



# Forest Contributions to Poverty Eradication

## Unfulfilled Potential



**DR. UMA LELE**

International leader, thinker, and policy analyst

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- I. Forests' links to many SDGs**
- II. Welcome renewed interest in understanding of forests-poverty interactions.**
- III. Do forests offer pathways out of poverty? How? Will the paradigm shift from conventional investment projects to performance based payments improve outcomes?**
- IV. New opportunities for technological leapfrogging?**
- V. Implications going forward**

# Outline of Presentation

**GOAL**  
**15**

#SDGs



## **LIFE ON LAND**

Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

**15** LIFE  
ON LAND



### **SDG 15 TARGET:**

BY 2020, PROMOTE THE IMPLEMENTATION OF SUSTAINABLE MANAGEMENT OF ALL TYPES OF FORESTS, HALT DEFORESTATION, RESTORE DEGRADED FORESTS AND SUBSTANTIALLY INCREASE AFFORESTATION AND REFORESTATION GLOBALLY

# Forests and SDGs: Forest target of 120 million ha.

By 2030 while welcome clarity in links to 12 SDGs



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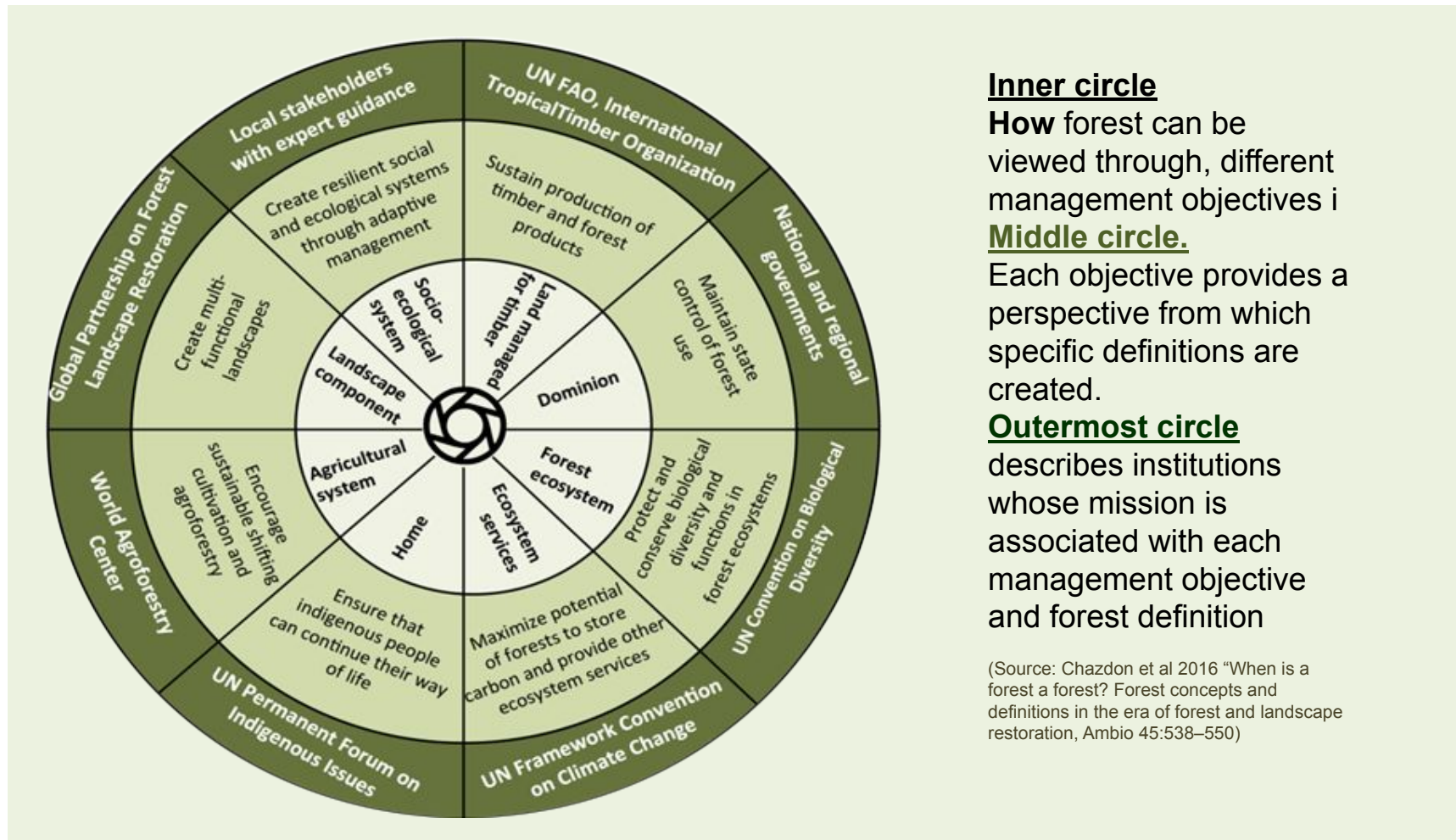


# Piecemeal Broadening of Forest Contributions Over Time --Now Needing an Integrated Approach



- Sustainable timber production,
- Non-timber forest products,
- Biodiversity conservation values,
- Climate mitigation, and
- Other ecosystem(water, scenic beauty) services delivery,
- Human well-being,
- Landscape approaches,
- Adaptive management, and
- Socio-ecological resilience.
  - Those perspectives have influenced definition of forests, estimations of forested areas and forest dependent people
  - Data and information on forest valuations remain inadequate.

# Different Objectives Lead to Different Conceptualizations, Definitions and Measurements of Forest Characteristics



# Why are Forests Important?: FAO's View

## Data Are Needed to explore Win-Win-Wins and Trade-Offs among these characteristics

### Why are forests important?

#### 1 Sinks of carbon dioxide

The world's forests **absorb and store carbon** in both above and below ground biomass.



#### 2 Habitats for biodiversity conservation

The world's forest area **primarily designated for biodiversity and forest within protected areas** have increased since 1990.



Conservation of biodiversity  
524 million ha  
2015



Forest within protected areas  
651 million ha  
2015

#### 3 Providers of important environmental services

Forests managed for **clean water supply, resilience against disasters, recreation, cultural and spiritual activities** have increased since 1990.



Protection of soil and water  
1 015 million ha  
2015

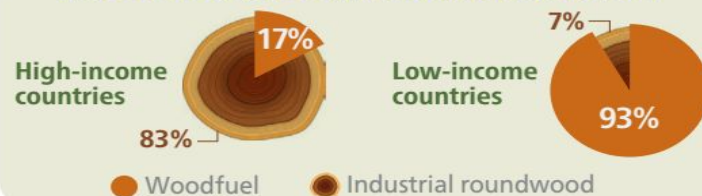


Carbon storage and other cultural, spiritual and ecosystem services  
1 163 million ha  
2015

#### 4 Sustaining livelihood and economic opportunities

Forests supply the world's population with **wood and non wood forest products**. In **low-income countries** woodfuel is still the most important wood product.

##### Share of woodfuel on total wood removals in 2011



# **Extraordinary technological advances can help address political economy of sustainable and inclusive innovation in forestry and the competing interests.**



**Virtually every individual, business, industry and government are being impacted by breakthroughs in the Internet of Things, big data, computing power, connectivity, artificial intelligence (AI), biotechnology, nanotechnology, materials science, energy storage, 3-D printing and quantum computing.**

**A fusion of these technologies is blurring the lines between the physical, digital, and biological spheres.**

**This revolution is already impacting forestry—with the use of GIS, biotechnology and big data.**

# Rights and claims to forest land by customary forest dwellers depend on who forest dwellers are and how “forest dependence” is defined and valued: What about drivers outside the forest sector?

**Rights and Claims:** ownership or user right to land, timber, non-timber forest products, agro-forestry, environmental services

## “FOREST DEPENDENT” PEOPLE, e.g.

- three categories:
- (i) forest dwellers, including hunter-gatherers and swidden cultivators;
- (ii) farmers living adjacent to forests, including smallholders and the landless; and
- (iii) commercial users, including artisans, traders, small entrepreneurs, and employees in forest industries and additional category is consumers of forest products among the urban poor.

Source: Byron and Arnold (1999)







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# Forests create jobs and wealth.



## \$600 BILLION

The formal timber sector contributes \$600 billion to the global economy — about 1% of GDP.

In Africa, including informal wood production in GDP estimates would double timber's contribution to GDP.

## 54.2 MILLION JOBS

The timber sector employs 13.2 million people formally and another 41 million people informally.

 = 9 Million People

 formal jobs  
 informal jobs



### X4

World **DEMAND FOR TIMBER** is expected to **QUADRUPLE** by 2050.

## Forests provide critical environmental services.

### Agriculture

In Zambia, increased tree cover combined with conservation farming has doubled maize yields.

### X2

### Water



Thanks to watershed services from forests, New York City's water utility saved \$6.5-8 billion in filtration costs over some 9 years.

### Energy

Reforestation in China's Loess Plateau significantly reduced the sediment load in the Yellow River, saving the Three Gorges Hydropower Plant \$40 million annually in reservoir enhancement costs.

### Infrastructure

In Vietnam \$1.1 million invested in mangrove forests saved \$7.3 million annually in avoided flood control measures.

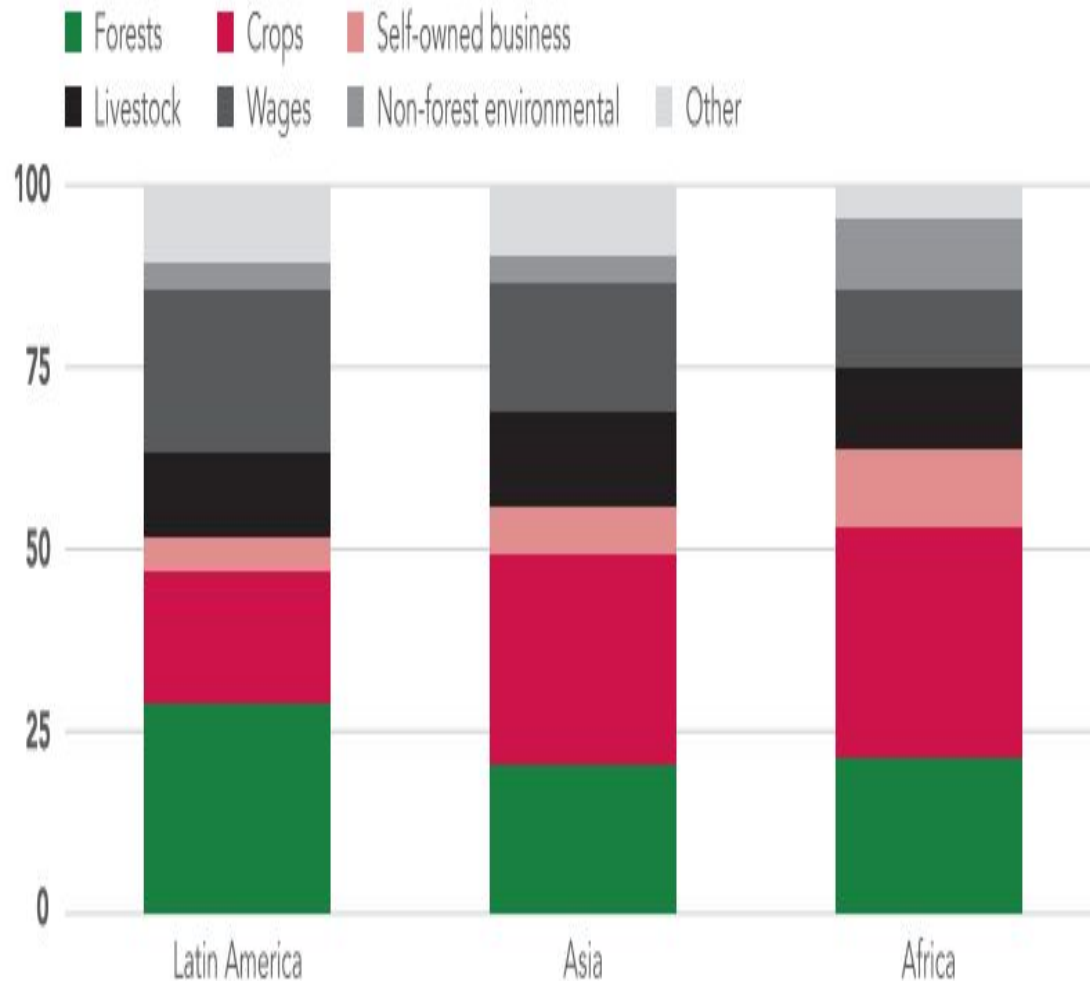
Sources: FAO (2014). *Contribution of the Forestry Sector to National Economies, 1990-2011*; FAO (2014). *State of the World's Forests*; World Bank (2013). *An 'Evergreen' revolution Cuts Fertilizer for Africa's Farms*; World Resources Institute (2011). *Forests for Water: Exploring Payments for Watershed Services in the U.S. South*; Zhao-Yin, W. et al. (2014) *River Dynamics and Integrated River Management*; International Federation of Red Cross and Red Crescent Societies (2002). *The World Disaster Report Focusing on Reducing Risk*.

# Forest income accounts for around a quarter of all income for rural communities near forests

## Sources of income for rural communities with access to forests (%)



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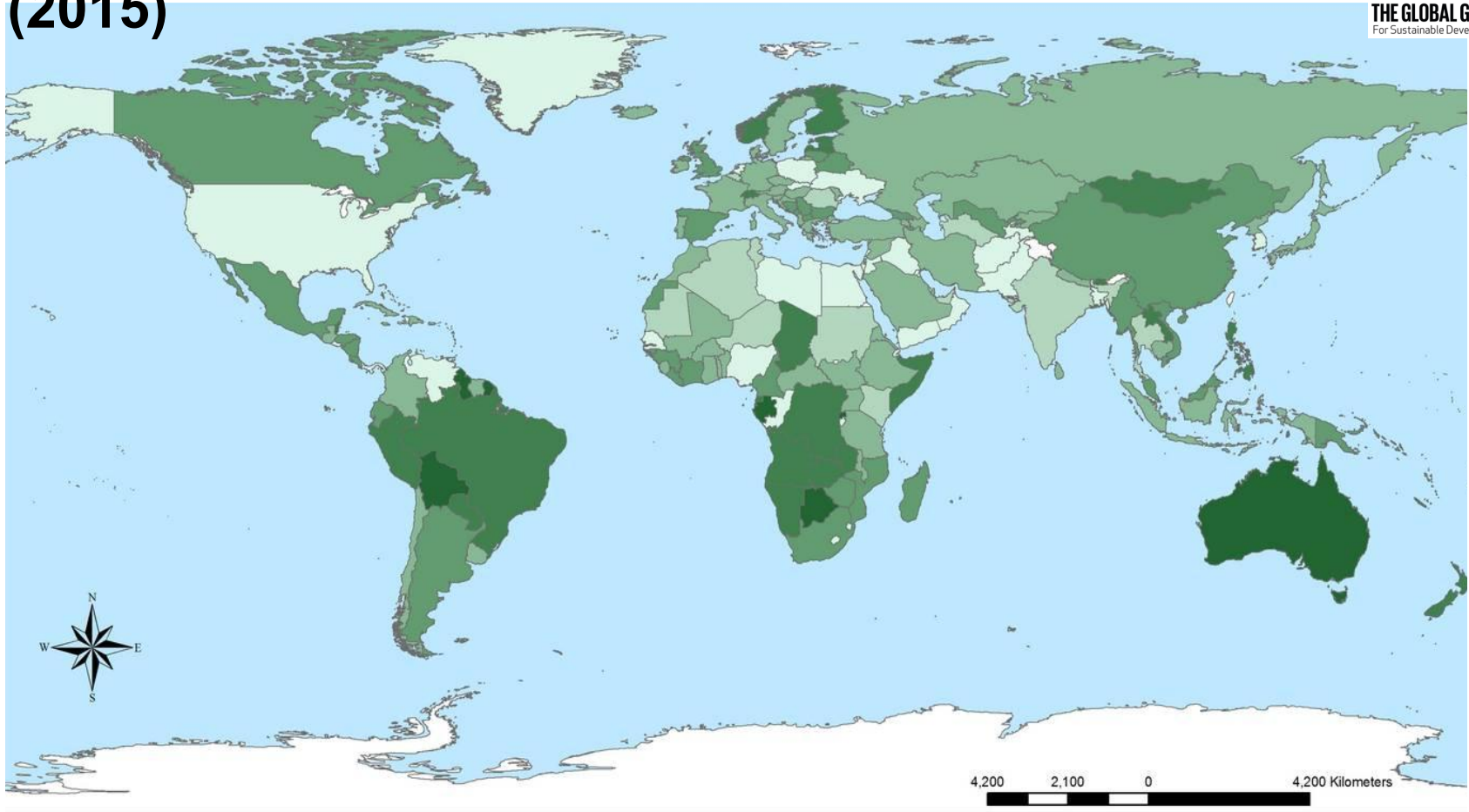


Source: Angelsen, A., P. Jagger, R. Babigumira, B. Belcher, and N. J. Hogarth, 2014, "Environmental income and Rural Livelihoods: A Global-Comparative Analysis," World Development 64(S1)

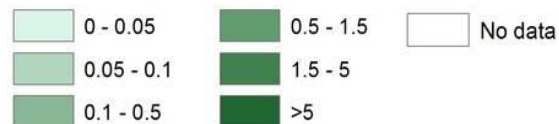
# Big Differences in Forest Areas per Capita (2015)



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ha per person



# Various Estimates of People's Forest "Dependence"



- **1.6 billion rural people dependent upon forests** to some extent of which 350 million almost entirely for their subsistence.
- In developing countries about 1.2 billion people rely on agro-forestry farming systems.
- **1 billion out of 1.2 billion extreme poor depend on forest** resources for all or part of their livelihoods.
- **240 million people** live in predominantly forested ecosystems.
- **300 - 350 million people** are highly dependent on forests and live within or adjacent to dense forests on which they depend for their subsistence and income.
- **600 million qualify as long-term users.**
  
- **Their conceptual and strategic implications?**

Sources: World Bank 2002, 2004, 2008, and 2009; Rainforest Foundation (n.d.); World Rainforest Movement 2005 as quoted in Sofie Chao (2012), Forest Peoples: Numbers Across the World, 2012.

# Three Purposes of “Environmental Income”



Supporting current consumption,

Providing safety-nets in response to shocks and gap-filling of seasonal shortfalls,

Providing means to accumulate assets and providing a pathway out of poverty (Wunder, Angelsen, and Belcher 2014)

# What about implications of Unmanaged “Hidden Harvests”

- Withdrawal of natural resources at rates faster than their regeneration/replacement risks increased deforestation, resource degradation, reduced resilience and pauperization of millions of people.
- Important implications for governance of natural resources.



# Indigenous People : Among the Most Vulnerable



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- “370 million self-identified Indigenous Peoples in some 90 countries worldwide.....among the world’s most vulnerable, marginalized, and disadvantaged groups.....accounting for less than five percent of the global population, .....(but) 15 percent of the extreme poor, and a substantial proportion of the world’s population with insecure access to food;
- Indigenous Peoples own, occupy, or use a quarter of the world’s surface area;
- Safeguard 80 percent of remaining biodiversity, and some of the most biologically important lands and waters are intact as a result of Indigenous Peoples’ stewardship;
- Their knowledge and expertise on how to adapt, mitigate, and reduce risks from climate change and natural disasters are considered vital”.

Source: World Bank Indigenous People, Inspection Panel, Emerging Lessons 2016

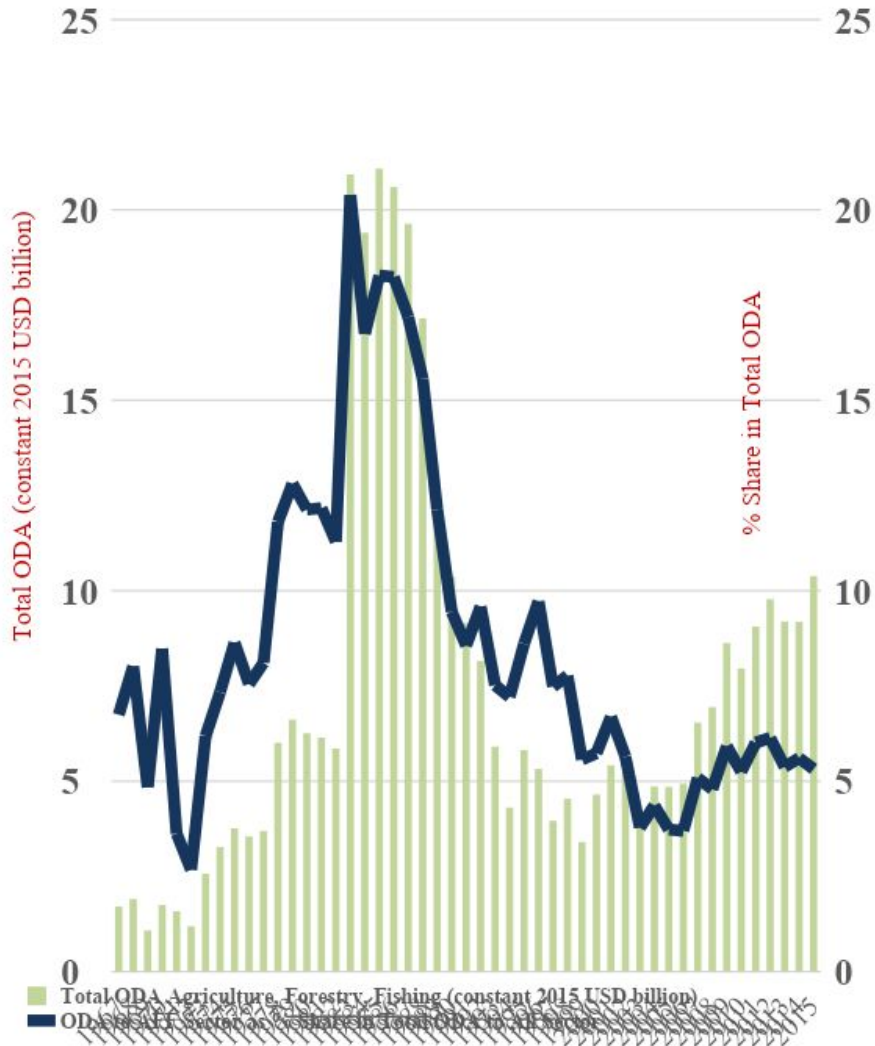
# Geo-spatial mapping of People and Resources will enable Spatial Multi-Sectoral Planning—Will require investment in data, analysis and capacity building



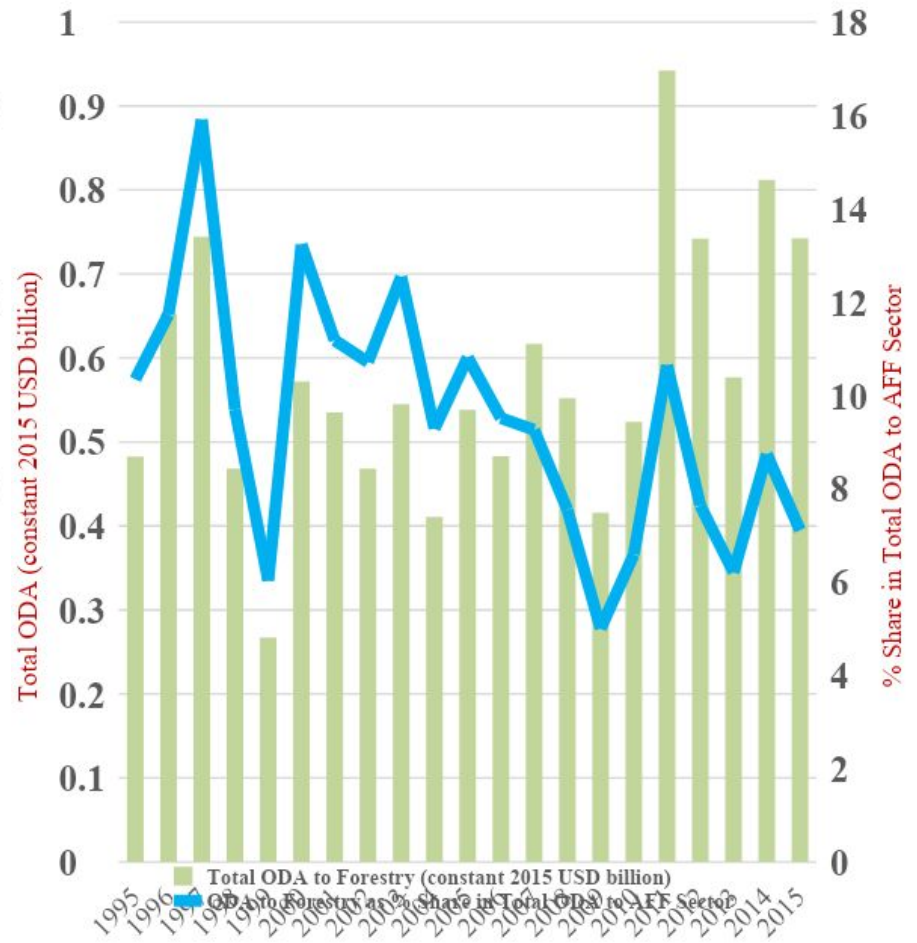
1. Changing number and share of people below \$1.9 poverty line at the regional and national levels
2. Percentage of population below poverty line
3. Depth of poverty—distance between poverty line and actual income level
4. Multi-dimensional Nature of poverty
5. Following Sen, deprivation of material or non-material attributes—limited capabilities, lack of voice,
6. Density of Poverty—e.g. far greater in South Asia compared to Latin America



### Declined Share of ODA to Agriculture, Forestry and Fishing Sector (1967-2015)



### ODA to Forestry Sector and as % Share in Total ODA to AFF Sector (1995-2015)





## **Some Hypotheses about Poverty and Forestry**

# Tragedy of Commons? Interactions between Locations of Forests and Poverty



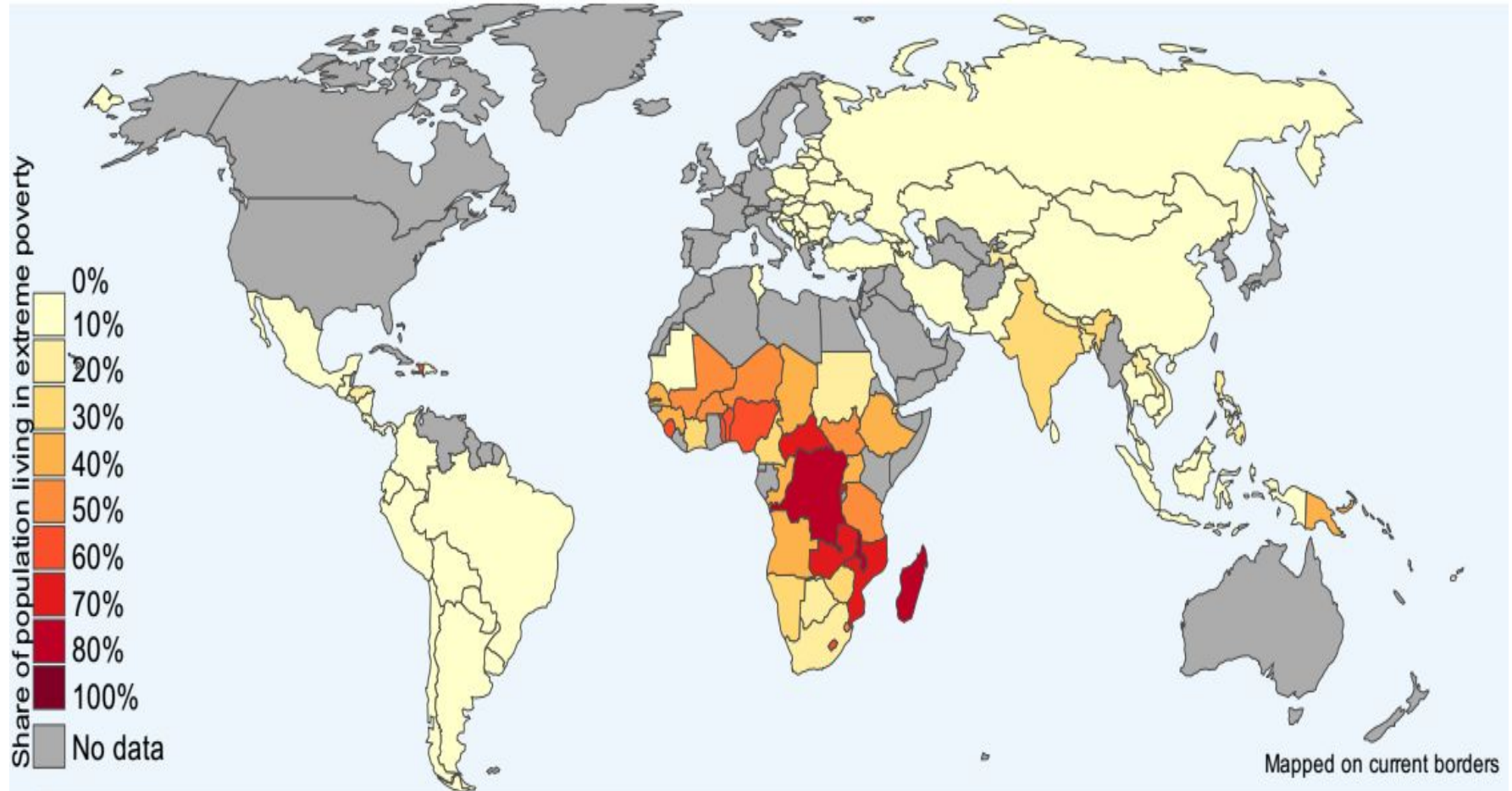
## In Six high natural forest cover countries

- High poverty rates in populations
- Low poverty density (the number of poor per unit area). (Sunderlin et al 2008)
  
- **in India**
- **More acute child malnutrition and mortality outcomes among tribals even after controlling for “wealth”.** (Das 2013).
  
- **Other puzzles in India**
  - JFM states have experienced open access forests
  - Increased use of gas stoves has not reduced deforestation
  - Land conflicts are on the rise.

Source: Saxena. Rights and Resources Institute, 2014

# High Share of the Population Living in Extreme Poverty in Forested Areas

Extreme poverty is defined as living with per capita household consumption below 1.90 international dollars per day (in 2011 PPP prices). International dollars are adjusted for inflation and for price differences across countries. Since some observations for 2014 are not available the map displays the closest available data (2008 to 2014).

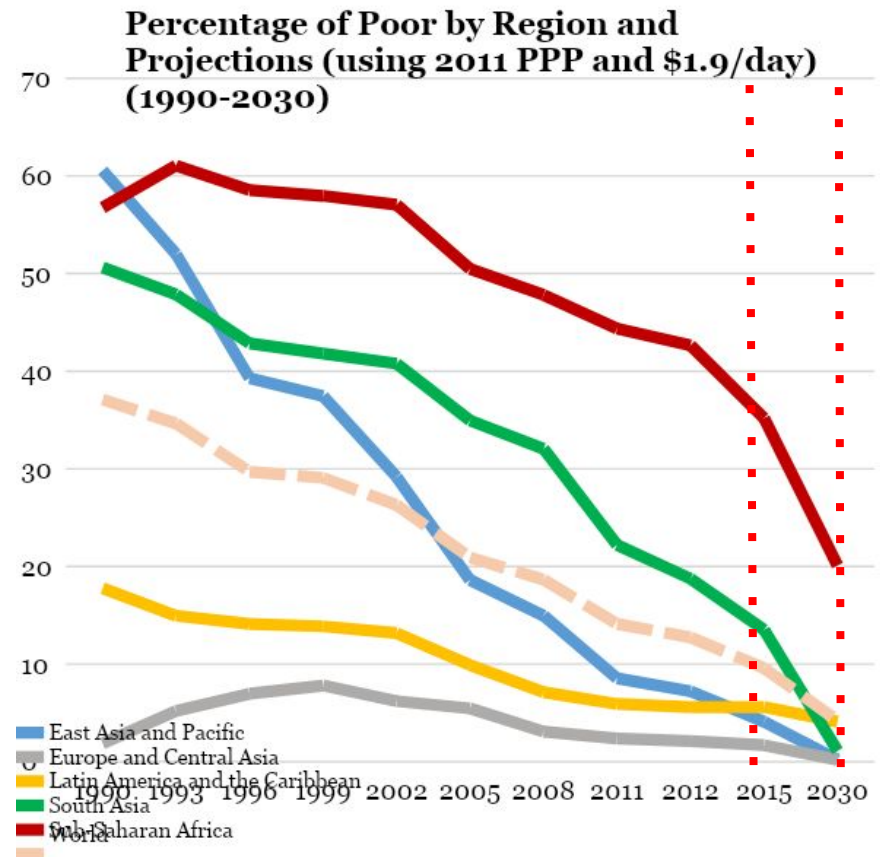
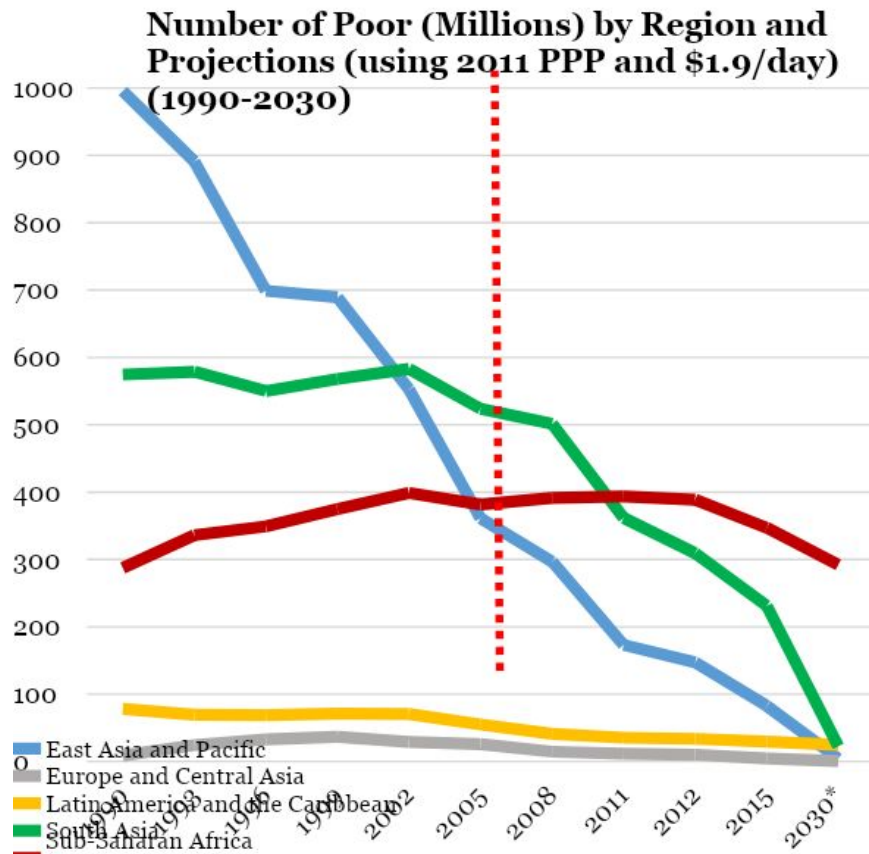


Data source: Poverty - WORLD BANK (WDI - 2017/02)

[OurWorldInData.org/extreme-poverty/](http://OurWorldInData.org/extreme-poverty/) • CC BY-SA

Note: Consumption in each country is adjusted for inflation over time and for price differences between countries and expressed in 2011 PPP international dollars.

# Zero Poverty Projected by 2030 in All Regions Barring Africa, 1990-2030



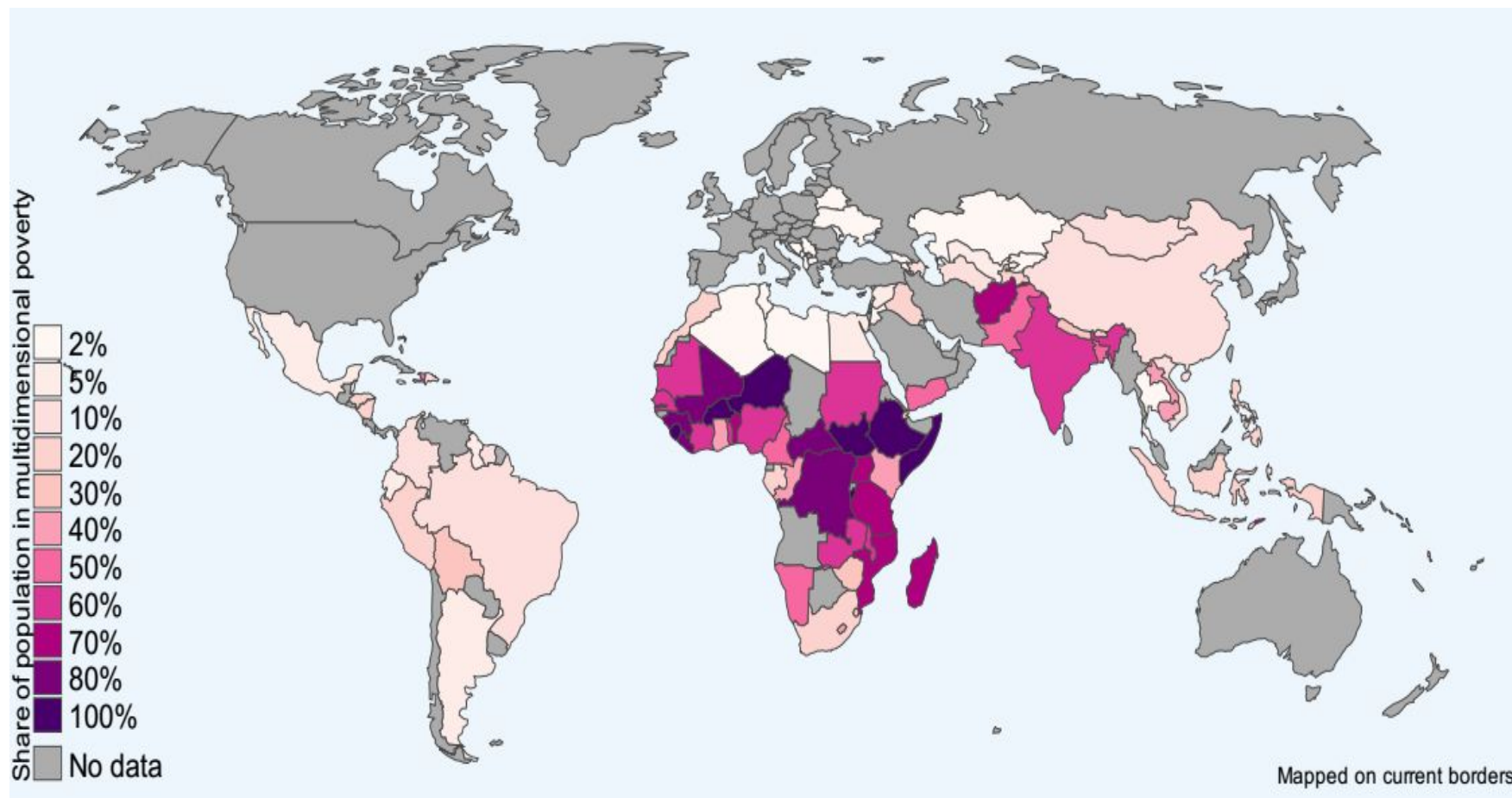
Source: Lele and Goswami; based on data from Cruz et al 2015.

# Even Higher Share of Population Living in Multidimensional Poverty

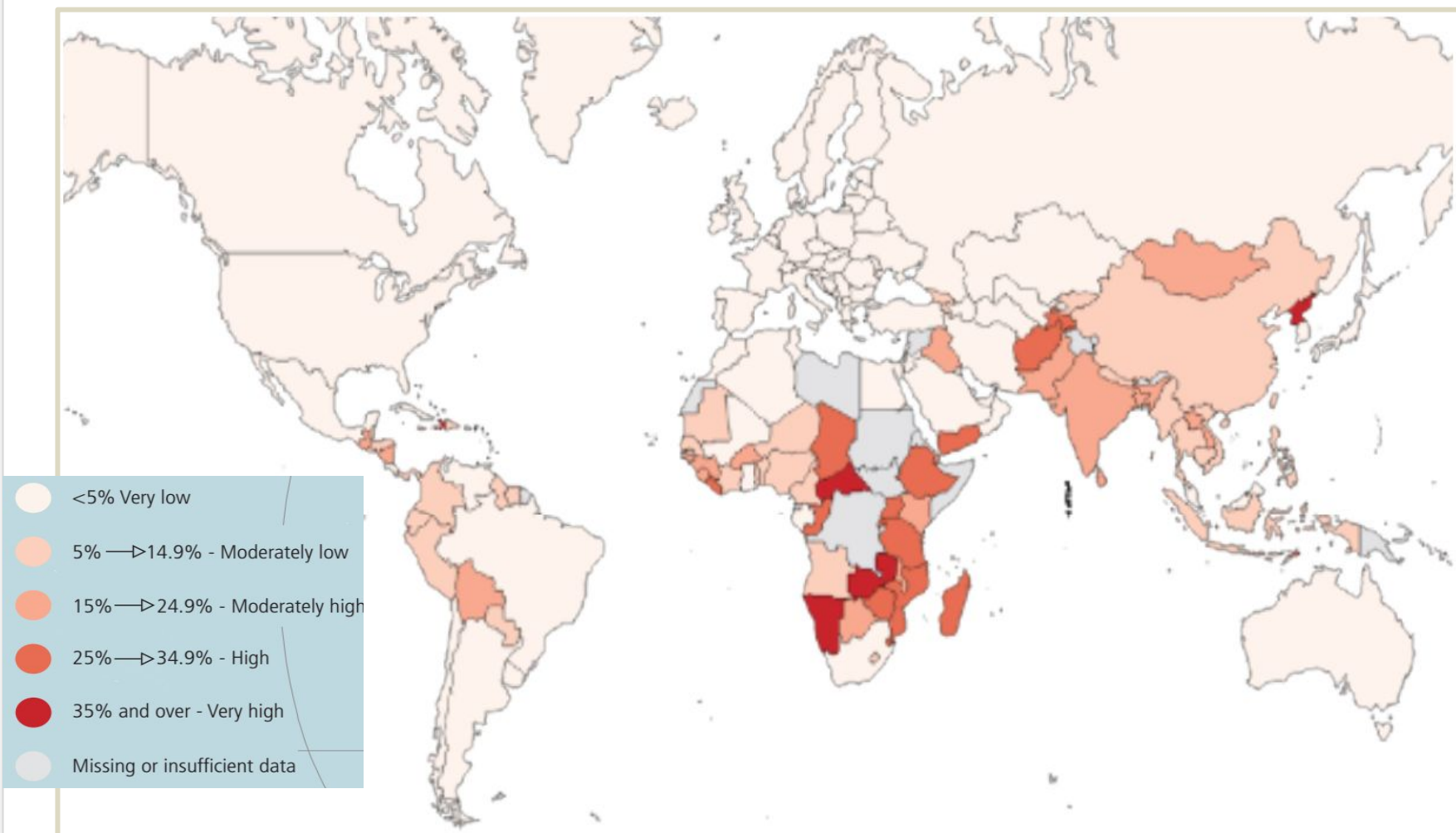


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Proportion of people who are poor according to the Multidimensional Poverty Index (MPI). The MPI weights ten indicators of deprivation in the context of education, health and living standards. Individuals are considered poor if deprived in at least one third of the weighted indicators. Since some observations for 2014 are not available the map displays the closest available data (2005 to 2014).



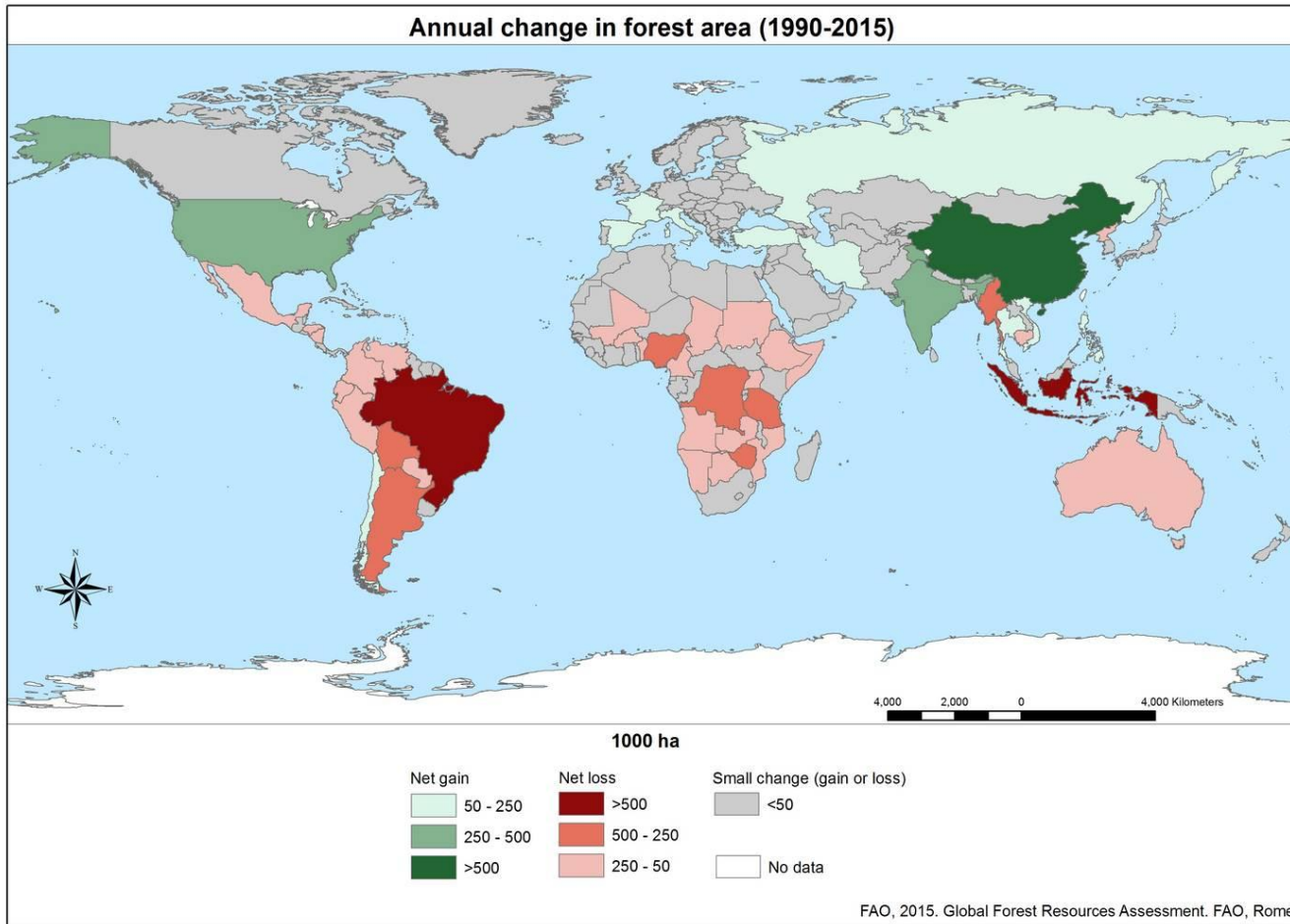
# Share of Undernourished Populations (2014-16) FAO's PoU—Win Win between forestry and food security?



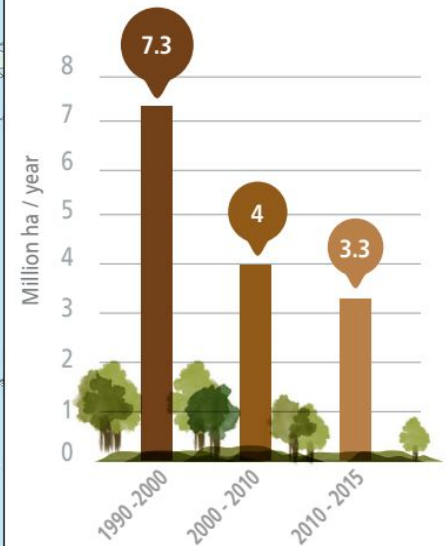
# Forest Cover Has Improved in Forest Poor China (1990-2015)



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World's forest annual net loss



↑ **Net forest increases** have been mostly in the temperate and boreal zones.

↓ **The largest forest loss** has occurred in the tropics, particularly in Africa and South America.



# But Elsewhere ---High “Environmentally Sourced Income” And Few Pathways out of Poverty?



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- Millions of rural smallholders derive income from foraging forests and wildlands as from cultivating crops;
- Environmental Income: much income (cash and non-cash income—**25%** to **28%** of income) as crops –so called “Hidden Harvest”, “Nature’s Subsidy” (Wunder, Angelsen, and Belcher 2014; Shackleton et al 2007; Noack et al 2015; Scoones et al 1992; Jagger et al 2014; and Sunderlin et al 2005);
- High under-reported forest income also shown in several previous studies- e.g. Aggarwal et al 2013.



# Why So Few Pathways out of Poverty and “Limited Rigorous Evidence of Impacts”

- Forest areas often far from markets, poor people frequently lack marketing knowledge, financial capital and/or networks necessary to reap benefits from forest related activities;
- Unstable land and resource tenure continue to hamper efforts to improve prospects for rural people
- Authorities use forests as source of revenue
- Authorities often turn only degraded lands to poor people
- Often authorities reluctant to devolve rights to the local level. (FAO 2012)

# Community Based Forestry: Mixed Outcomes



## CBF has often failed to meet its potential because:

- Poor-quality, low- productivity forests are assigned to the poor:
- “little trees to little people”. (FAO 2012)
- Withdrawal of timber rights through logging bans have exacerbated poverty.
- Community timber plantations have not proven economically attractive for small holders.
- In many countries, small and medium forest-based enterprises (SMFEs) are seldom given high priority by governments.
- **Contested Land Claims, Growing Land Conflicts**
- Source: FAO 2012

# What should be done? From FAO reports

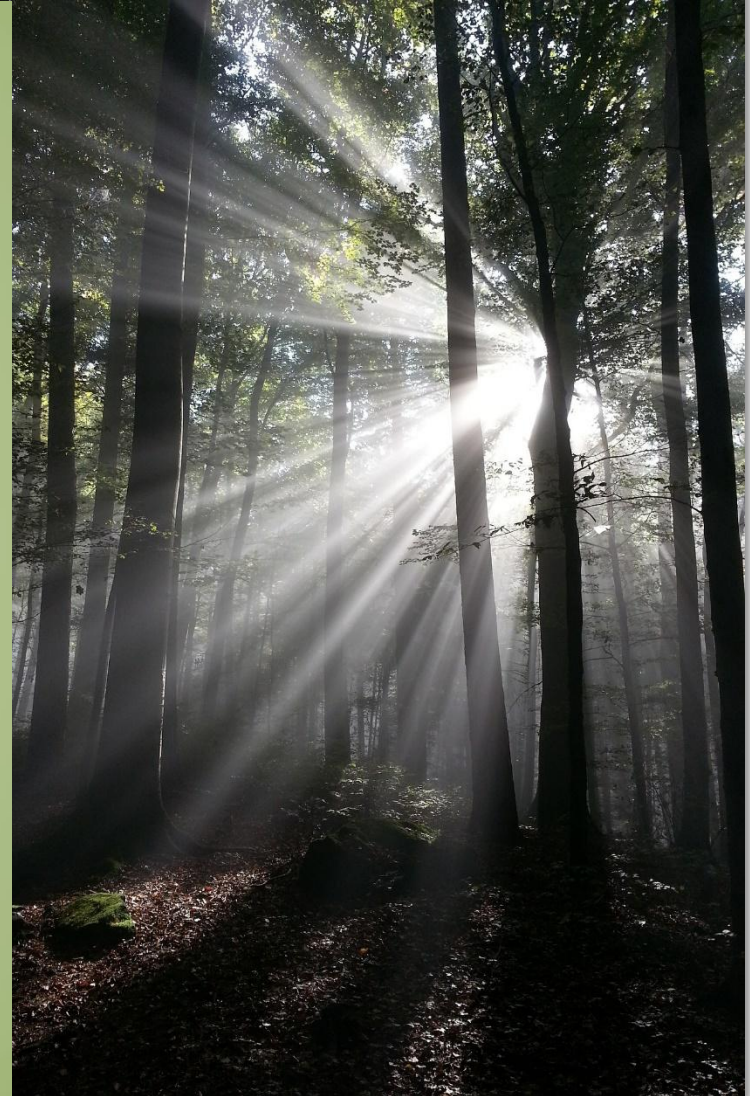


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Food and Agriculture  
Organization of the  
United Nations

- ✓ Improve familiarity of forestry policymakers with poverty issues in forest areas.
- ✓ Allocate clear and secure forest tenure and use rights over good-quality, productive forests to poor people.
- ✓ Ensure consistency and continuity of policies



# LESSONS FROM CHINA, COSTA RICA, VIETNAM

Gain in Forest Cover, Biodiversity but Not Carbon Sequestration?



## WHAT WORKS?



- **Farm Forestry potential:**
- Adoption of on-farm eucalyptus woodlots .
- Adoption of carbon forestry woodlots .
- Well targeted-farm plantation forestry projects towards poor households
- Strengthened Foresters and Farmer's organizations, Indigenous people's, Community forestry,
- Empowered women's organizations
- **PES—Costa Rica, Mexico, China**

# How to Avoid Forest Dependence Turning Into Poverty Traps?

1. Ensure Clarity in Tenure and other Rights

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2. Focus on Productivity Increase

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3. Invest in Multi-Sectorial Interventions: Forestry, Agro-Forestry, Credit

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4. Improve Market Access through supporting Value Chains

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5. Promote Environmental Services

# REDD+: What Next?

- Developed (Annex I) countries would incentivize and compensate developing (non-Annex I) countries for verifiably achieved emission reductions;
  - *Remarkable success as an idea and as a flagship of international climate negotiations;*
  - The Warsaw Framework (2013) established the structure for an international REDD+ mechanism;
  - Stern Review's enthusiastic endorsement—"low opportunity costs, emission cuts could be achieved quickly and cheaply";
  - **But its implementation has been slower and the results smaller than most expected when the initiative was launched in 2005;**
  - Funding not there to make it operational;
  - National REDD+ policies are shaping up in Brazil, Indonesia, **But continuous political struggles with vested interests for continued forest exploitation and/or legitimate development objectives;**
  - **"So far, REDD+ efforts have not been able to change— at any scale – the basic deforestation logic and to make living trees worth more than dead trees";**
  - The way forward, "REDD+ countries must assume a stronger role and ownership in the implementation of REDD+, and to incorporate it in their INDCs and in their domestic emission targets.
- Source: Agrawal and Angelsen 2009; Angelsen 2009; and Angelsen, Brockhaus, Sunderlin and Verchot 2012, Seymour et al, 2016.

# Call for Action: Time to Tap Into the Technological Revolution through Partnerships



## PARTNERSHIPS FOR SDGs

- Forestry can bring together *philanthropists and entrepreneurs with international organizations and G 20 to harness the new technologies, processes and forms of organization to expand knowledge and achieve social and environmental goals.*
- *Partnerships can increase effectiveness, competitiveness, resilience to shocks and environmental sustainability, thereby contributing to poverty reduction, food and nutrition security, and sustainable natural resource management involving millions of the world's poorest” .*





**THANK YOU**



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