

Changing Roles of Forests and Their Cross- Sectoral Linkages in the Course of Economic Development



Based on A Paper by Uma Lele, Alain Karsenty, Catherine Benson, Judicaël Fétiveau, Manmohan Agarwal and Sambuddha Goswami

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Questions Addressed in the Paper

- What are key factors underlying changes in forest cover loss and gain in the last two decades including relationship to other sectors and external factors?
- Is growth and prosperity possible without causing further damage to the environment including to and from forests?
- What is the future of forests given dramatic changes in the global context in the last two decades?
- What implications for policies and investments for more pro-forest outcomes going forward?

The Good News

- Forest cover loss in 2000-2010 has slowed¹ in 35 (mostly developing) countries that constitute well over 90 % of the loss²
- Several middle income *developing* countries have *increased* their forest cover
- *Tree cover outside the forest sector* has increased
- Reduced forest loss/ increased gain... despite accelerated rates of global economic growth, driven by all developing regions
- Share of forest emissions in total global carbon emissions has declined
- These achievements are the result of the efforts of developing countries themselves
- ***They have occurred without much external financing***

1. Compared to the 1990-2000 period

2. FAO 2010

Factors Explaining Reduced Rate of Forest Loss and Increased Forest Gain in Selected Forest Rich and Forest Poor Countries

Reduced Forest Loss
but importing deforestation

- Brazil
- Indonesia
- Central Africa

Improved Forest Governance particularly in Brazil, changes in International Markets and Prices

Forest Gain
More plantation forests but
exporting deforestation

- China
- Vietnam
- India

Tenure rights, Agricultural Productivity Growth, PES (particularly in China)

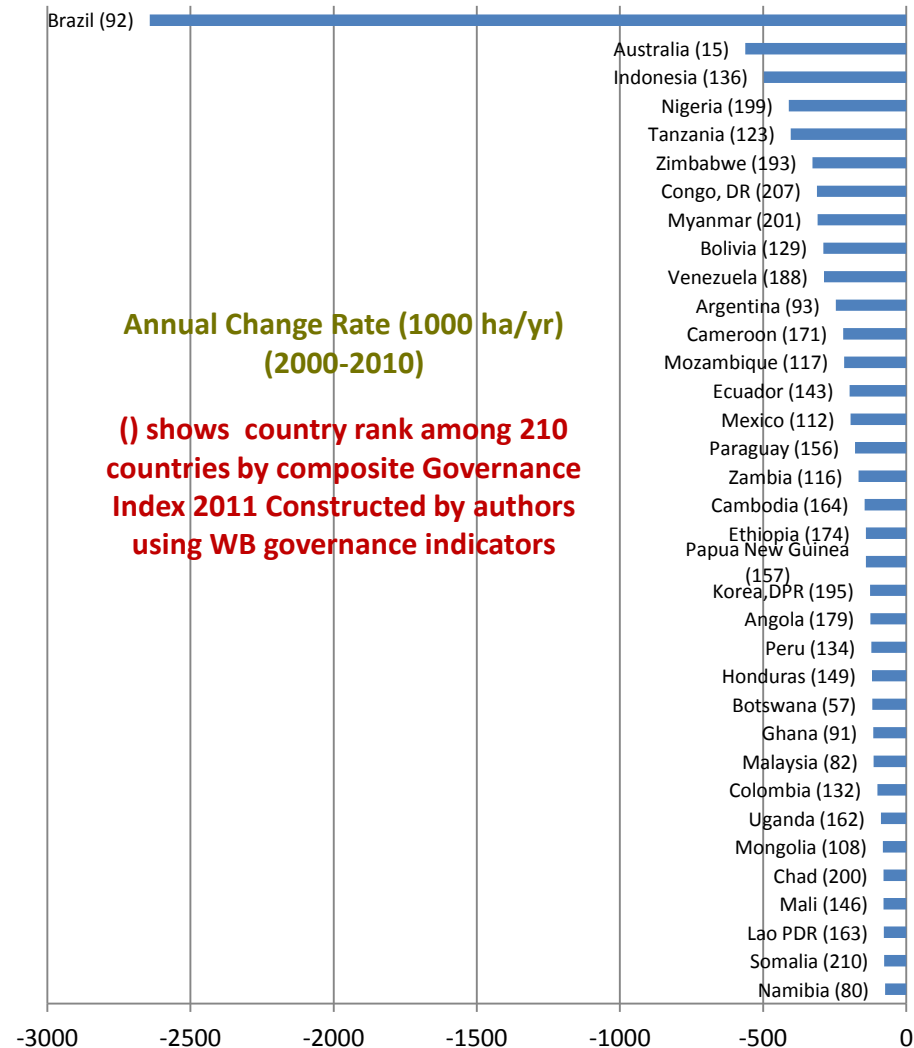
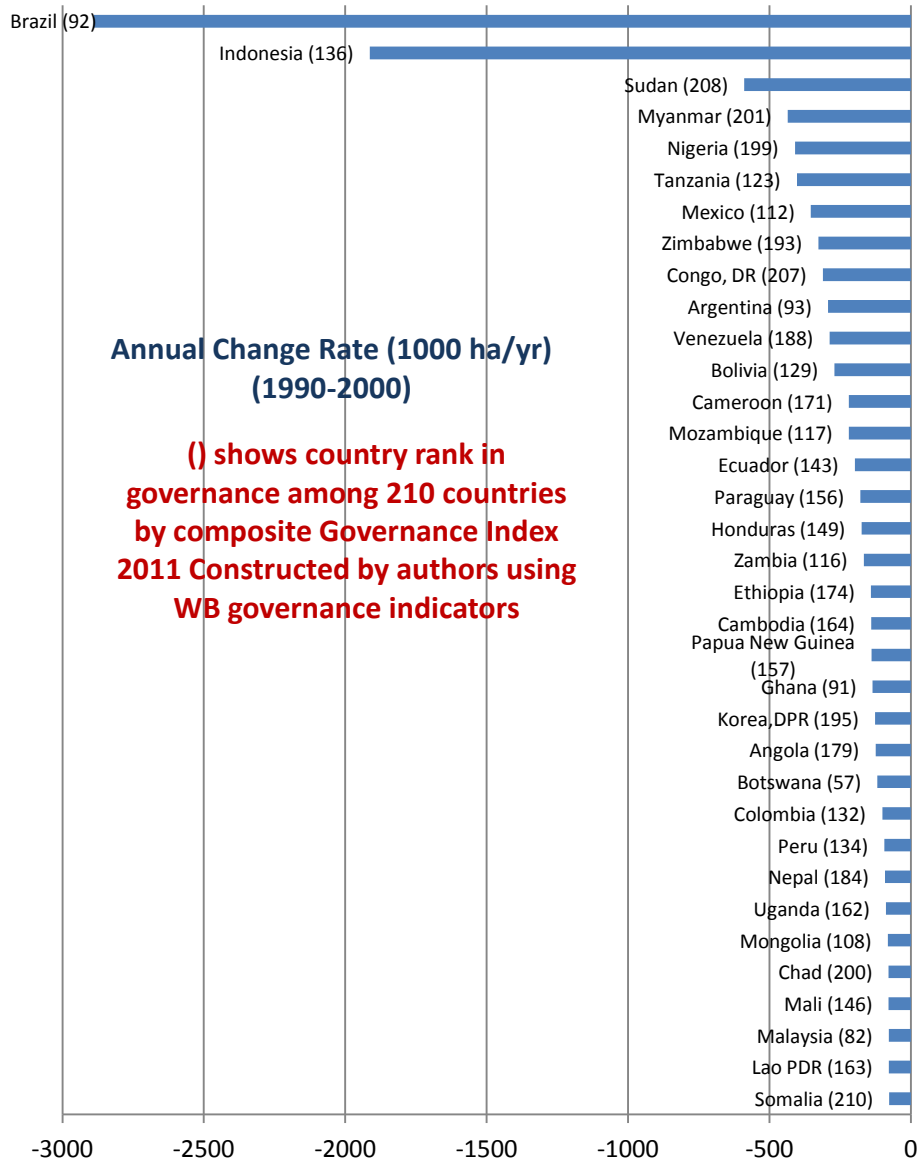
The Bad News

- Net global gain is less impressive because some countries have “exported” their deforestation.
- Initial size of the forest cover and per capita income (closely related to quality of governance) explain most of rate of forest cover loss;
- With accelerated speed of globalization, global trade in forest and agricultural products has increased with increased incentives to deforest.
- Despite some slowing following the great recession in 2008 -- globalization is accompanied by increased FDI, Savings and investment, integration of global commodity, financial , land and foreign exchange markets. The speed may resume over the long haul.
- Demographic pressures, urbanization, and income growth have expanded markets for food and agriculture, and minerals.
- Share of forest emissions in total emissions has declined
 - in part because deforestation has slowed
 - but also because emissions in other sectors have increased
- Biofuels policies and subsidies of developed countries exert pressure on forests through land use changes and have reduced supply of cereals traded on the global markets increasing food prices.

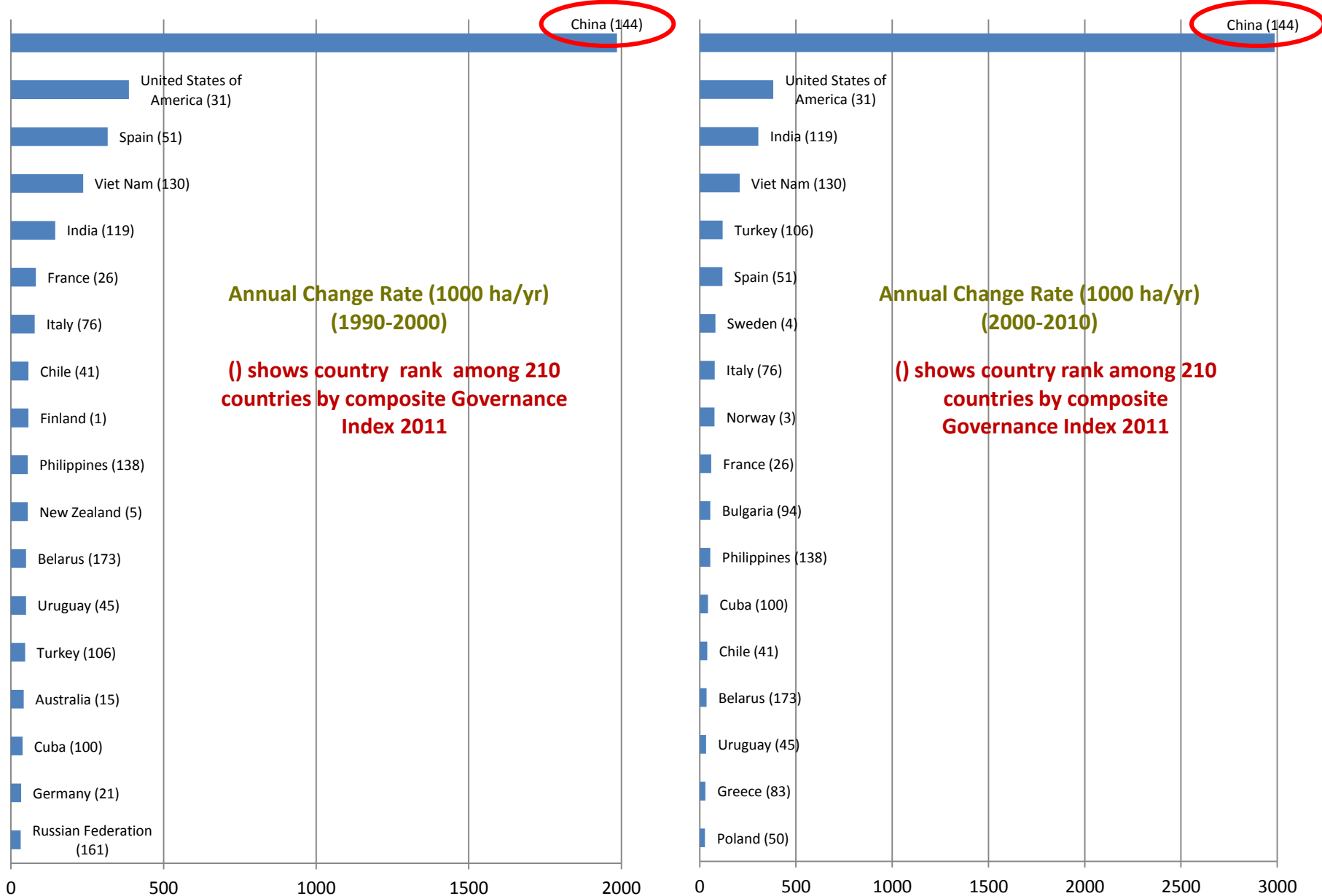
Importance of Governance

- Barring a few notable exceptions (e.g. Brazil), weak institutions and poor governance remain widespread challenges
- Governance is determined by a complex set of factors including political will, information and knowledge, country capacity and opportunity cost of land use
 - Governance takes time to improve.
- Gains in governance as well as those in global market forces are reversible.

Top 35 Countries with Collective > 90%+ of Global Forest Loss And Their Ranking in Governance Index (also see slide #8)



Top 18 Countries with > 90% of Forest Gain And their Ranking in Governance Index



Source: FRA 2010 and <http://info.worldbank.org/governance/wgi/index.asp>

Land use changes in the last two decades are part of long run structural transformation of countries at different stages of development

What is Structural Transformation?

1. Declining share of GDP originating in agriculture and (mostly natural) forests,
 2. Declining share of employment in agriculture and forestry,
 3. Rural-urban migration,
 4. Growth of the services and the manufacturing sectors and
 5. A demographic transition, i.e., reduction in the population growth rates.
- Differences in labor productivity between the agricultural/forestry/rural sector and non -agricultural sectors narrow as countries develop.
 - There is often a huge and even a widening gap in productivities between sectors at early stages of development.
 - **Magnitude of rural poverty is reflected in the** difference between the share of employment in agriculture (including forestry) and its share in GDP at early stages of development.
 - **With more intensive agriculture and economic development more land becomes available for forest regeneration under a mosaic of land uses .**

Forests have been at the center stage of Climate Change negotiations in the new millennium

- Leading to REDD(+) as a “performance based system” different from traditional forms of aid.
- Based on the principle of “sovereignty”.
- Underlying arguments:
 - Forests play a large role in carbon emissions
 - Developing countries are the major source of carbon emissions
 - It is seemingly cheaper to reduce carbon emissions in developing countries than in developed countries
 - It is in the interest of developed countries to compensate developing countries because (until recently) they were the major sources of GHG emissions leading to climate change
 - It is in the interest of developed countries to compensate developing countries for forest carbon loss, particularly if there is to be a binding post Kyoto global agreement to reduce carbon emissions.

Several assumptions underlying REDD+ are being questioned

- Measurable performance is not possible with many institutional dysfunctions
- Binding post Kyoto global agreement/regime is increasingly in doubt,
- A part of weakening multilateralism and rise of bilateralism
- With OECD countries fiscal woes political will to compensate developing countries is weakening
- Without prospects of a binding regime carbon market has collapsed
- The Carbon Market Collapse is leading to Domino effect on mitigation investments as well as overall climate finance resources. (Carbon Finance, WB 2011)
- As Post Kyoto deal has become more distant, developing countries' share of GHG emissions has increased weakening argument in support of a “moral imperative” for OECD finance.
- Forests' role in carbon emissions is declining
- REDD is turning out to be difficult to design, implement and finance

REDD+ Will not be a “quick and cheap” way of curbing GHG Emissions

- Funding REDD through carbon offsets sales is contested by some stakeholders,
- Major players (e.g. EU) fear it creates massive amounts of “hot air” depressing carbon prices even more
- Issues of additionality, leakage and permanence... not addressed in a convincing way
- Private sector and conservation NGOs push for remunerating project-based activities
- But REDD+ has been designed as remunerating countries for their performances, not projects.
- The idea of compensating the Opportunity Costs for keeping forests is theoretically correct but complex to operationalize
- “Opportunity Cost” keeps on changing with new pressures on forest areas (mining, agribusiness, oil, urbanization) ,
- Land Tenure Issues (recognition of exclusive rights) are crucial for implementing incentives (PES) on the field
- Meaning of “performance-based” with respect to local governance, “fragile states” and the limited reach of national public policies is a challenge:
- A broader concept of “performance” is needed linked to reform process and coherence of public policies to address drivers underlying deforestation.
- Large and sustained investments in agriculture, land tenure, land-use planning and governance are required before realizing performance
- YET REDD+ offers an opportunity for catalyzing investments for Structural Reforms

PES helps to demonstrate Interactions between forests and other sectors and their implications for future action

- PES can be used within REDD+ schemes or as national programs funded through taxes on water or fuel distribution (Costa Rica, Mexico....)
- PES cannot be limited to land use-restricting contracts based on compensation of the opportunity cost of conserving forests:
 - Leaving poor people in their poverty condition is not desirable
 - PES should build assets for getting people out of poverty through viable economic alternatives :
 - PES need to be embedded into rural development policies
- Tenure rights: need to grant local communities and/or households with management and exclusive rights, and the public property of some forested areas should be established by law after consultations with the stakeholders

REDD+ Needs to Learn from History

- Forests at the Center stage in the 1990s due to heightened concern about biodiversity loss
- The excessive focus on conservation of primary tropical forests and the “logging ban” had a chilling effect on donor investments
- Forests needed an eclectic approach rather than blunt instruments to address forests’ multiple functions-
- To Address Forests’ Multiple Market and Non-Market Values their management calls for a wider understanding of the underlying causes of losses and gains of multiple values and Steps to Address them
- World Bank’s 1991 Forest Strategy was revised to reflect these lessons following OED Evaluation in 2000.

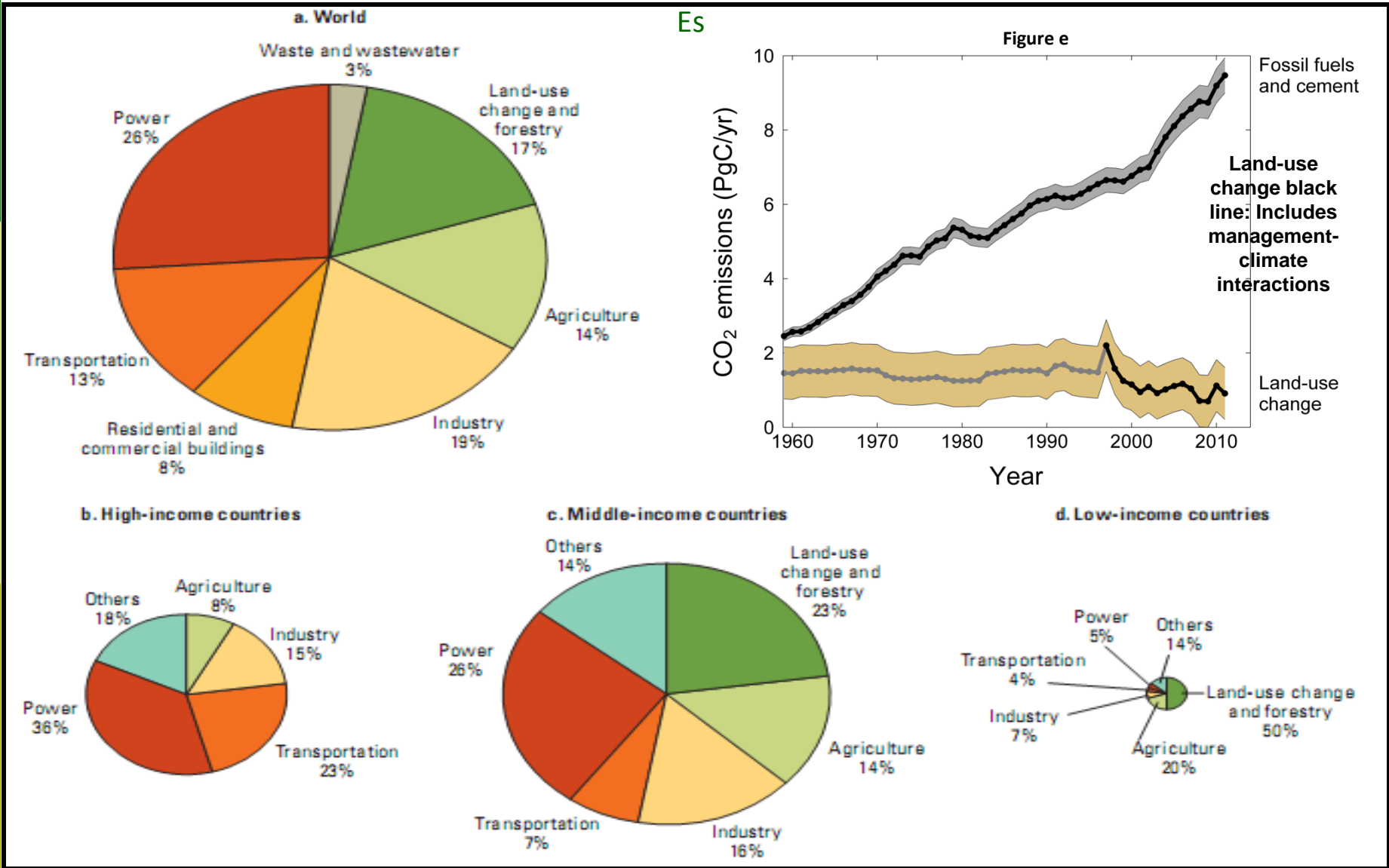
Implications For the Future

- Strong but often insufficiently appreciated Linkages between forests and the rest of the economy
- They go beyond biodiversity or carbon emissions/sequestration
- Successful Developing Countries pursue a multi-sectoral approach to forest management which includes: Water, food, energy, transport, mining

Implications for the Future

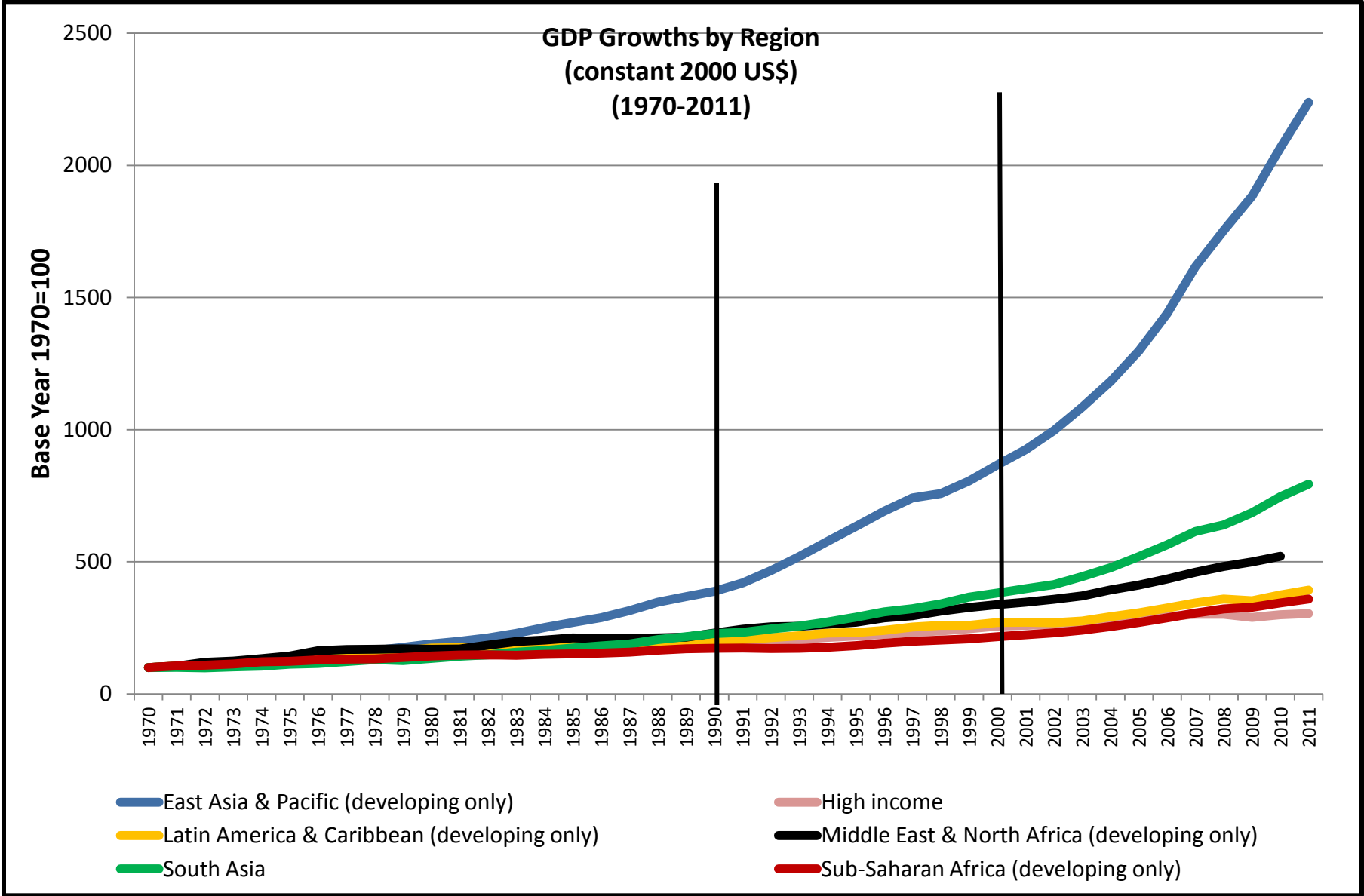
- Move from a carbon centric” and “conditional carbon performance based financial transfer” approach, where promised finances often do not materialize, but divert attention from key issues,
- Pursue an eclectic/holistic approach to forest management
- Help build developing countries’ own information and knowledge, technology, human, institutional, policy, implementation and M and E capacity
- Promote substantive South –South and South-North Cooperation.
- Build a genuinely multi-stakeholder coalition including particularly the local communities—not just the governments’ action
- Tackle the underlying drivers of deforestation
- Promote joint and sustained investments for “greening” the economy which create gainful employment and incomes.

Role of Forests in Greenhouse Gas Emissions has declined for good and bad reasons: Forest Carbon Emissions and Rate of loss vary by stages of development and have declined from 2004 to 2010 progress in other sectors is slow!



Source: WDR team, based on data from Barker and others 2007 (Figure a) and WRI 2008 (Figures b, c, and d) -- taken from WDR 2010 and for (Figure e) Le Quéré et al. 2012; and Global Carbon Project 2012.

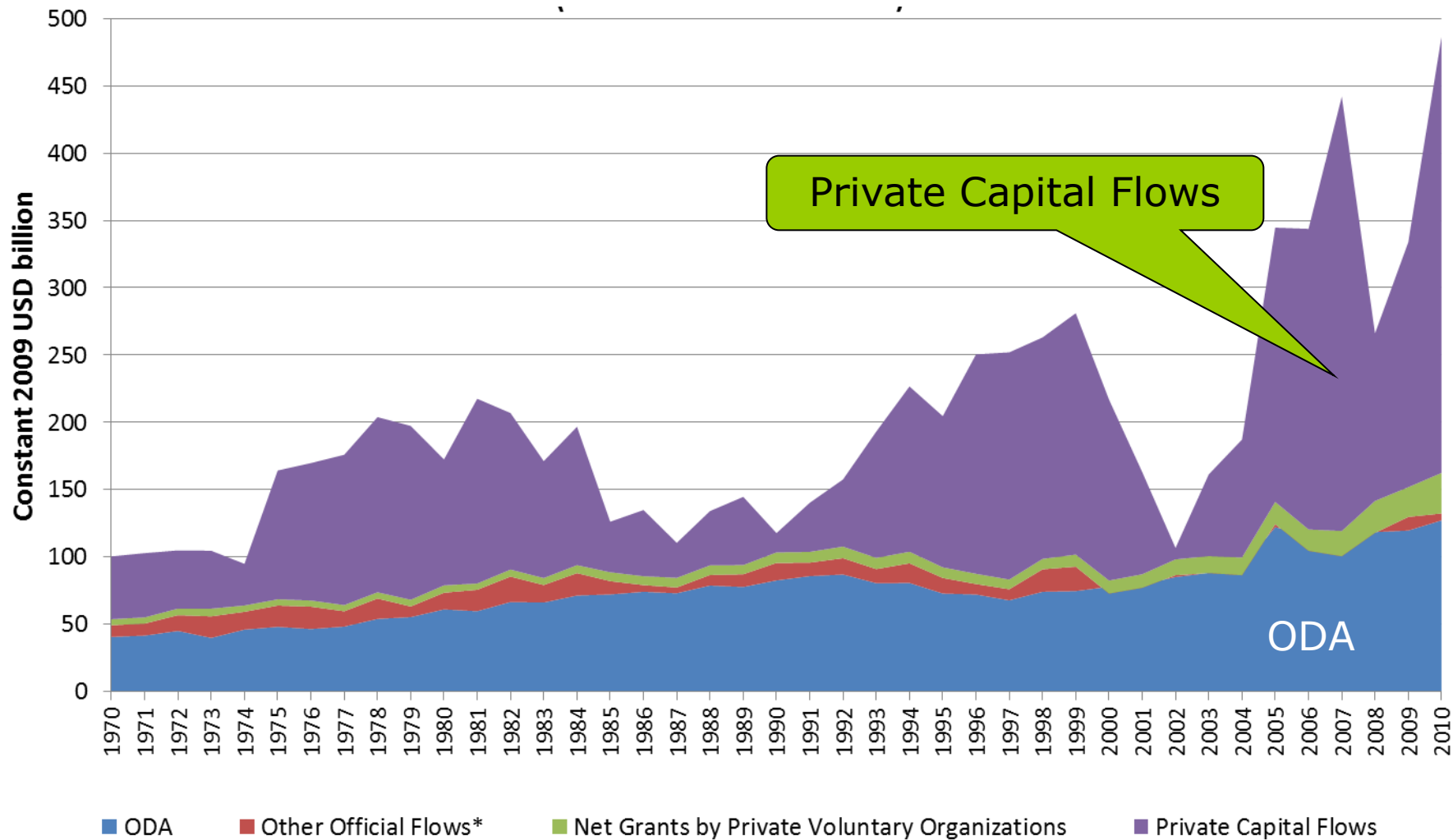
Global Growth Driven by All Developing Regions since 1990



Source: WDI and Global Development Finance, World Bank

Note: MENA - data is not available for the year 2011

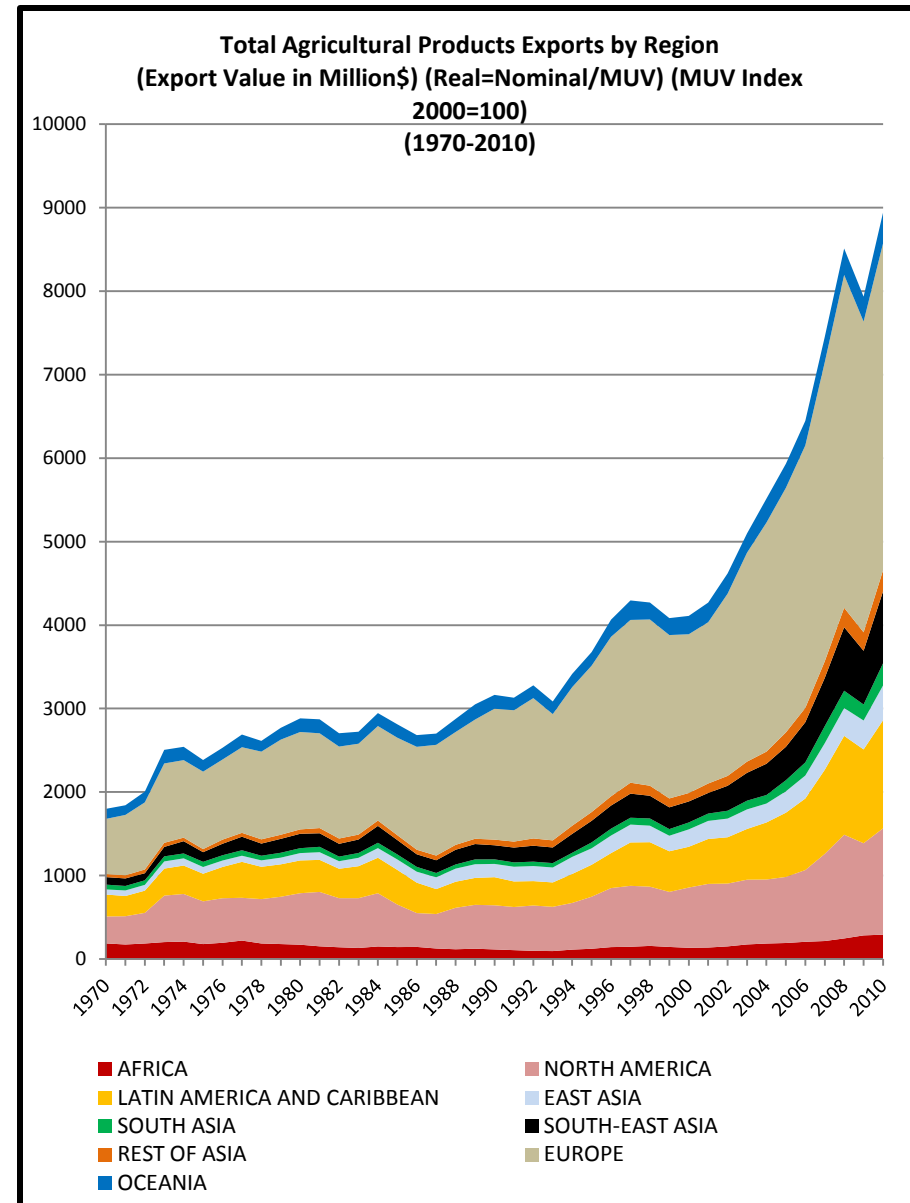
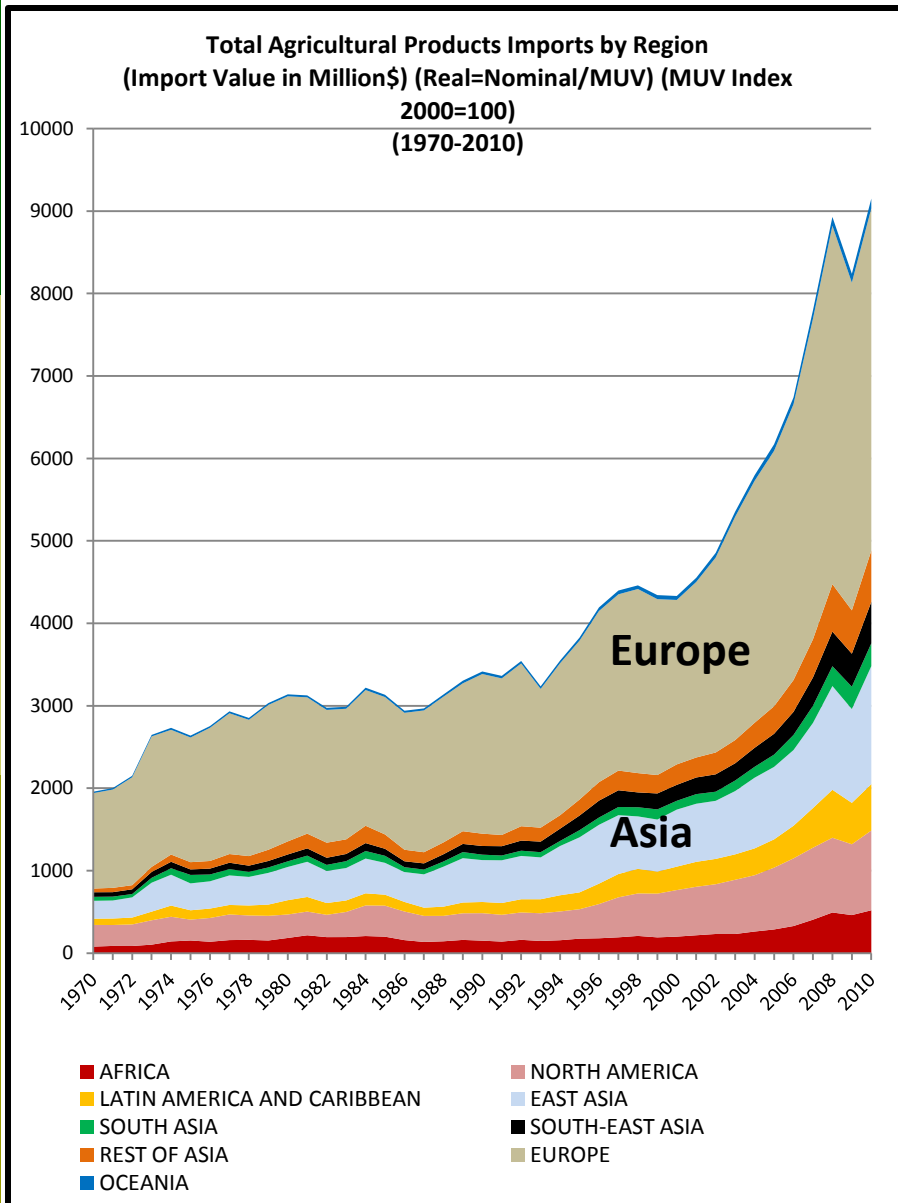
DAC Members' Total Net Resource Flows to Developing Countries (1970-2010)



Note: Net OOF flows were negative in 2000-01, 2003-04 and 2006-07 & 08.

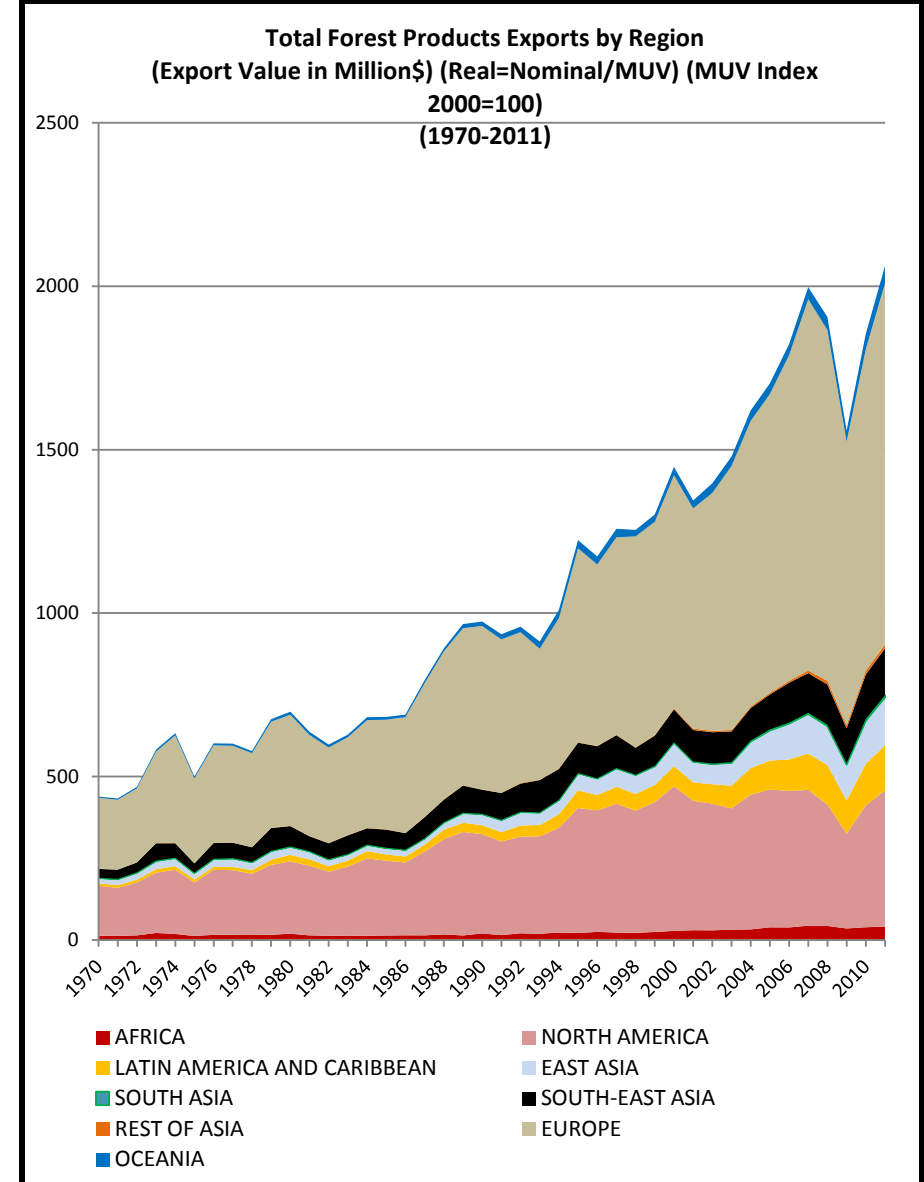
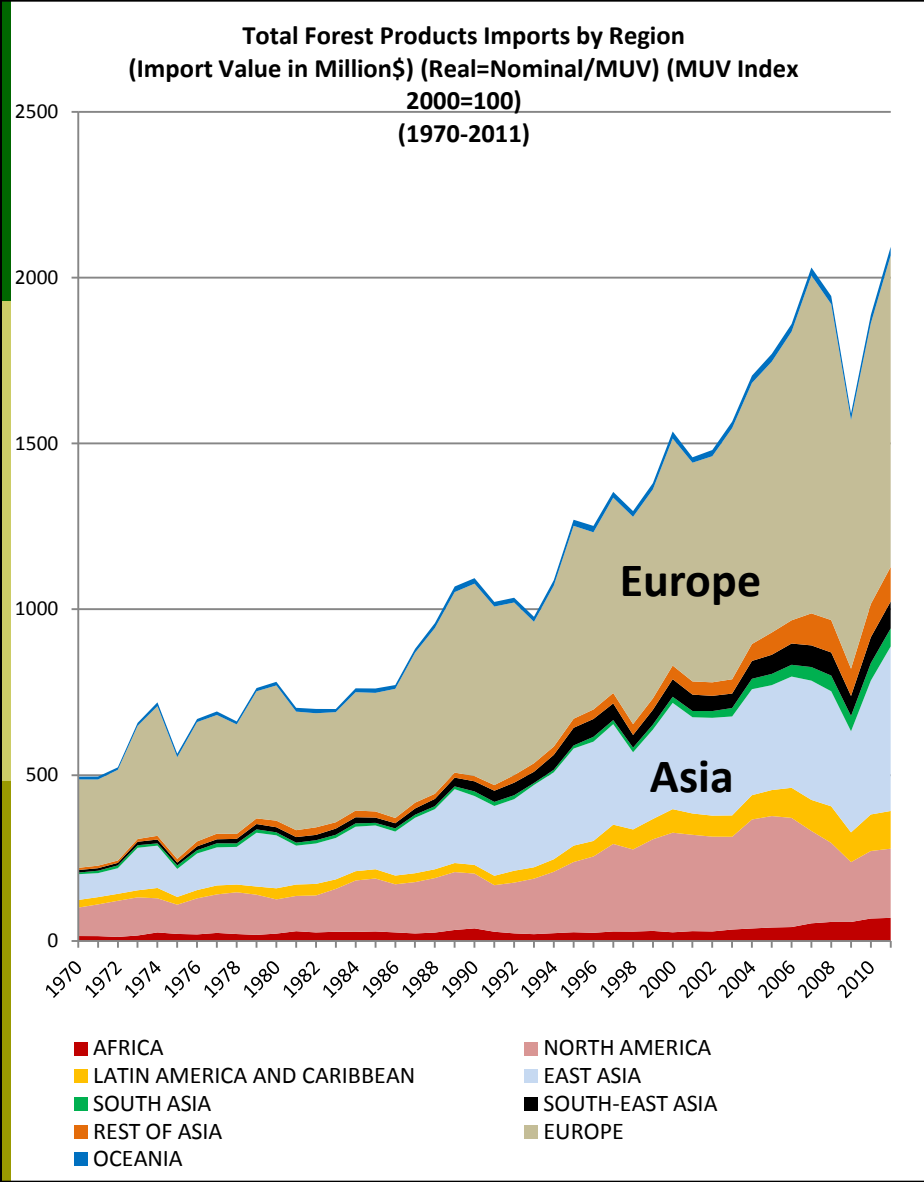
Source: <http://stats.oecd.org/Index.aspx?DataSetCode=CRSNEW>

Faster Growth of Agricultural Products Imports and Exports than Merchandise (1970-2010)



Source: FAOSTAT

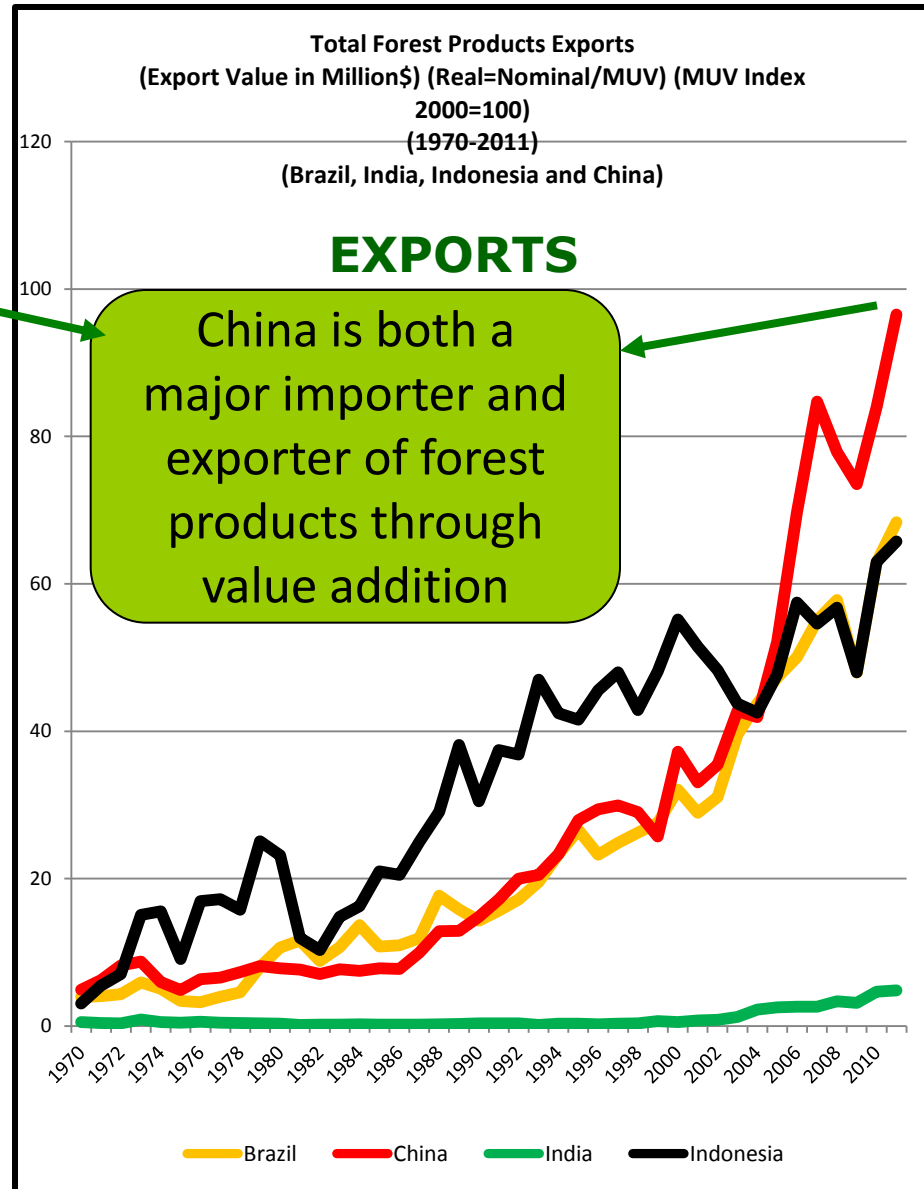
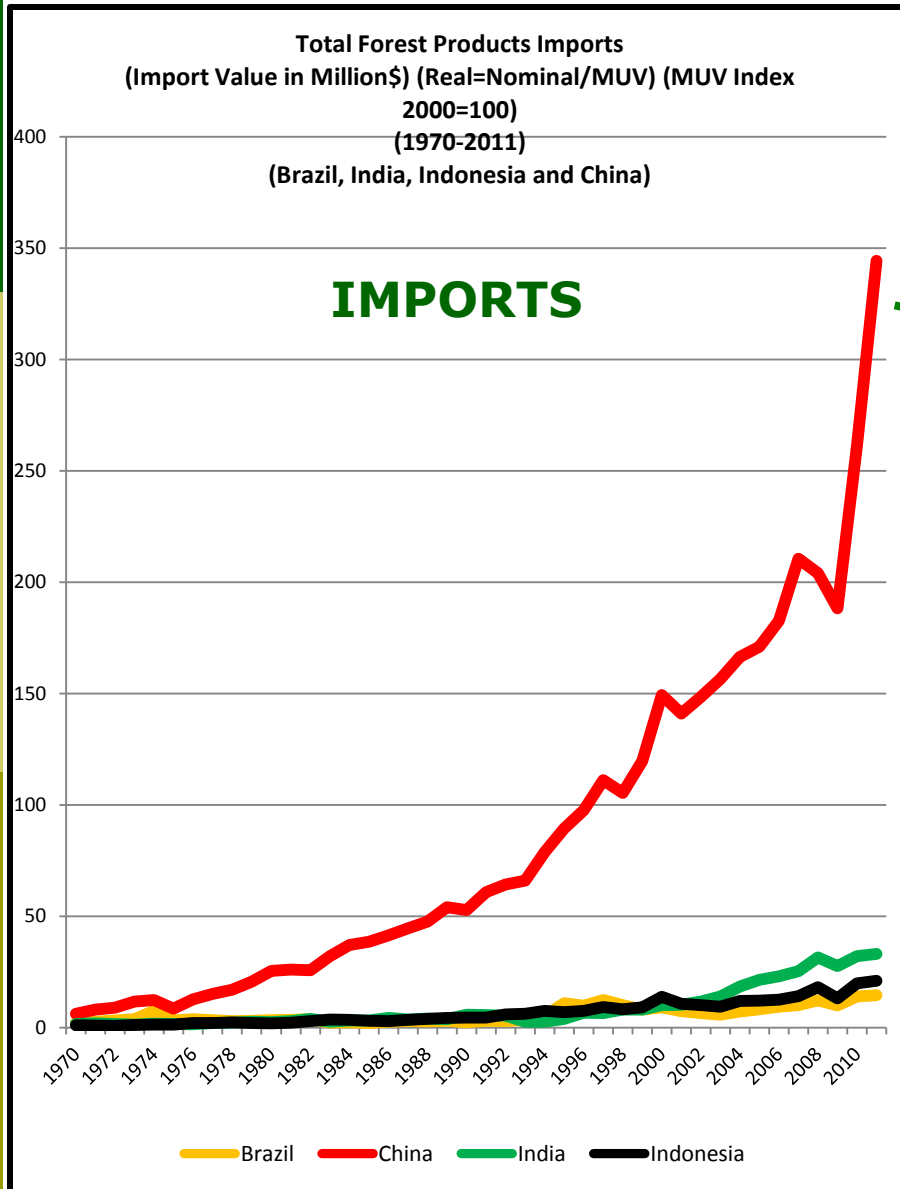
Europe and Asia dominate in Faster Growth of Forest Product Trade than Merchandise Trade Index 2000=100) (1970-2011)



Source: FAOSTAT

Growing Role of Brazil, India, Indonesia and China in Forest Trade

Total Forest Products Imports and Exports (1970-2011)



9 Billion + in 2050: Cereal Production (Net of Biofuels) Increase by 70%,
Meat production: 220%, Cereal Imports of Developing countries by 220%

On Demand Side

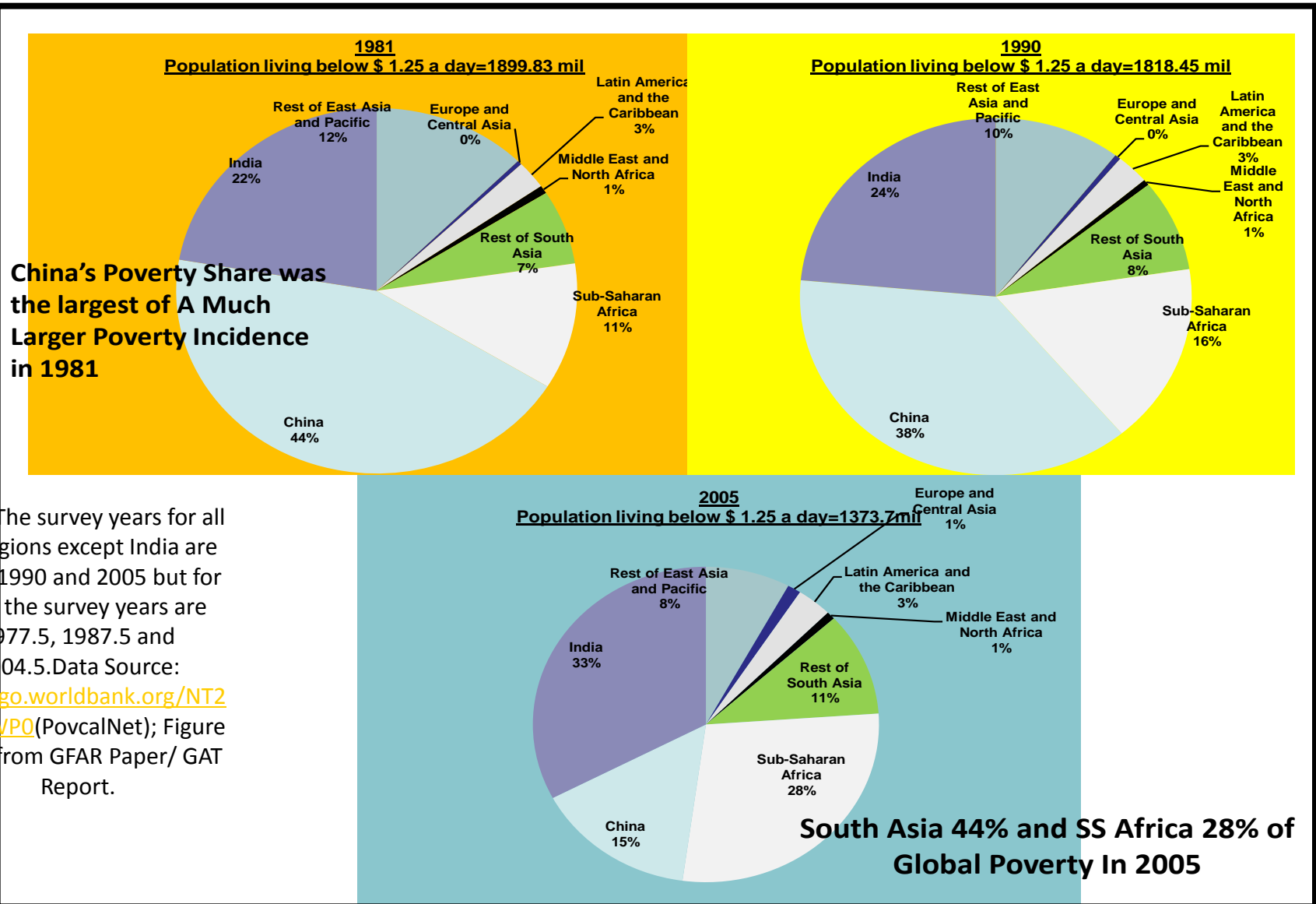
- Population Growth:
 - Almost all in SSA and SA
 - But Declining Growth Rates
- Income Growth:
 - Mostly in Developing Countries
- Urbanization Levels:
 - Up from 50% to 70%
 - Rural Population Will shrink
- Shift in Food Consumption Patterns:
 - Rice, Wheat, Maize, Soybeans for Feed
- Biofuels: maize, oilseeds
- Processed Foods

On Supply Side

- Slowing Yield Growth
- Climate Change
- Limits to Land, Water, Soils, Biodiversity, Forests, Fisheries
- Last Frontiers?
 - LAC, SSA, Eastern Europe
- Increased Market Related Risks and Uncertainty
- DE capitalization of Agriculture - Investment in R&D

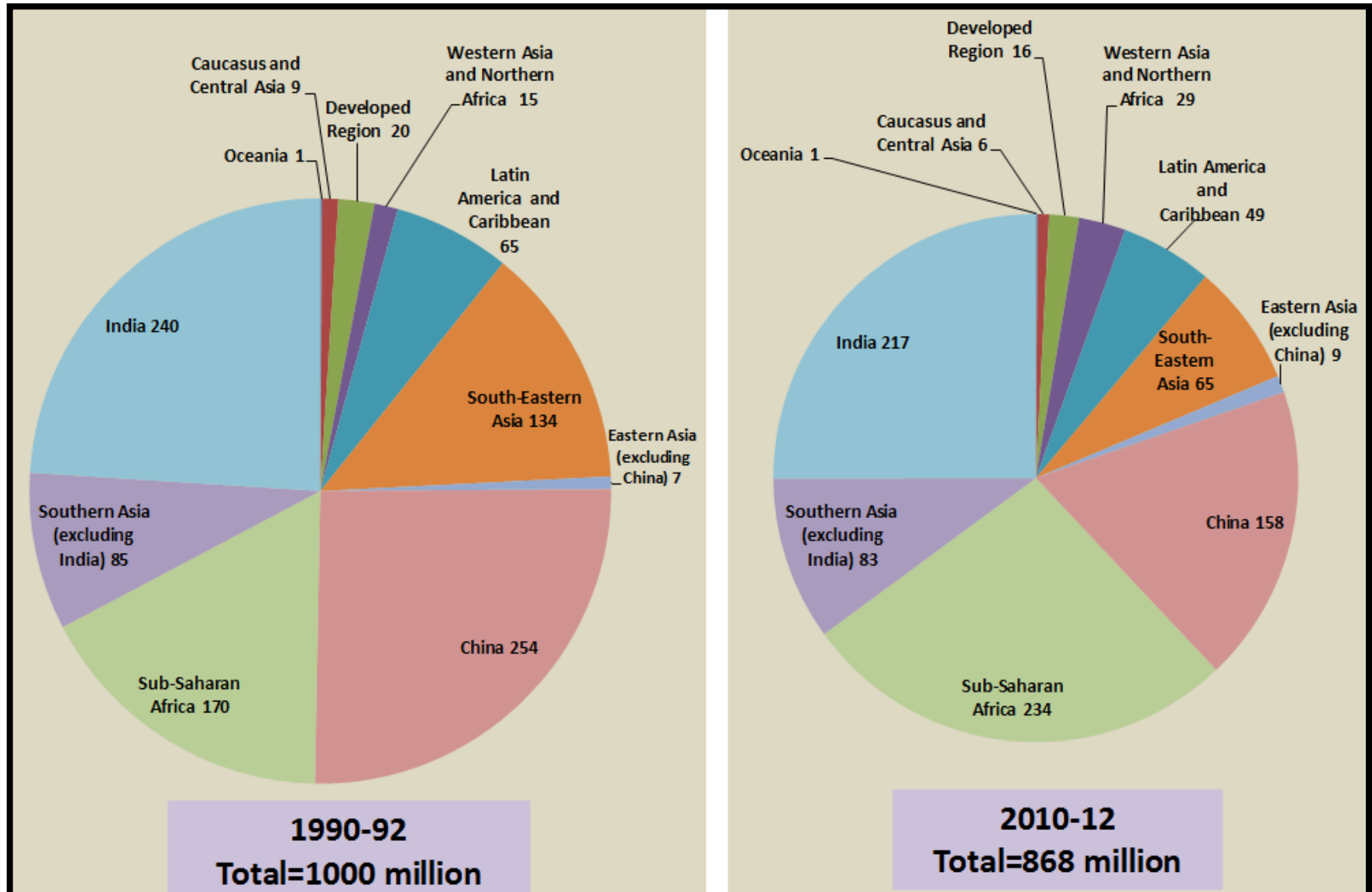
Reducing Poverty is a necessary condition for improved management of natural resources

Population living in Poverty below \$1.25 a day (1981, 1990 and 2005)



Note: The survey years for all the regions except India are 1981, 1990 and 2005 but for India the survey years are 1977.5, 1987.5 and 2004.5. Data Source: <http://go.worldbank.org/NT2A1XUW/PO>(PovcalNet); Figure taken from GFAR Paper/ GAT Report.

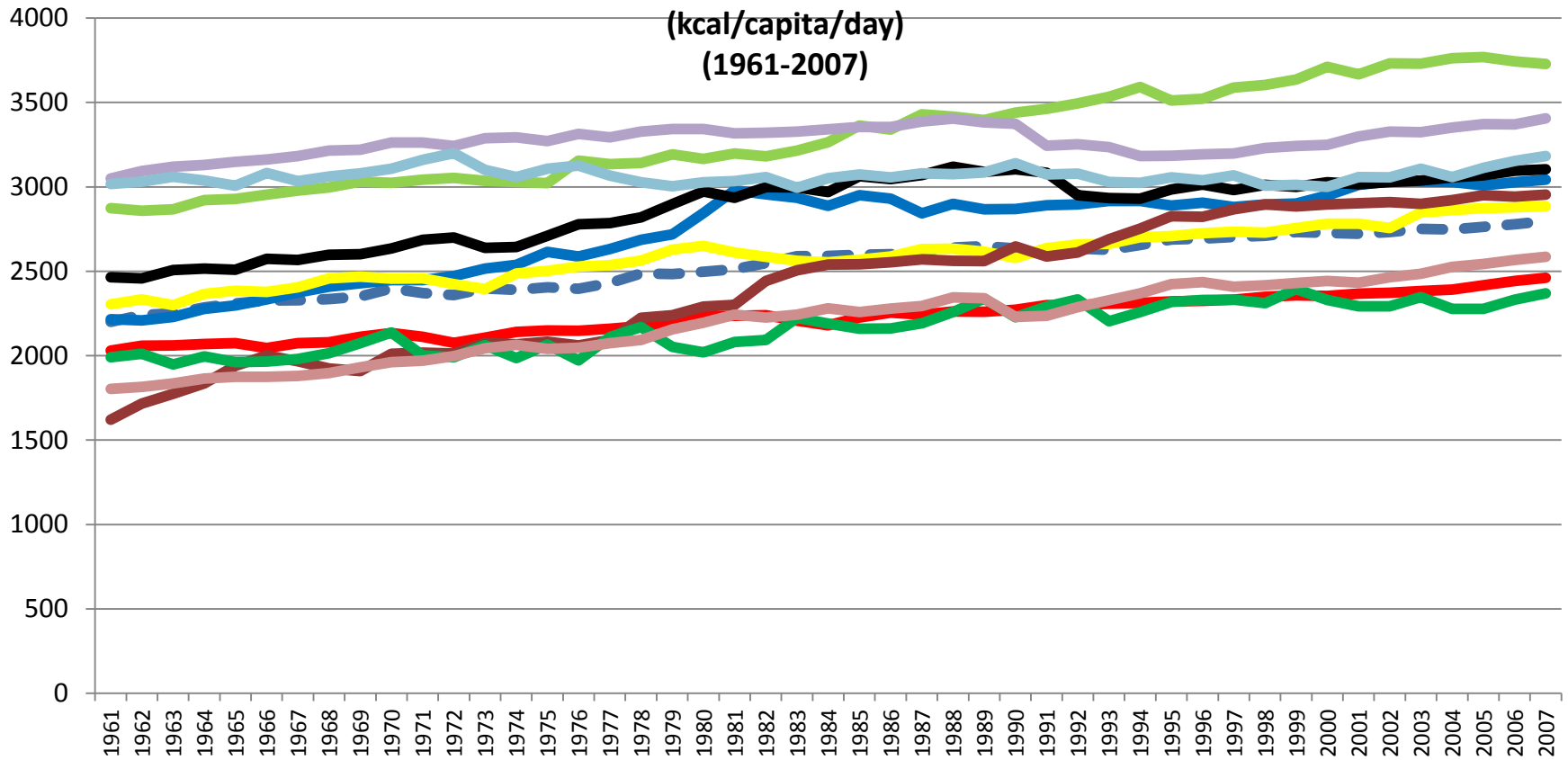
Number of Undernourished Concentrated in South Asia and SSA 1990-92 VS. 2010-12



Data Source: The State of Food Insecurity in the World 2012.

Over and Under Consumption of Food on the Same Planet

Total Food Supply by Region
 (Crops Primary Equivalent + Livestock and Fish Primary Equivalent)
 (kcal/capita/day)
 (1961-2007)

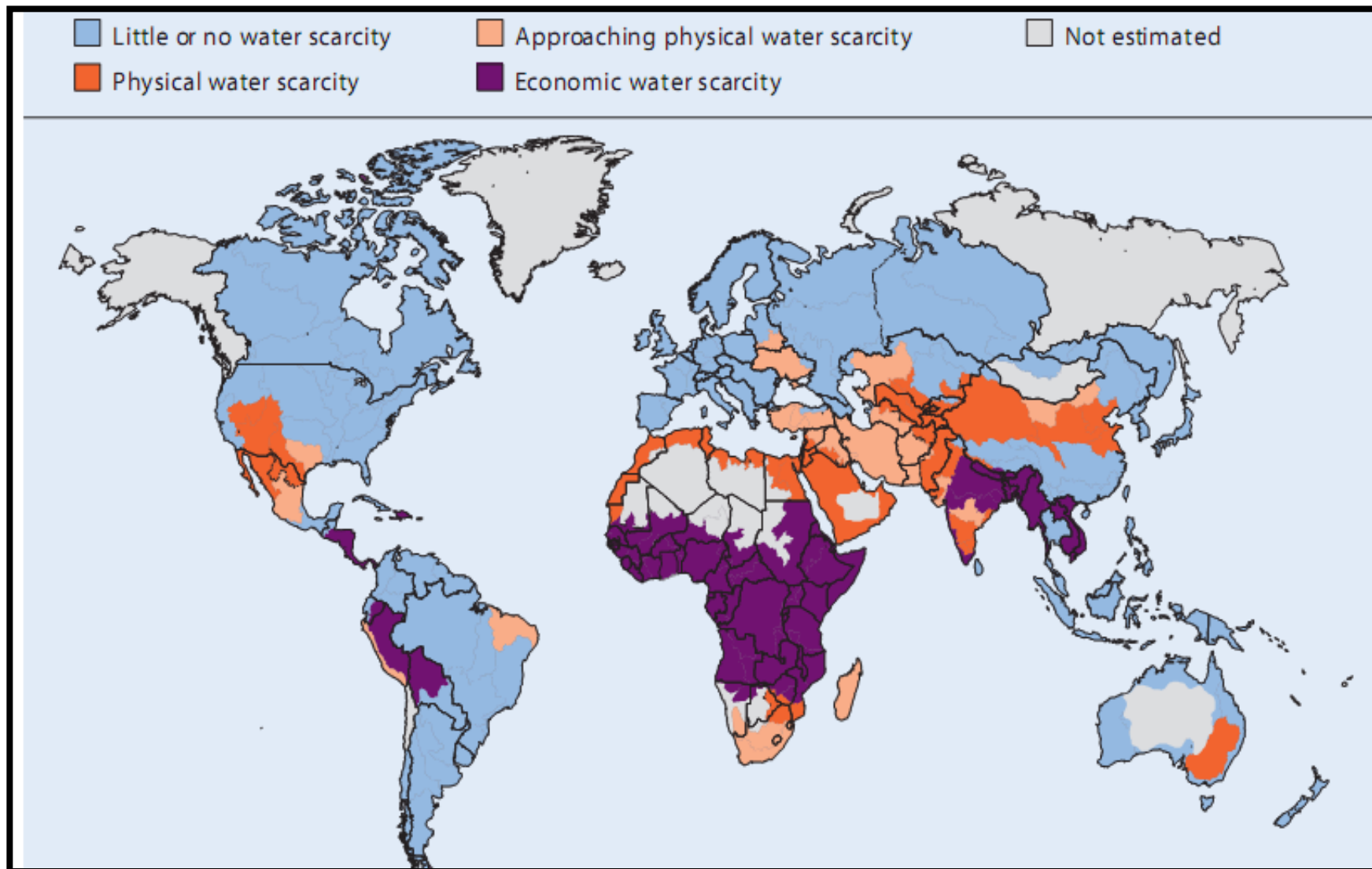


Source: FAOSTAT 2012

- World + (Total)
- Africa + (Total)
- Northern America + (Total)
- Central America + (Total)
- South America + (Total)
- Eastern Asia + (Total)
- Southern Asia + (Total)
- South-Eastern Asia + (Total)
- Western Asia + (Total)
- Europe + (Total)
- Oceania + (Total)

Water Scarcity will Increase Food Insecurity

Areas of Physical and Economic Water Scarcity

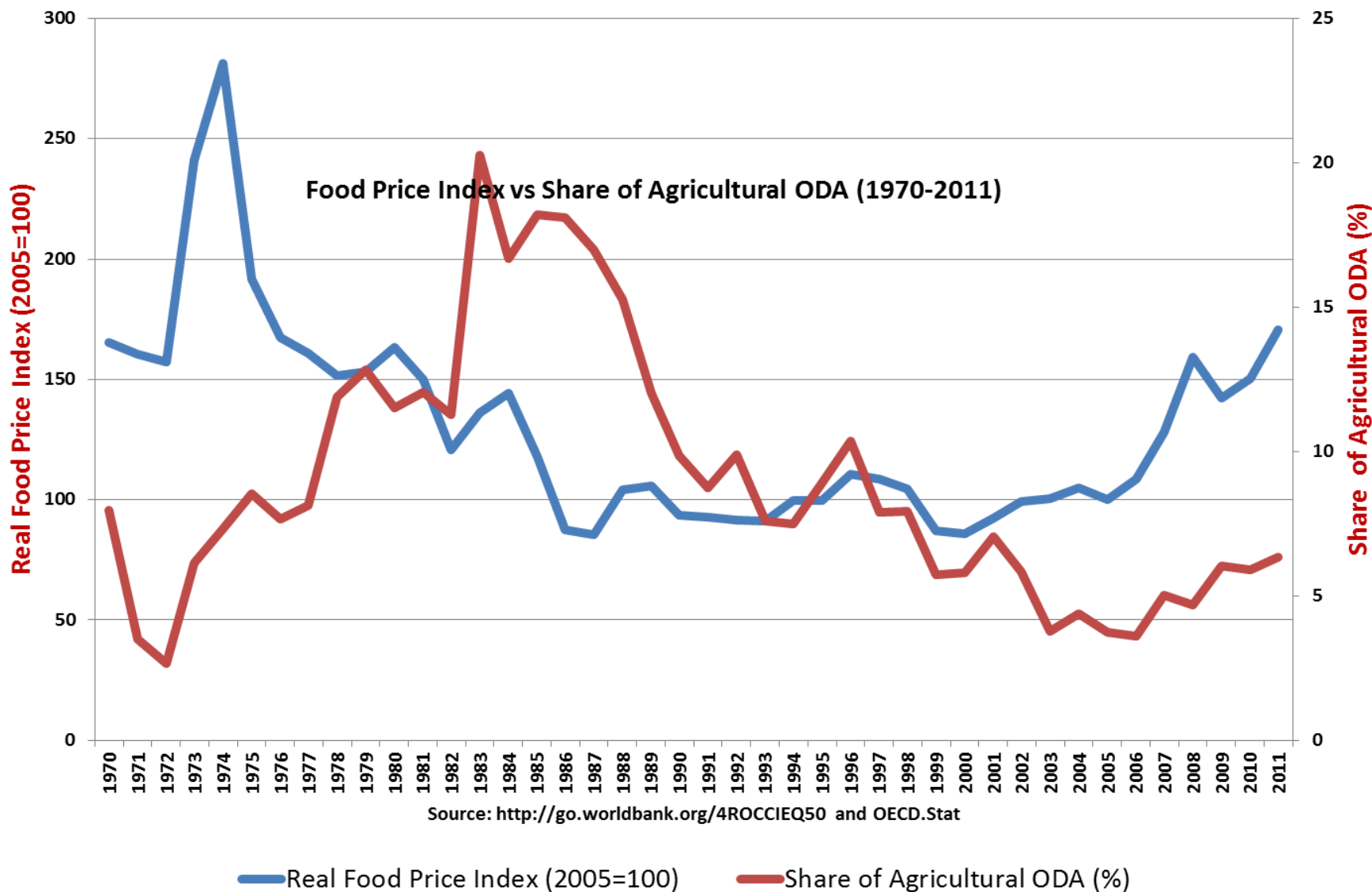


Source: International Water Management Institute analysis done for the Comprehensive Assessment of Water Management in Agriculture using the Watersim model.

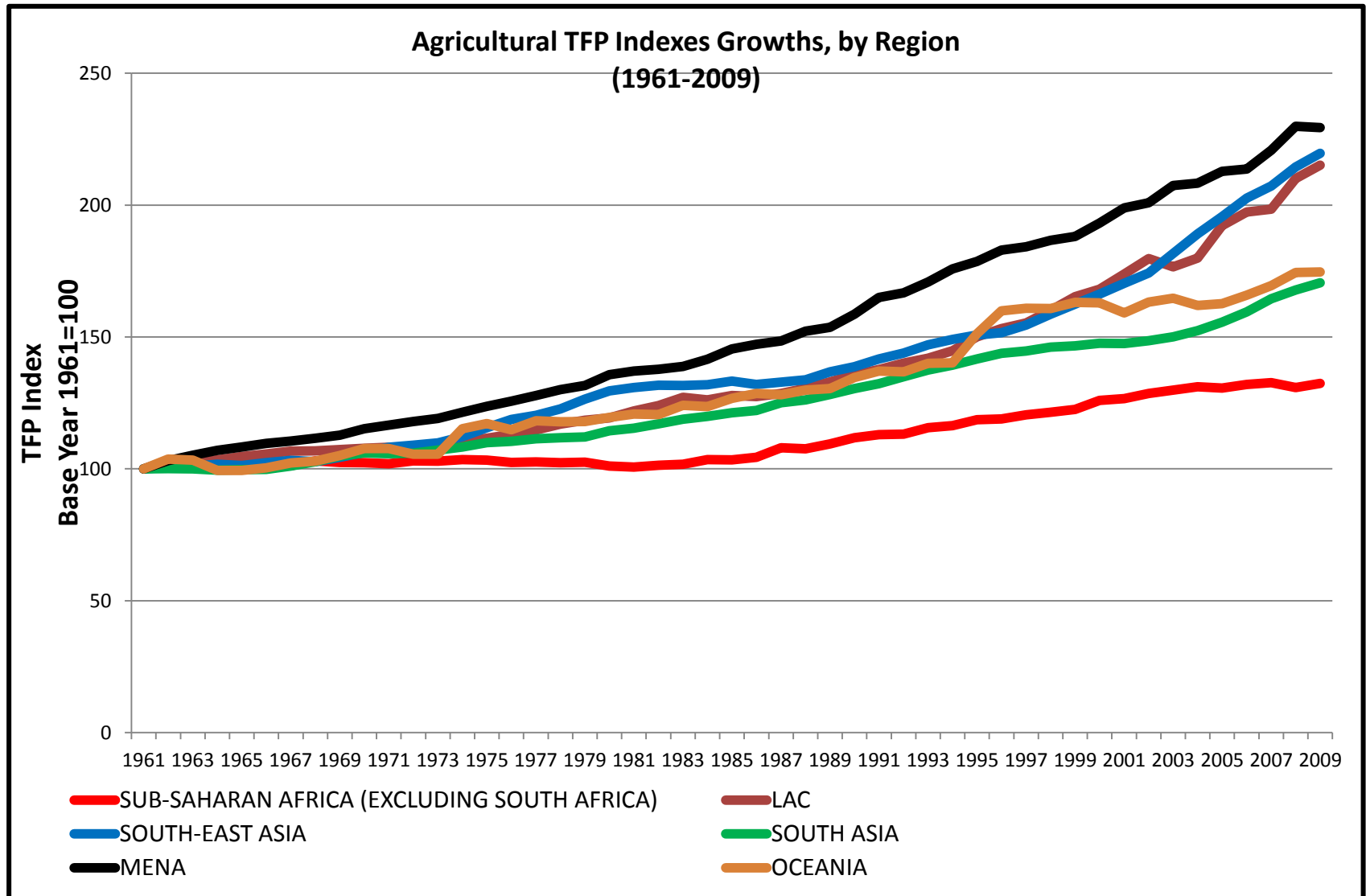
Demand for PES is growing to protect watersheds: both water quantity and quality

- Relationship between forests and watersheds complex and basin specific
- Huge growth in PES attributable to demand for watershed protection
- Easier to tax urban consumers
- Little Evidence on impacts of PES on forest cover or watershed protection and it is mixed

External aid to food agriculture and forests had impacts on food price index

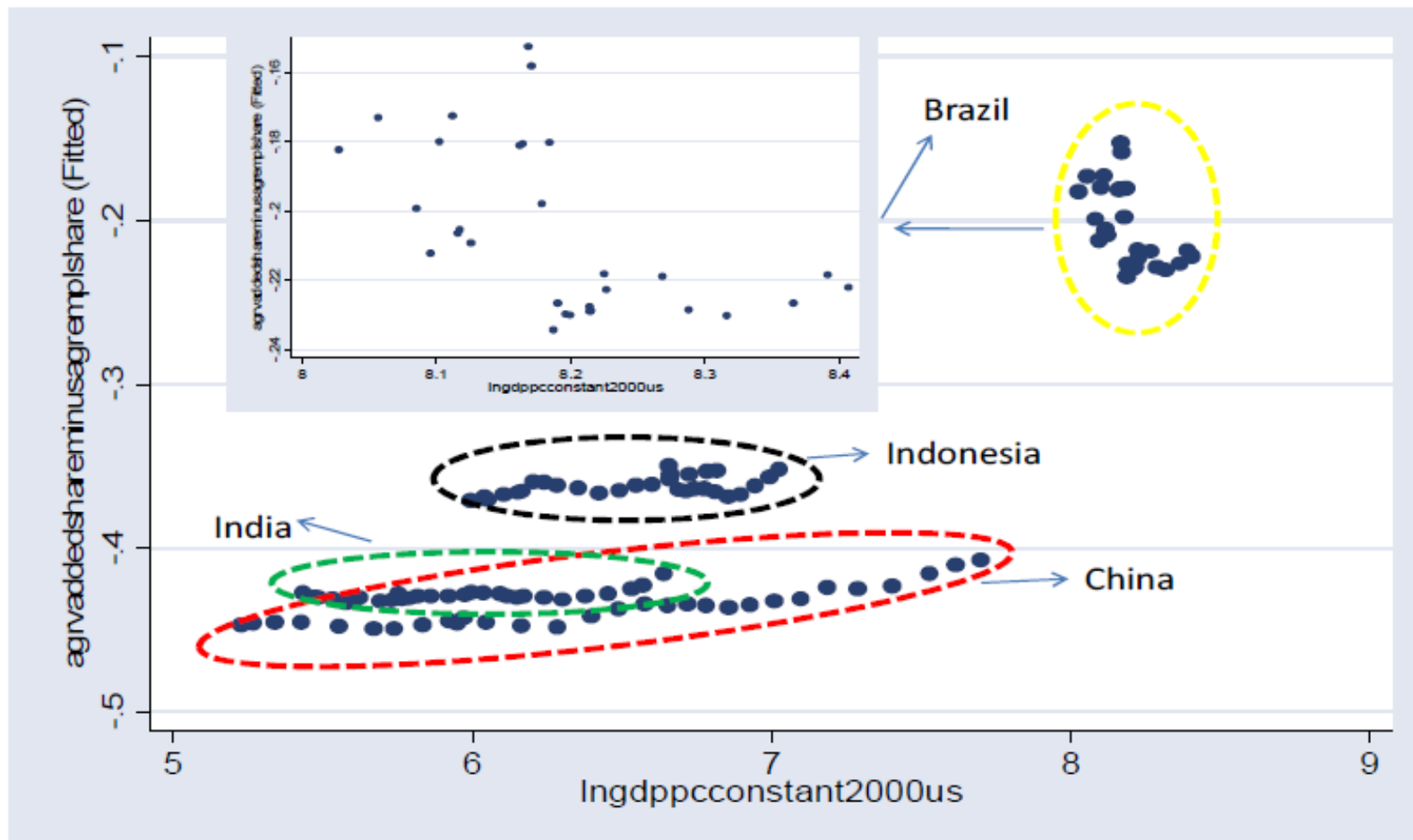


Agricultural TFP Growth Crucial but lagging in South Asia and Sub-Saharan Africa leading to forest clearing



Source: Fuglie's Worksheet 2011

Difference between the Share of Value Added and Share of Employment in Agriculture (Brazil, India, Indonesia and China) (1980-2009)

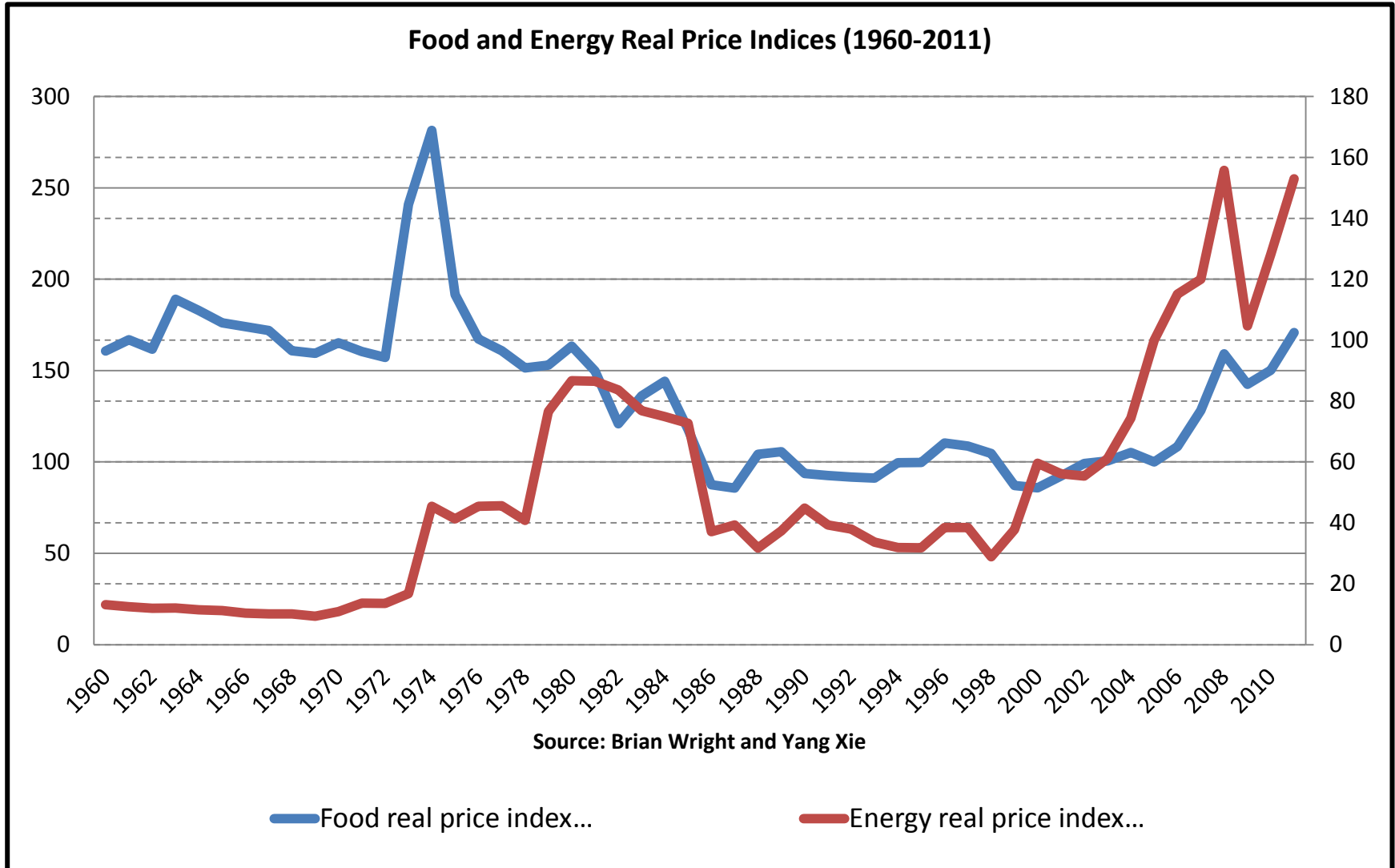


Data Source: WDI and Global Development Finance, World Bank and FAOSTAT

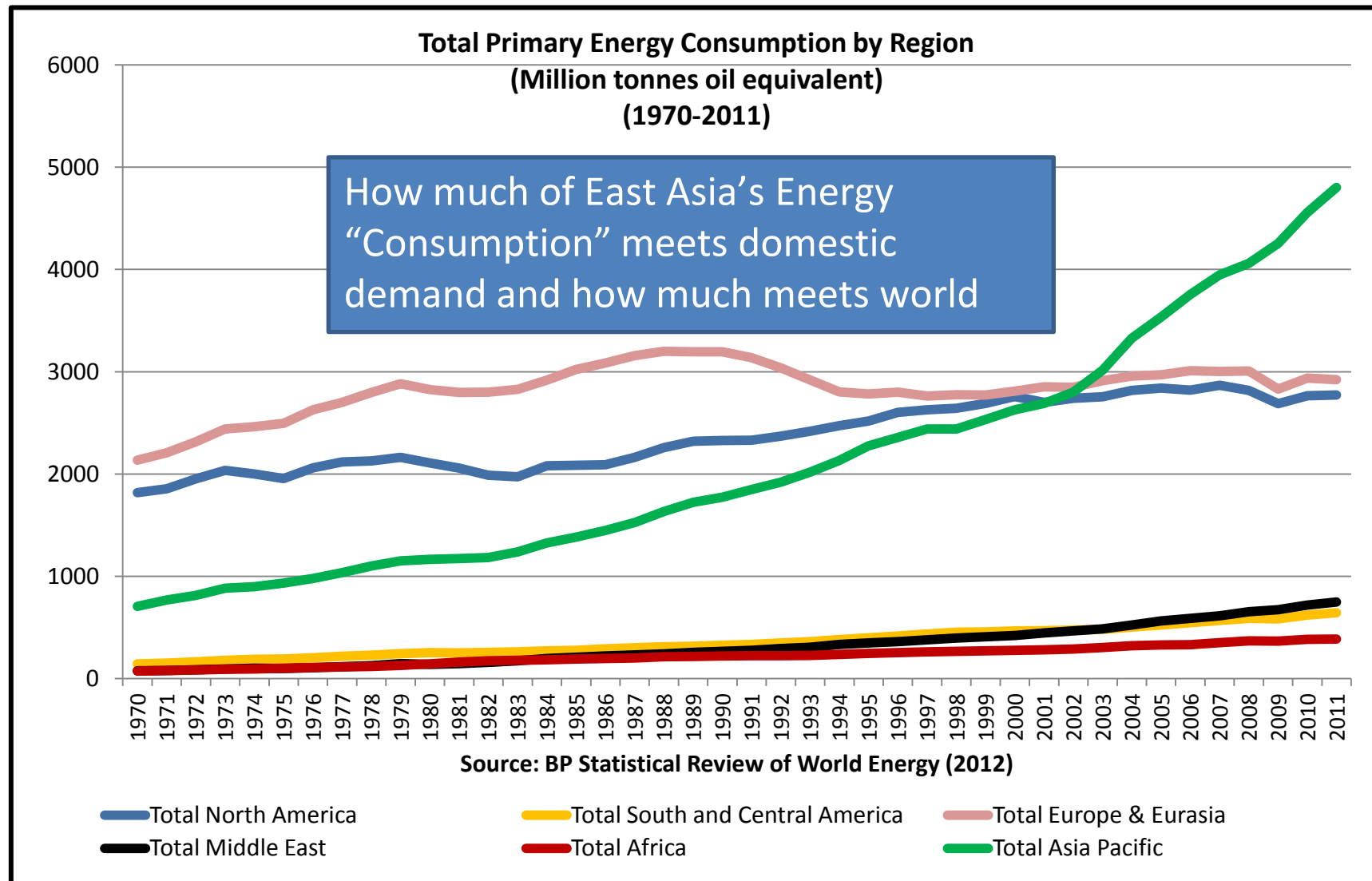
Forests are impacted by choices made in the energy sector

- Poverty determines fuel wood use
- Increased supply of energy is critical for growth and poverty reduction
- Biofuels are a game changer
- but other energy choices also affect forests

Food and Energy Price Indices Are Increasingly Moving Together



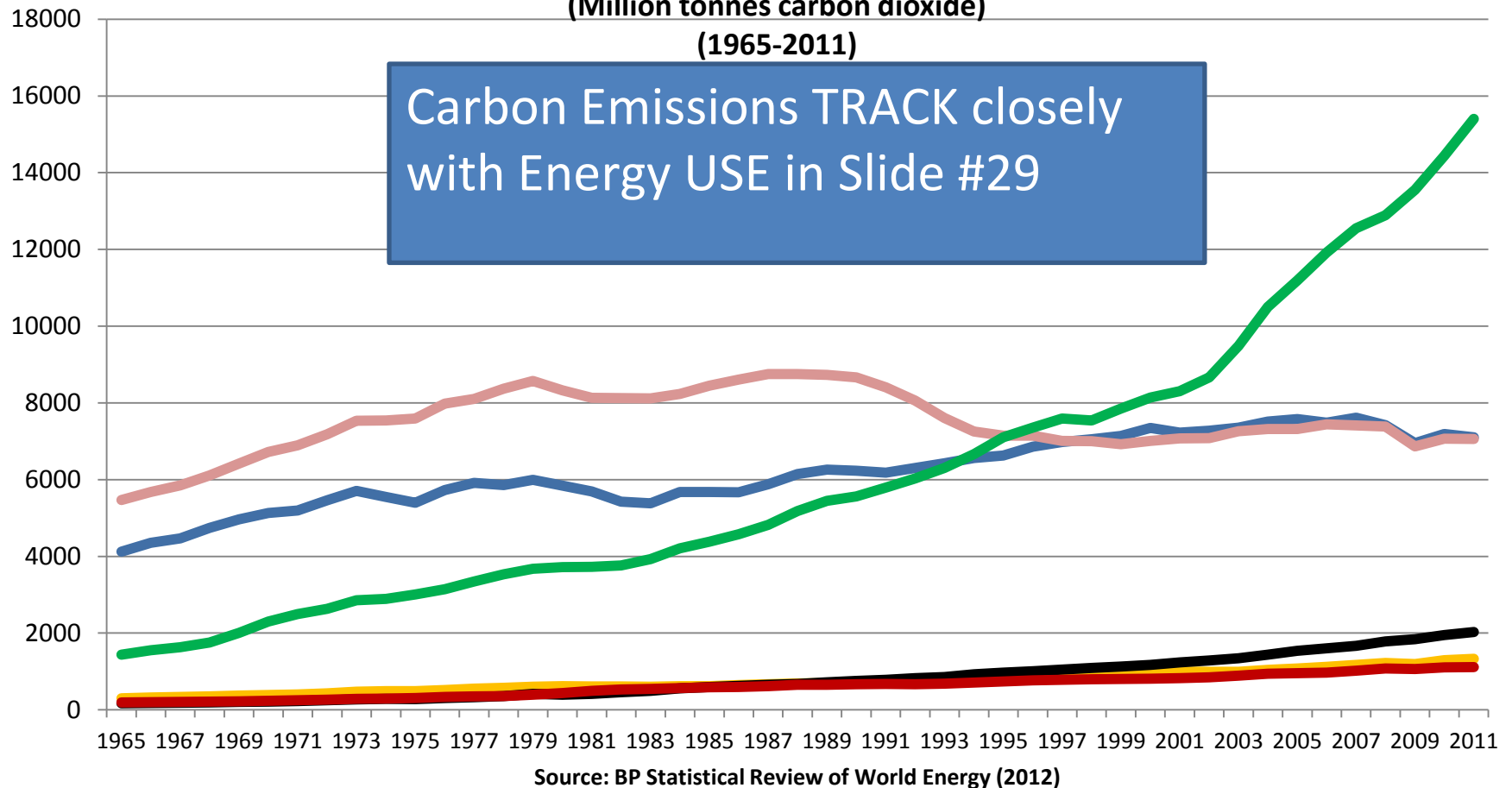
Total Primary Energy Consumption Has Grown Fastest in East Asia



Carbon Dioxide Emissions by Region

Carbon Dioxide Emissions by Region
(Million tonnes carbon dioxide)
(1965-2011)

Carbon Emissions TRACK closely
with Energy USE in Slide #29

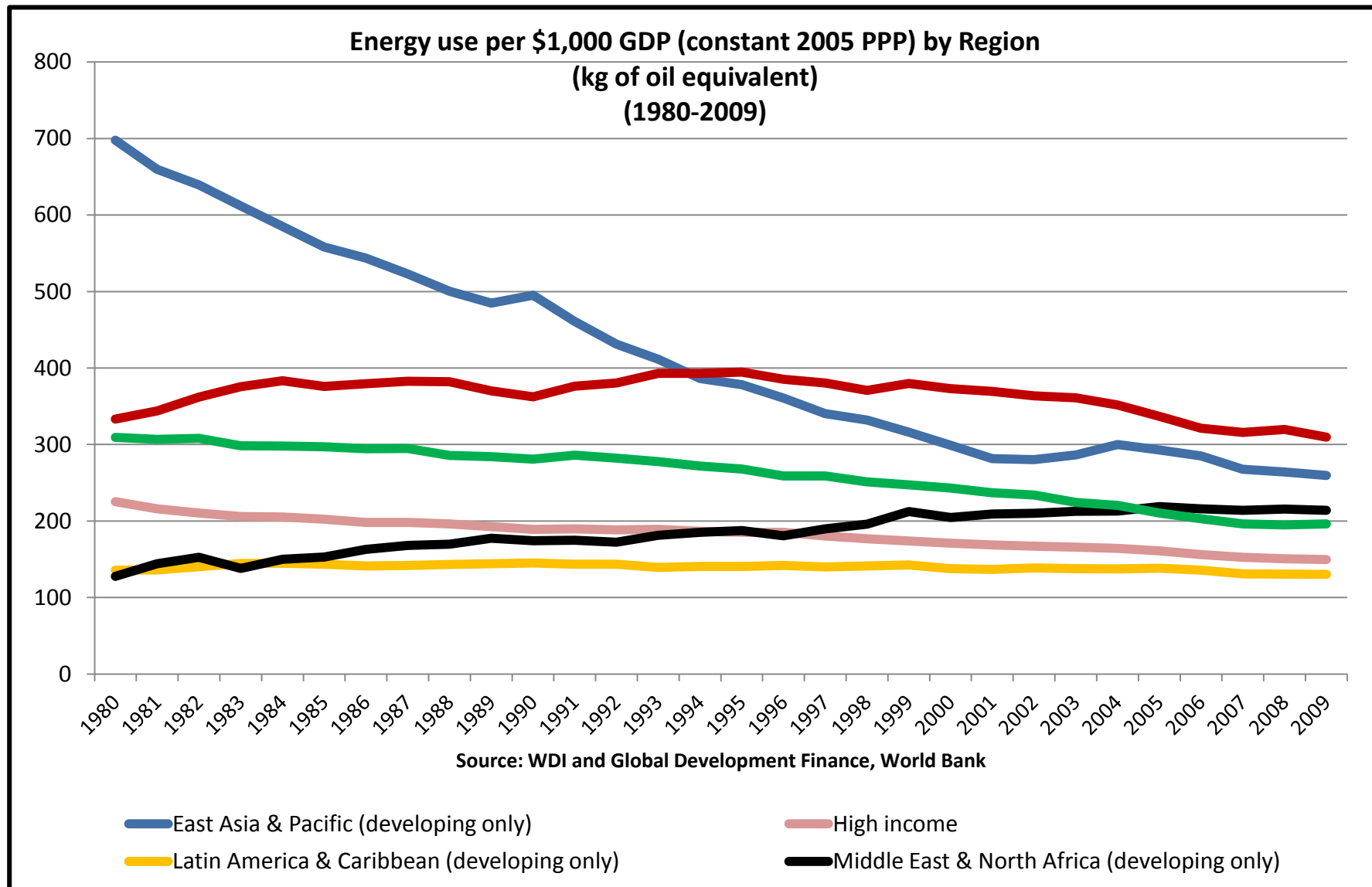


— Total North America
— Total Middle East

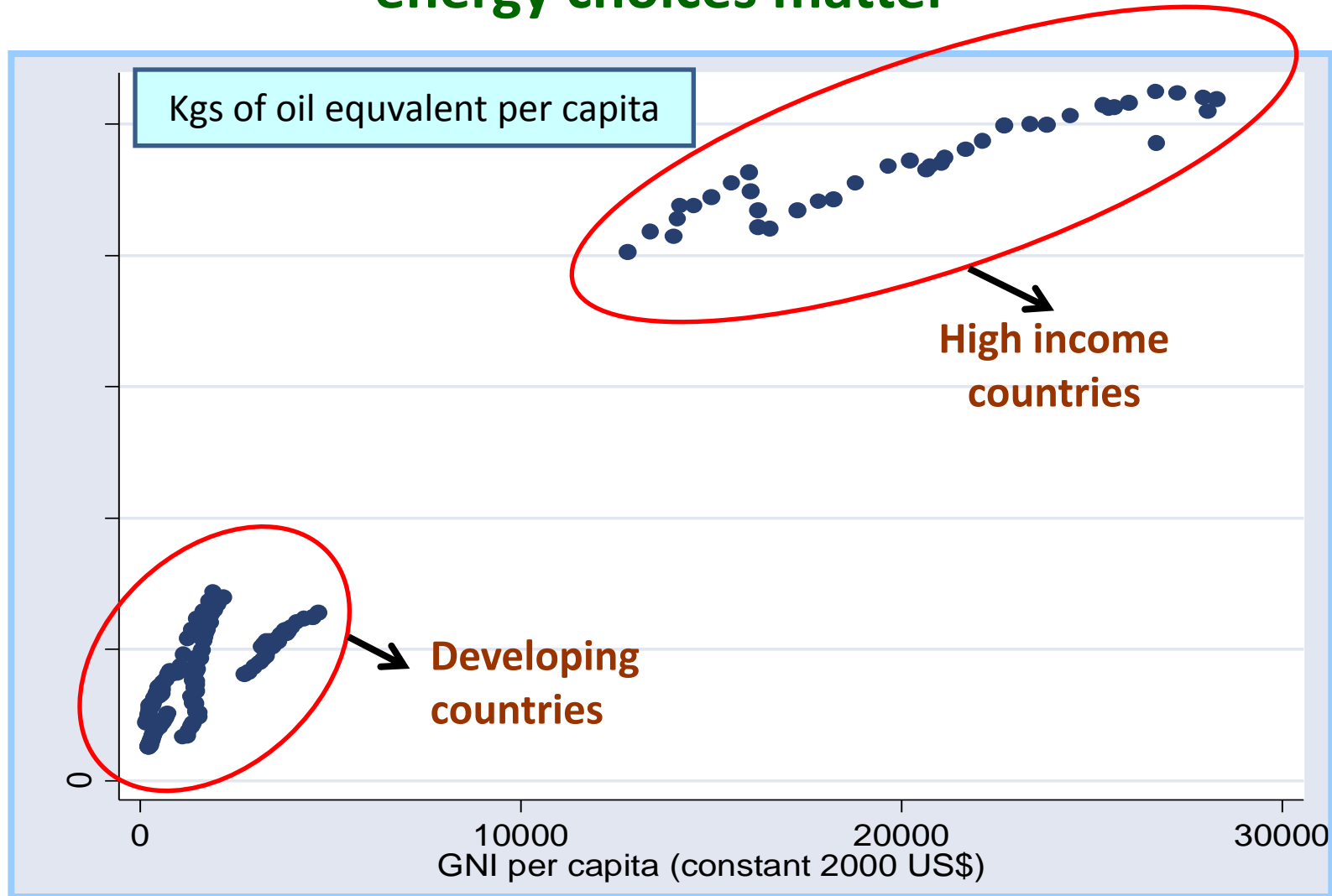
— Total S. & Cent. America
— Total Africa

— Total Europe & Eurasia
— Total Asia Pacific

Energy use per \$1,000 GDP has been declining fastest in Asia, but not as rapidly in other Regions



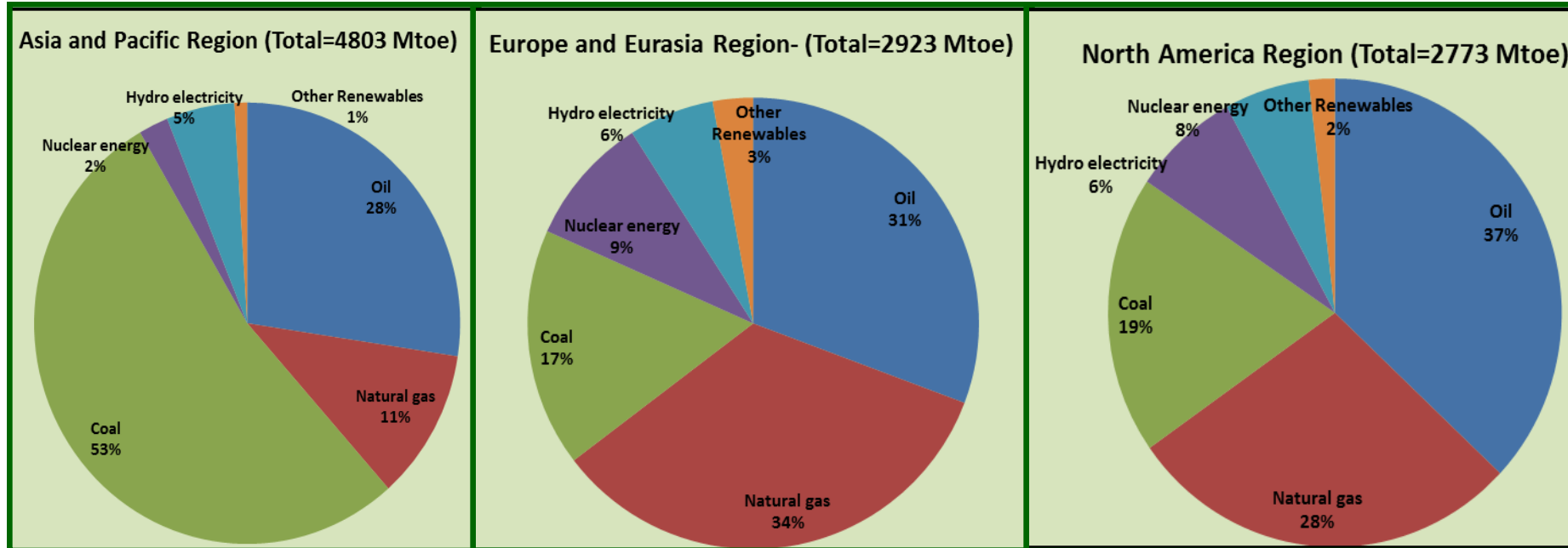
Energy use per capita remains low in developing regions relative to developed regions but is growing rapidly... energy choices matter



Data Source: WDI and Global Development Finance, World Bank

Europe has less polluting total primary energy consumption than other regions

Shares By Fuel Types (2011)



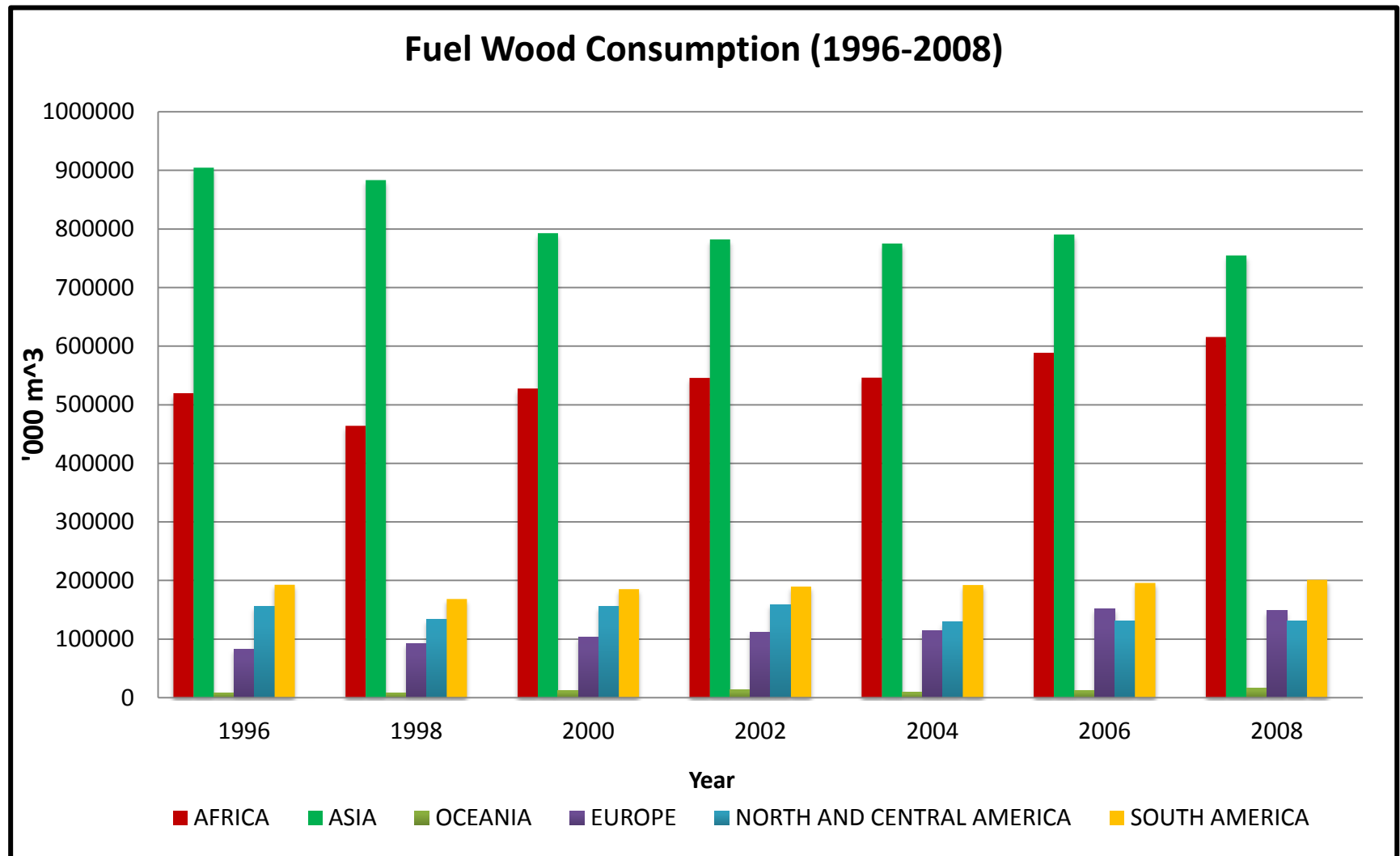
Coal + oil 81%

48%

56%

Coal and oil dominate energy consumption

Poverty and Fuel Wood Go Hand in Hand: Asia and SSA dominate in fuel wood use



Source: Adapted from the FAO State of the World Reports, 1997-2011

Hydro power: both good news and bad for forests

It increases power supply, reduces pressure on fuel wood, but can damage watersheds

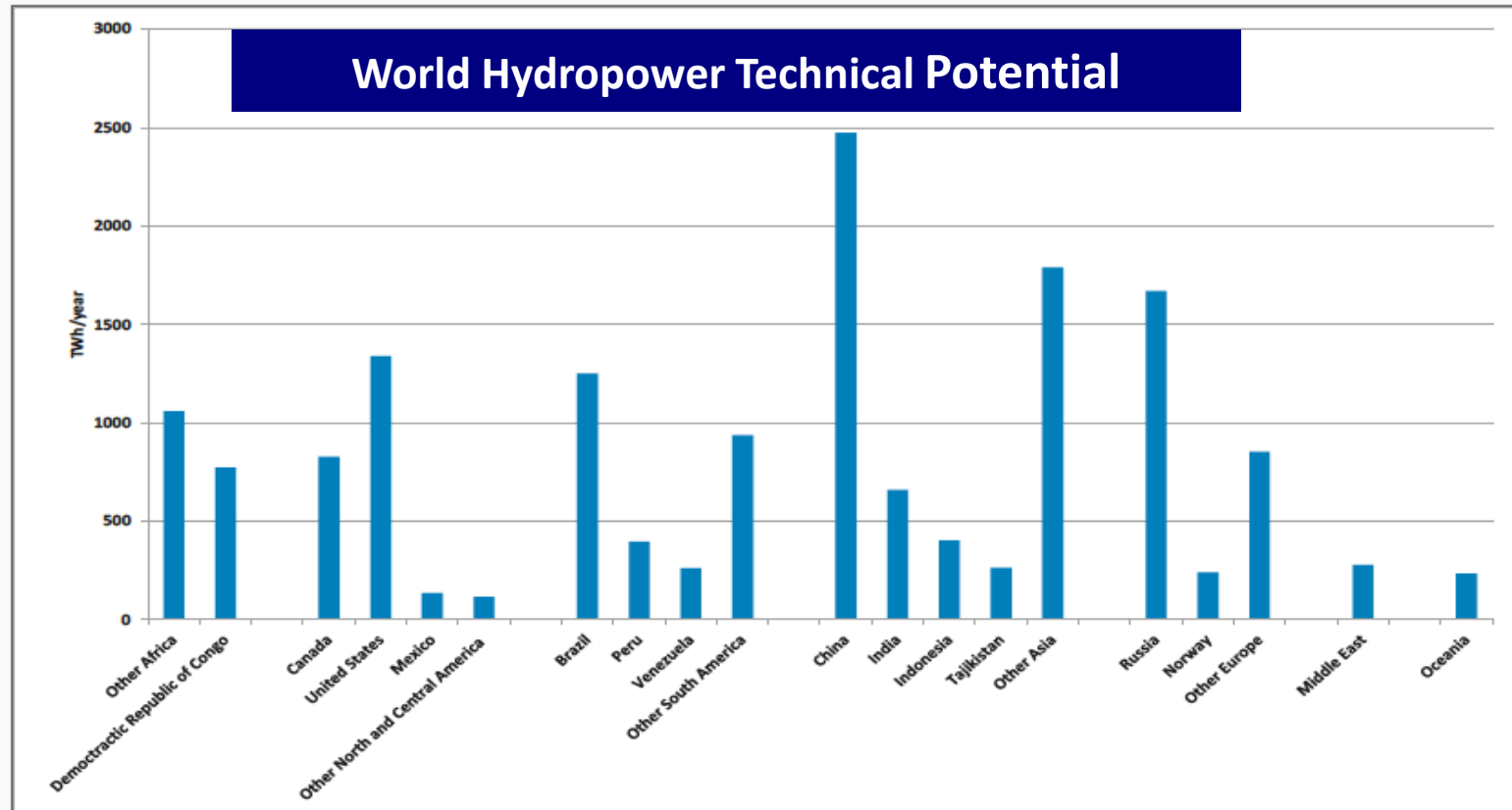


FIGURE 2.5: WORLD HYDROPOWER TECHNICAL RESOURCE POTENTIAL¹⁴

Source: WEC, 2010.

¹⁴ This is based on taking the theoretical total hydropower generation that could be achieved in a country by using all natural inflows as if they dropped to sea level and then assuming what proportion of this could technically be converted to hydropower with today's technologies. However, it is not known for certain whether all of the compiled data sources adhered to this methodology so the totals must be treated with caution.

Forests and Health

- Growing interaction between wildlife and humans has been resulting in spread of infectious diseases from animal to humans – not only a public health issue, but also an economic one. e.g. HIV AIDS, Ebola and malaria
- Forests and forest products are a major source of formal and informal medicines
- But progress on developing countries realizing pharmaceutical values has been limited
- Recreational value
- Forests are an important source of mental and physical well being, hence recreational uses of forests should emphasize enhanced benefits, minimum damage to forests.

Forests and Transport

- Roads and deforestation are closely linked
- Assess likely impacts of roads on forest conversion before investments are made in roads
- Consider alternatives—e.g. railroads, which are more benign on forests
- Increase emission standards

Forests and Mining

- Mining in some cases is second largest threat to large intact forests
- In other cases small localized damage
- Mining can be followed by promotion of reforestation or conversion of forest fragments with natural regeneration
- Safeguards developed by the World Bank and other international organizations are intended to minimize harm to forests and to forest-dependent people. But they also increase transaction costs and reputational risks of investments involving forests

Thank You