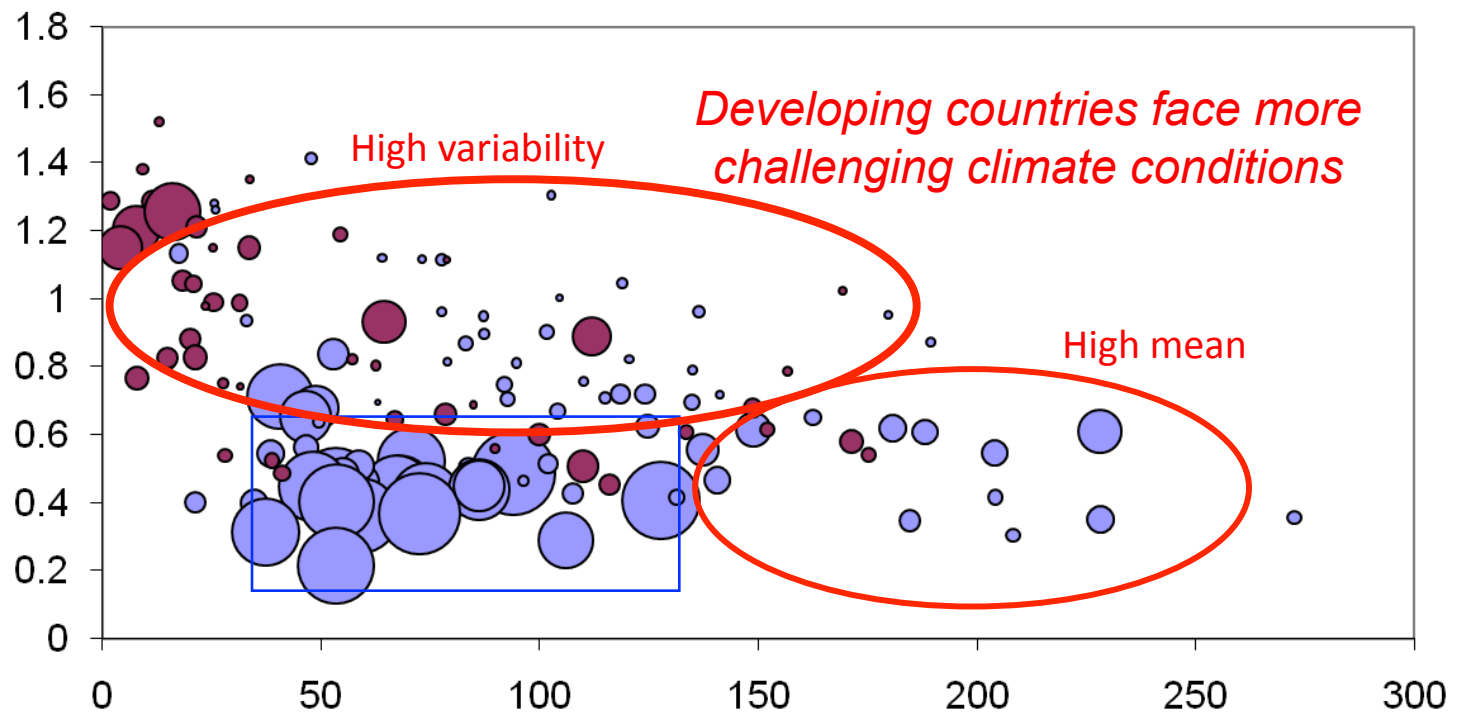
Mean Annual Rainfall

Rainfall Variability and GDP

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Monthly
Rainfall
Variability



Mean Annual Rainfall

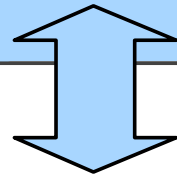
Water Resources Management

Infrastructure for management of floods and droughts, multipurpose storage, water quality and source protection

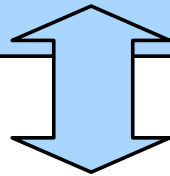
Institutional framework

Management instruments

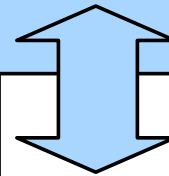
Political economy of water management



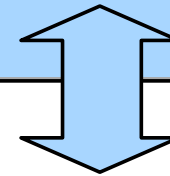
Water supply & sanitation



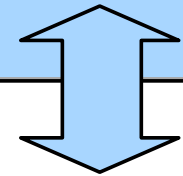
Irrigation & drainage



Energy

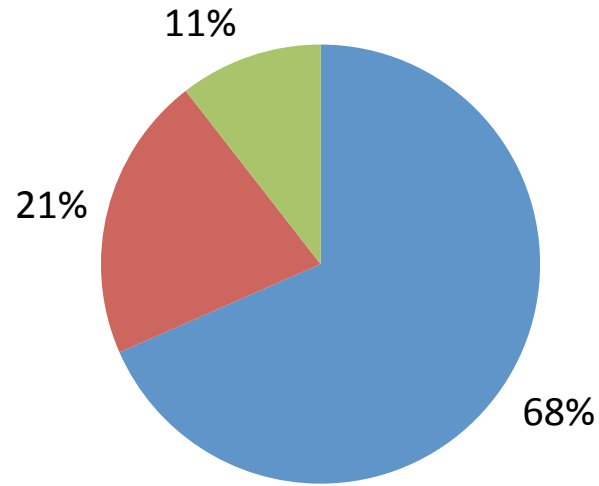


Environmental services



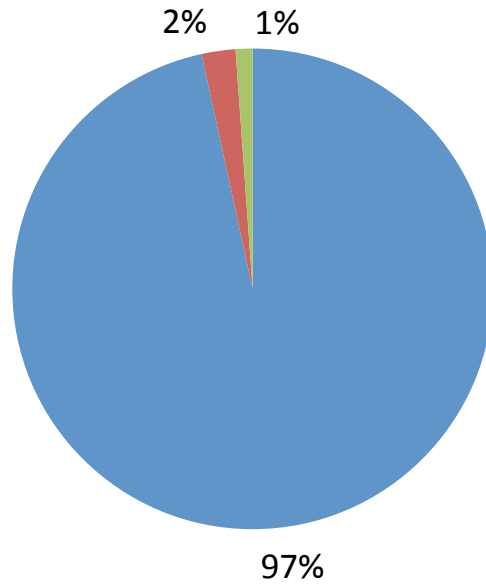
Other uses including industry and navigation

Withdrawal



- Agriculture
- Domestic
- Industrial

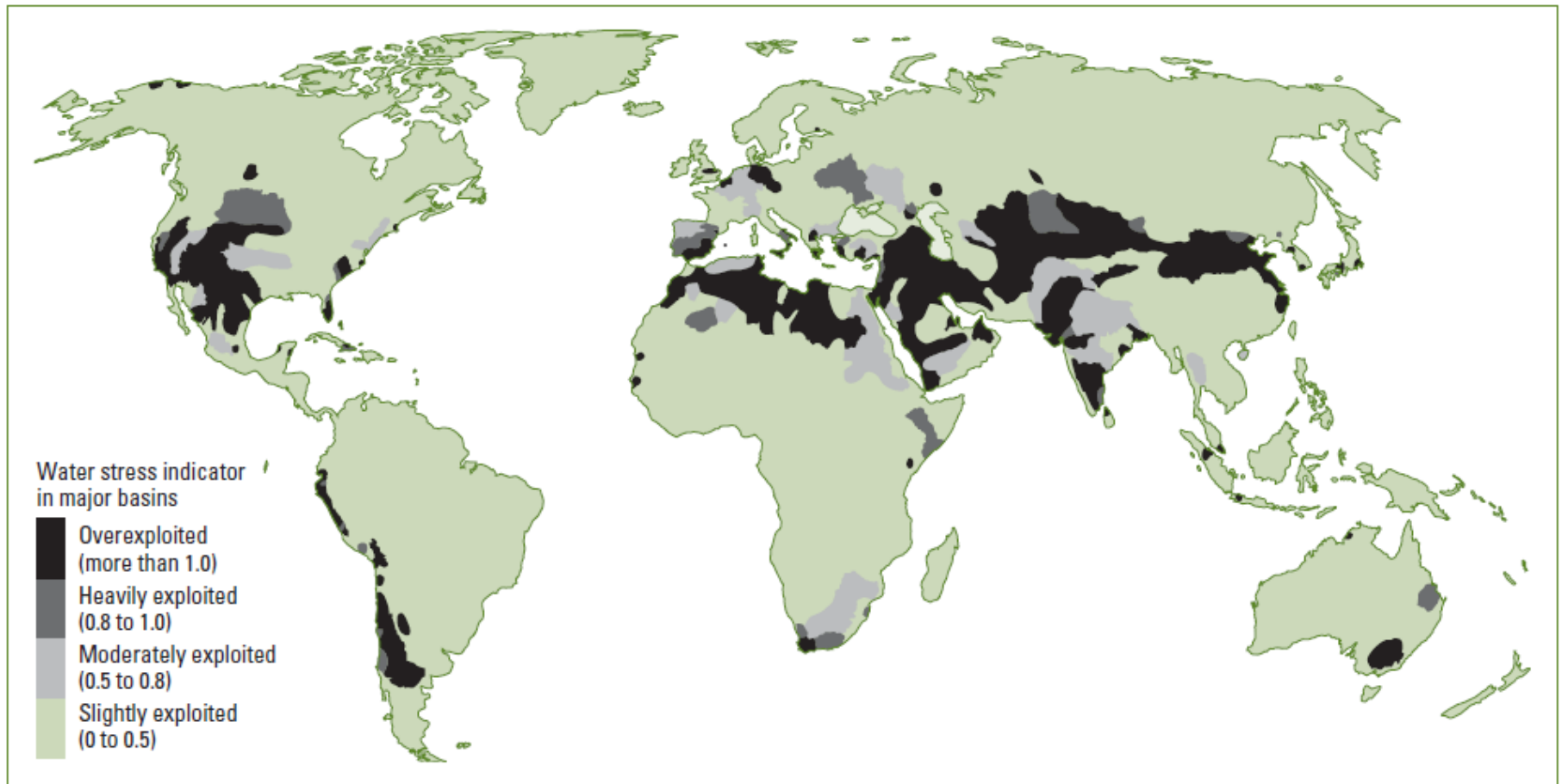
Consumption



- Agriculture
- Domestic
- Industrial

Agriculture is dominant in almost all water-stressed basins

Map 8.1 Overexploitation has caused severe water stress in many river basins



What is “the water crisis” that keeps
leaders awake at night?

National Security (2012)

GLOBAL TRENDS 2030:

ALTERNATIVE WORLDS

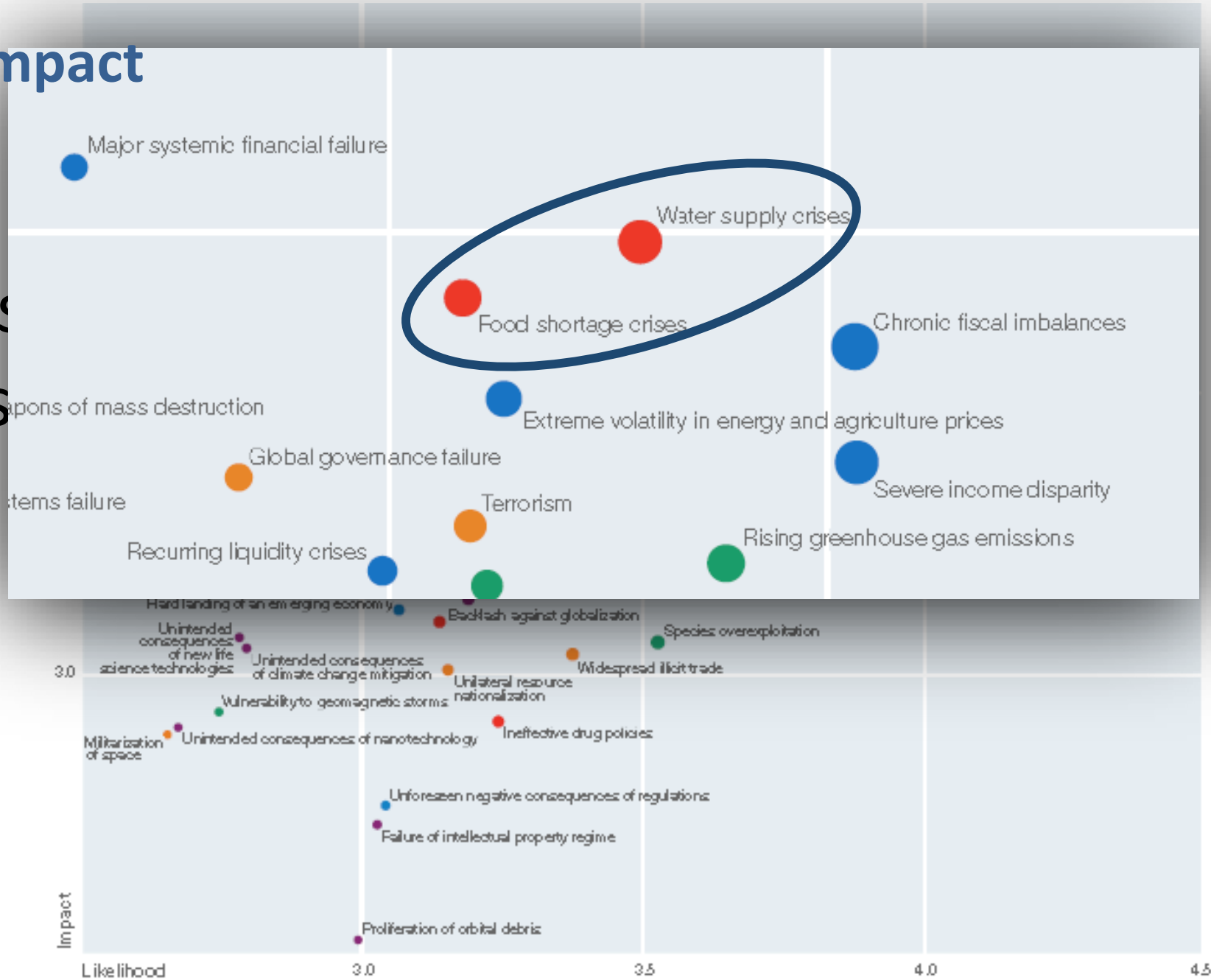


Four overarching megatrends will shape the world in 2030:

- Individual Empowerment.
- The Diffusion of Power.
- Demographic Patterns.
- The Growing Nexus among Food, Water, and Energy

Business Leaders (WEF 2012)

Impact



Source: World Economic Forum

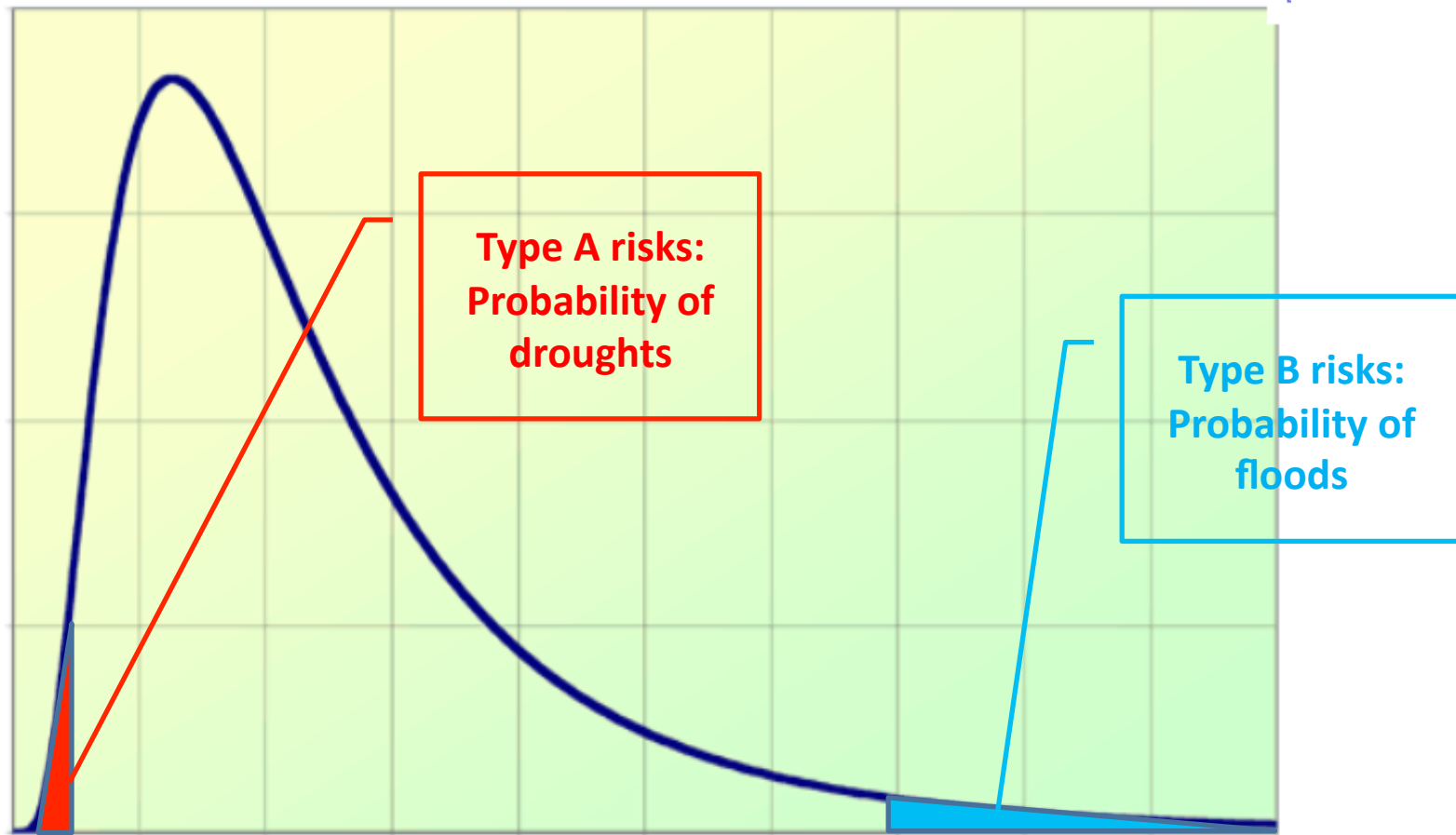
Likelihood

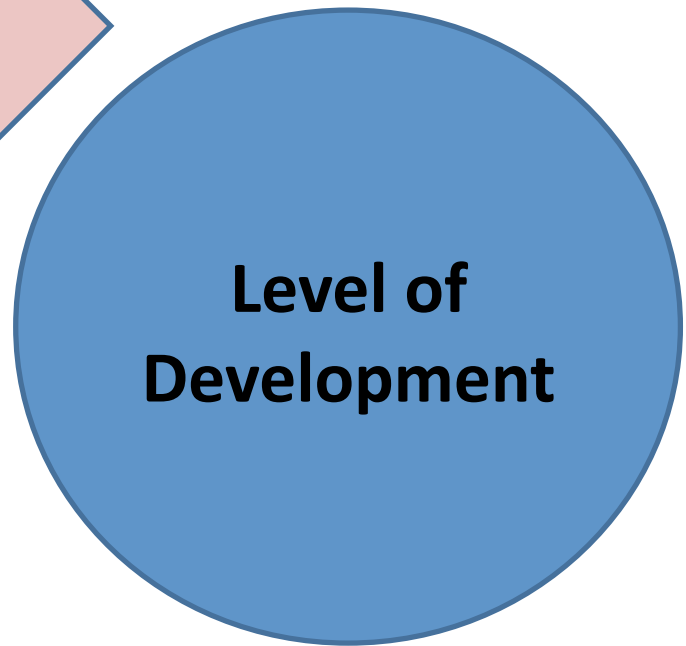
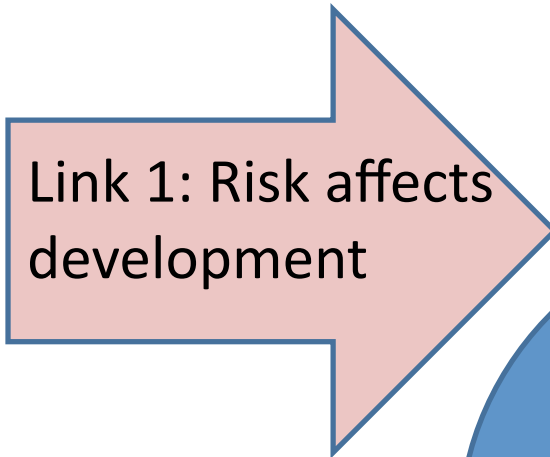
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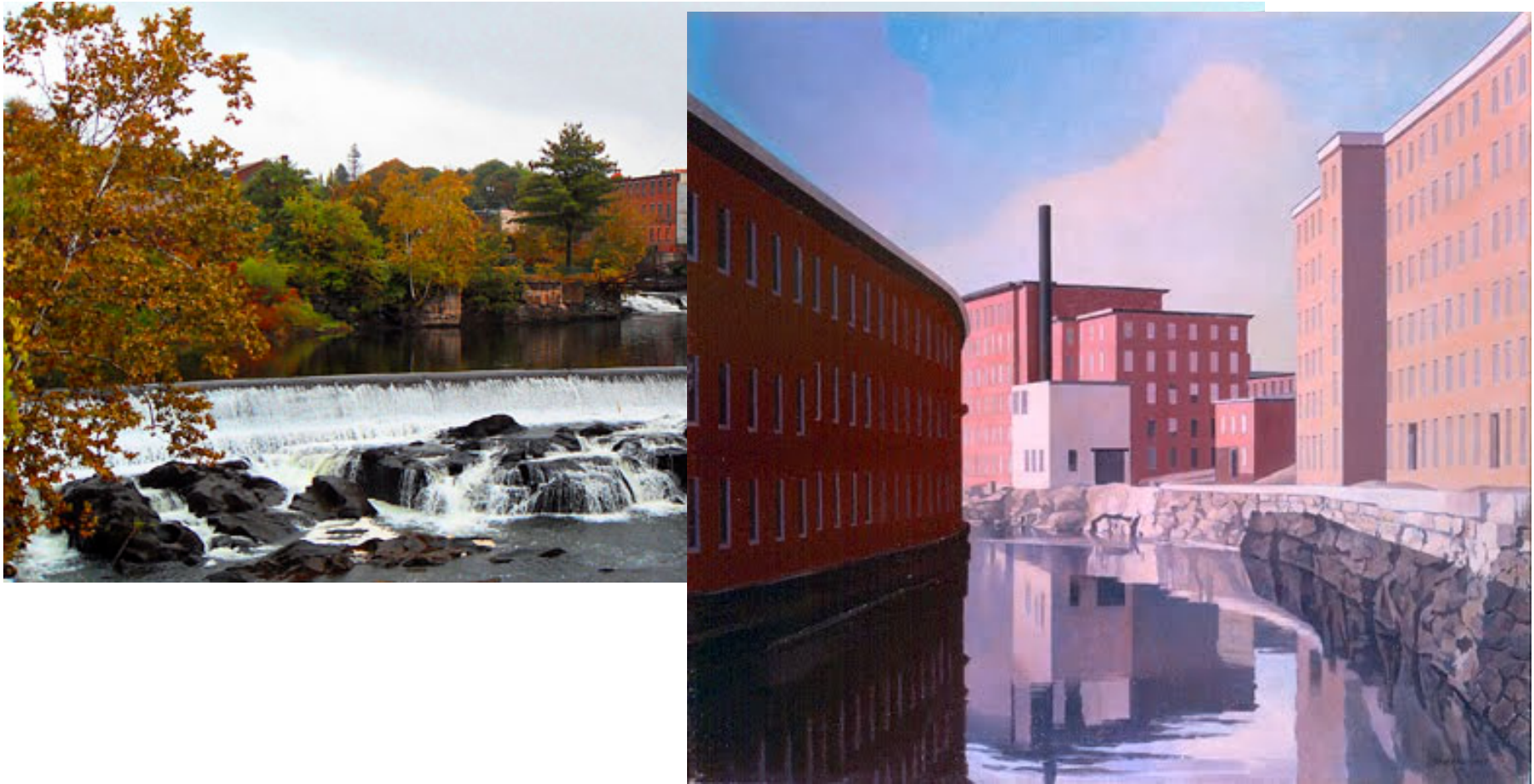
Societies face two types of water risk...

Probability of flow





An example – how 19th century New England benign hydrology



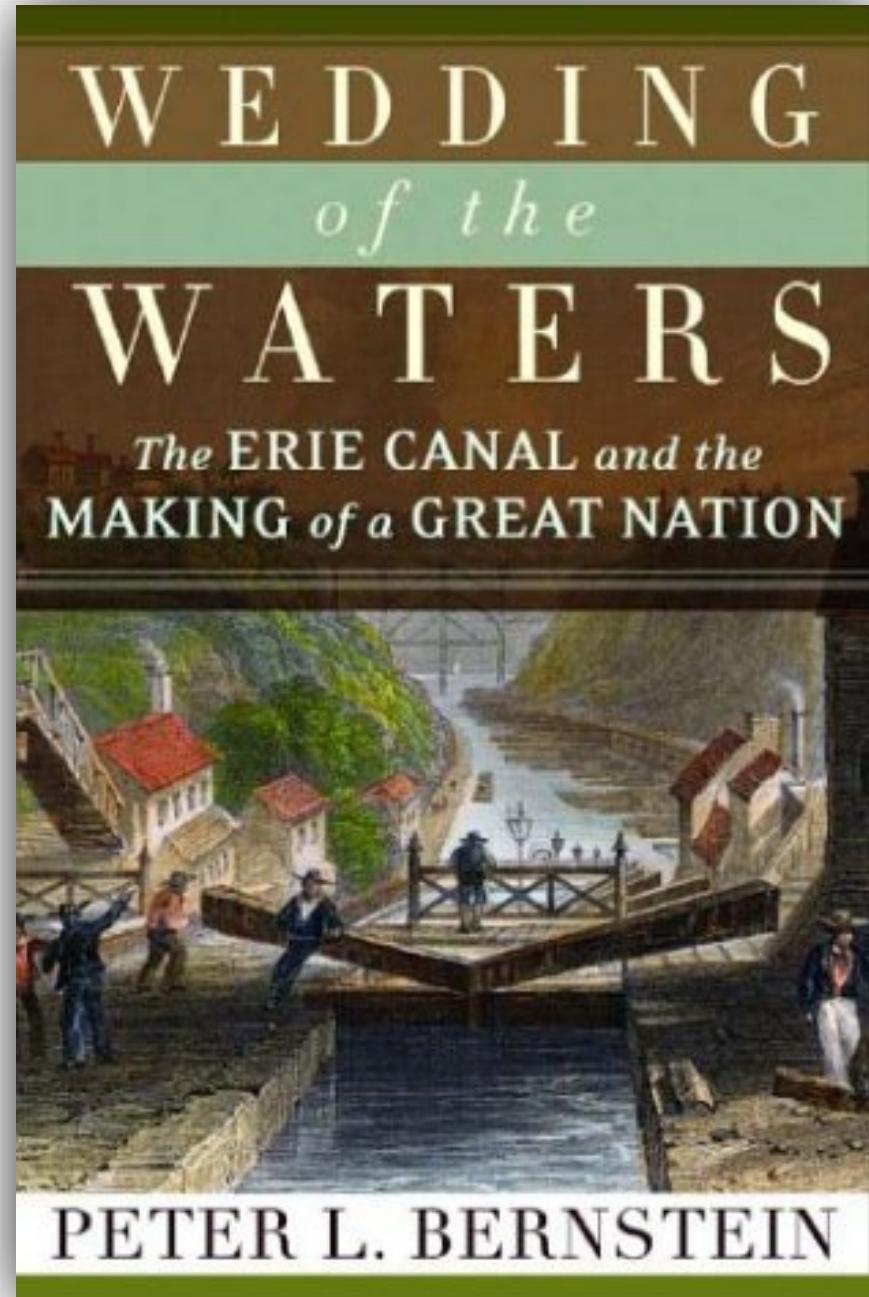
An easily-mobilizable “water platform”
(for energy, transport, factories and people)

The response when Boston “achieved water security” in 1848 (from Cochituate)

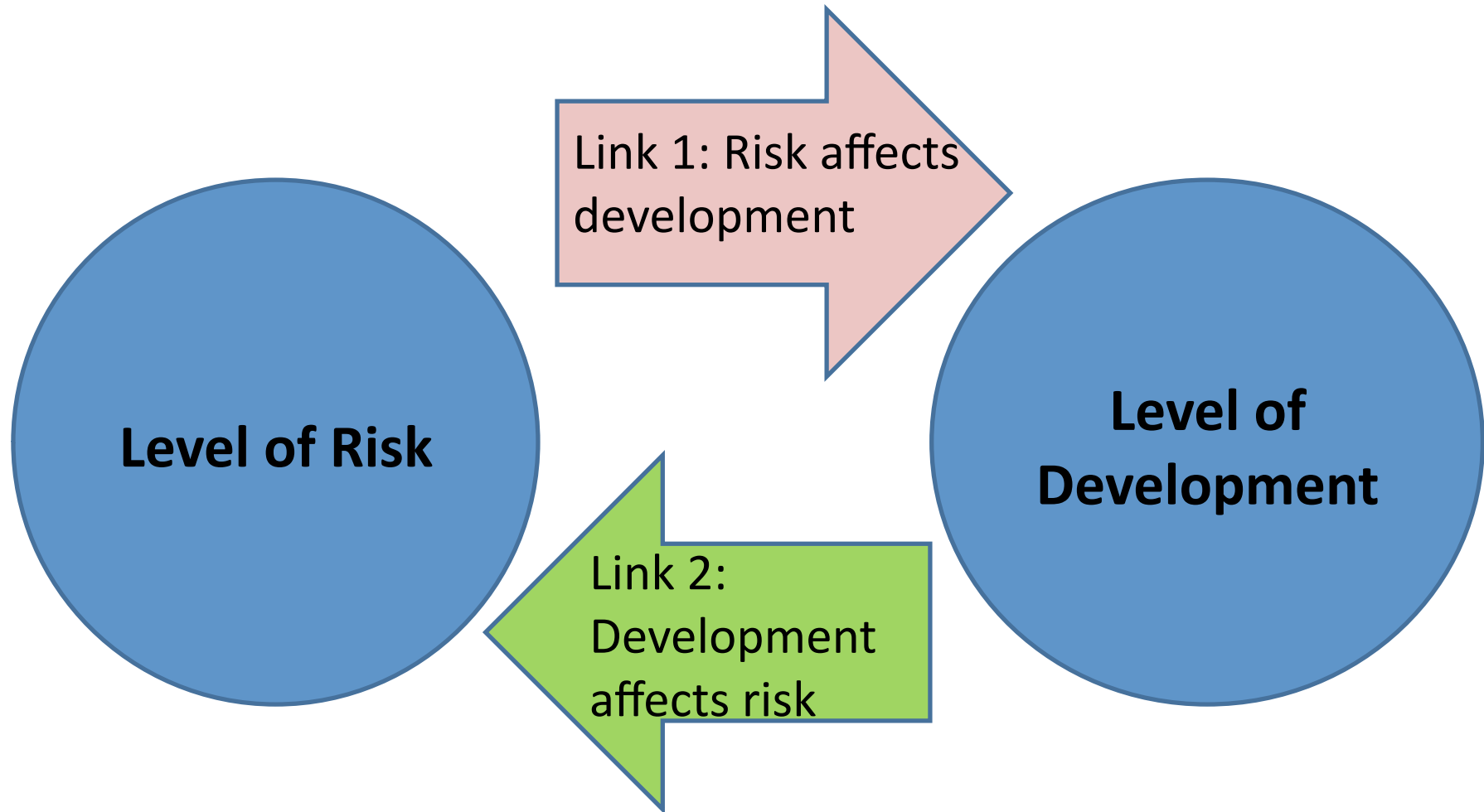


Other forms of taking advantage of
benign hydrology to build a water
platform for growth...

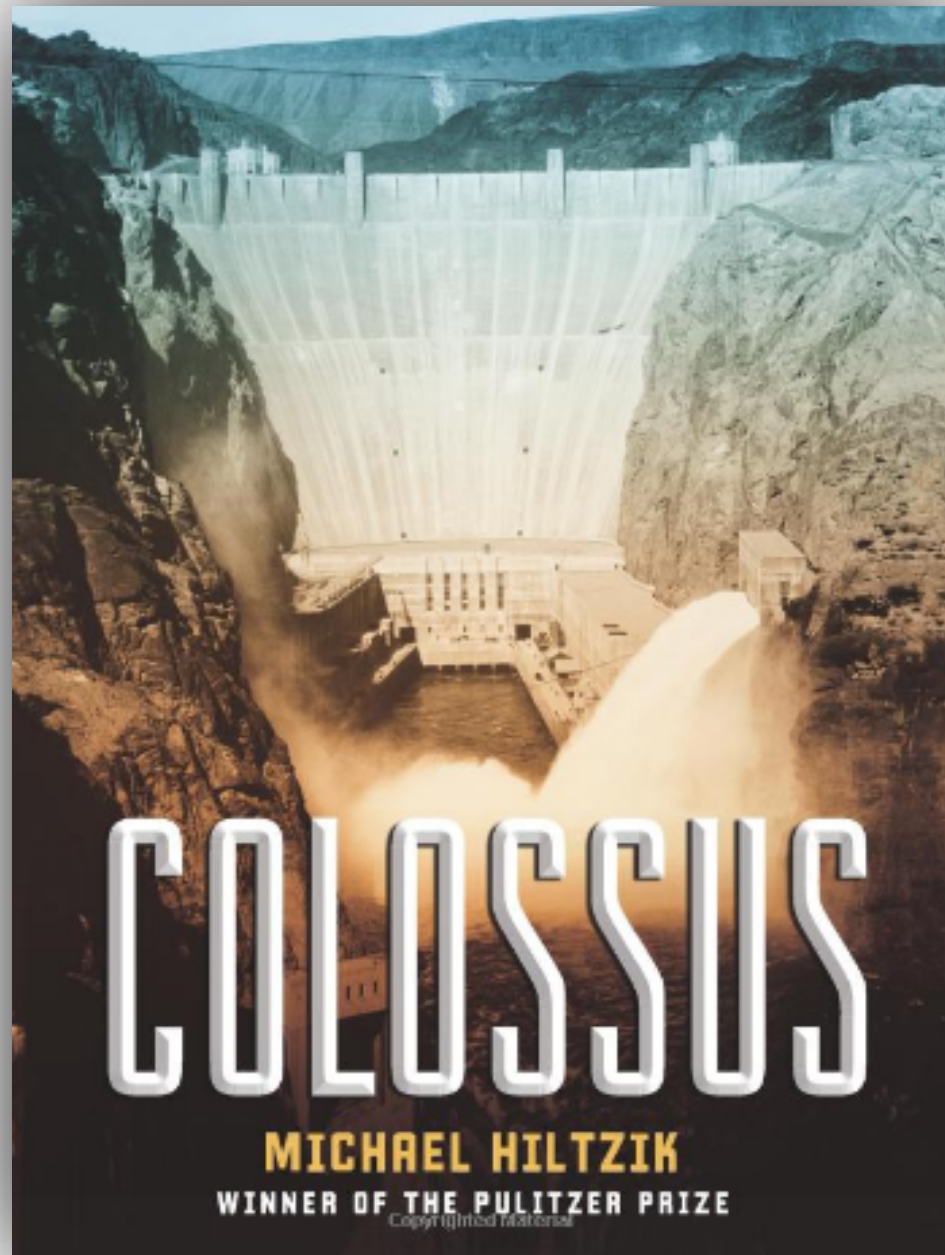
Secure, low-cost
navigation
changed the
history of the US
(and the food
security of
Europe)



But the quest for water security is
a two-way street



A country
with a
growing
economy
could invest
to make parts
with malign
hydrology
productive....



What societies do to reduce risk



Infrastructure

Institutions

INSTITUTIONS affect water security

1. By reducing vulnerability to drought

Notes: Data Source: Expert opinion, and BRS Landuse map
Data Currency: 1999
The Tasmanian boundaries indicate IBRA5 Regions.

C6 - Degree of Changed Hydrological Conditions

Landscape Health Project

Indicative Map Only

Legend

- ∧ IUZ-EUZ
Degree of Changed Hydrological Condition
- Moderate to Major Change
 - Moderate Change
 - Minor to Moderate Change
 - Minor Change



0 200 400 600 800 1000 Kilometers

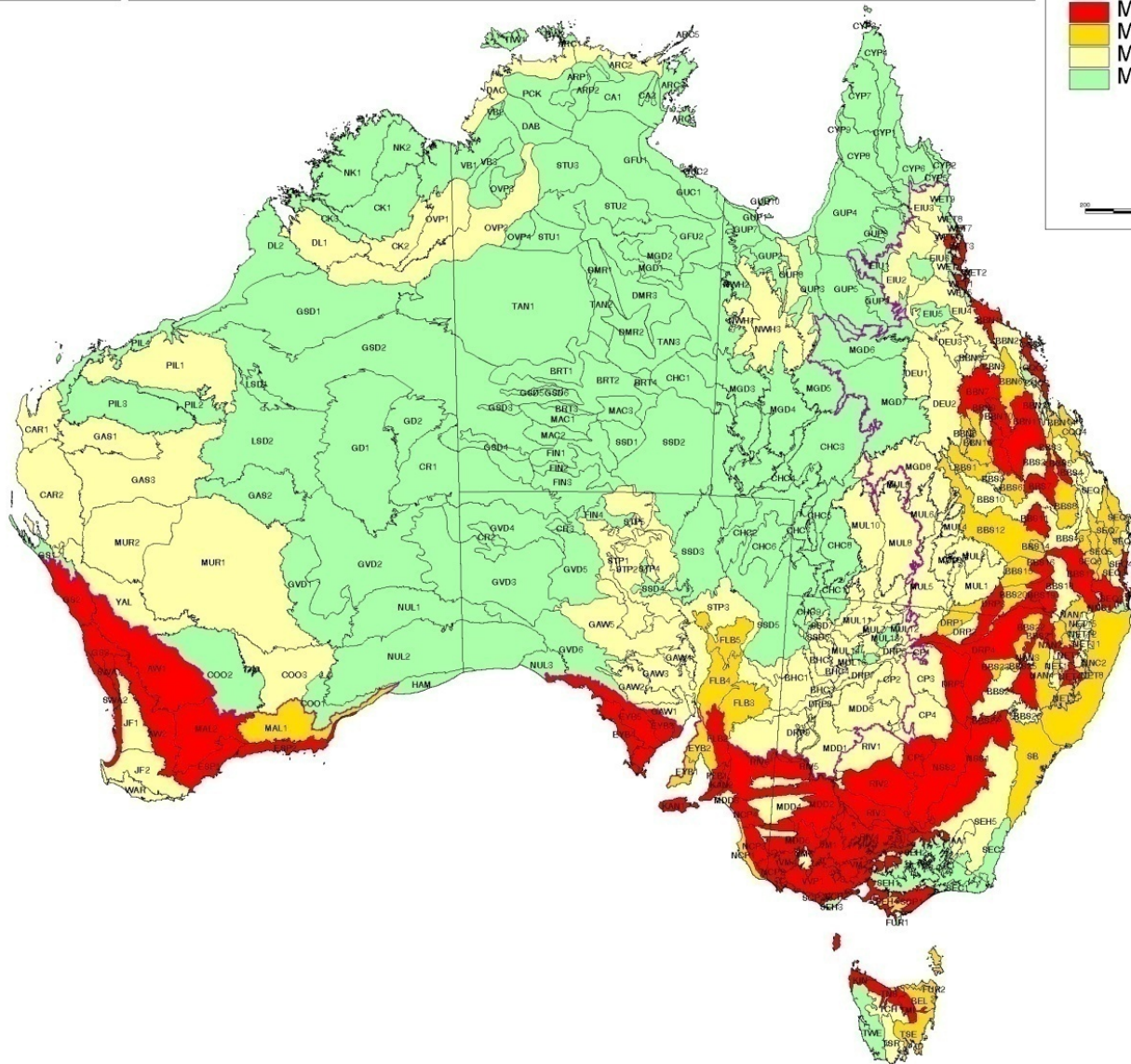
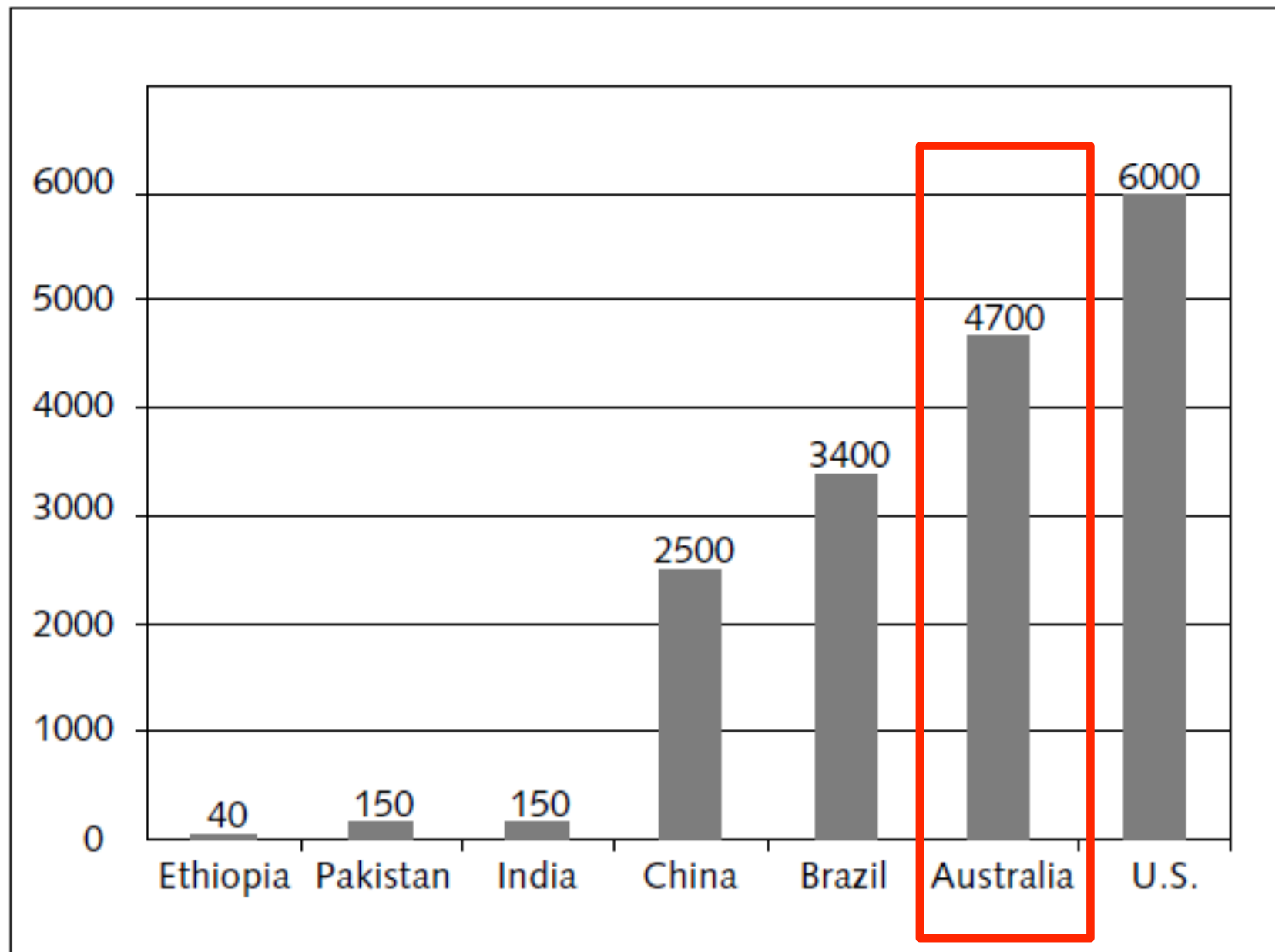


Figure 1.2 Water Storage Capacity in the Rich and Poor Worlds (cubic meters per capita)



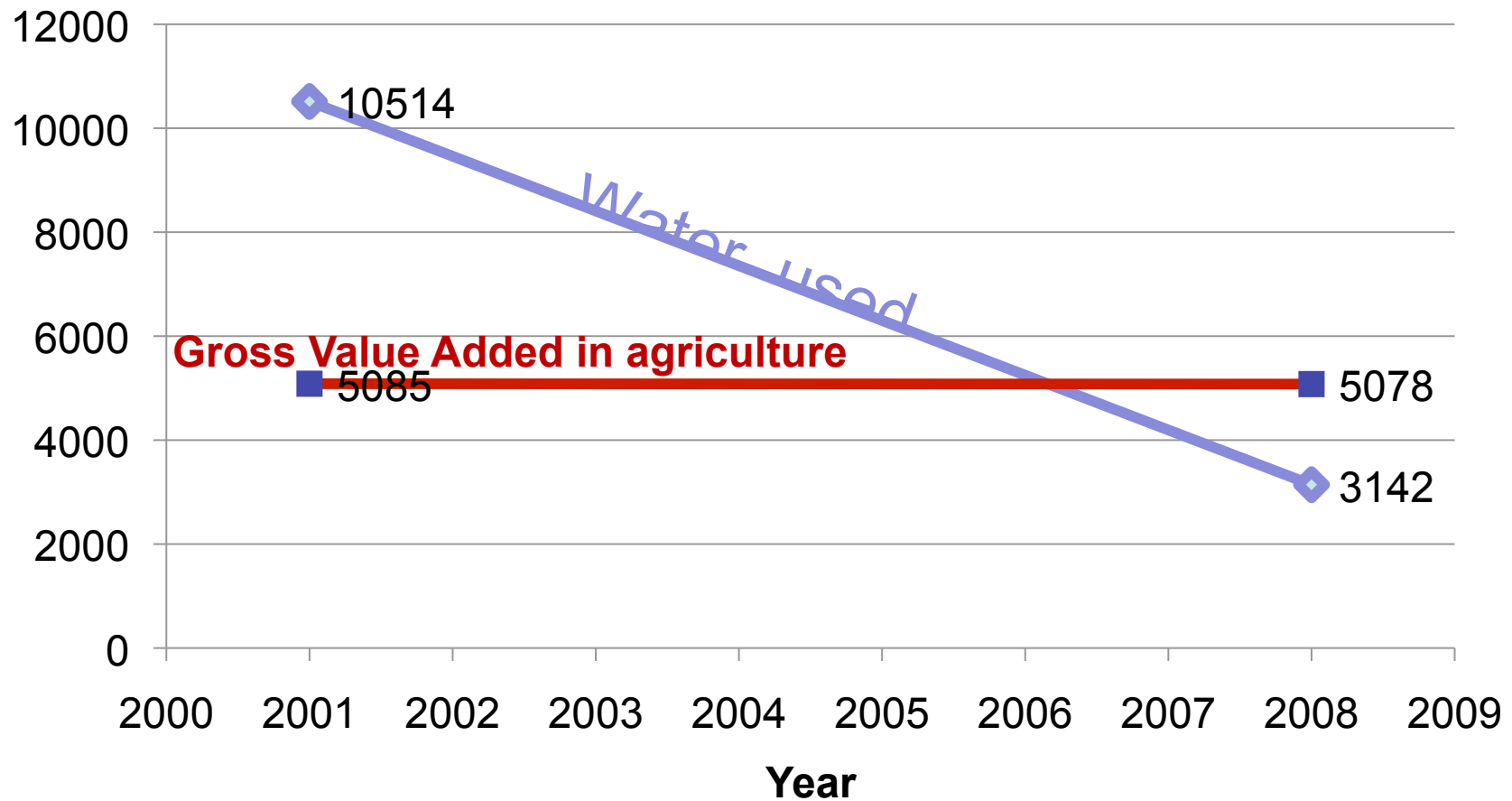


Australian Government



What actually happened?

Water Use and GVA in Agriculture in MDBasin



Source: Natl Water Commission

INSTITUTIONS affect water security

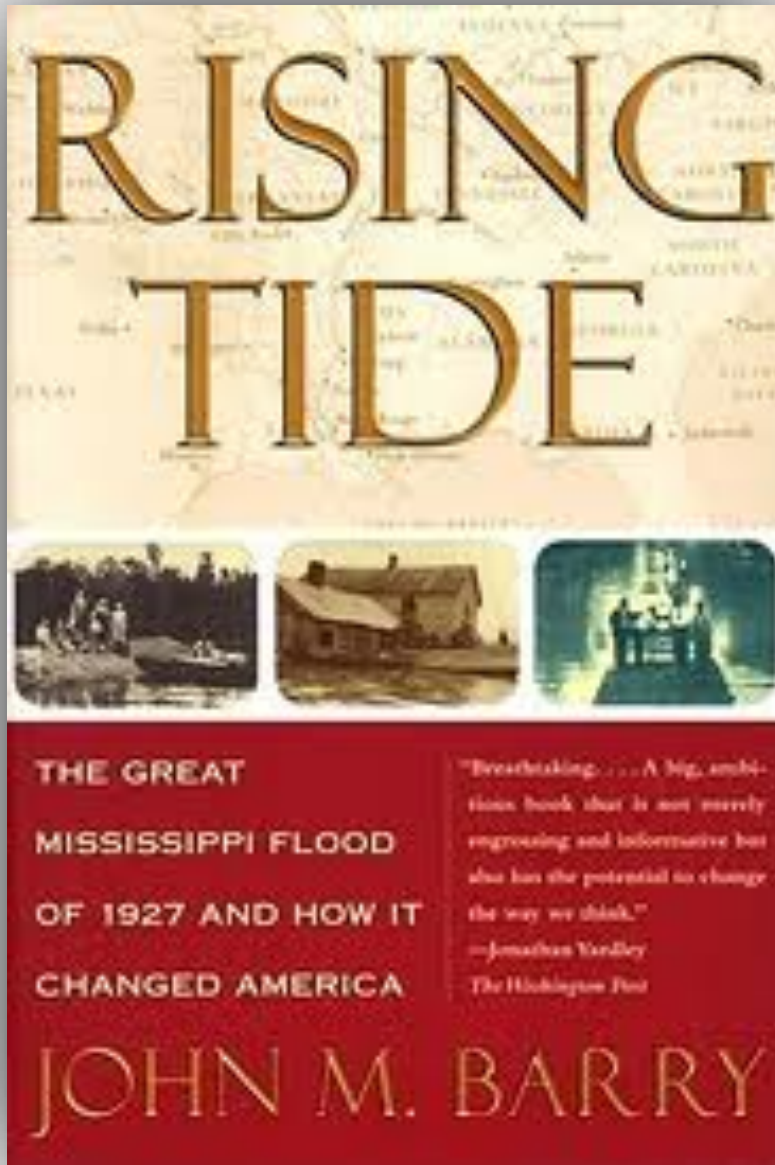
1. By reducing vulnerability to drought
2. By reducing vulnerability to floods



The course and watershed of the **Mississippi River**
The Father of Waters

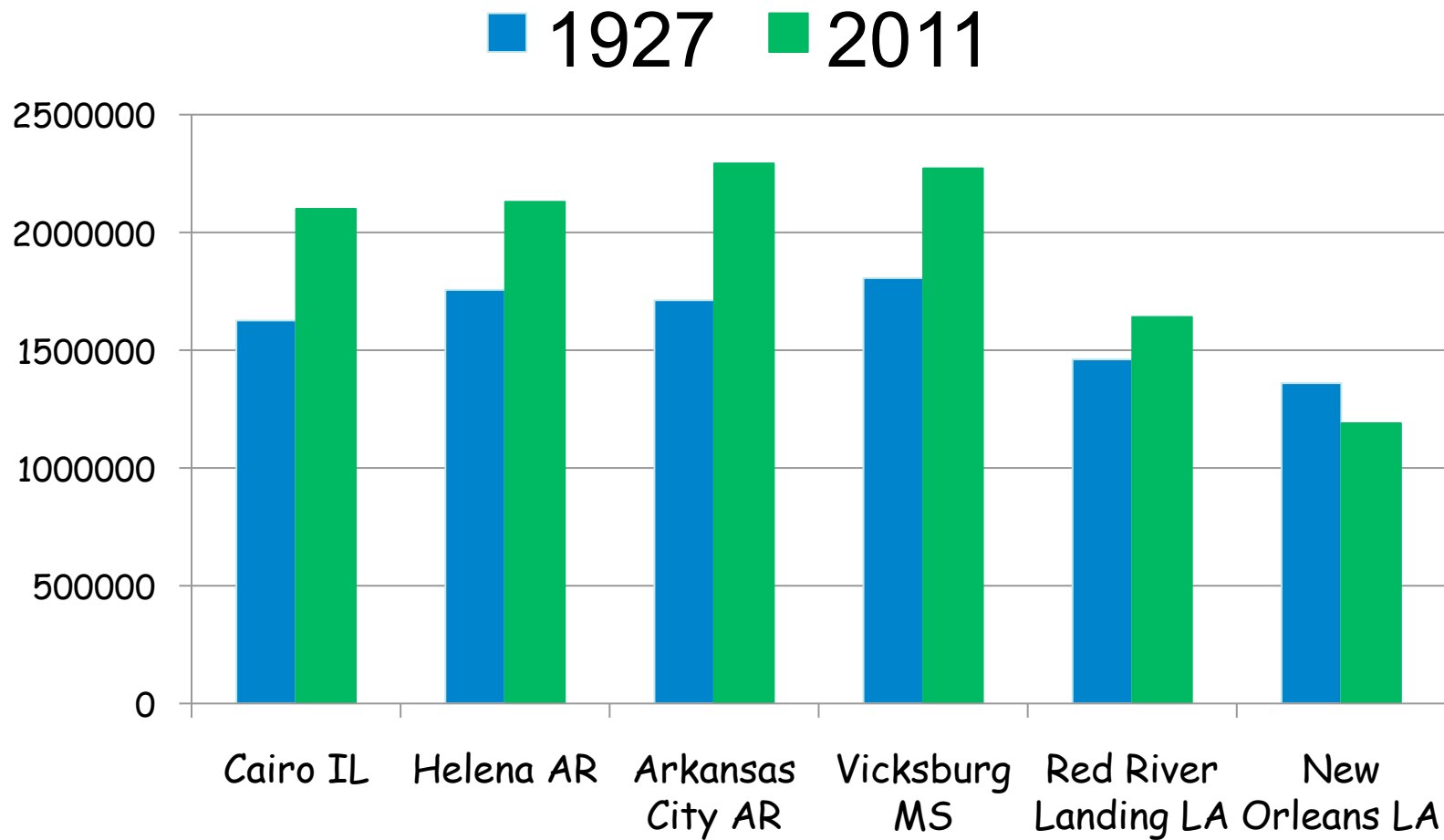
200 Miles
400 Km

The historic 1927 flood



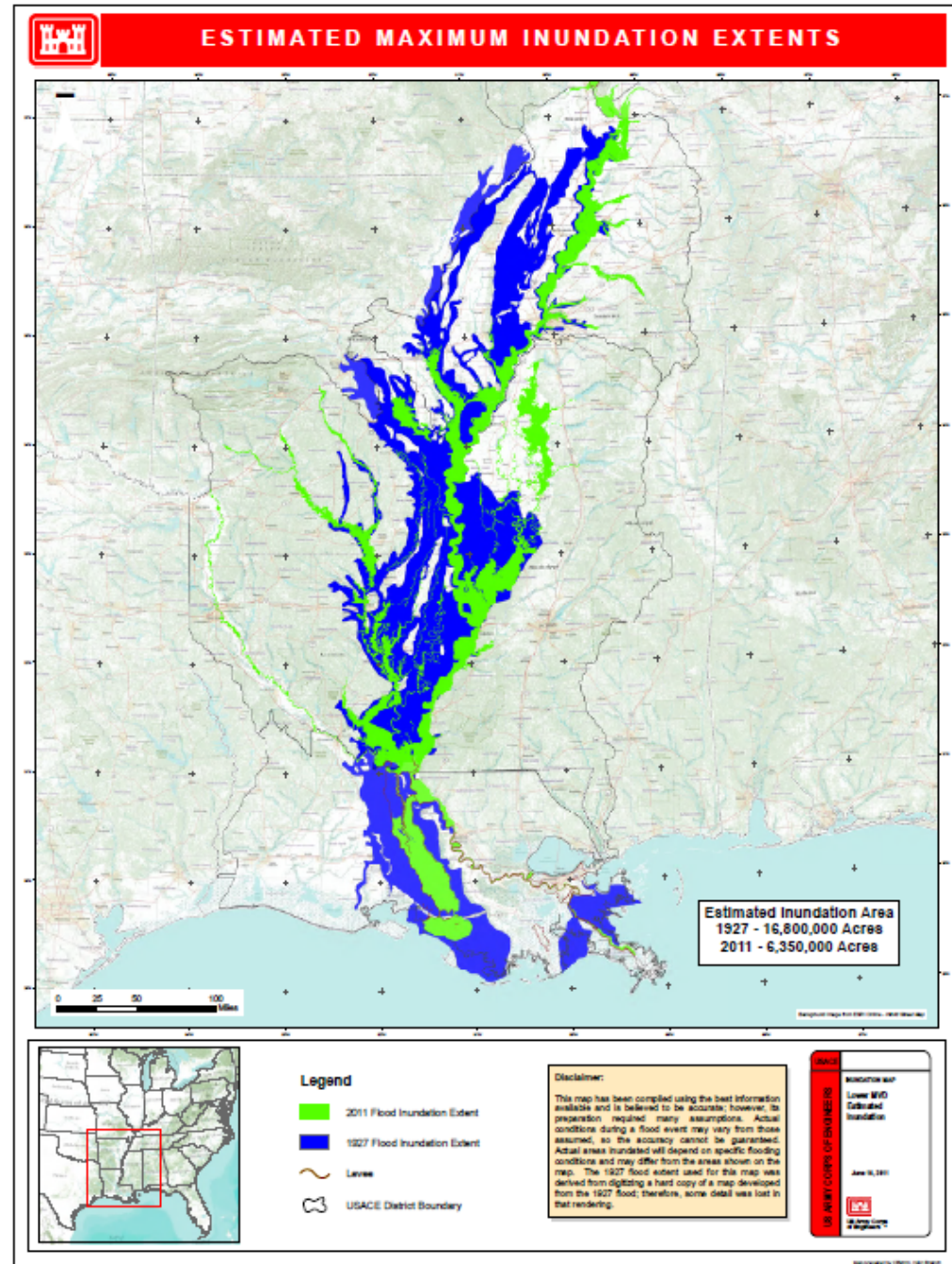
- Anarchic management and terrible economic and social devastation
- The main lesson:
 - ▶ In a major flood the river can not be constrained by levees
 - ▶ Have to “make room for the river”
 - ▷ A broad participatory process
 - ▷ Designates floodwaters and backwater areas
 - ▷ Compensation

The great test of 2011: Peak flows (cusecs) similar to 1927



Flooded Areas 1927 Flood VS 2011 Flood

- “Extra” water on designated backwaters and floodways
- Process orderly and consensual
- Flooded area 60% less in 2011

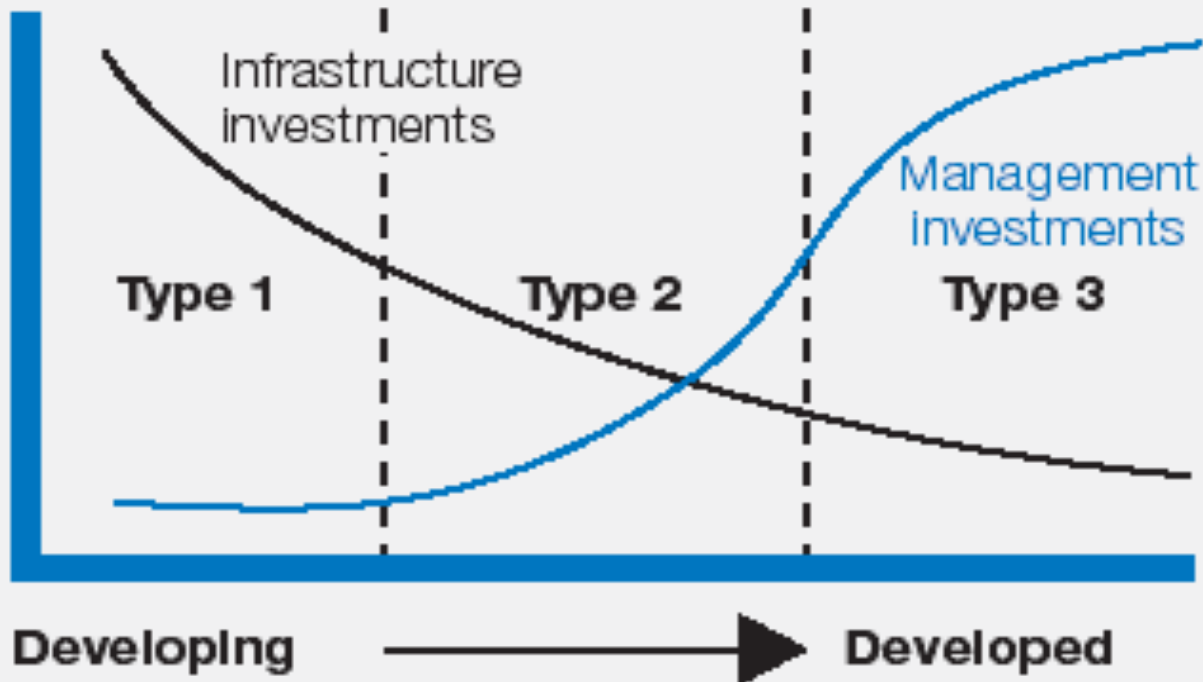


The now-MICs did what the rich did, and built infrastructure for security and water-enabled growth

f2.1

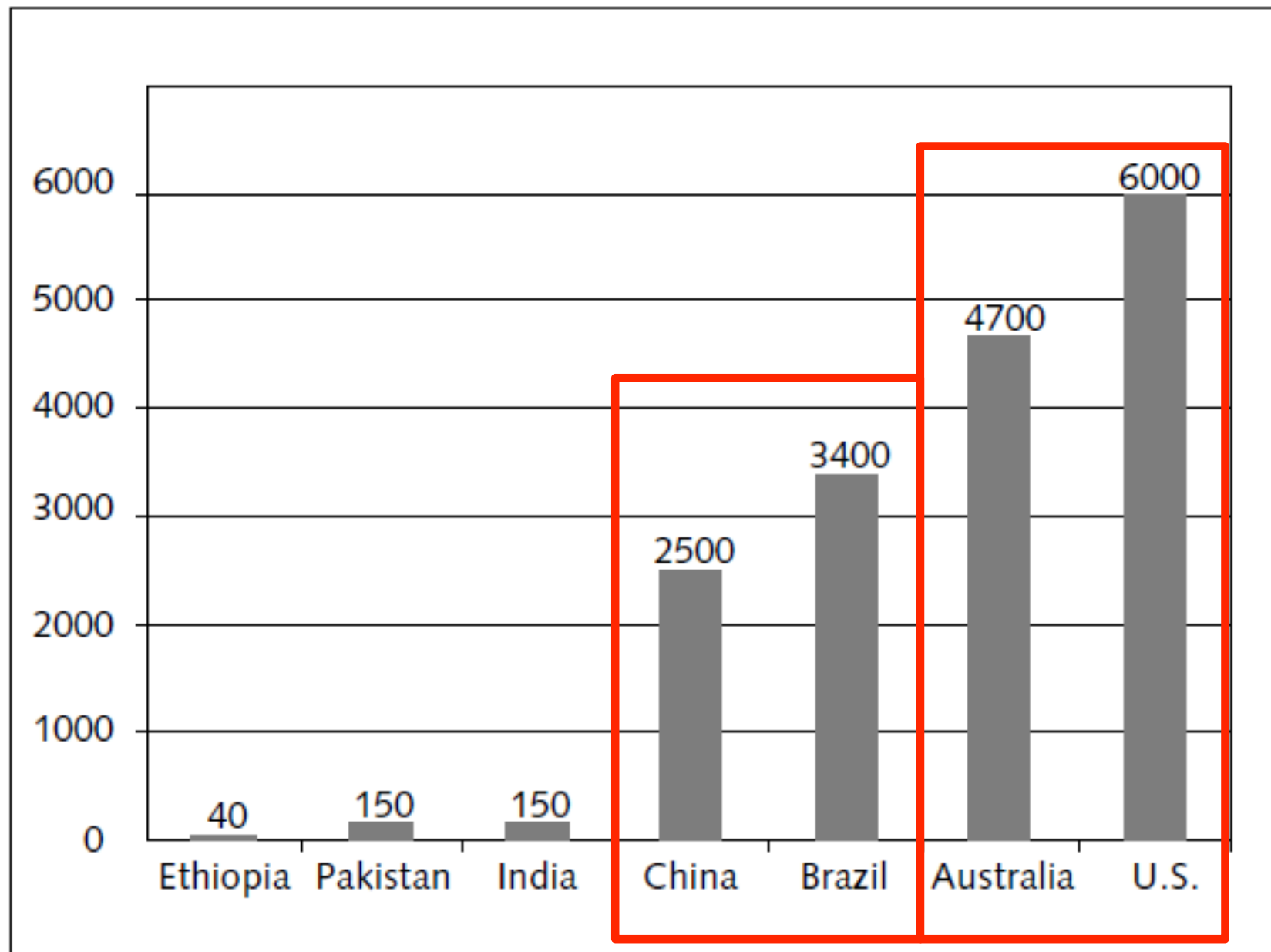
Rates of return on investment by development of water infrastructure

Returns on Investment



Source: World Bank, China Country Water Resources Assistance Strategy 2002.

Figure 1.2 Water Storage Capacity in the Rich and Poor Worlds (cubic meters per capita)



The impacts of creating "a water platform for growth"

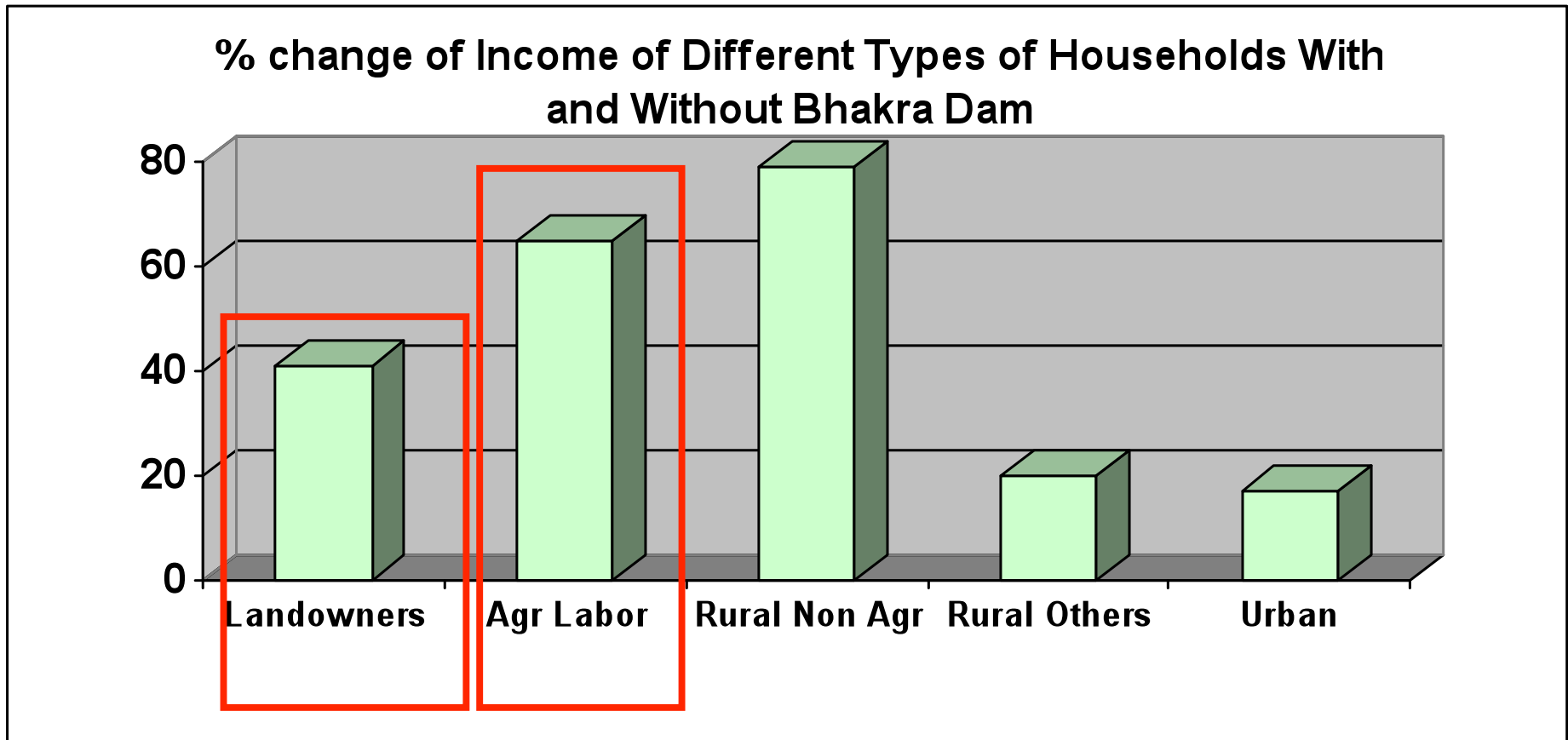
The example of Bhakra Dam in NW India



Panoramic View of Bhakra Dam

Irrigated 7 million hectares and provided 2800 mw of power

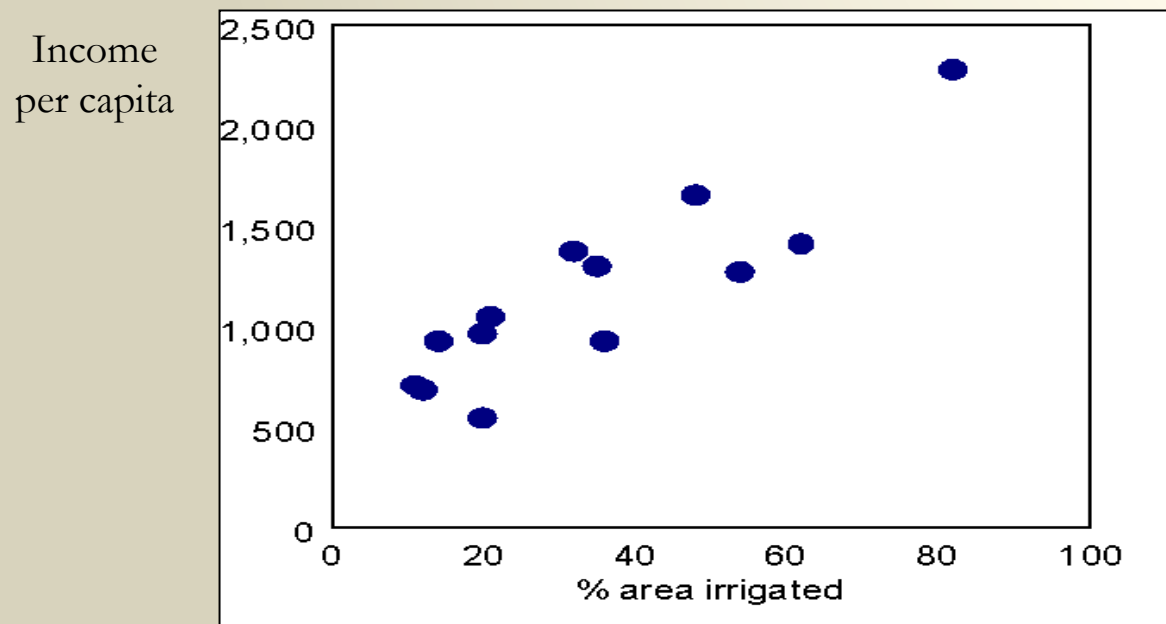
Bhakra stimulated broad-based regional growth (with indirect effects as large as the direct effects....)



Bhakra had a huge positive impact on the poor (not counting the million migrant workers from Bihar each year....)

Source: Bhatia, 2003

The NET effects of water infrastructure + green revolution techniques on the poor in India?



Net effect:

Unirrigated districts (< 10% of cropped area irrigated) --- **69% are poor**

Irrigated districts (> 50% of cropped area irrigated) --- **26% are poor**

Profound implications for social indicators....



THE WORLD BANK ECONOMIC REVIEW, VOL. 15, NO. 3 367-391

Where Has All the Education Gone?

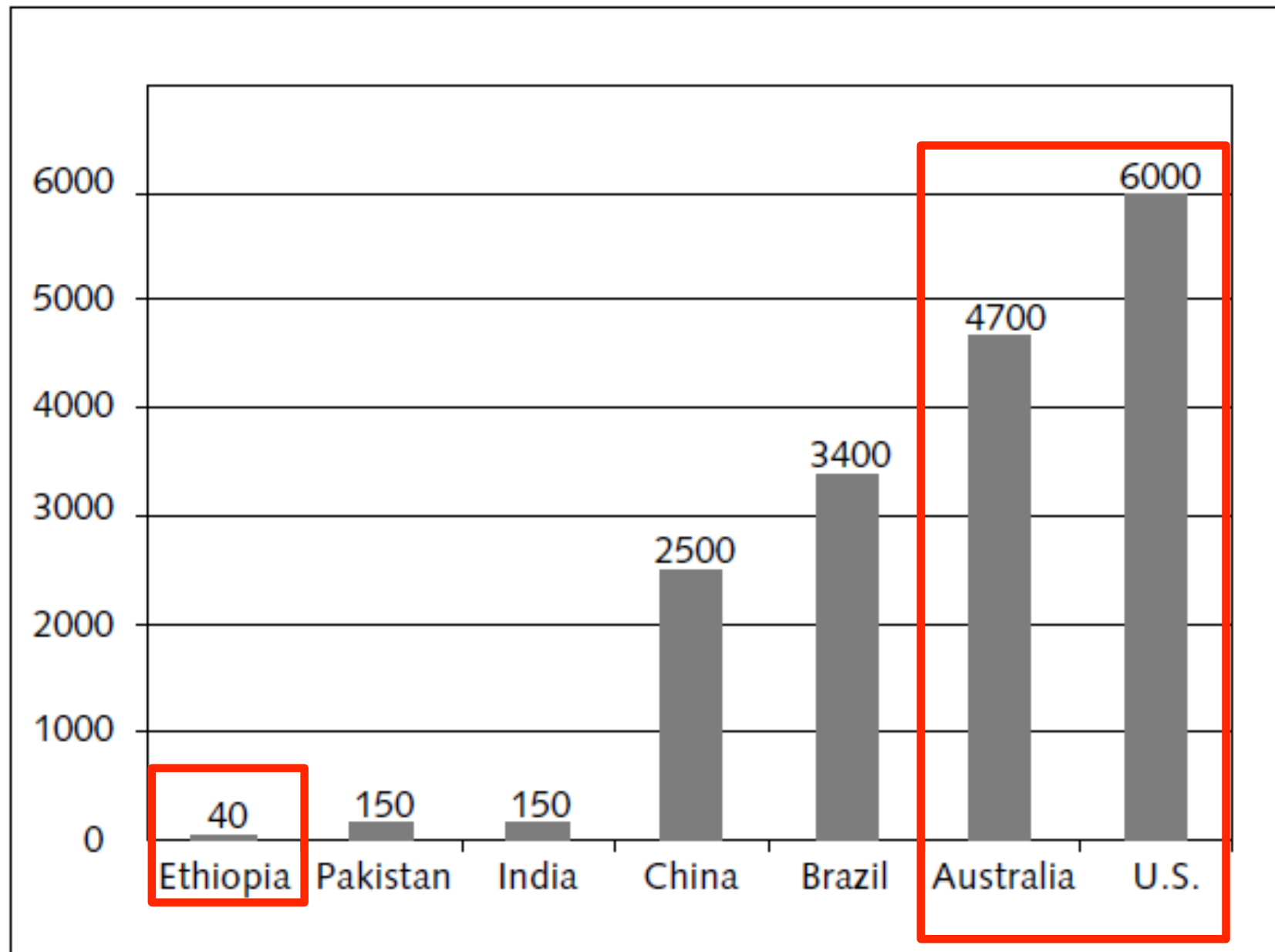
Lant Pritchett

- Returns to five years of education in India:
 - 32% in irrigated districts
 - 0% in unirrigated districts

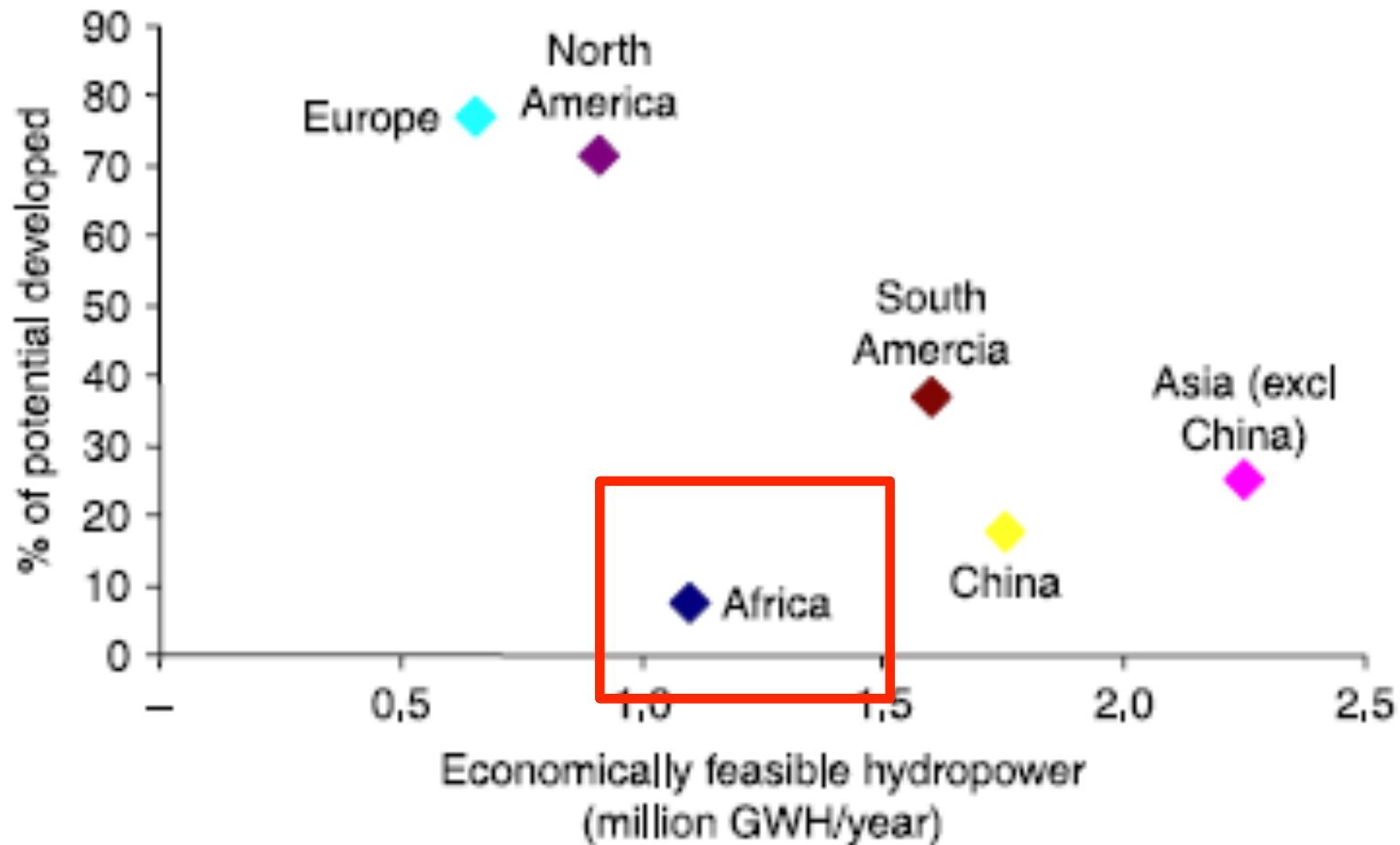
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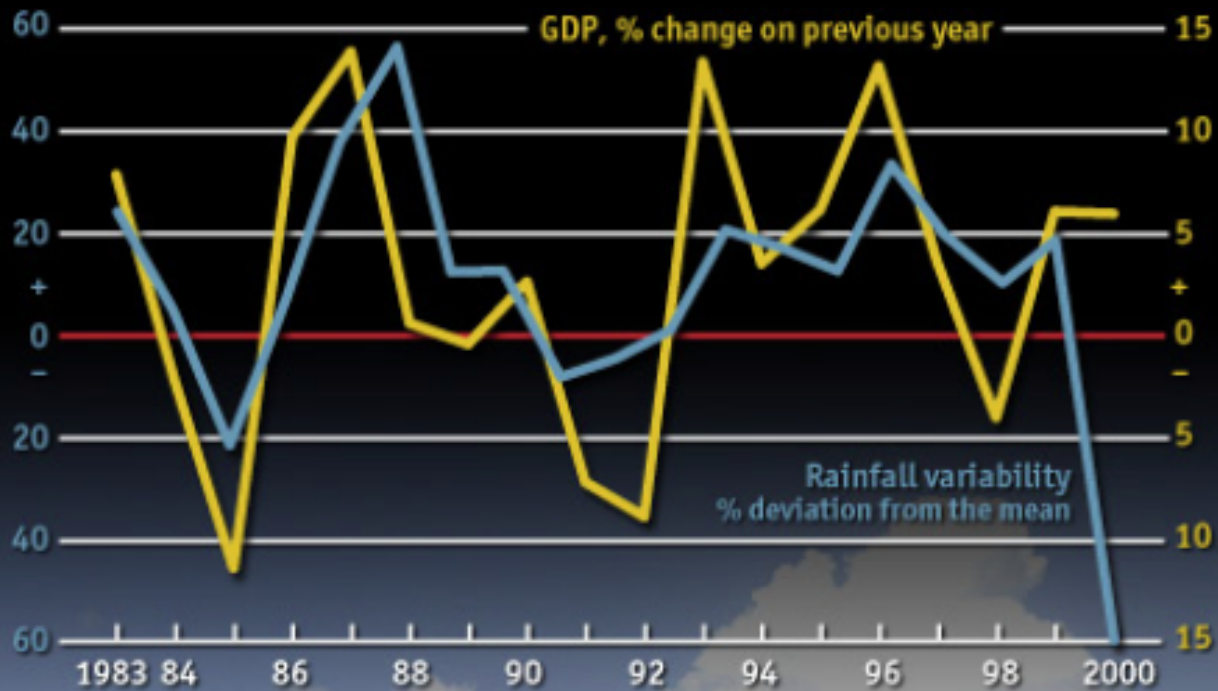
Figure 1.2 Water Storage Capacity in the Rich and Poor Worlds (cubic meters per capita)



Hydropower in different regions

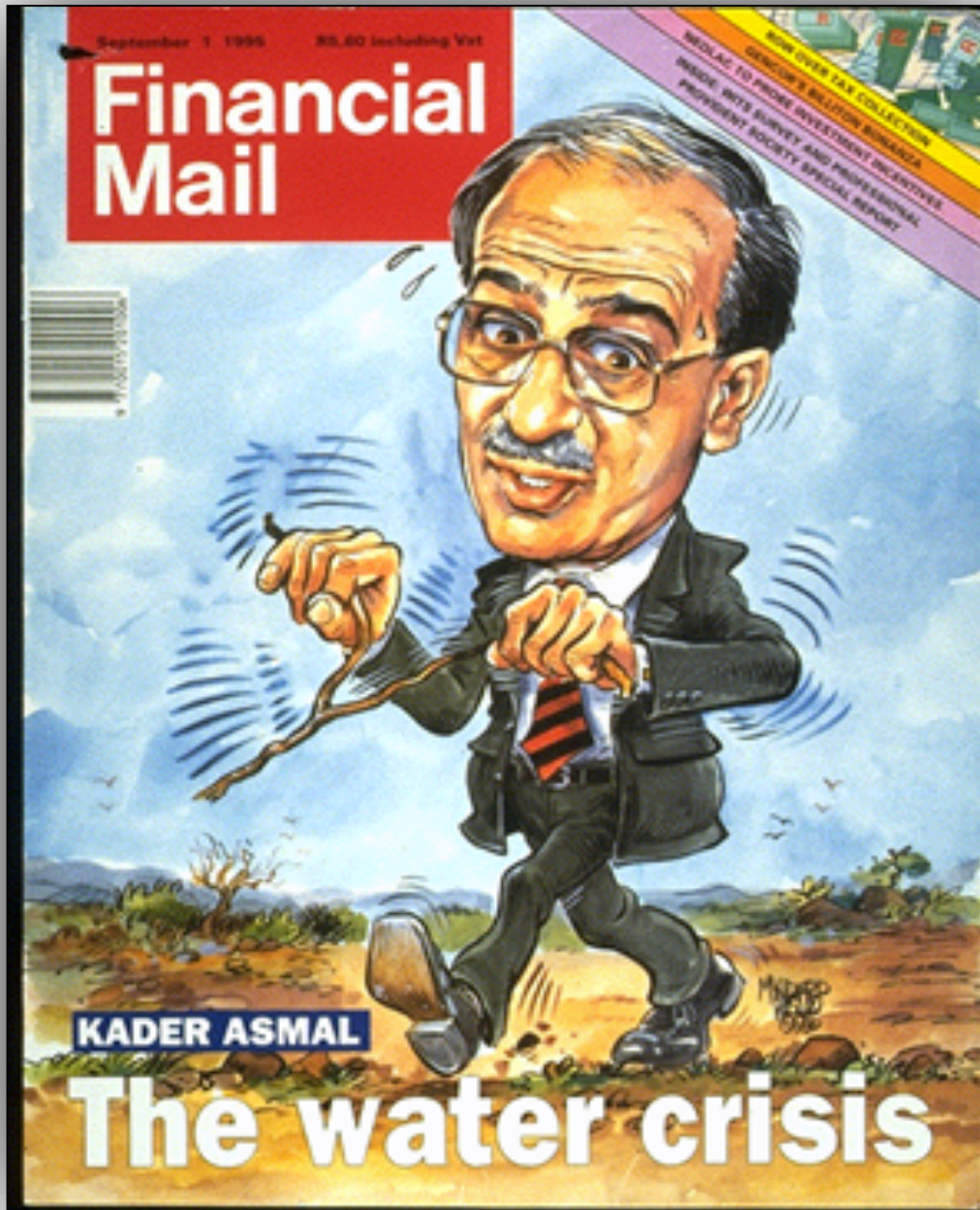


Economic growth and rainfall in Ethiopia



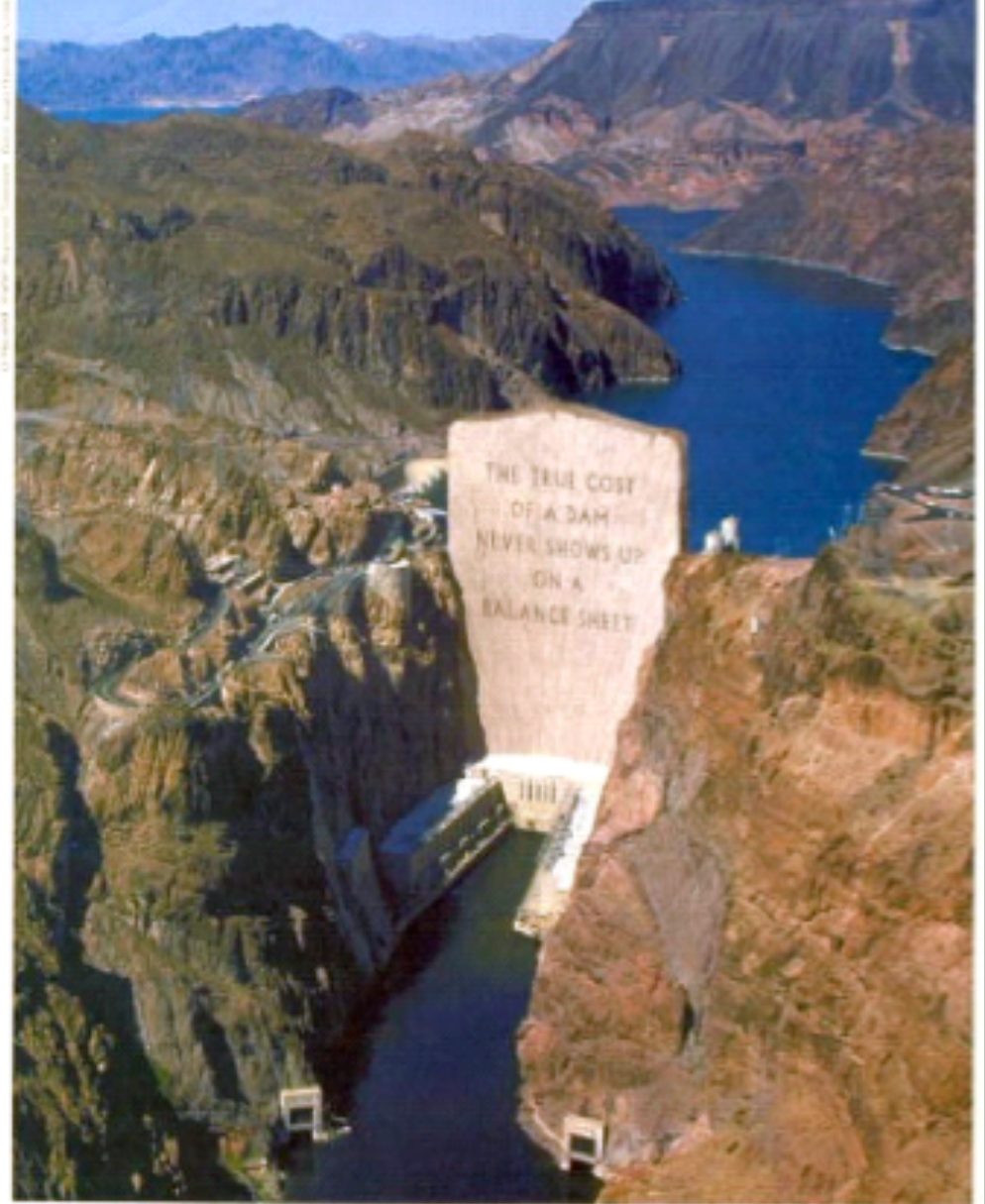
Sources: UN World Water Development Report, based on van Aalst, Hellmuth and Ponzi 2007; IMF





Developing countries, with shallow domestic capital markets need help to finance their water infrastructure ...

- Historically the World Bank, the US and other rich countries helped, but...
- Rich people who have a lot of dams (*we have built 1000 days of storage on Colorado*) don't like dams any more...
- And oppose dams even in quite different circumstances (*e.g. Pakistan which has 30 days of storage on the Indus...*)

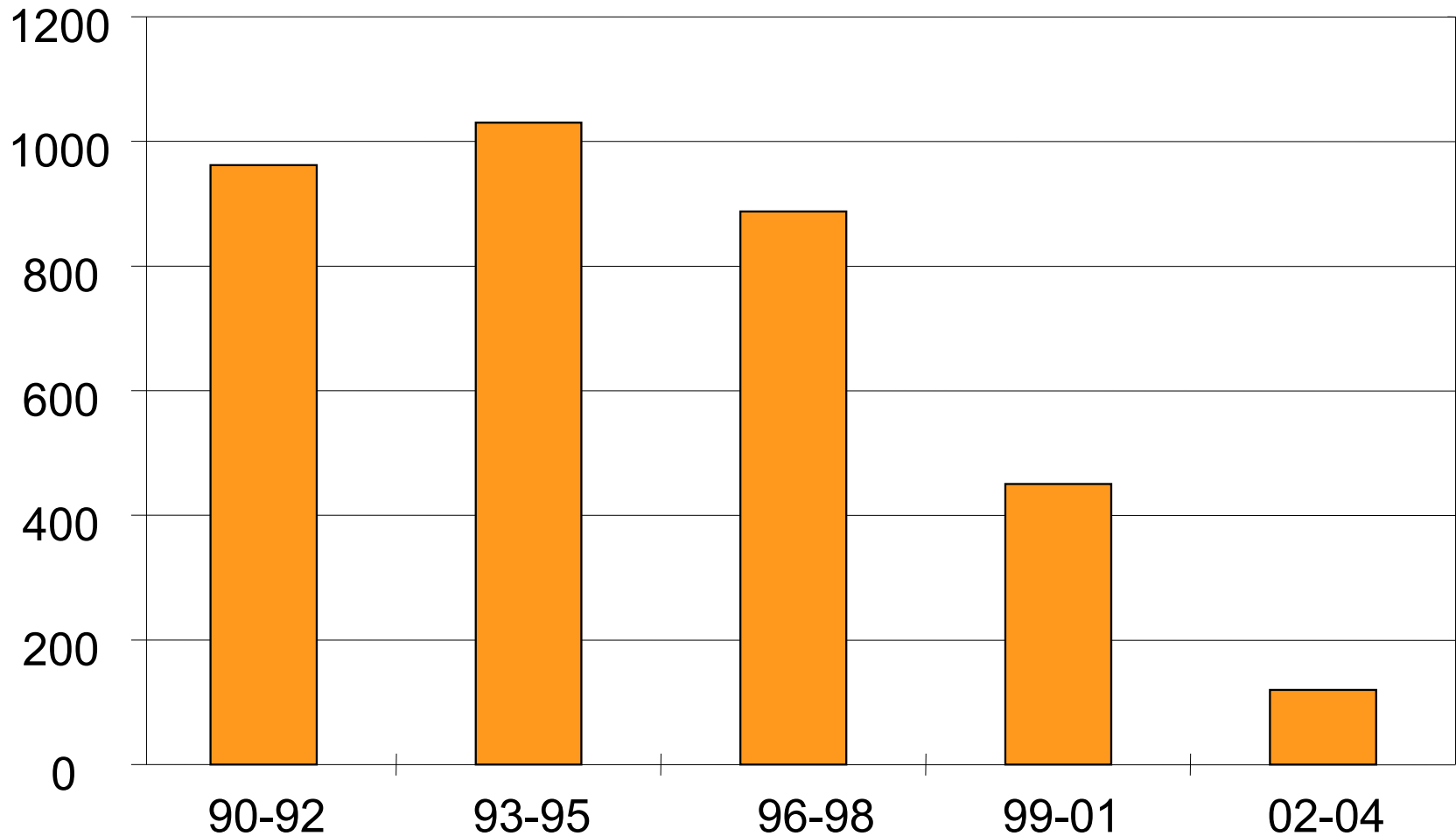


The BAMS dam near town like a good idea. The most it does will a
 much occasion for cutting off the flow. But that's what the dam has
 all that water. There's a rough way for these dams. The dam
 when there's too much to bring up and with fish. They then
 the government go on to do it. It's a regular thing in the world.
 Now give the world money. The project is a good one. It's a

across. Be World Committee on Dam. You'll see an average large
 dam go over budget by 40%. They are big and expensive. So how
 can you reduce the world and economic. Instead of getting hold
 of WWS. Instead of getting hold of WWS. It's a good idea. You'll see
 the world. For supplying water and energy. That way you can get
 the world. You'll see the world. BAMS. THE WORLD.



..rich countries have a lot of say at aid institutions like the World Bank...

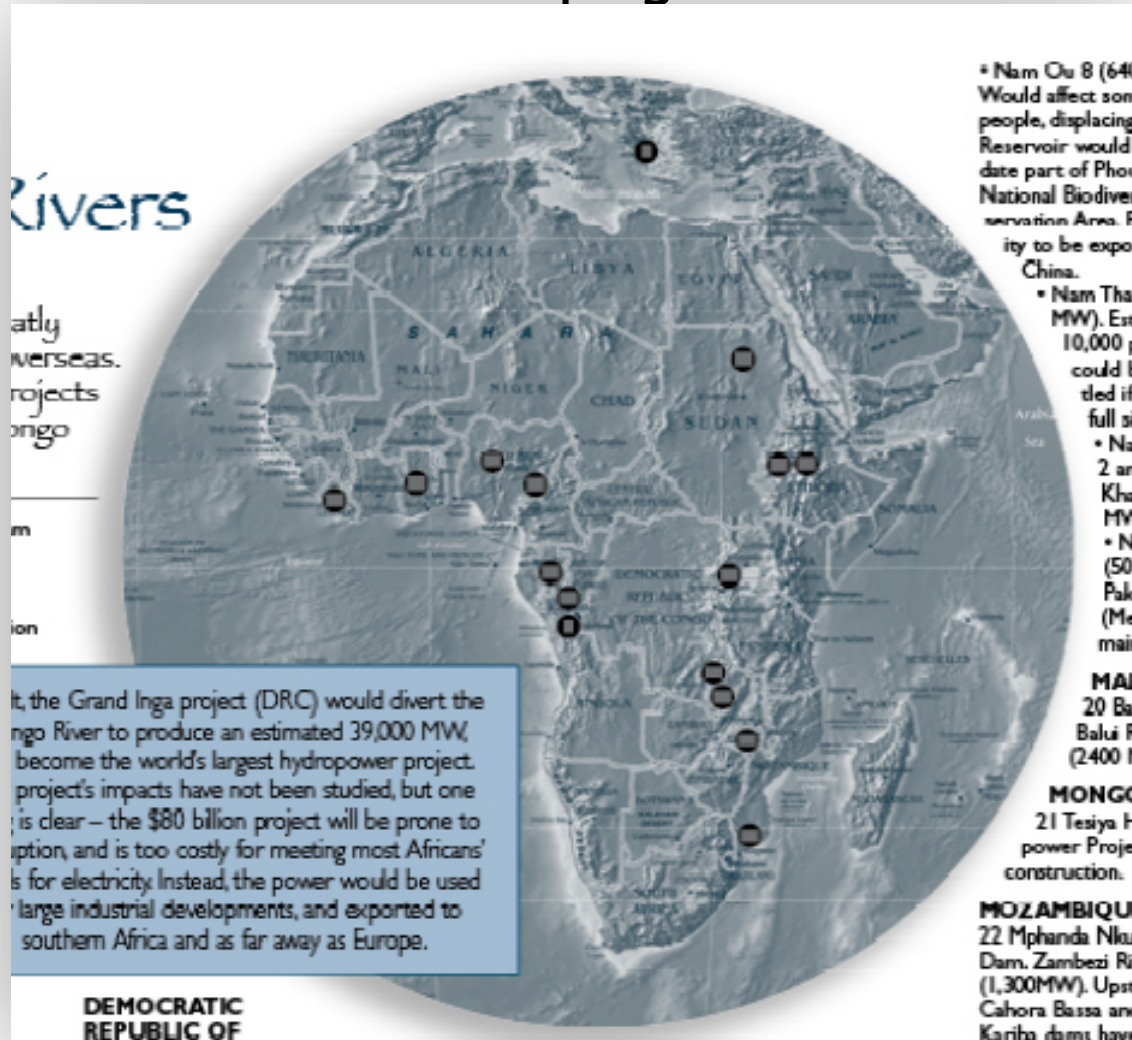


World Bank lending for hydropower in US\$ millions

But the world is changing..

The Middle Income Countries (India, Brazil and especially China) are filling the gap left by rich countries who used to help....

Whereas the World Bank now finances about 5 dams,
the Chinese finance over 300 outside of China in the
developing world



World Bank turns to hydropower to square development with climate change

The Washington Post Politics

BUSINESS

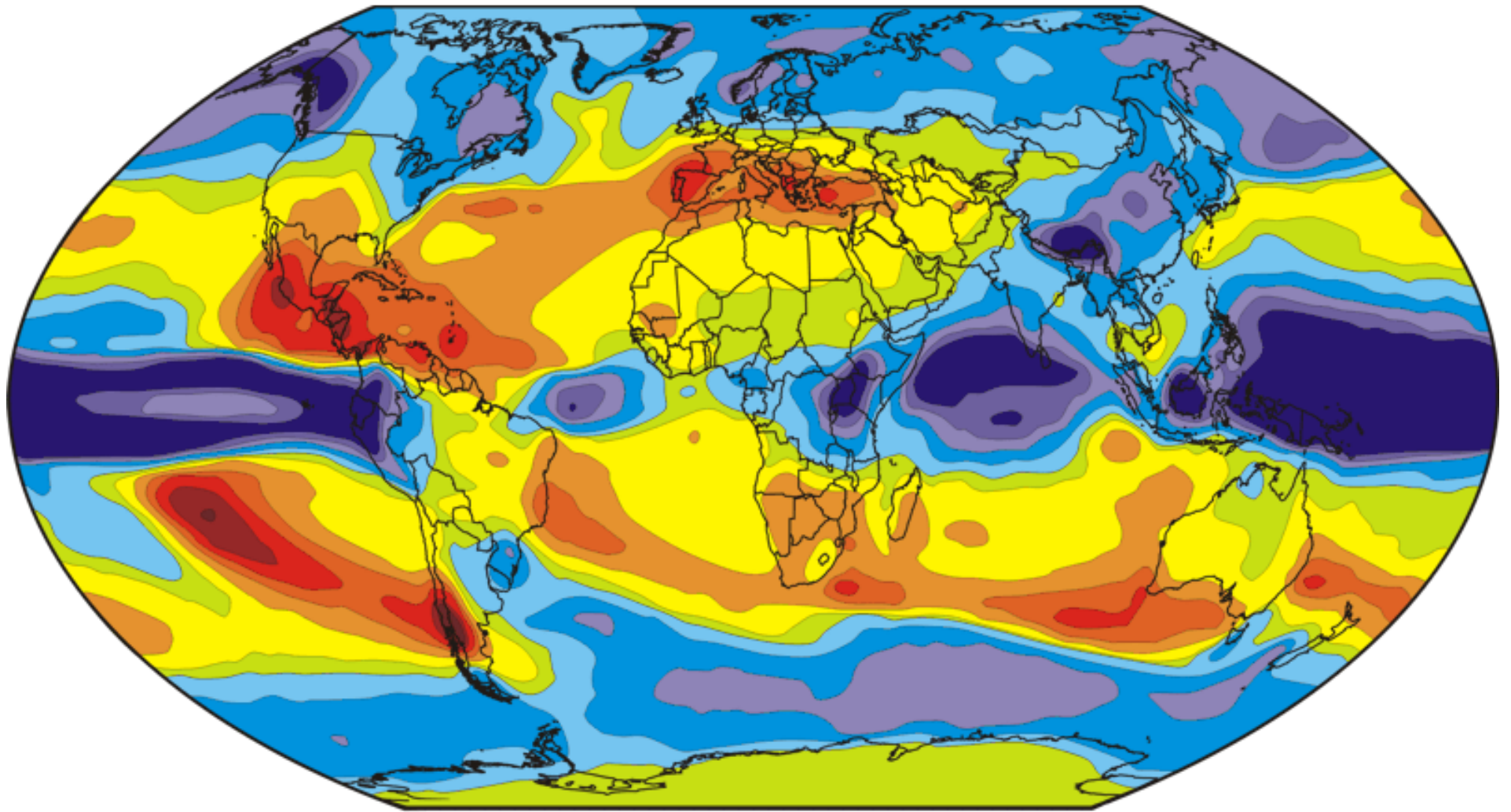


Michael Reynolds/European Photopress Agency - World Bank President Jim Yong Kim attends the Fragility Forum this month in Washington. The forum discussed ways for fragile nations to improve their economies, their infrastructure and the well-being of their citizens.

By Howard Schneider, Published: May 8

The World Bank is making a major push to develop large-scale hydropower projects around the globe, something it had all but abandoned a decade ago but now sees as crucial to resolving the tension between economic development and the drive to tame carbon use.

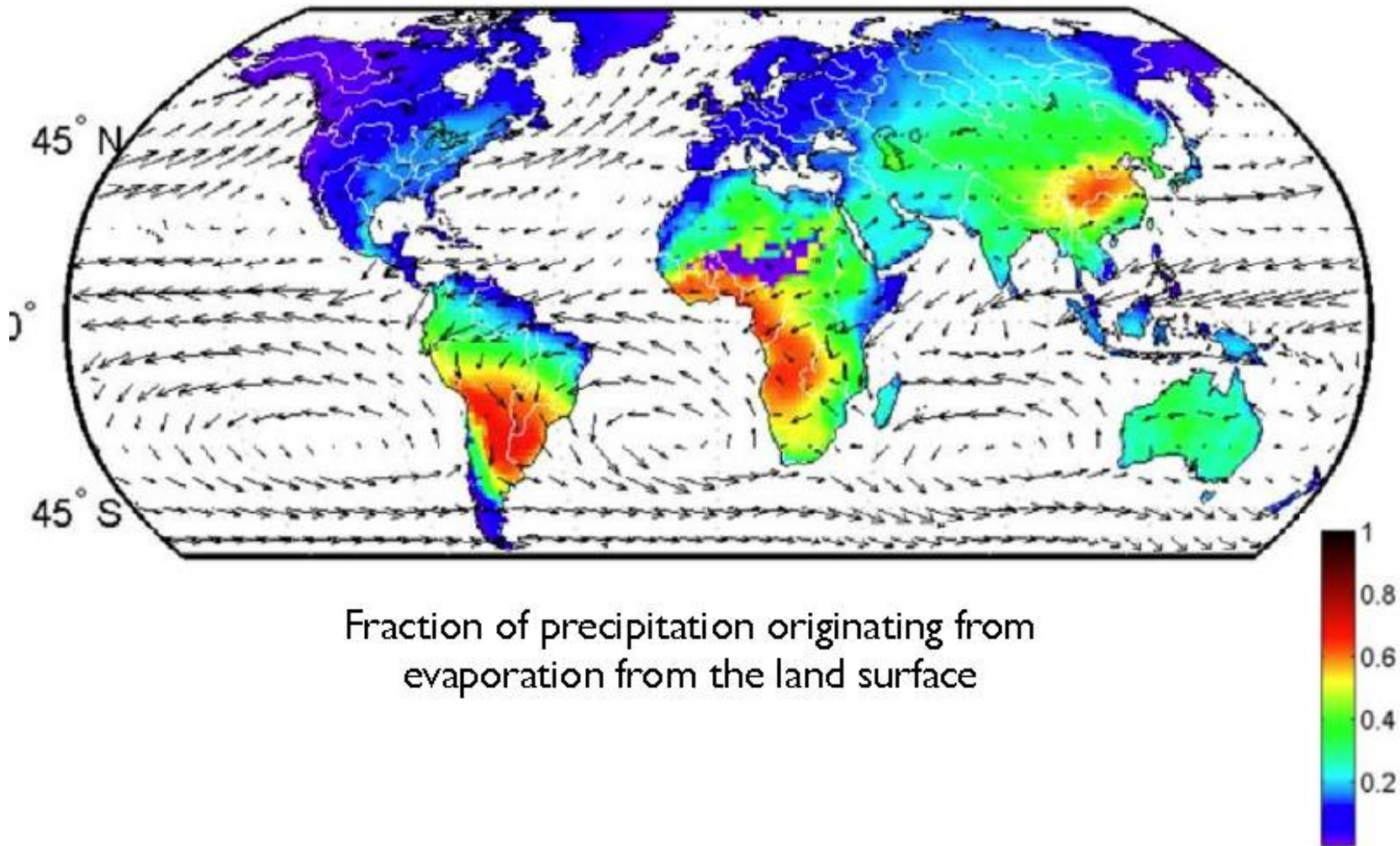
Climate change projections and priorities



Average Projected Changes in Precipitation
for years 2080 to 2099 (mm per day)

IPCC 2007: Climate Change 2007: The Physical Science Basis.

Effects of land use changes are also very large (and sometimes in the opposite direction...)

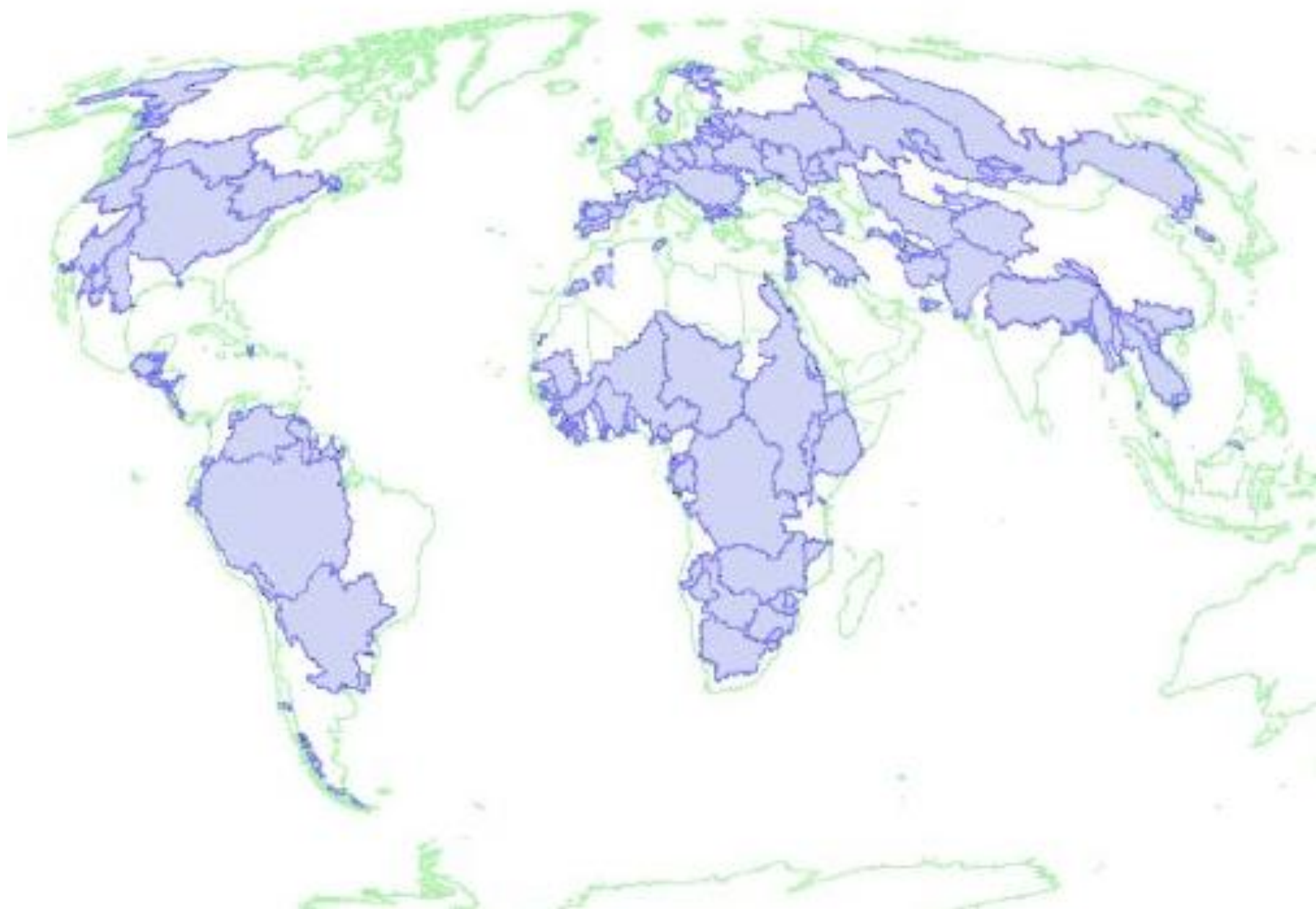


Fraction of precipitation originating from evaporation from the land surface

precip recycling ratio for January, van der Ent et al. 2010

Bottom line

- Climate change science is in its infancy
- The best preparation for a non-stationary climate is to:
 - Focus on known variability
 - Develop infrastructure and institutions which are resilient



Story Line

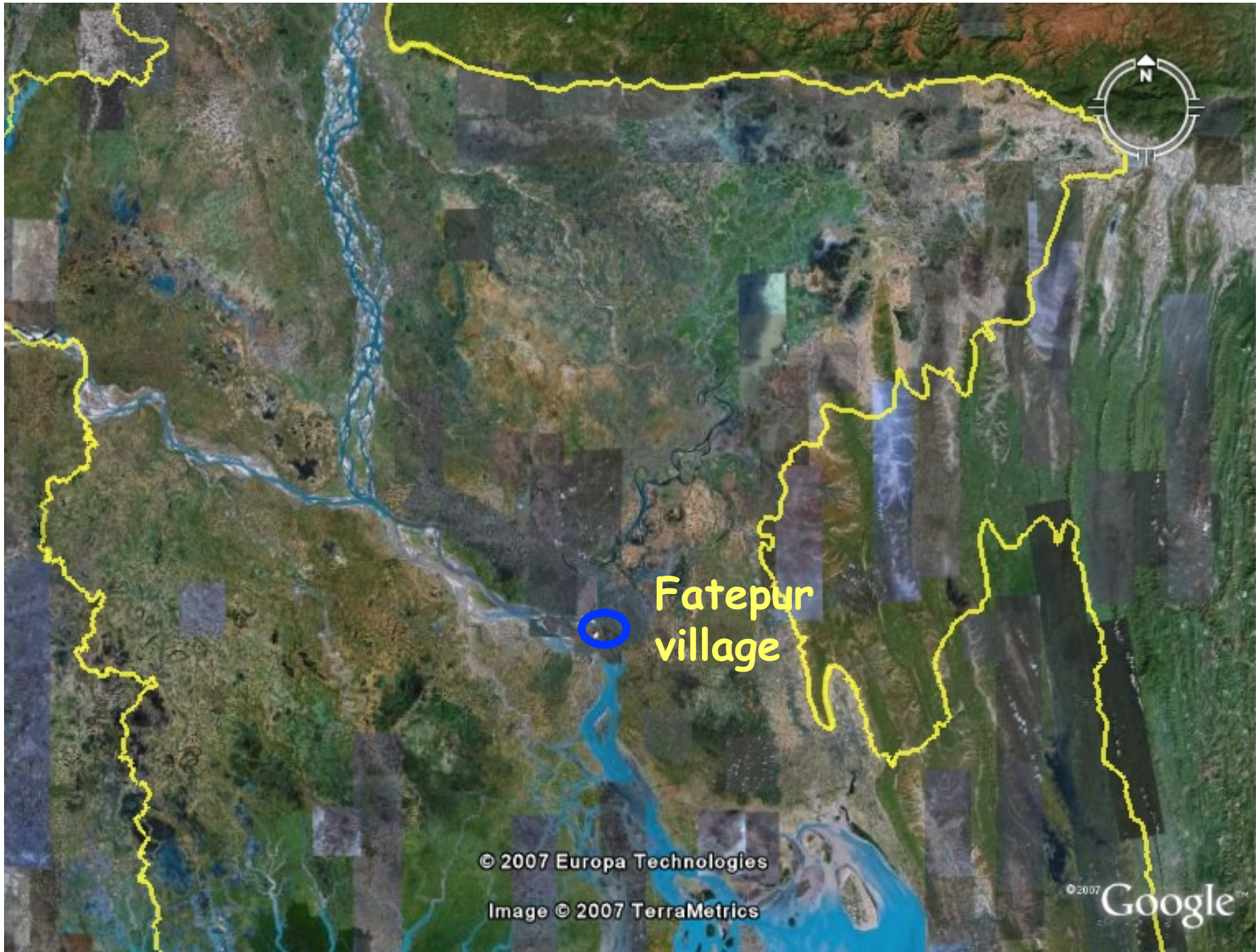
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Story of this section

- What I have learned, first-hand...
 - Bangladesh



Fatepur
village

© 2007 Europa Technologies

Image © 2007 TerraMetrics

© 2007 Google


Fatepur 1976:

No protection from the annual floods...



Fatepur, Bangladesh, 1976: Lives of utter misery...



A satellite image showing a large river delta with a central island. The river channels are dark, and the surrounding land is a mix of brown and green. A blue circle marks a location on the island, labeled 'Fatepur village'. A north arrow is in the top right corner.

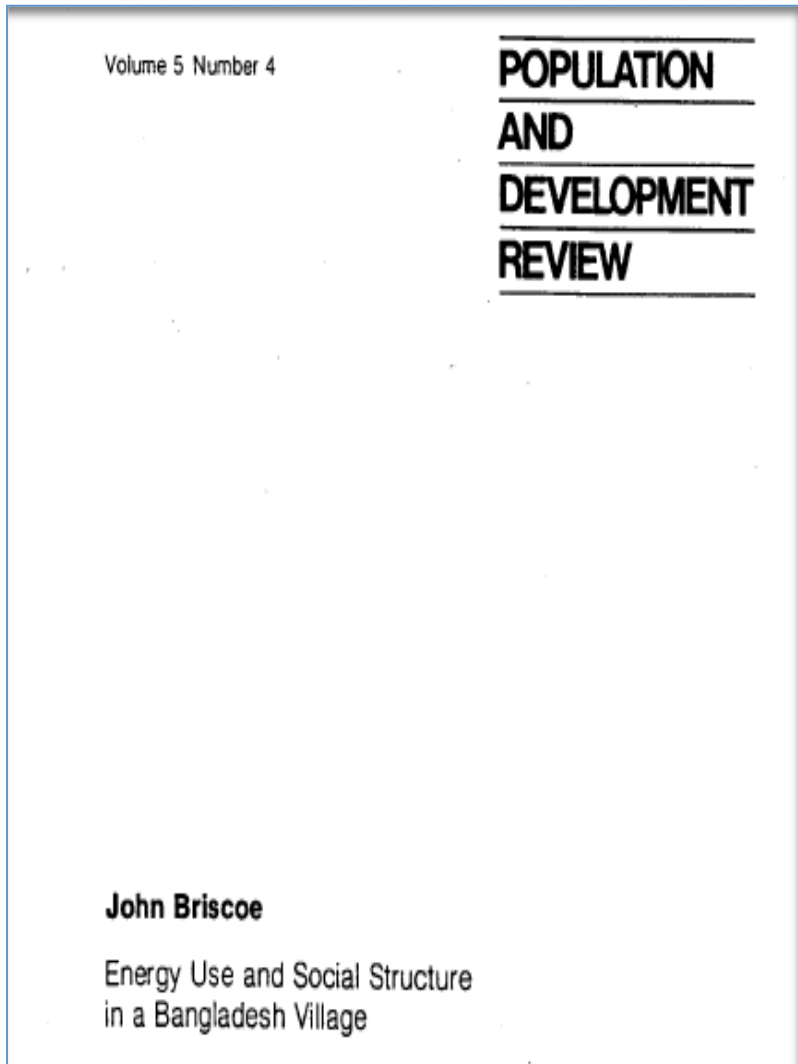
The Government (with ADB support) planned to build an embankment around the island...

 Fatepur village

Image © 2007 DigitalGlobe
Image © 2007 TerraMetrics

©2007 Google

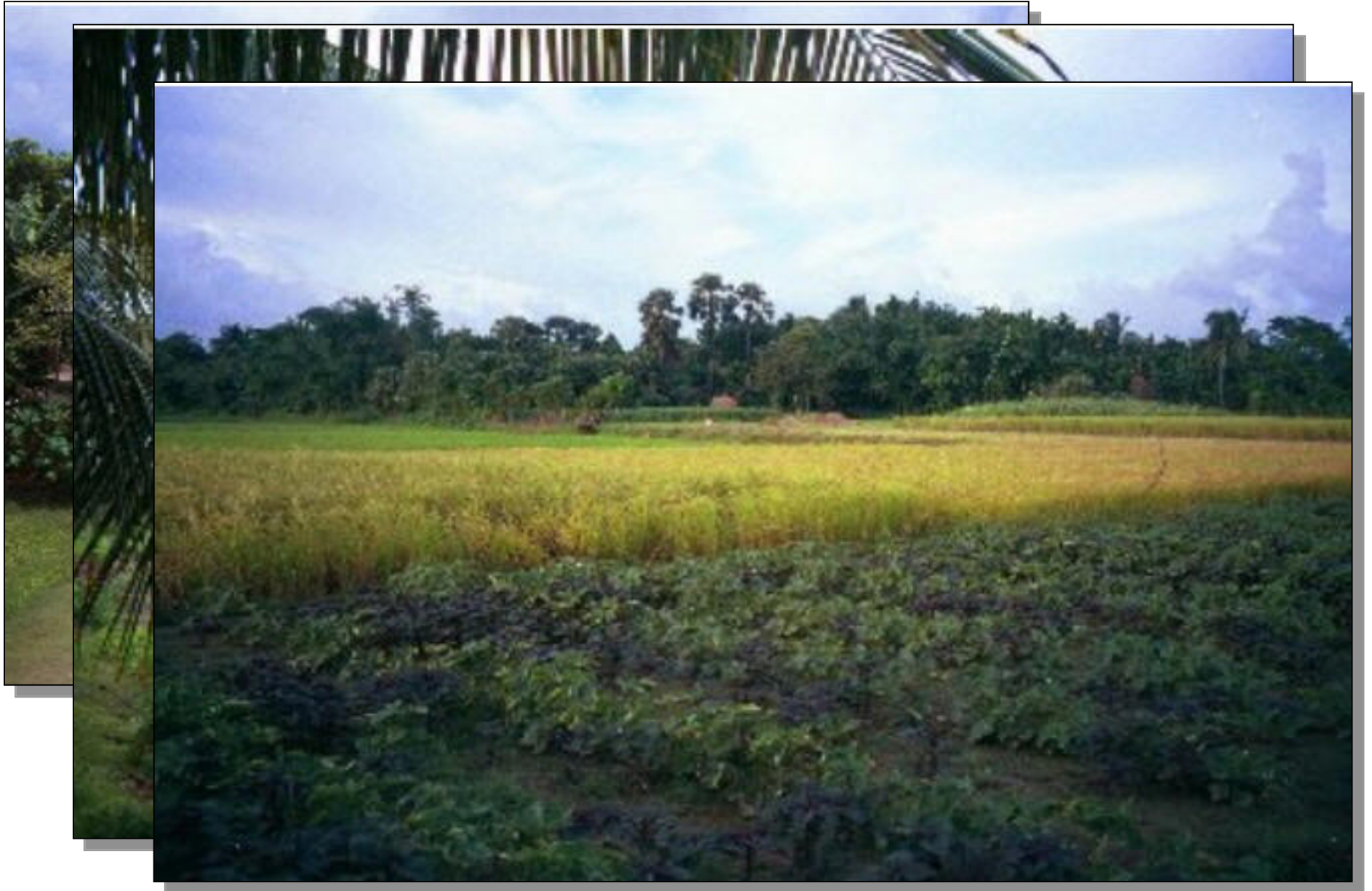
My prediction (as a young environmental socialist...)



- ▶ The embankment would benefit the rich and further impoverish the poor....

What happened?

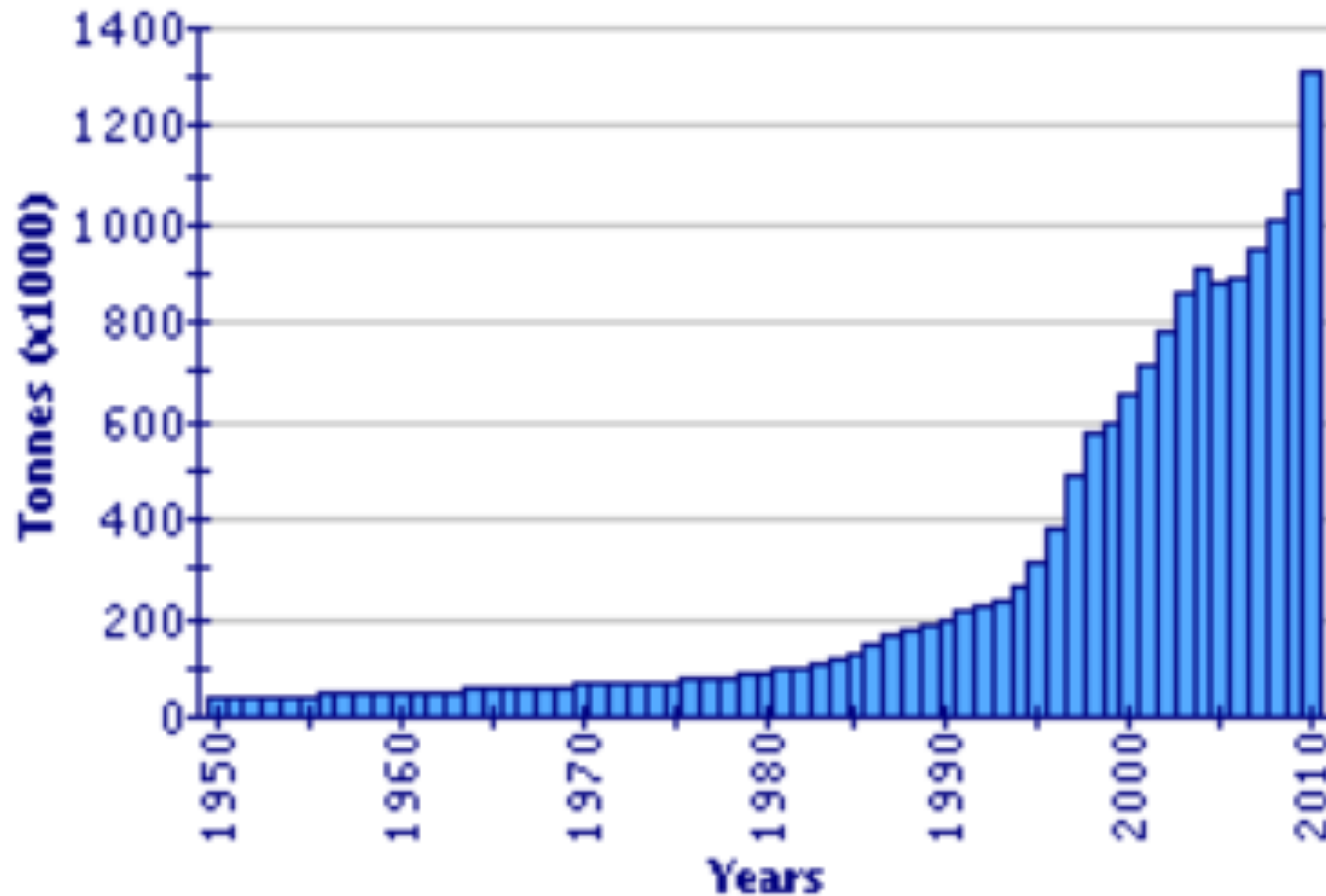
Fatepur, 1998



A simple and astonishing change

- ▶ Water control and “green revolution” meant going from one low-yielding to three high-yielding crops a year
- ▶ A revolution in aquaculture

Reported aquaculture production in Bangladesh (FAO Fishery Statistic)



The story of big fish and little fish

http://www.fao.org/fishery/countrysector/naso_bangladesh/en

The induced social changes...

- ▶ Higher wages and more regular employment
- ▶ Markets where there were none before
- ▶ Life expectancy of women:
 - 47 years in 1976
 - 67 years in 1998

Social conditions in Fatepur, 1998



Assessments of causes of progress?

▶ By the IFIs

- A major World Bank Poverty Assessment:
 - Progress is due to NGOs and social services
 - (Virtually) nothing on infrastructure

▶ By the NGOs

- NGO services
- Denunciation of the embankment by NGOs because of “environmental damage”

▶ By the people:

- The embankment
- Roads and bridges
- The garment industry
- BRAC and Grameen? Oh, yes, but NGOs will not cooperate....

▶ Mine?

- At the end of the day it is about productivity
- Infrastructure (even badly done) matters a lot
- Modern agriculture matters a lot
- Beware of diagnoses of single issue NGOs and donors

Story of this section

- What I have learned, first-hand...
 - Bangladesh
 - **Brazil**

Brazil's agricultural miracle

How to feed the world

The emerging conventional wisdom about world farming is gloomy. There is an alternative

Aug 26th 2010 | From the print edition

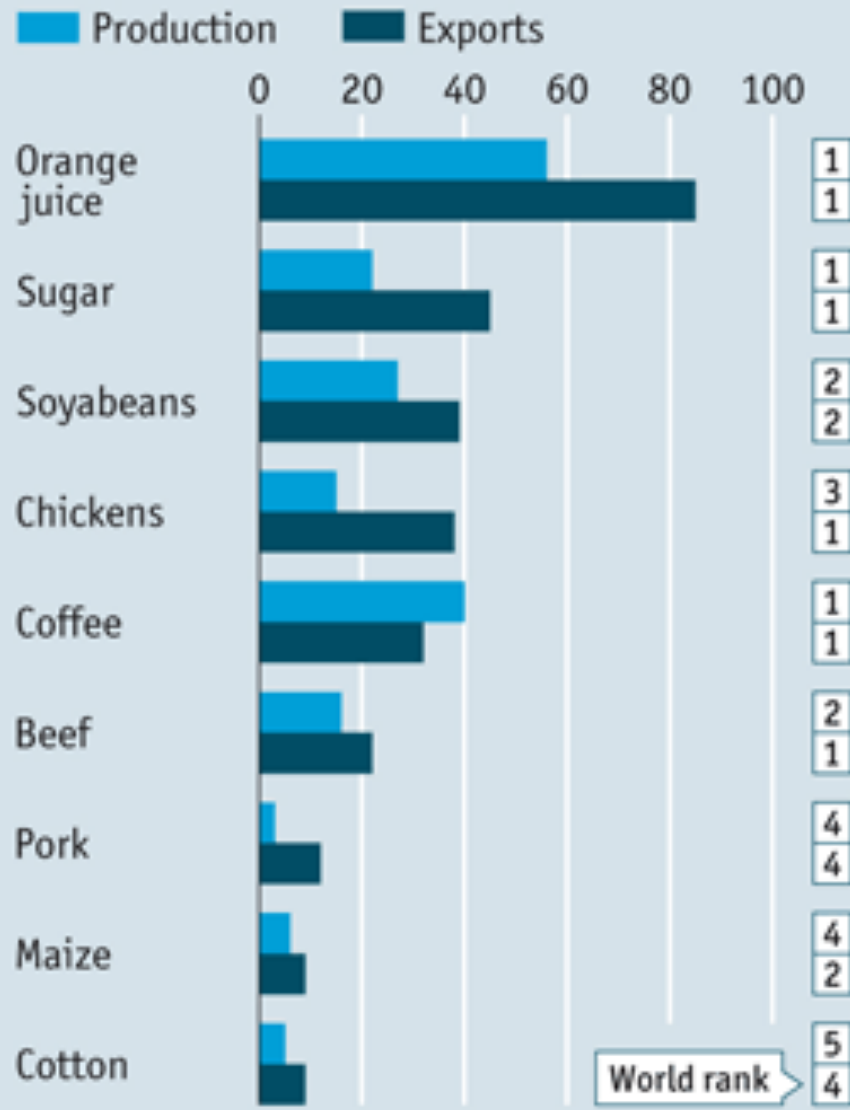


Bloomberg News

Big portions

2

Brazil's agriculture, world share 2009, %



Source: United States Department of Agriculture



Policy, Technology, and Efficiency of Brazilian Agriculture

Between 1985 and 2006, Brazilian agricultural production grew by 77 percent

Going with the grain

1

Brazil's:

*grain production,
tonnes m*

*area planted,
hectares m*

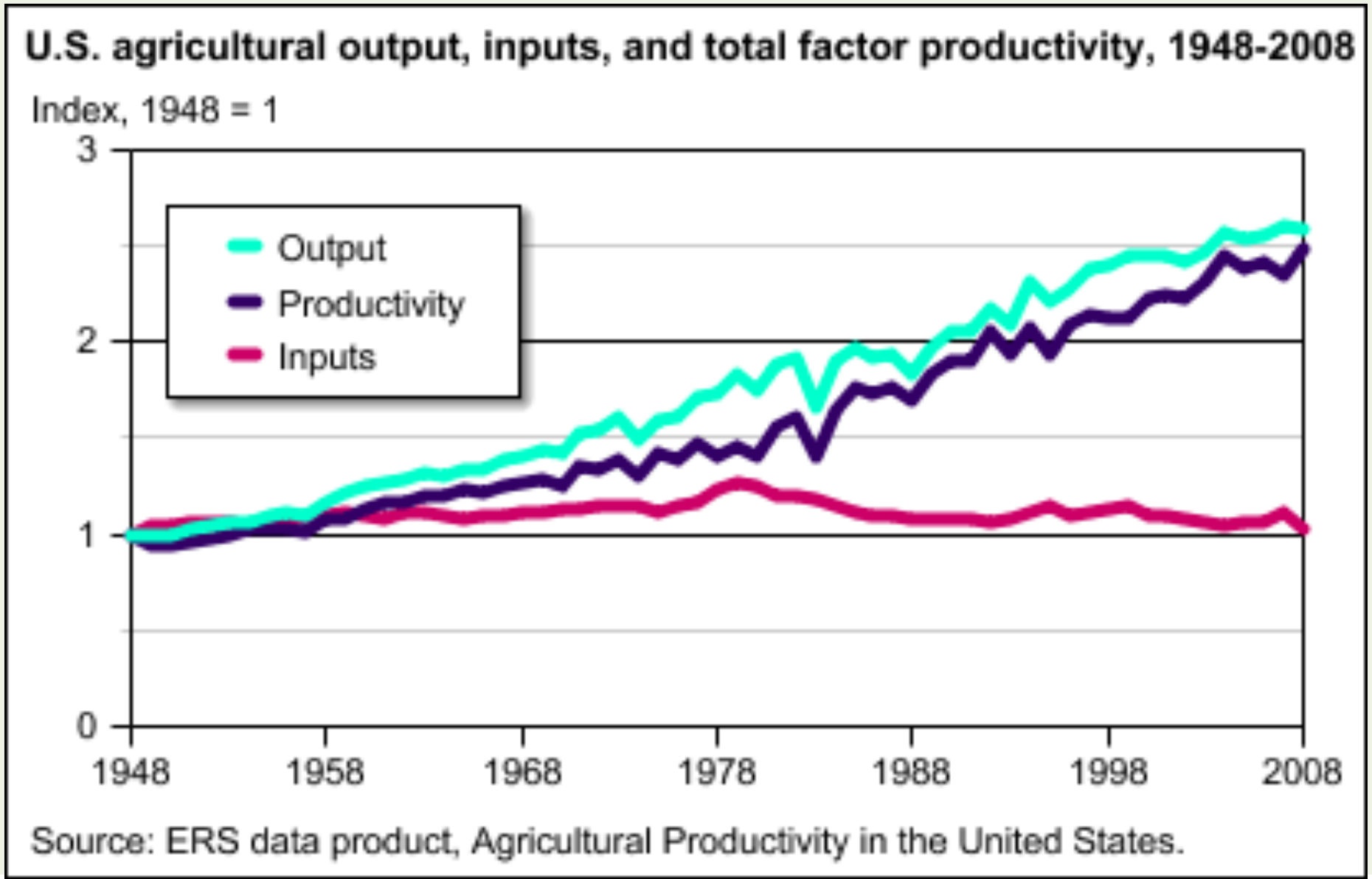


Source: Brazilian Ministry of Agriculture

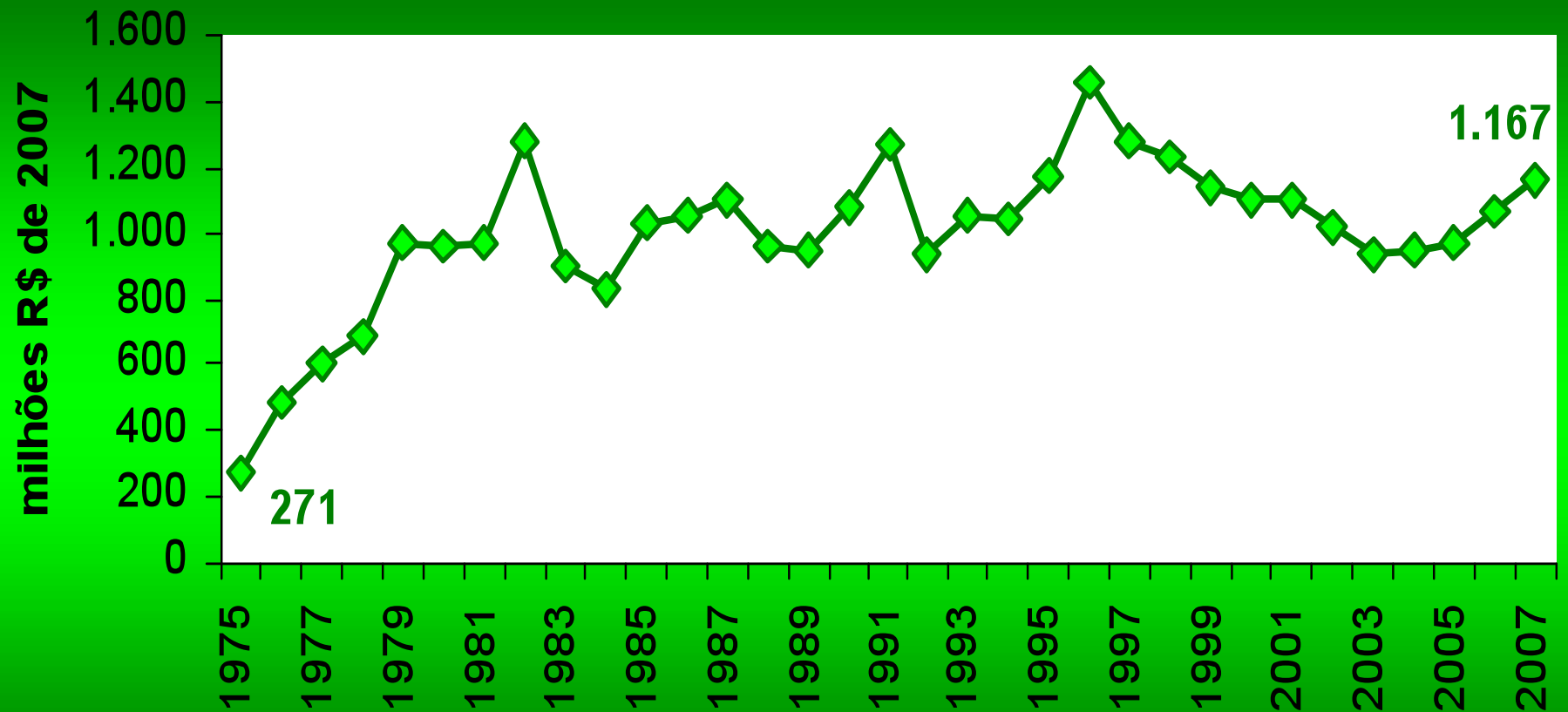
Huge increases in production with 90% due to TFP...



The same pattern as US agriculture:
(much) more with (much) less



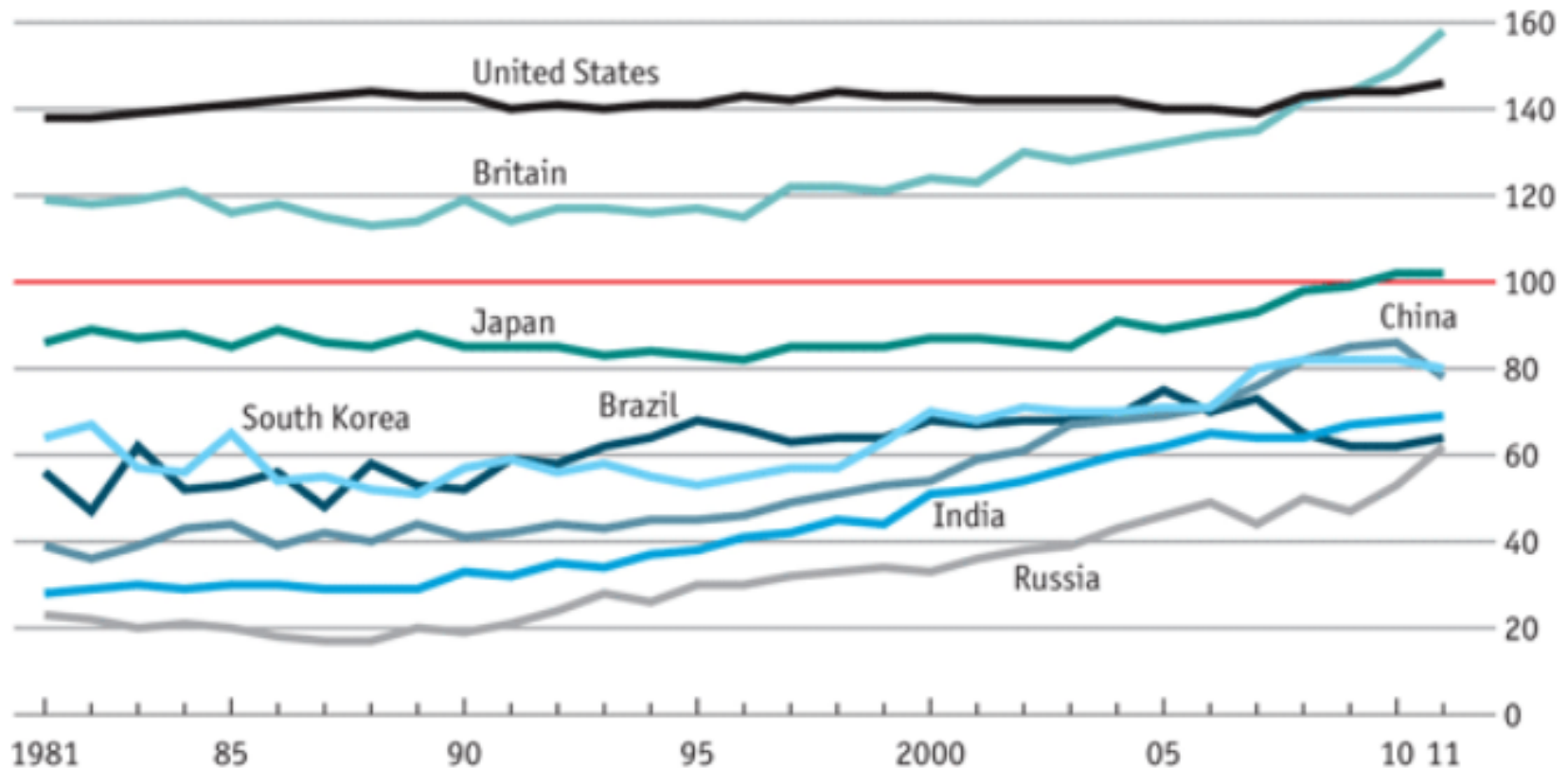
Brazil's public investment in agricultural research was one key



Fonte: Embrapa

Impact of academic papers

Frequency of citations, 100=world average



Source: Thomson Reuters Web of Knowledge

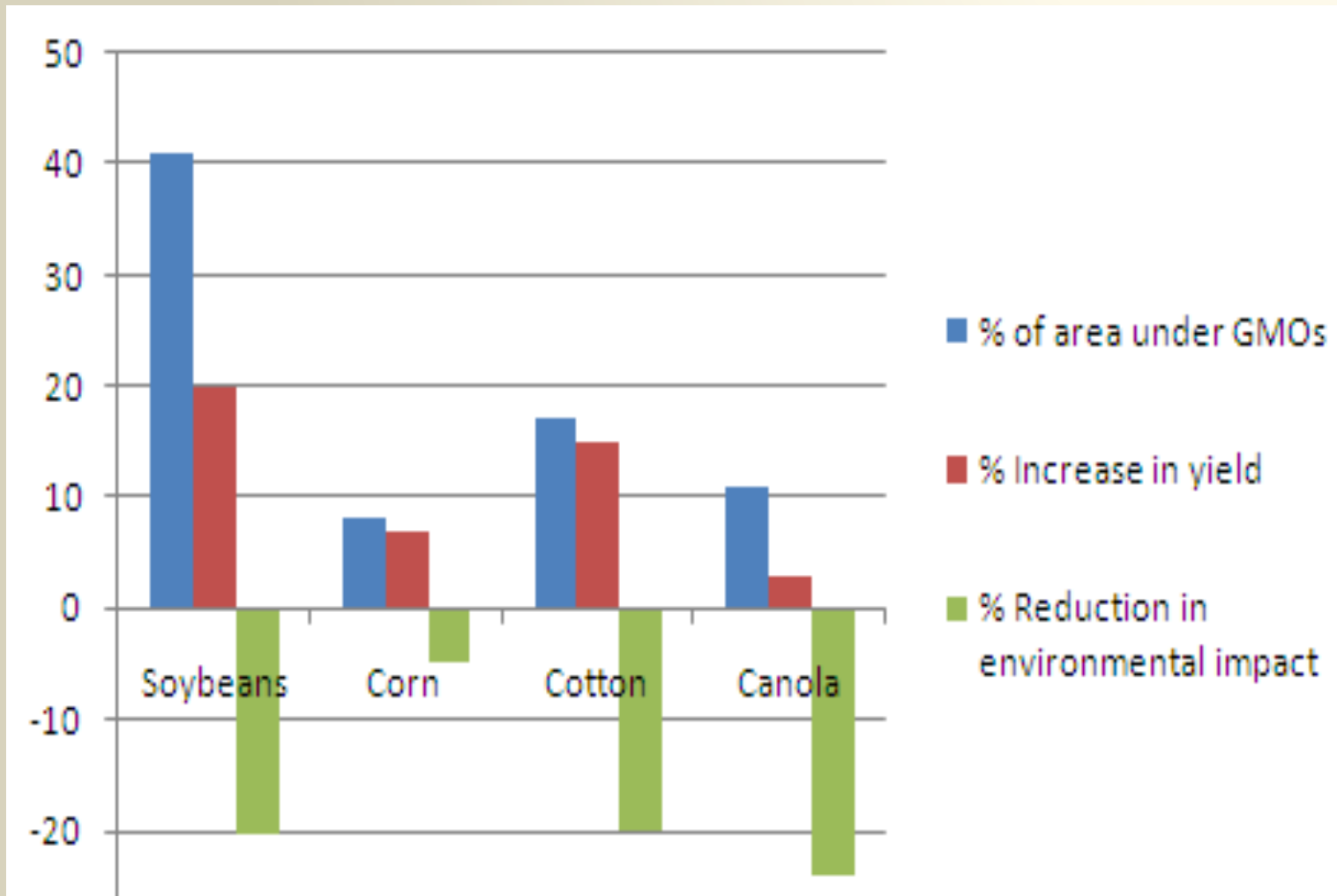
- ▶ “China and Russia favour physical science.”
- ▶ **Brazil's scientific papers are focused on agriculture, plant and animal sciences.**

<http://www.economist.com/blogs/graphicdetail/2013/02/focus-4>

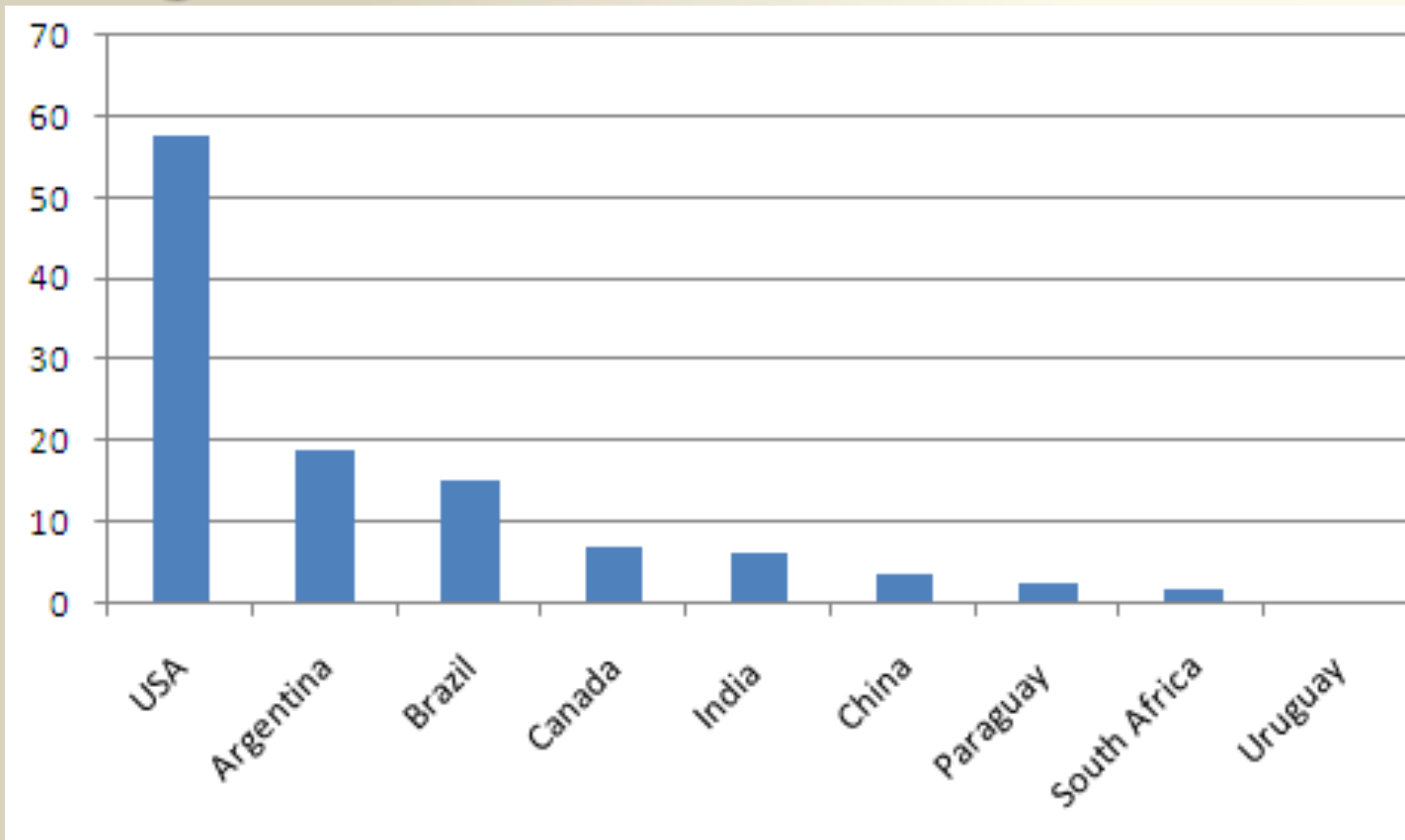
What did Embrapa do?

1. **THE SOIL:** Embrapa poured industrial quantities of **lime** onto the soil to reduce levels of **acidity**.
2. **PASTURE:** Embrapa **went to Africa and brought back a grass** called *brachiaria*. **Patient crossbreeding** created a variety, called *braquiarinha* in Brazil, which **produced 20-25 tonnes of grass feed per hectare, many times what the native cerrado grass produces and three times the yield in Africa.**
3. **FARM PRACTICES:** pioneered and encouraged new operational farm techniques. Brazilian farmers **pioneered “no-till” agriculture**. In 1990 Brazilian farmers used no-till farming for 2.6% of their grains; today it is over 50%.
4. **SOYBEANS:** Embrapa turned **soyabeans into a tropical crop**. It has also been importing genetically modified soya seeds and **is now the world's second-largest user of GM** after the United States

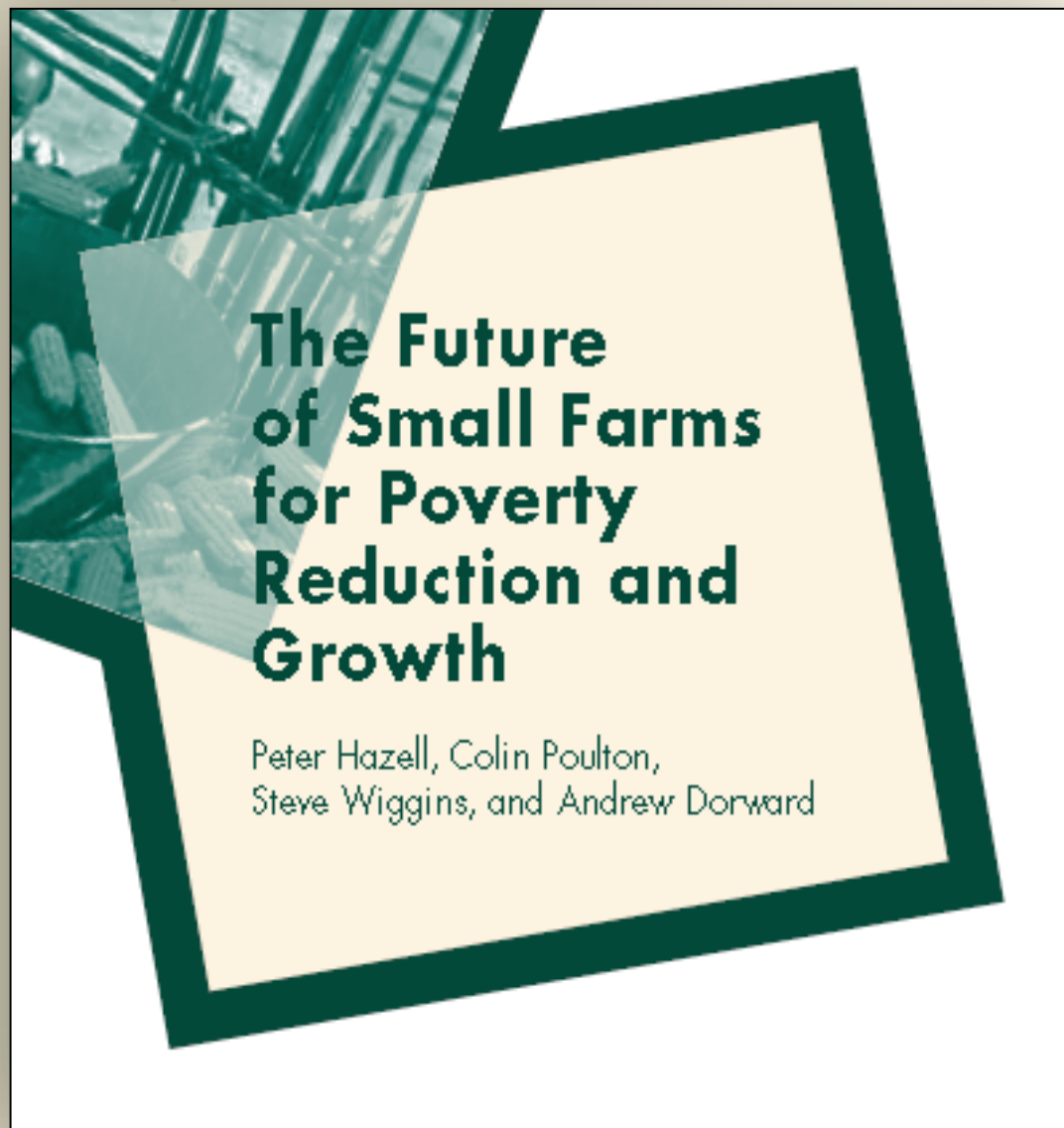
Major gains from GMOs: Productivity and environment...



And so the MICs are 8 of 10 largest users of GMOs...

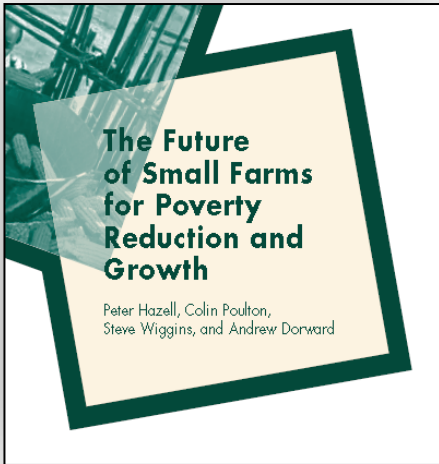


A (crucial) issue is scale



**The Future
of Small Farms
for Poverty
Reduction and
Growth**

Peter Hazell, Colin Poulton,
Steve Wiggins, and Andrew Dorward



- **Green Revolution technology**, centered on seeds, was largely **scale neutral**; small farmers could participate, especially as new rounds of crop breeding made the modern varieties less variable in yield and thus less risky.
- (Today's) **new technologies** involve higher capital inputs (and) mechanization (and) require high levels of education, (and) **may disadvantage smaller farms**

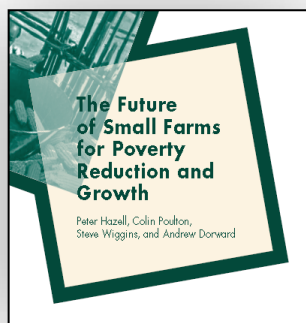


Table 3—Transaction cost advantages of small and large farms

| Transaction | Small-farm advantage | Large-farm advantage |
|---|----------------------|----------------------|
| Unskilled labor supervision, motivation, etc. | ✓ | |
| Local knowledge | ✓ | |
| Food purchases and risk (subsistence) | ✓ | |
| Skilled labor | | ✓ |
| Market knowledge | | ✓ |
| Technical knowledge | | ✓ |
| Inputs purchase | | ✓ |
| Finance and capital | | ✓ |
| Land | | ✓ |
| Output markets | | ✓ |
| Product traceability and quality assurance | | ✓ |
| Risk management | | ✓ |

Source: Poulton, Dorward, and Kydd 2005.

Brazil's agricultural miracle

How to feed the world

The emerging conventional wisdom about world farming is gloomy. There is an alternative

Aug 26th 2010 | From the print edition



▶ In Brazil, big is beautiful

- **BIG**: 30% (1.6m) farms are large commercial operations which produce 76% of output.
- But there was and is a strong movement (MST) opposed to large-scale agriculture, GMOs...
- Which was (and is) a part of the PT







Pragmatic politics: Roberto Rodriguez and Lula



Brazil's agricultural miracle

How to feed the world

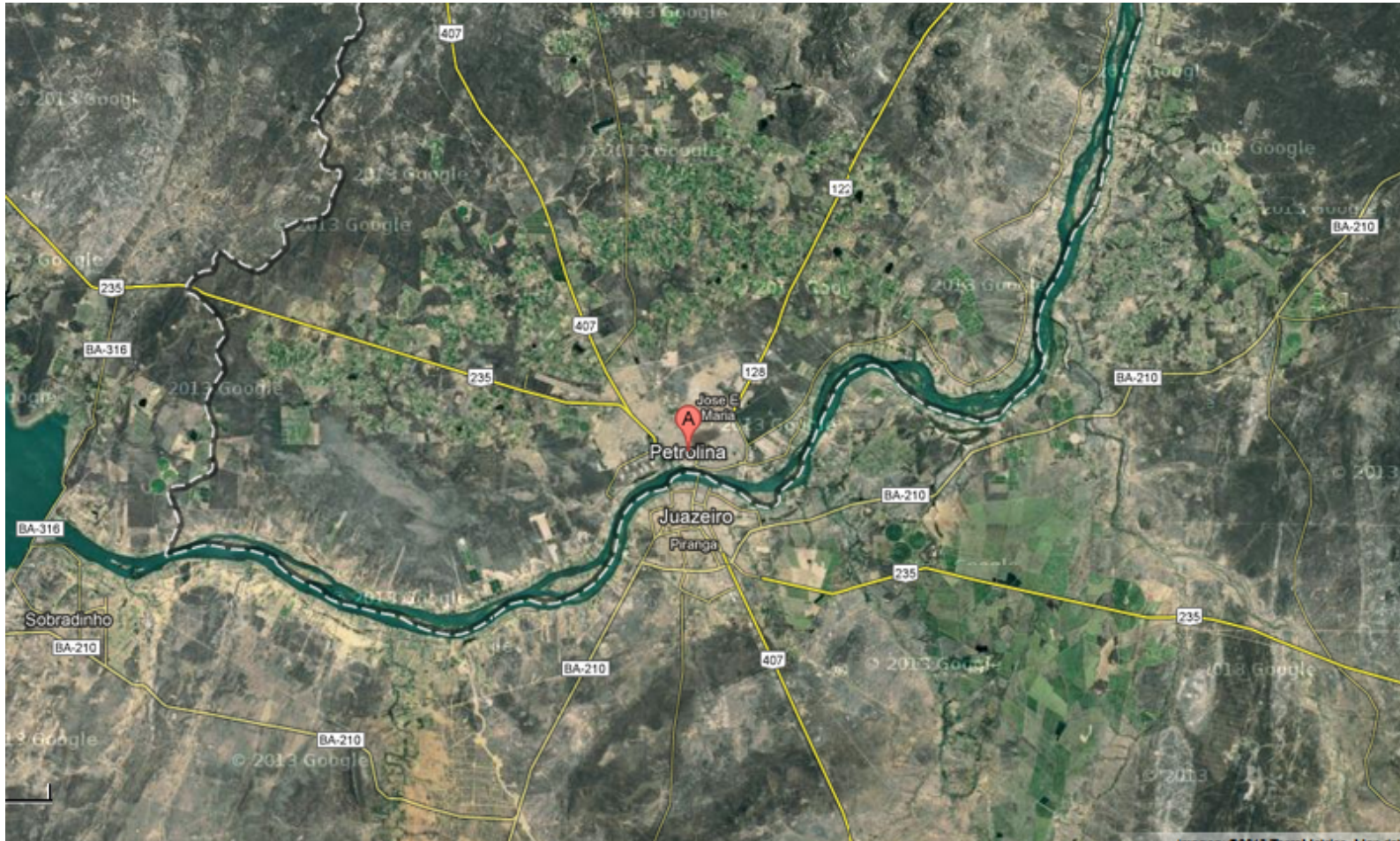
The emerging conventional wisdom about world farming is gloomy. There is an alternative

Aug 26th 2010 | From the print edition



- ▶ In Brazil, big is beautiful
 - Pragmatism...
- ▶ But Brazil worries about small farmers, too

In the Sao Francisco Valley in the North East



- **10 x more water than the Murray in Australia**
- **1/10 of the value added in irrigation**
- **Decades of projects with small farmers which failed to take off**
- **Except when the small farmers became linked to entrepreneurial farmers**

The Brazilian response?

Can we have our cake and eat it too?

Federative Republic of Brazil



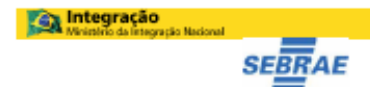
Investment Opportunity

THE PONTAL PROJECT

Preliminary Information Document



October 2005





- An ongoing attempt – through a “reverse concession” to build on this organic model
- Concession awarded to an agribusiness operator on two criteria:
 - **FINANCIAL (35%):** Whoever requires least investment from the government
 - **SOCIAL (65%):** Whoever presents a more compelling model for integrating at least 25% of the irrigable land to small farmers who will be integrated to the production chain of the agribusiness user.
- www.pontal.org/project.html

My reading of the lessons from Brazilian agriculture

- Assess comparative advantage and play to it
 - Continuity with political change is key
- Understand that there is no silver bullet
- Be patient and persistent (Ag research spending)
- Be pragmatic (Lula and Roberto Rodrigues)
- Be realistic (about scale)
- Be innovative (about scale and PPPs – Pontal)

A side-note on Brazil and the development community

The IASSTD of 2008, just as the global food crisis hit...



International Assessment of Agricultural Knowledge, Science and Technology for Development

- ▶ Eulogizes “small-scale and organic”
- ▶ Denounces Brazilian (scale, technology) model...
- ▶ Denounces GMOs

Brazil's agricultural miracle
How to feed the world

The emerging conventional wisdom about world farming is gloomy. There is an alternative

Aug 26th 2010 | From the print edition



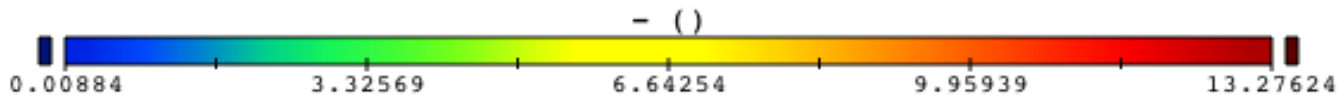
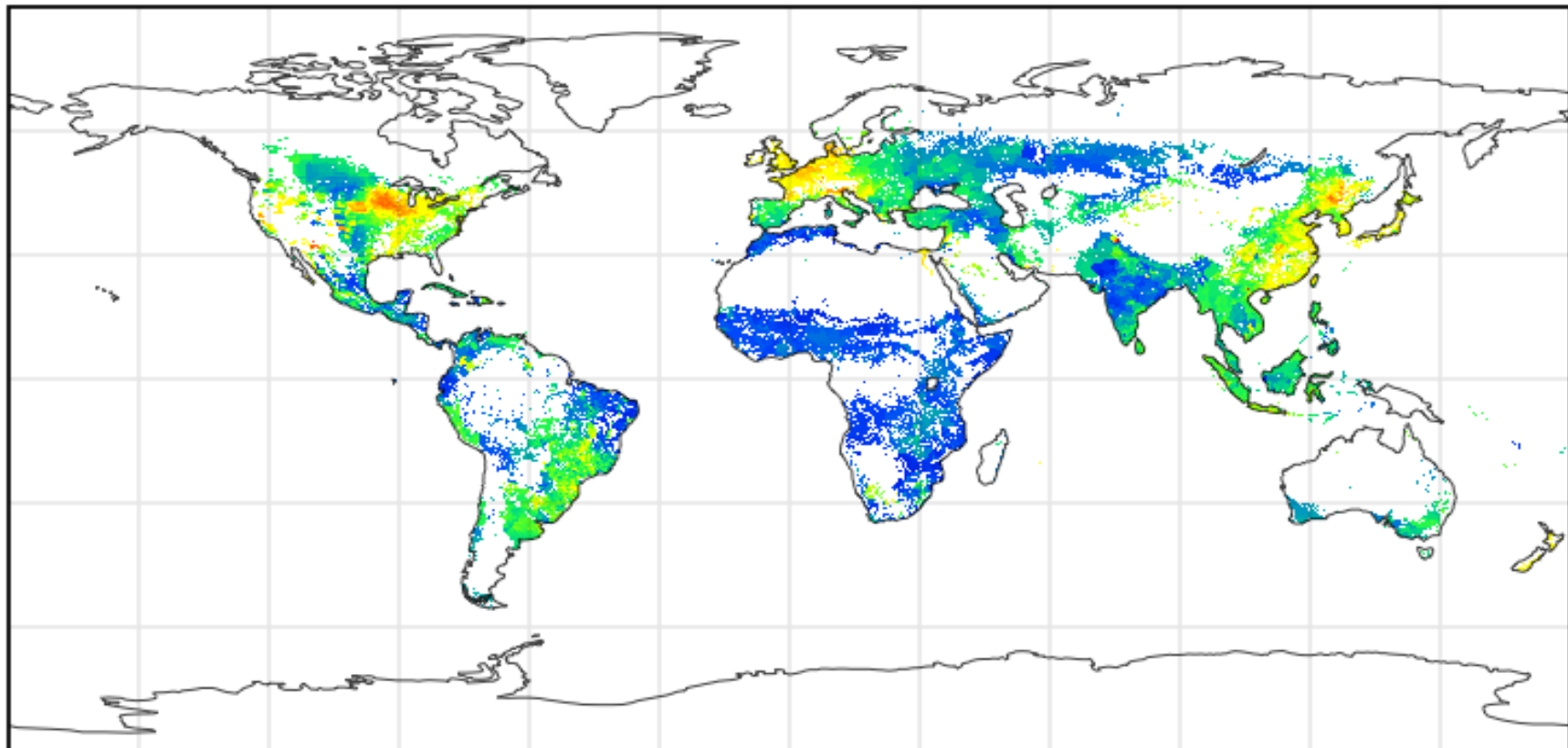
- ▶ Brazil has followed the opposite prescription from that of the advocacy community.
- ▶ For most NGOs:
 - Small and organic is beautiful.
 - They frown on chemical fertilizers and loathe GMOs
 - They think it is more important for food to be sold on local than on international markets.
- ▶ Brazil's strategy is the opposite:
 - Brazil's farms are many times the size even of American ones.
 - Farmers buy inputs and sell crops on a scale that makes sense only if there are world markets for them.
 - They depend critically on new technology.
 - Brazil's progress has been underpinned by the state agricultural-research company and pushed forward by GM crops.
- ▶ Brazil represents a clear alternative to the growing belief that, in farming, small and organic are beautiful.

Story Line

1. My qualifications (or lack thereof) on the subject
2. Water and development:
 - a) In rich and middle-income countries
 - b) In Africa
3. Agriculture:
 - a) In rich and middle-income countries
 - b) In Africa
4. Some thoughts on a way forward for Africa

The performance of African agriculture

Grain Yields Around the World

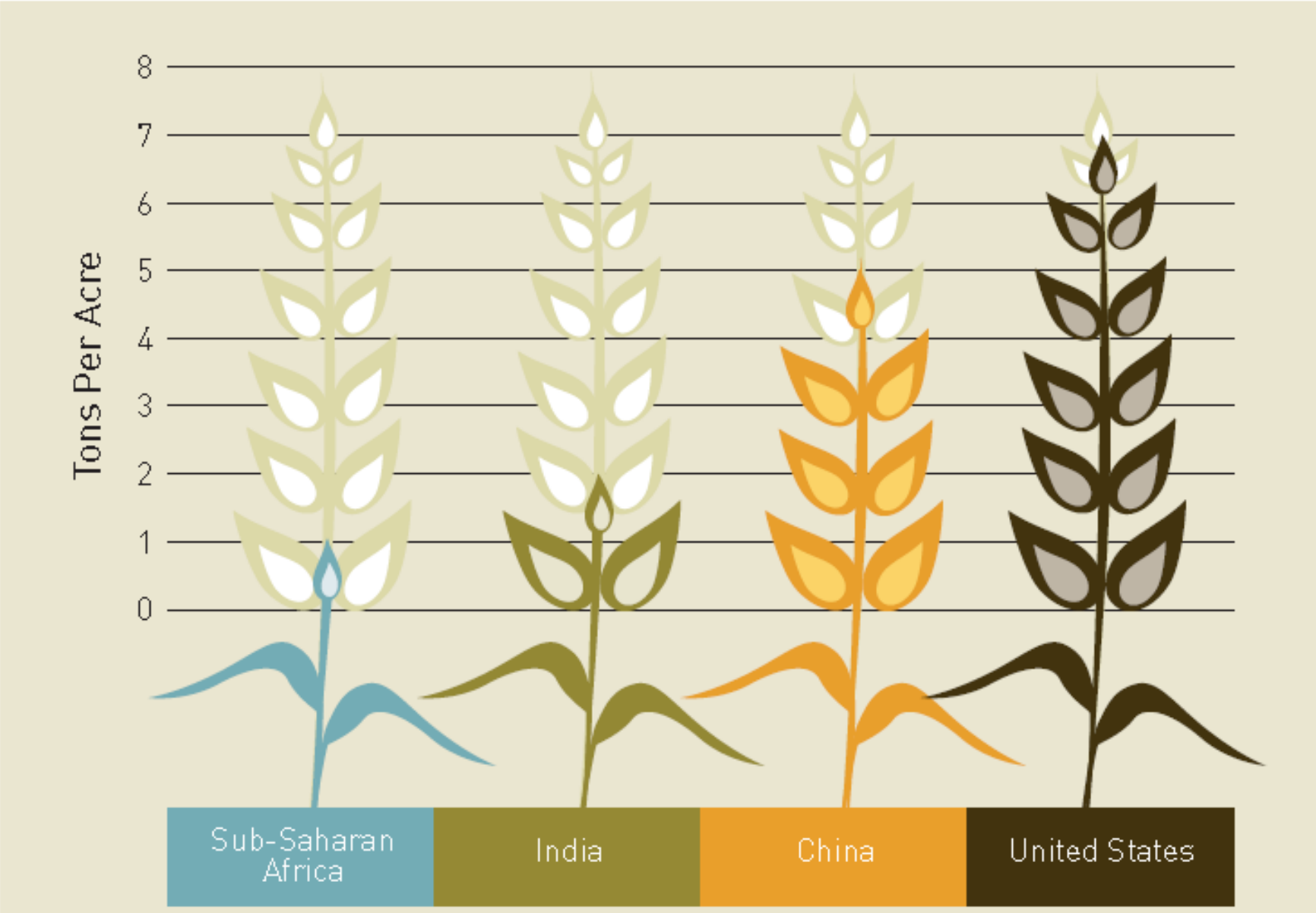


Equirectangular projection centered on 0.0°E

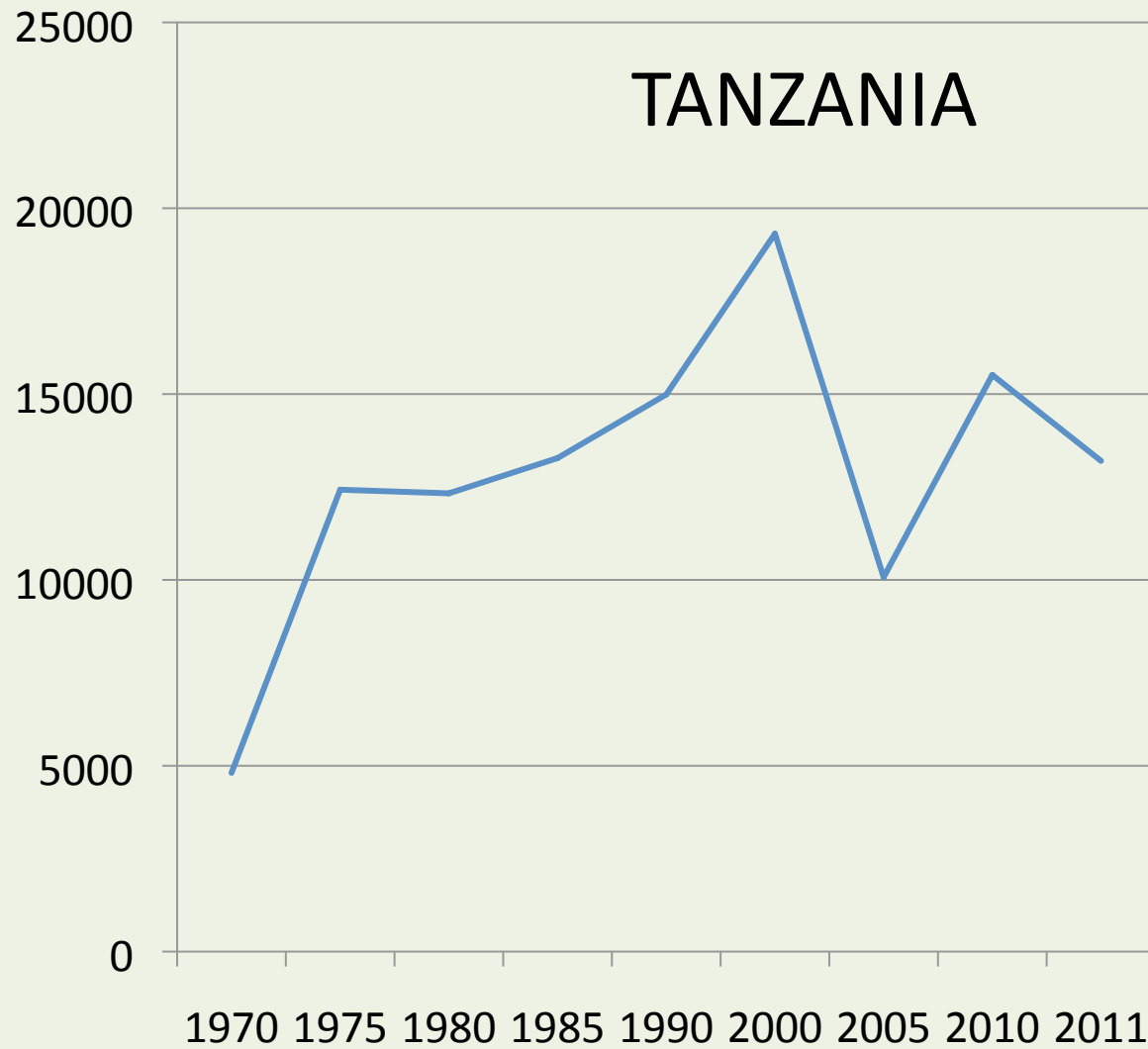
Data Min = 0.00884, Max = 13.27624

Interpretation: Grain yields (in metric tons per hectare) rise from lowest (dark blue) to highest (dark red)
Source: Center for Sustainability and the Global Environment (SAGE), University of Wisconsin.

CHART 1: AVERAGE YIELD OF CEREAL BY COUNTRY



Maize yields Hg/Ha



Source: FAOSTAT

A typical African example

Farming in Nigeria

Feed yourself

If only Nigeria could revamp its farms

May 4th 2013 | TARABA | From the print edition

- Nigeria should be able to feed itself but patently fails to do so. It spends about \$11 billion a year importing food and is the world's largest buyer of rice.
- Less than half of Nigeria's arable land is now used; only 10% of farmland is "optimally" used.
- The biggest impediment may be lousy infrastructure: crumbling roads and patchy supplies of electricity and water..
- Nigerians proportionally use a tenth as much fertilizer as their Indian counterparts.

GROWTH OF TFP IN AGRICULTURE % PER YEAR – Africa missing out then...

| REGION | 1970-90 |
|---------------------------|-------------|
| Sub-Saharan Africa | 0.31 |
| Latin America | 1.02 |
| Asia | 1.51 |
| North America | 1.49 |
| Europe | 1.26 |

Source: Recalculated from Fuglie (2008) by
R.A. Fischer, Derek Byerlee and G.O. Edmeades, FAO, 2010.

and now...

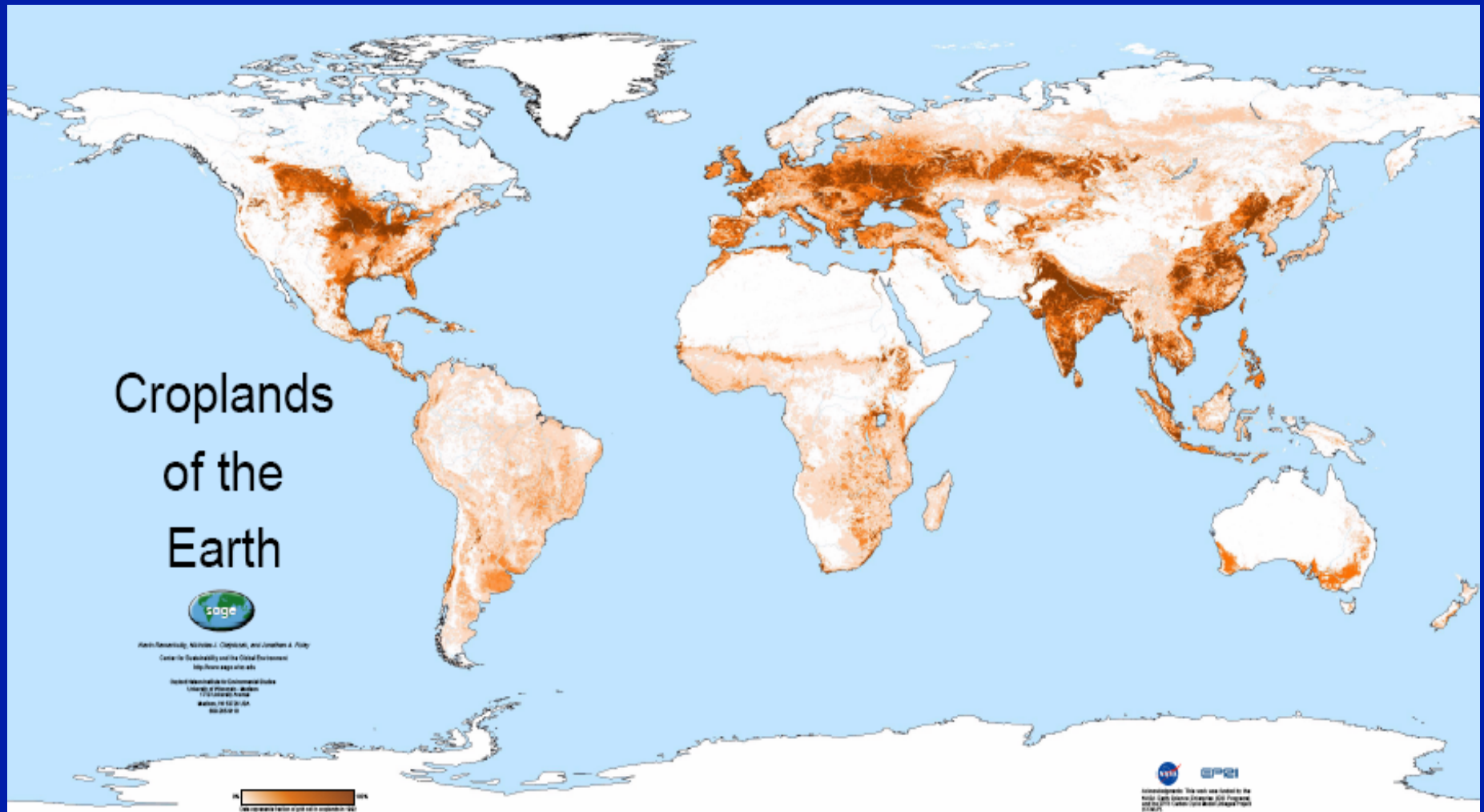
| REGION | 1970-90 | 1991-06 |
|---------------------------|-------------|-------------|
| Sub-Saharan Africa | 0.31 | 0.86 |
| Latin America | 1.02 | 2.44 |
| Asia | 1.51 | 2.62 |
| North America | 1.49 | 1.91 |
| Europe | 1.26 | 1.52 |

Source: Recalculated from Fuglie (2008) by
R.A. Fischer, Derek Byerlee and G.O. Edmeades, FAO, 2010.

What Africa has

- Low cultivation intensity...
- FAO 2009: 80% of the world's reserve agricultural land is in Africa and South America

Croplands of the Earth



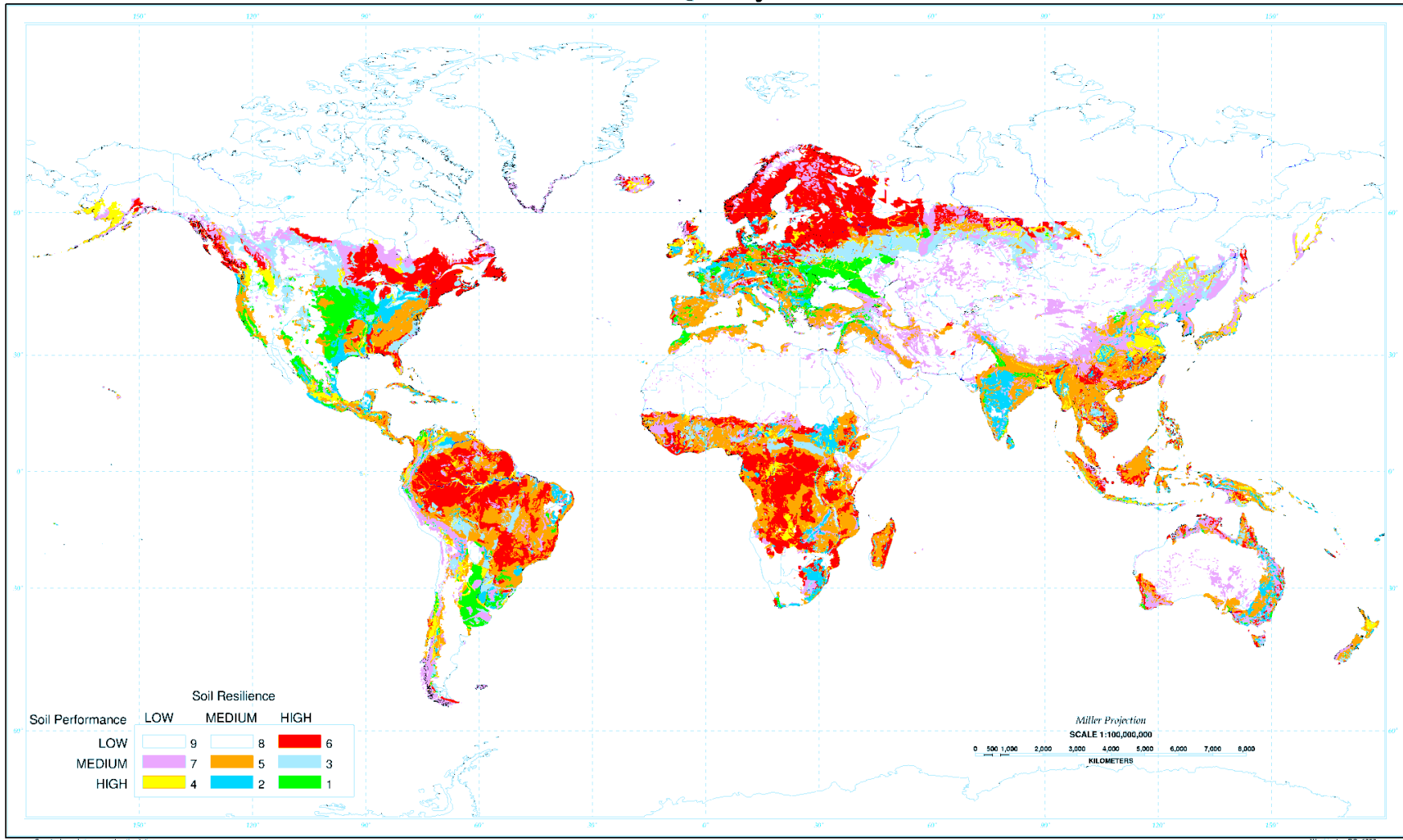
Interpretation: The darker the shading, the larger the percent of the land under that pixel that is in crops.
Source: Center for Sustainability and the Global Environment (SAGE), University of Wisconsin.

What Africa has

- Land quality not worse than Brazil's "uncultivable cerrado"

Inherent Land Quality

Inherent Land Quality Assessment



What Africa has

- Land...
- **Water...**

Climate Constraints

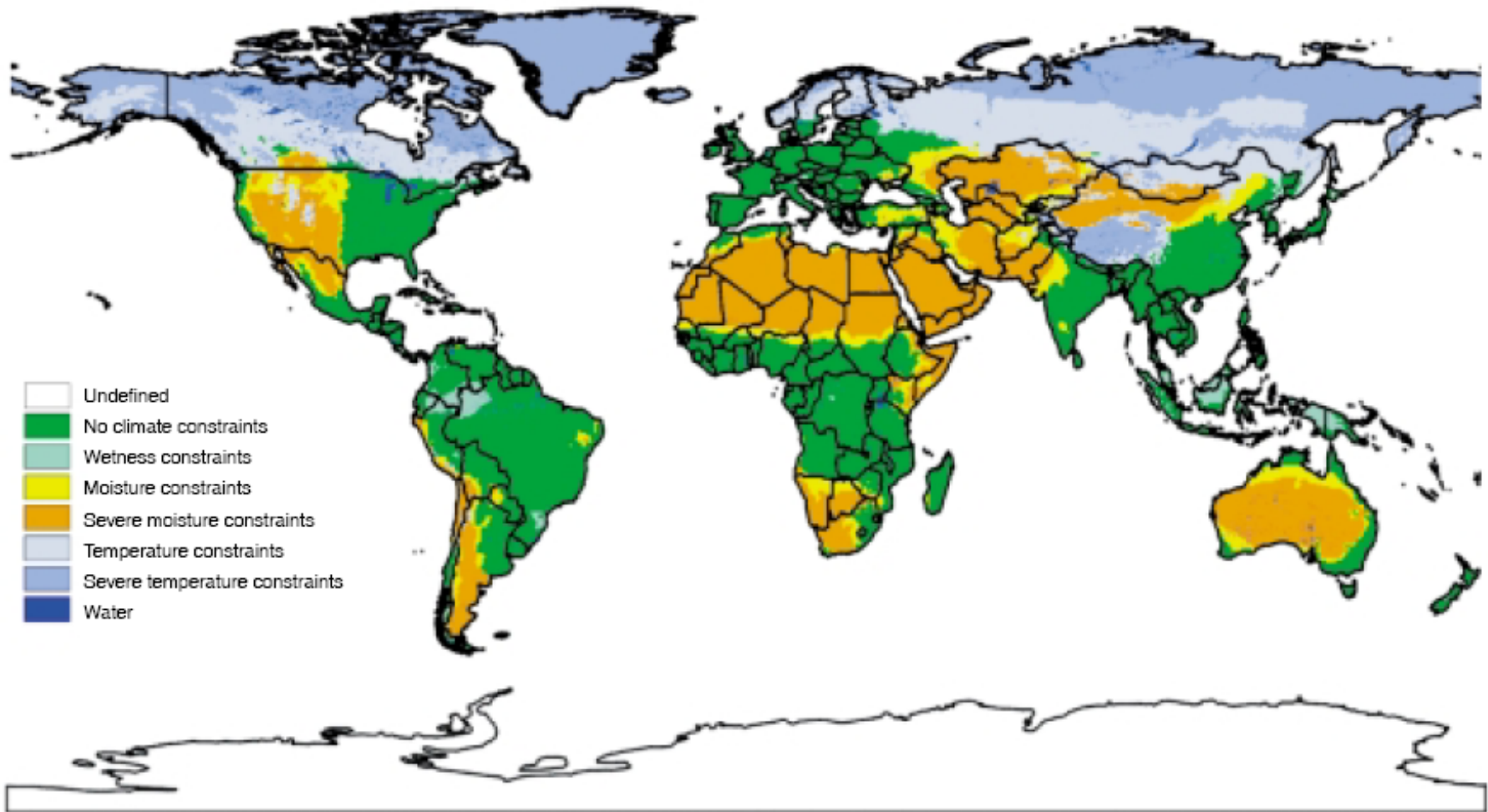


Plate E. Climate constraints.

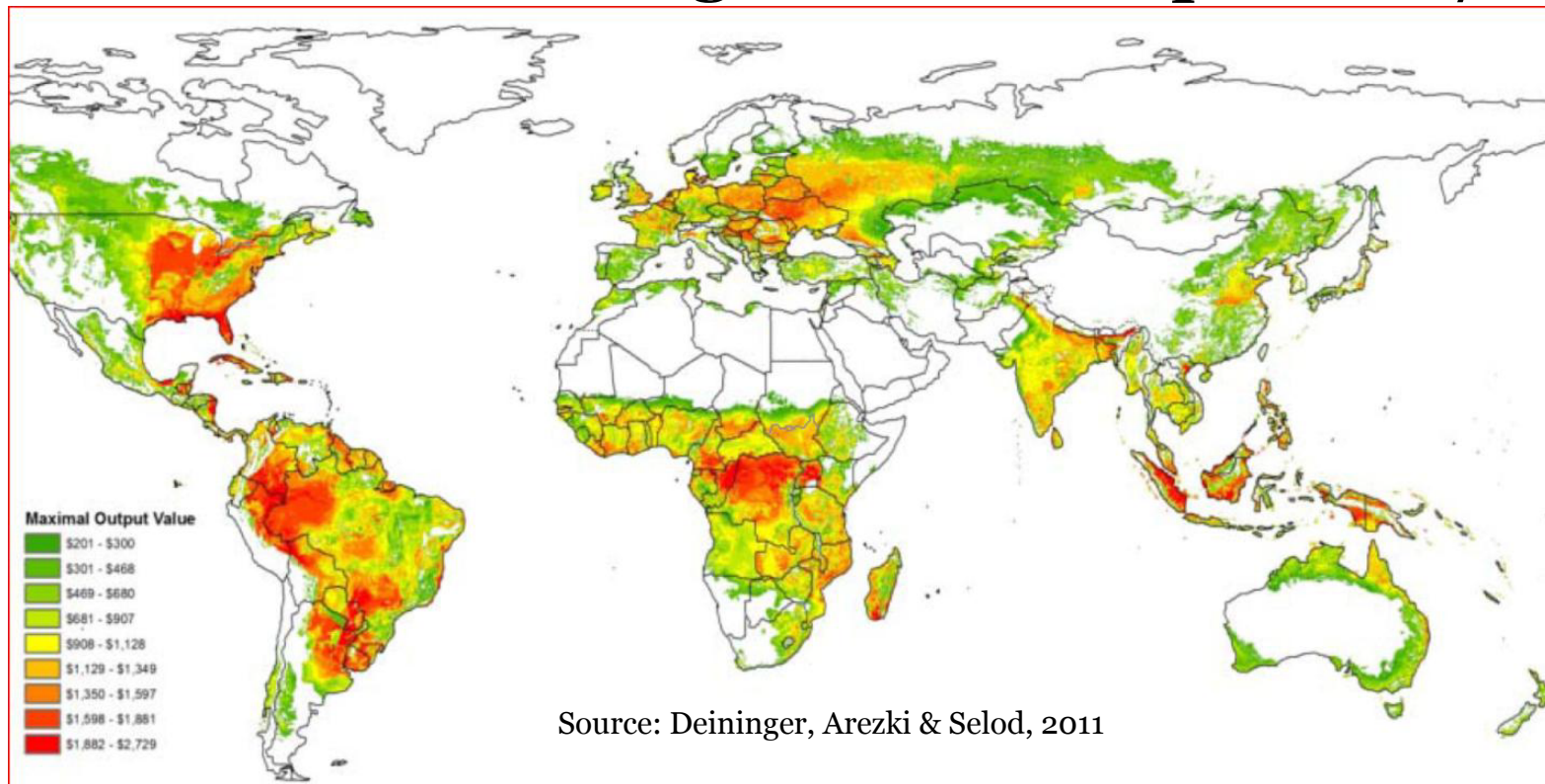
Source: International Institute for Applied Systems Analysis

What Africa has

- Land...
- Water...
- **Potential**



Max Potential Value of Agricultural Output (US\$/ha)



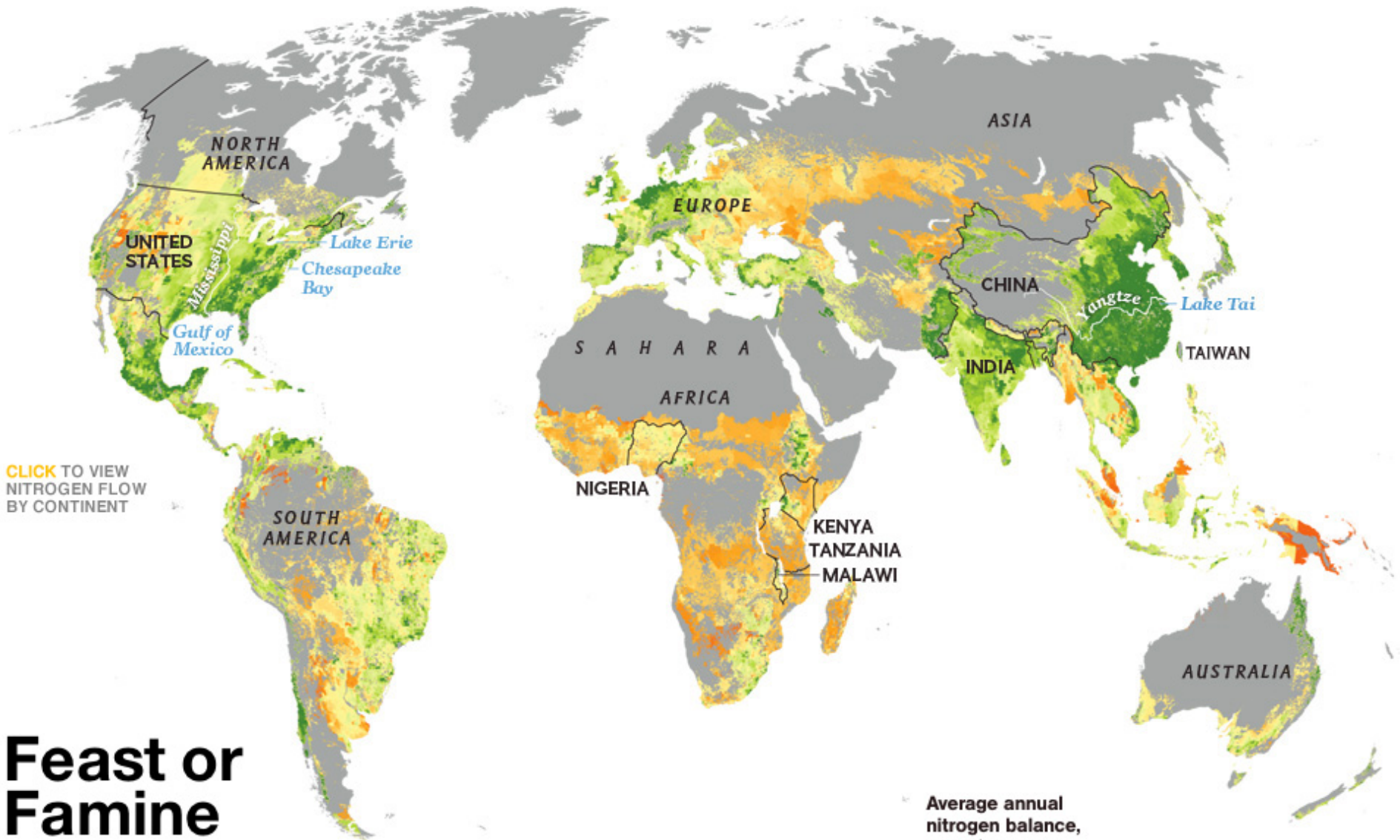
- 4 regions:-little land for expansion/low yield gap - Asia, Europe, Australia, MENA
- land available but low yield gap – much of the Americas
- big yield gap but little land available – most populous SSA/C.America
- big yield gap/land available – sparsely population SSA countries (e.g., DRC, Angola, CAR, Madagascar, Mozambique, Sudan, Tanzania, Zambia)

Story Line

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3. Agriculture:
 - a) In rich and middle-income countries
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4. Some thoughts on a way forward for Africa

Africa needs MORE...

- **Fertilizer...**



CLICK TO VIEW
NITROGEN FLOW
BY CONTINENT

Feast or Famine

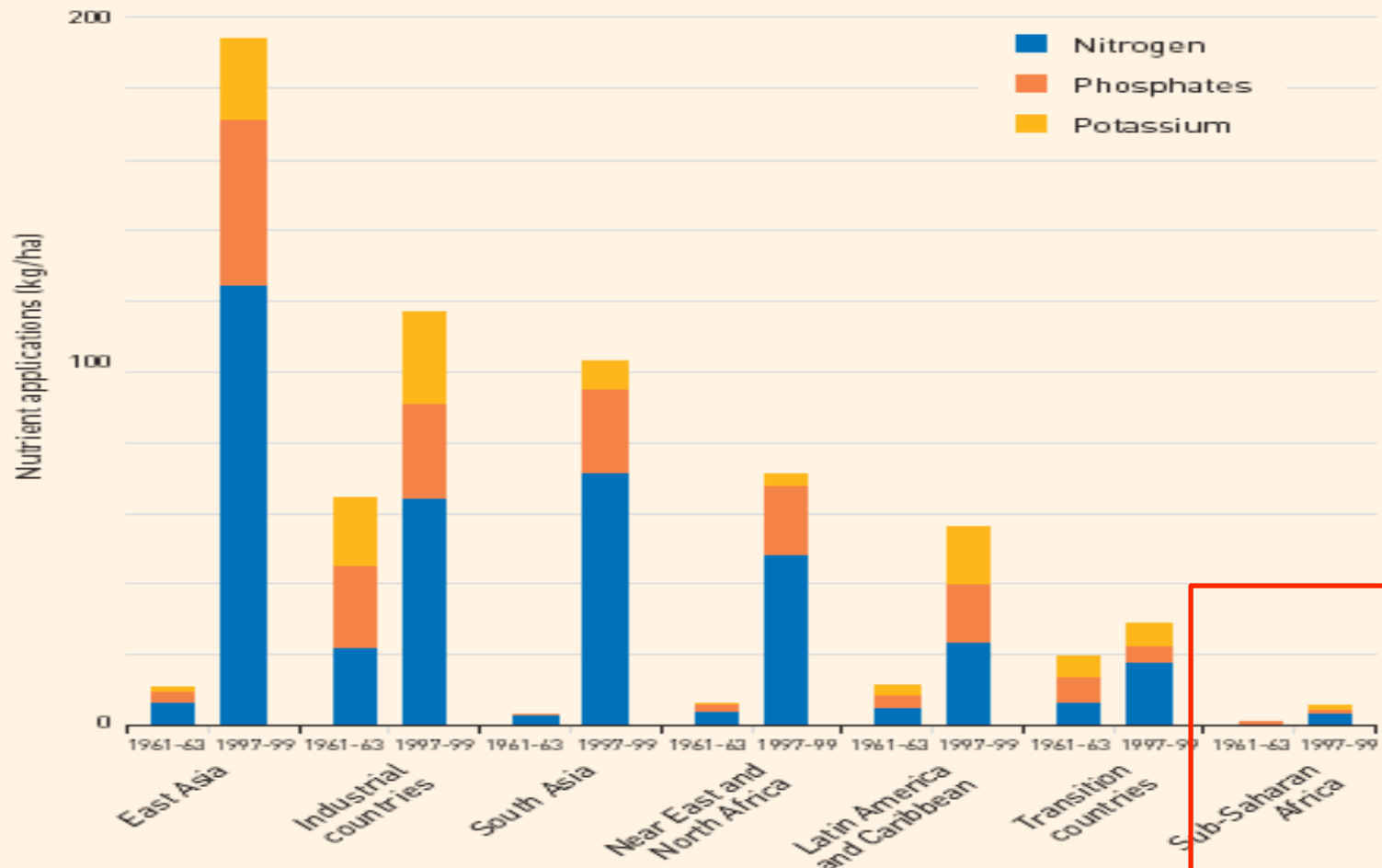
Nearly half the people on the planet wouldn't be alive if not for the abundant food made possible by nitrogen fertilizer. Yet its benefits have not reached everyone. In sub-Saharan Africa, where 239 million people go hungry in a year, crops fail as soil is stripped of nutrients, and farmers can't afford to buy fertilizer. Elsewhere overuse pollutes waterways and releases greenhouse gases.

Average annual
nitrogen balance,
pounds per acre



Zero means the crop used exactly the amount of nitrogen applied. The ideal range varies due to local conditions.

Fertilizer Use (kg/ha, 1962-1998)

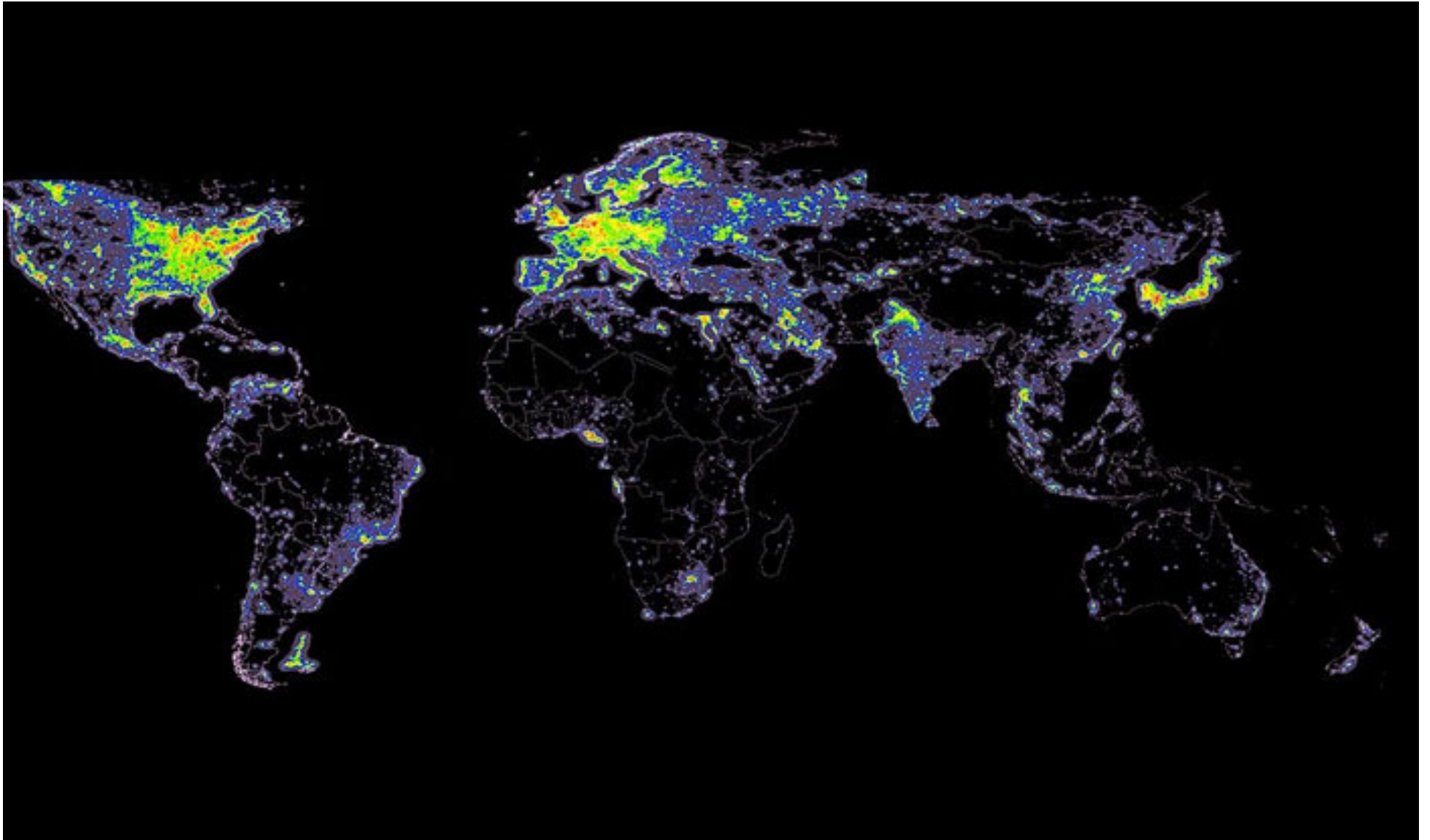


Source: FAO data

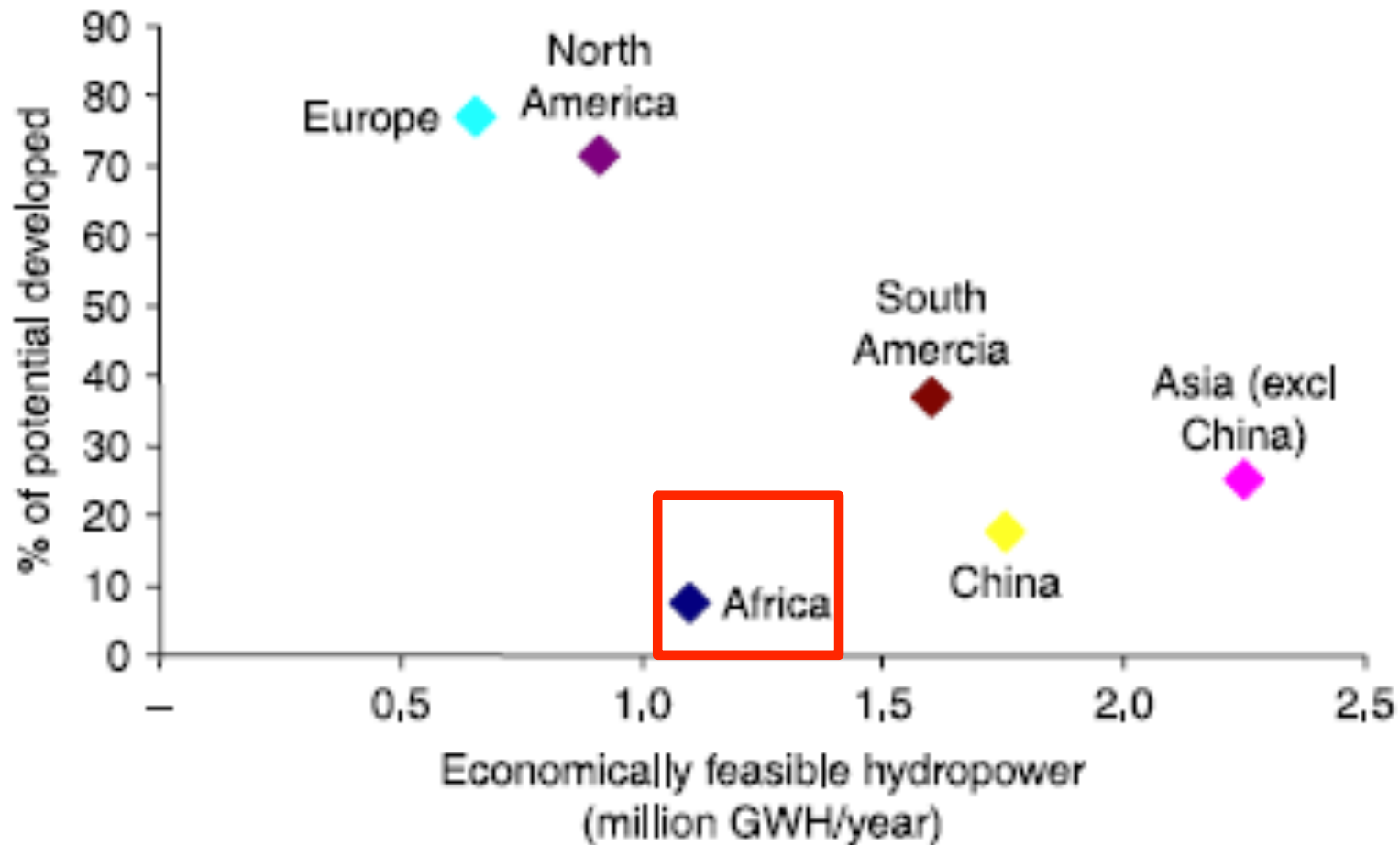
Africa needs MORE...

- Fertilizer...
- **Infrastructure...**

Electricity



Hydropower in different regions



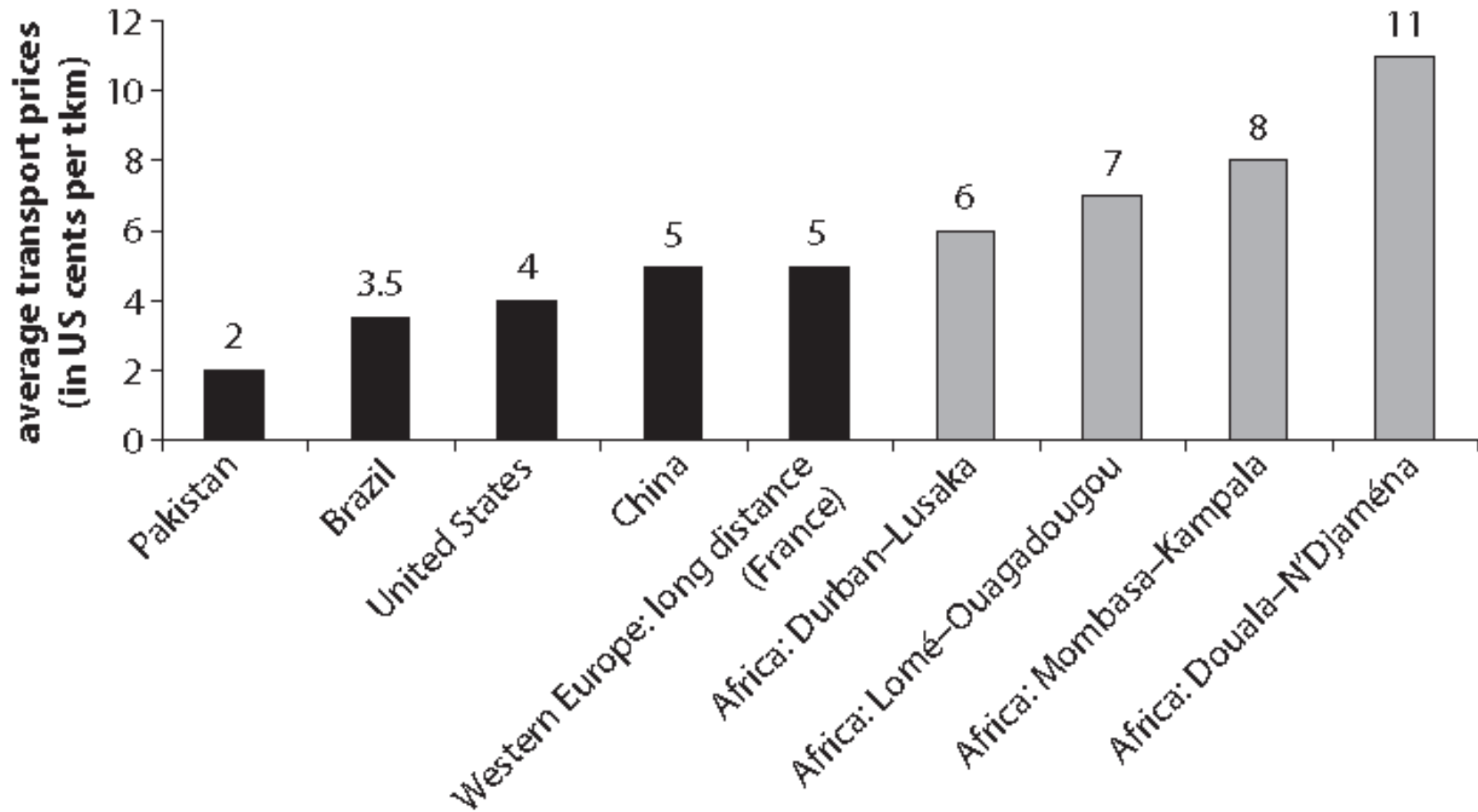
September 15, 2012

World Hunger: The Problem Left Behind

By TYLER COWEN

In other words, the region that probably needs fertilizer the most also has to pay the most for it, and much of Africa doesn't have the prosperity to make this an easy stretch. The high prices result in large part from infrastructure and trade networks that aren't developed enough to create a low-cost and competitive market.

Figure 2.1 Average Transport Prices: A Global Comparison in 2007

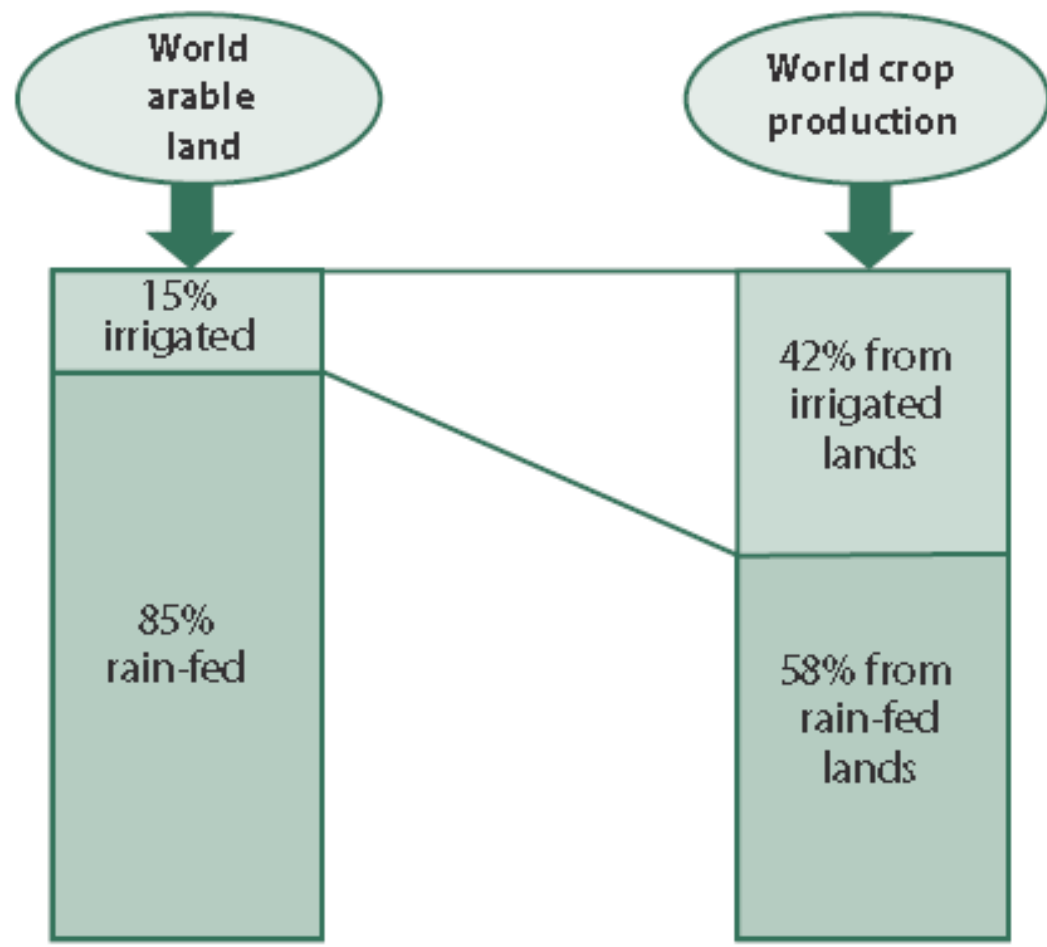


www.infrastructureafrica.org/system/files/WP14_Transportprices.pdf

Africa needs MORE...

- Fertilizer...
- Infrastructure...
- **Irrigation...**

FIGURE 1.1 Irrigated and Rain-Fed Shares of World Arable Land and Crop Production



Irrigation in SSA

- Green revolution was also a blue revolution
- SSA has large untapped water resources for agriculture. Only around **4 to 5% of cultivated land is irrigated**, two thirds of which is accounted for by Madagascar, South Africa, and Sudan. The **potential exists to bring an additional 20mha or more of land under irrigation**
- overall water withdrawals for agriculture are still limited in Sub-Saharan Africa: irrigation uses **less than 3 percent of total renewable resources** compared to 36 percent in South Asia and 51 percent in the Middle East and North Africa.

An example of potential

The Zambezi River Basin *A Multi-Sector Investment Opportunities Analysis*

Figure 2.1. Irrigation levels considered in this analysis (ha)

Annual irrigated area, in hectares

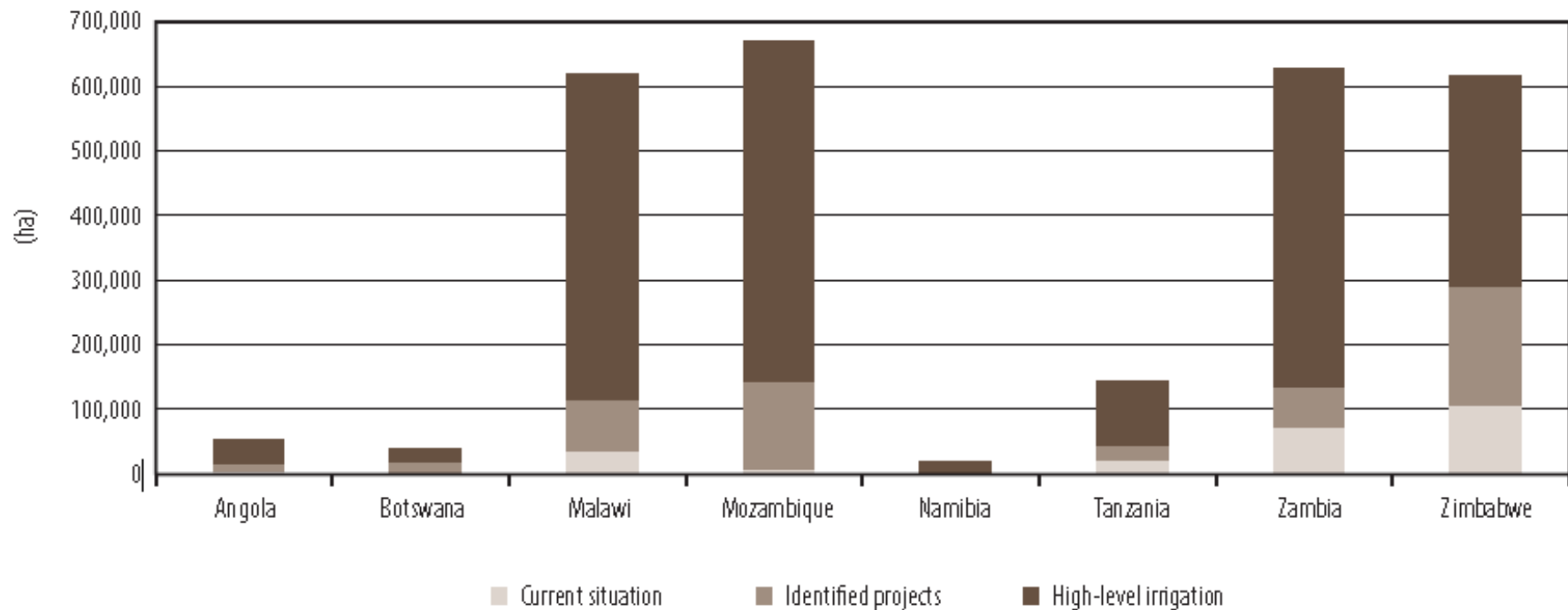
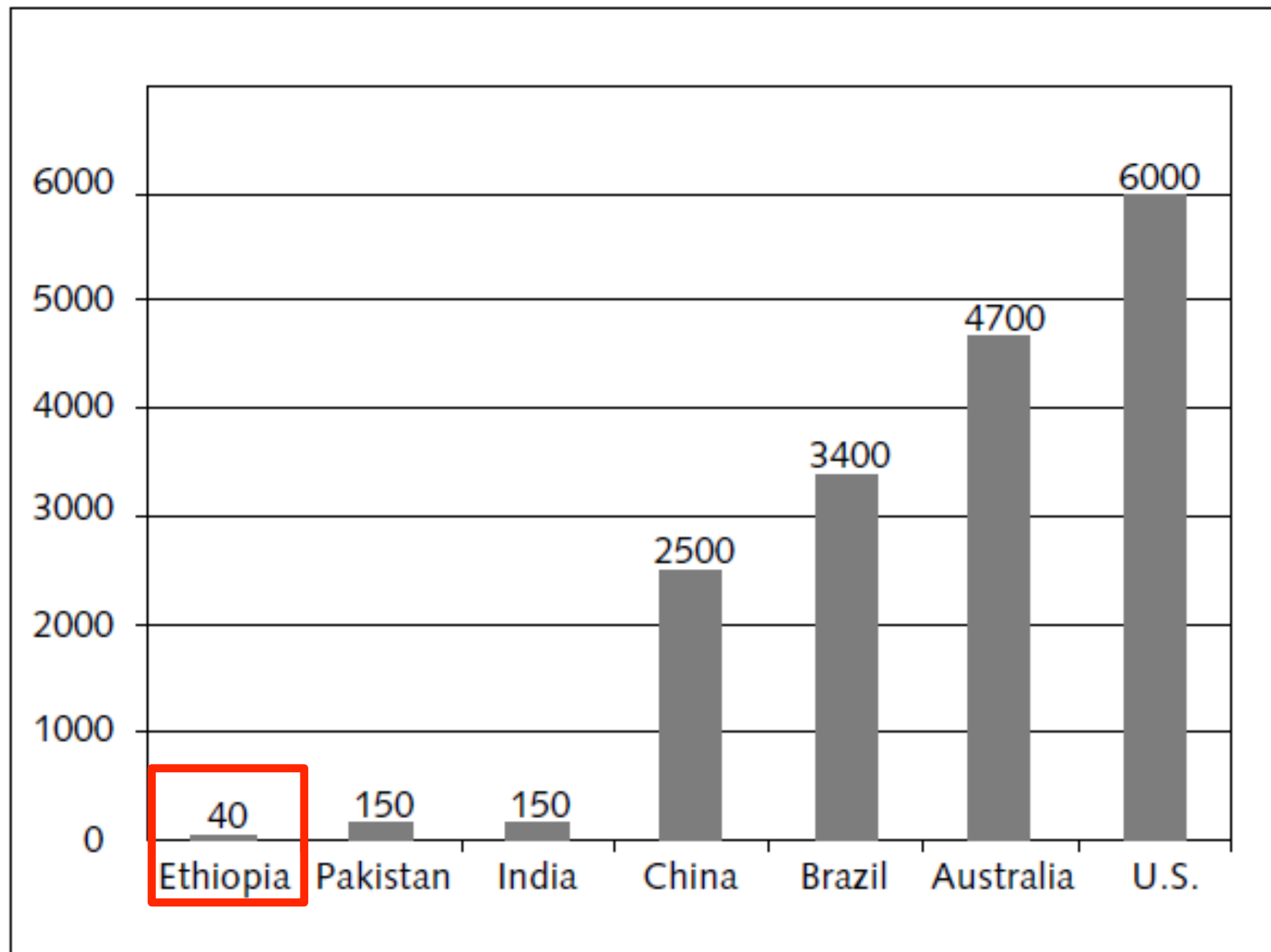


Figure 1.2 Water Storage Capacity in the Rich and Poor Worlds (cubic meters per capita)



Africa needs MORE...

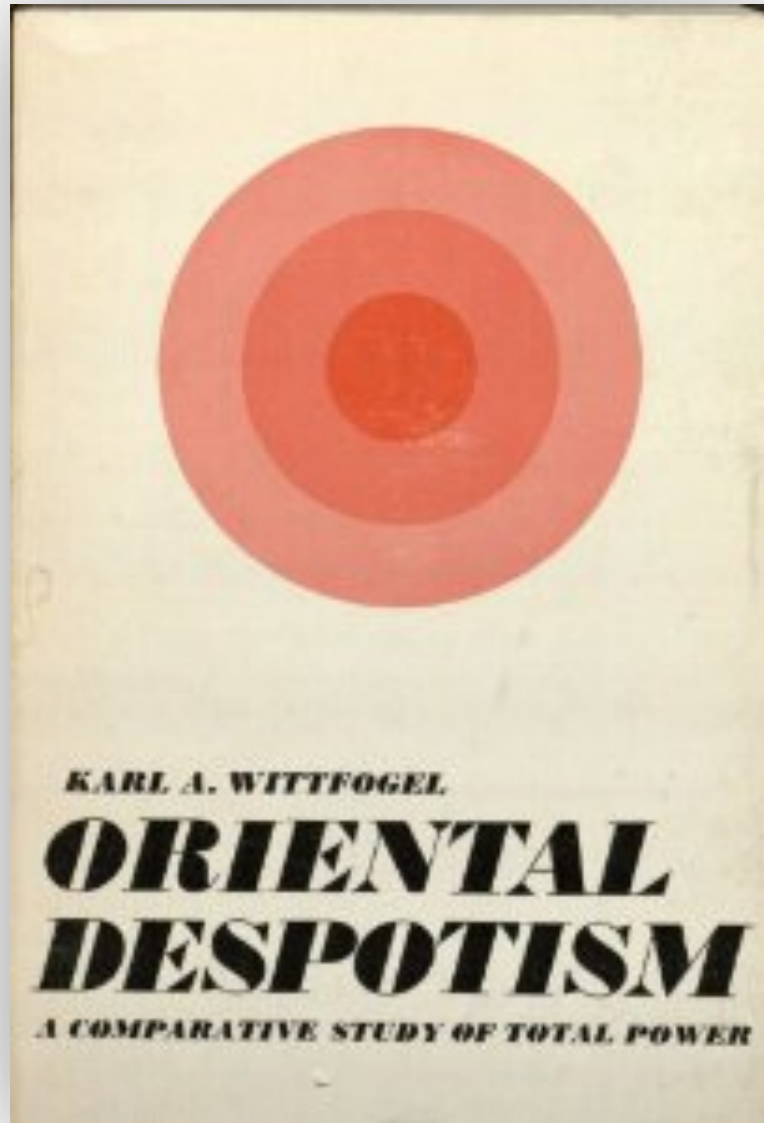
- Fertilizer...
- Infrastructure...
- Irrigation...
- **Knowledge...**

Ghana

- Observation by a Ghanaian CEO of a MNC:
 - *Once the best and brightest Ghanaians went into engineering*
 - *Now they become anthropologists (because NGOs dominate the job market, and this is the skill they want....)*

Africa needs MORE...

- Fertilizer...
- Infrastructure...
- Irrigation...
- Knowledge...
- **Institutional capacity....**



- Wittfogel's classic is much disputed....
- But SSA was (regrettably) never accused (like India and China) of having irrigation spawning “(Oriental) despotism”

Africa's Economic Boom

Why the Pessimists and the Optimists Are Both Right

Authors: Shantayanan Devarajan, and Wolfgang Fengler

May/June 2013

Foreign Affairs

- Manufacturing has not advanced – same (small) share of GDP as in the 1970s.
- (As ag becomes more industrial, implication is that this will be very difficult.)
- Pervasive problem is high cost of production, related largely to poor infrastructure. Anyone trying to do business is constantly stymied by power cuts, impassable roads and leaky water pipes.



“What separates the countries that advance from those that don’t is primarily ability to implement..”

Irrigation in Africa...

- Is clear that Africa does not easily create hierarchical institutions that manage networked infrastructure.
- My own experience with irrigation in the Limpopo Valley in Mozambique post independence...

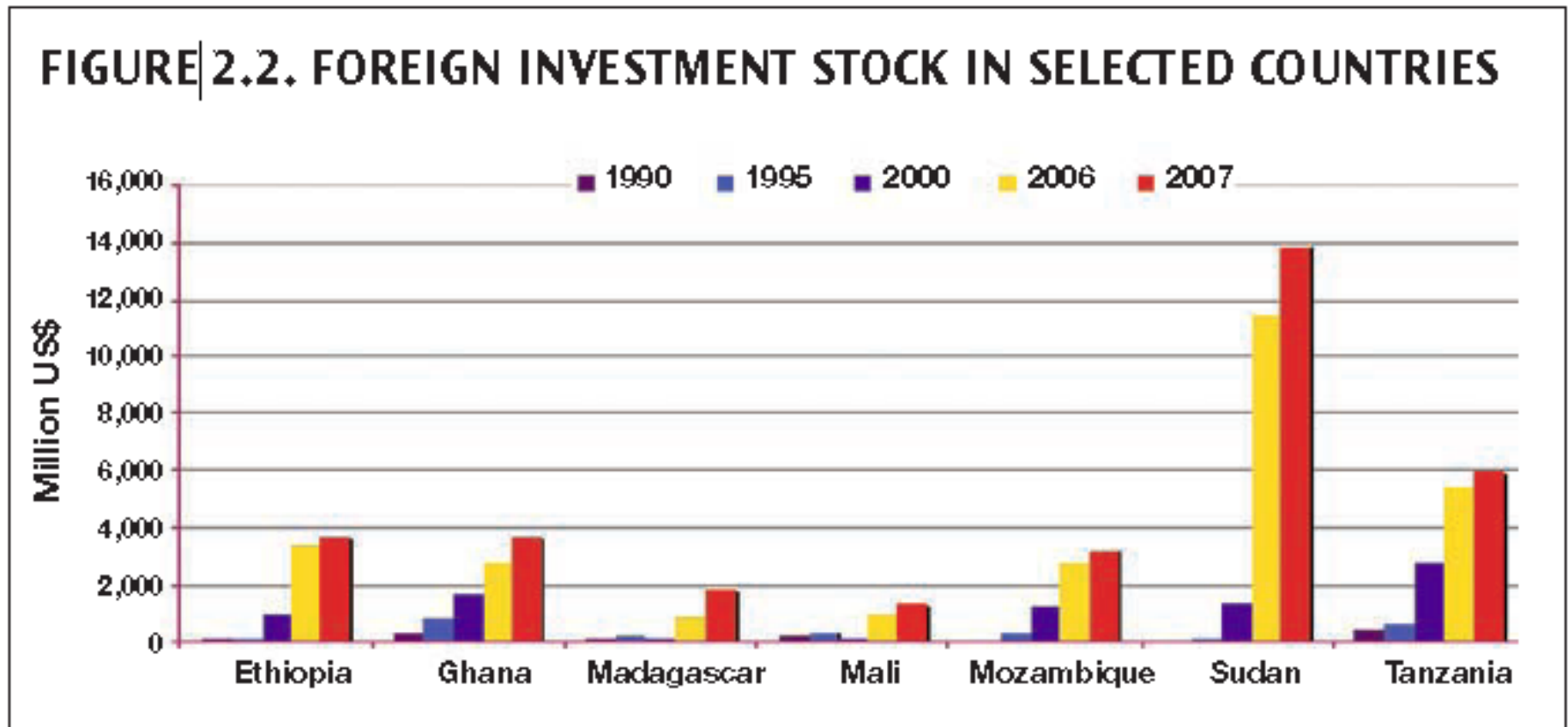
Africa needs MORE...

- Fertilizer...
- Infrastructure...
- Irrigation...
- Knowledge...
- Institutional capacity
- **Foreign Direct Investment....**

Two views

- Persistent low levels of public investment in agriculture
- Non-existent or shallow domestic capital markets
- And therefore a natural turn to foreign direct investment
- FDI projects can help create implementation capacity

The facts:
These countries are the key recipients of FDI in land in Africa.



Data source: UNCTAD (2008a)

FDI naturally goes first where there is underutilized capacity **Mali's Office du Niger**



A (relative) success: Mali's Office du Niger

- A project started in 1932
- A 60,000-hectare scheme
- Some success from small (average 3 hectare) farmers
 - Between 1982 and 2002:
 - rice yields have quadrupled,
 - horticulture contributed more than 50 percent of gross -value of rice output
 - cropping intensities have increased, and food security has improved.
 - But large parts of the command area remain undeveloped, 80 years later..
- Capital and know-how needed to farm the whole potential area

The Office du Niger search for FDI

- A Sino-Malian joint venture is developing 20,000 ha that had not previously been irrigated.
- In 2008 the Malian government awarded a 50 year renewable lease for 100,000 ha of un-irrigated farmland to Malibya, a subsidiary of Libya's sovereign wealth fund.

FAO 2009

- a recurring theme is, from the perspective of African governments, the relatively low importance and value of financial transfers compared to the expected broader economic benefits such as employment generation and infrastructure development.
- international land deals may constitute a development opportunity in recipient countries – by bringing capital and know-how, creating employment and developing infrastructure.

But it is easier said than done....

Investment Strategy

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Last updated: September 16, 2012 7:35 am

Play a part in an African investment story

By Brendan Maton

If agriculture seems like the investment story of the moment, then Africa is its most exciting chapter.

- Guy Scott, Zambia's vice-president and a farmer himself, aired concerns that the majority of promises made by foreign investors do not materialize.
- Mr. Scott's point was not that foreign investors are unscrupulous, merely that farming is a complex business while raising capital is about painting the rosiest picture possible.

Growth and Productivity in Agriculture and Agribusiness

- Difficult business environments, a shortage of indigenous entrepreneurs, the small size of the potential investments, lack of access to markets, and the discouraging experience of working directly with small-scale sponsors have constrained IFC engagement and performance in Sub-Saharan Africa
- These factors have pushed it toward a focus on foreign sponsors and export-oriented or niche local or regional businesses, such as palm oil and rubber.

The challenge of expectations

- None of this is easy, nor is success ever going to be complete
- This provides an easy opening for severe criticisms from anti-globalization, human rights-oriented NGOs

The New York Times

The Opinion Pages

OP-ED CONTRIBUTOR

The Global Farmland Rush

By MICHAEL KUGELMAN

Published: February 5, 2013

WASHINGTON



“commoditization of global agriculture has aggravated the destabilizing effects of these large-scale land grabs..”



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What we do

Get involved

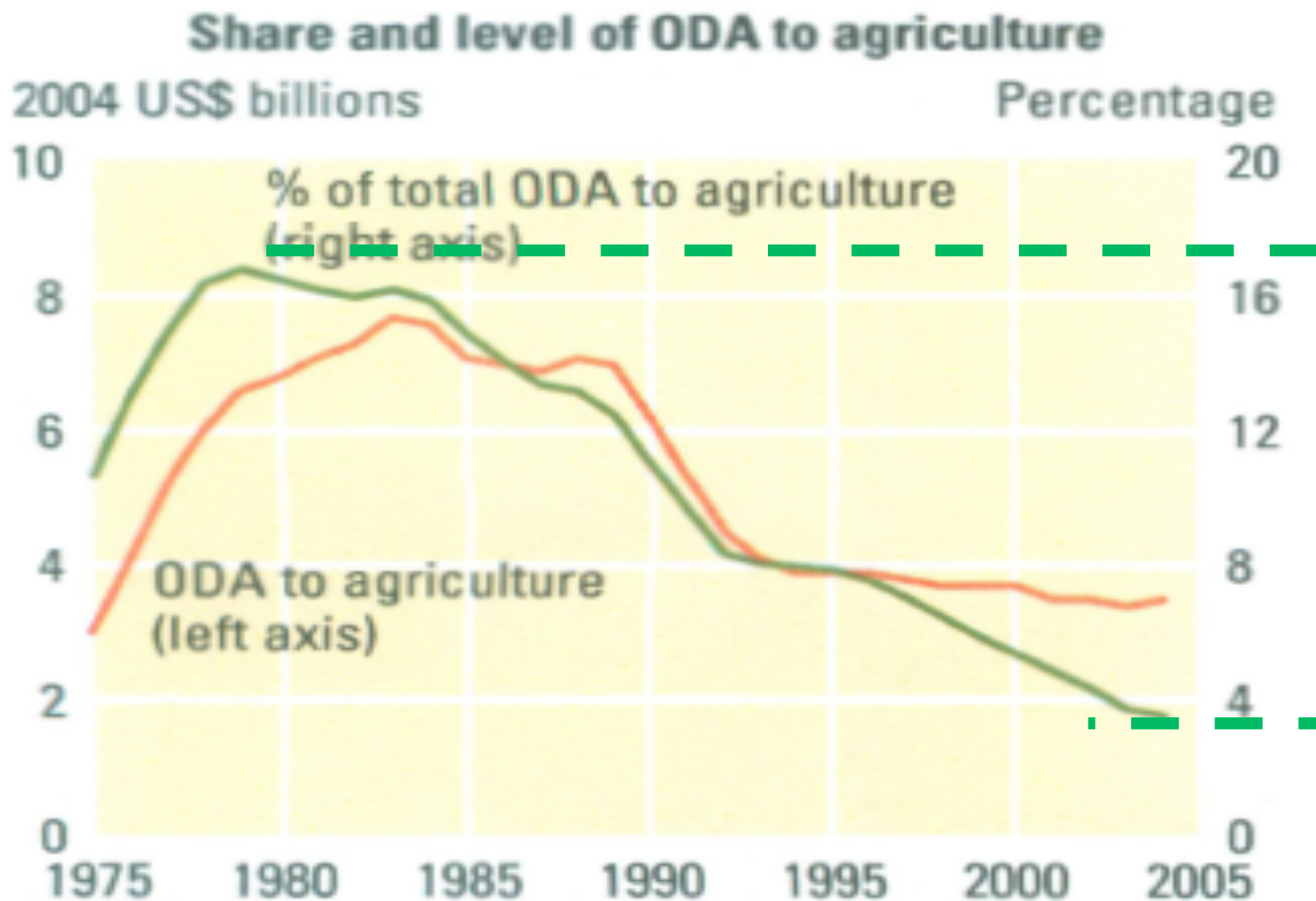


SOLD! Oxfam campaigners project a giant sold sign on to the White Cliffs of Dover to highlight the issue of land grabs.

Oxfam research shows that big land deals in poor countries are leaving people homeless and hungry. Families are being unfairly evicted from their land and left with no way to grow food or earn a living.

How should Africa respond to these external views?

The wisdom of donors....



Source: OECD 2006a;

Note: Data corrected for inflation on right-hand axis.

A precipitous decline, in part because of... (WDR 2008)

- *“increased competition for ODA, especially from social sectors.....*
- *and opposition from environmental groups that saw agriculture as a contributor to natural resource destruction and environmental pollution”*

Who followed the donors' lead and who followed the other path?

Growing Asia did not follow the donors' prescriptions...

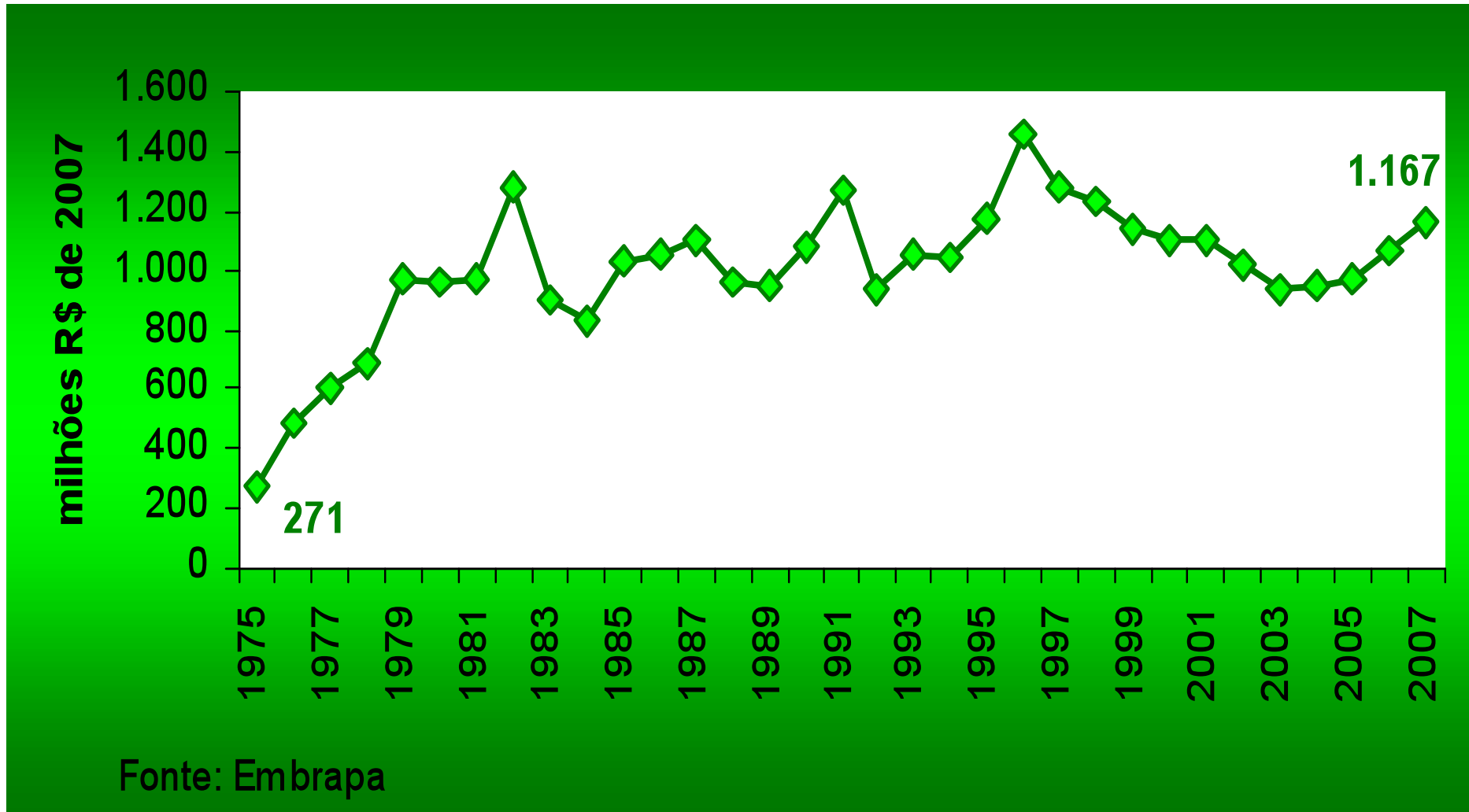
SPENDING ON AGRICULTURE: (Lipton)

- Asia in the 1960s typically allocated 20% of public spending to agriculture;
- SS Africa today allocates 5-10%.

SPENDING ON AGRICULTURAL RESEARCH:

- Asian countries spent nearly five times the amount spent by countries in Sub-Saharan Africa on agricultural research per hectare over the period 1980–2003 (Alene and Coulibaly 2009).

Again, Brazil spending on ag research



Observations from Brazil....



- ▶ can the miracle of the *cerrado* be exported, especially to Africa, where the good intentions of outsiders have so often shriveled and died?



No silver bullets and no short cuts

- ▶ “We went to the US and brought back the whole package [of cutting-edge agriculture in the 1970s],” says President of Embrapa.
- ▶ “That didn't work and it took us 30 years to create our own. Perhaps Africans will come to Brazil and take back the package from us. Africa is changing. Perhaps it won't take them so long. We'll see.”

The world's fastest-growing continent

Aspiring Africa

Pride in Africa's achievements should be coupled with the determination to make even faster progress

Mar 2nd 2013 | From the print edition

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Corbis/The Economist

Africa's Economic Boom

Why the Pessimists and the Optimists Are Both Right

Authors: Shantayanan Devarajan, and Wolfgang Fengler

May/June 2013

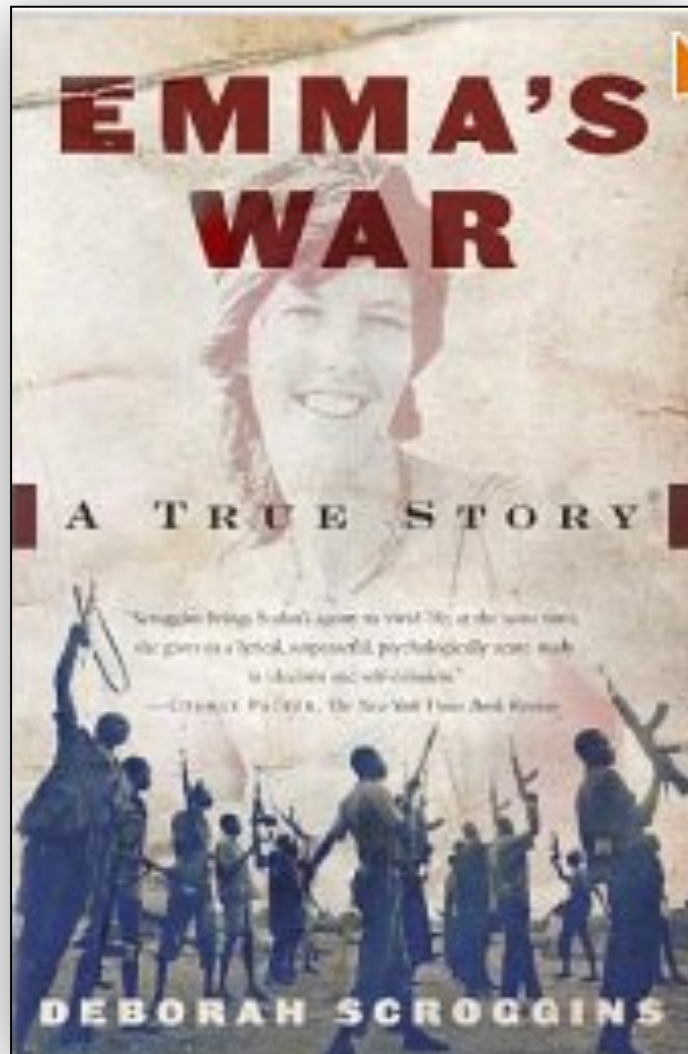
Foreign Affairs

“believing in a more prosperous African future requires a healthy dose of optimism, but not a leap of faith”

The great question for African leadership

- Will it listen to the still-persistent western aid narrative which has served it so badly:
 - “Don’t build dams”
 - “Reduce spending on agriculture”
 - “Concentrate on the MDGs and social goals”
 - “Stay away from GMOs”
 - “Don’t encourage large-scale agriculture”
 - “Don’t allow FDI in agriculture”
- Or will it learn and adapt the lessons from Brazil, China and other MICs?

In short



- Will Africa focus on its real problems
“The politics of the belly”
- Or will it succumb, again, to the western
“politics of the mirror”?