

# Natural capital, ecological scarcity and poverty

Edward B Barbier

Department of Economics and Finance

University of Wyoming

# Key questions

- What does green growth mean for low and middle income economies?
- What are the specific implications for the poor within developing countries?
- What is the relative importance of natural capital and other capital in raising livelihoods as well as increasing economic productivity?
- Does natural capital have a special role in terms of risk mitigation for the poor?

Barbier, E.B. 2010. "Poverty, development, and environment." *Environment and Development Economics* 15:635-660.

# Green growth and LDCs

- Green growth means fostering economic growth and development, while ensuring that natural assets continue to provide the resources and environmental services on which our well-being relies.
- For developing countries, the most important economic objective remains poverty alleviation.
- But for many of the poor, especially in rural areas, poverty is tied to the growing problem of ecological scarcity.
- Thus any transition to a green economy for LDCs must address problems of poverty and ecological scarcity.

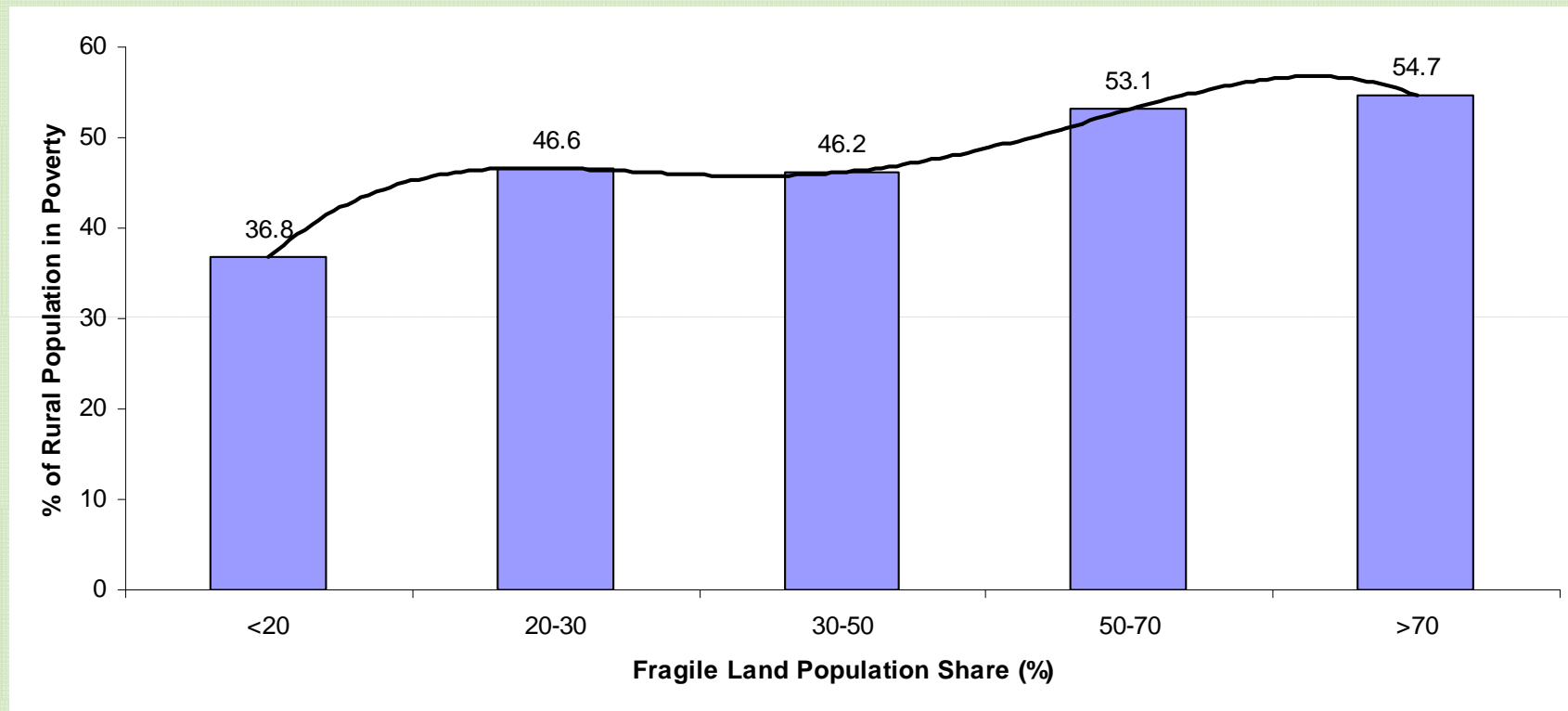
# The global problem of “ecological scarcity”

- Over 60% of the world's major ecosystem goods and services have been degraded or used unsustainably (MEA).
- The demise of key ecosystems of the developing world include mangroves (35% either lost or degraded), coral reefs (30%) and tropical forests (30%)
- Over the next 50 years, global biodiversity loss will accelerate, leading to the extinction of at least 500 or the 1,192 currently threatened bird species and 565 of the 1,137 mammal species .
- The remaining areas of relatively undisturbed ecosystems and species richness are mainly in tropical developing regions.
- LDCs already account for 71% of global water withdrawal, and their demand is expected to grow by 27% by 2025.

# Ecological scarcity and rural poverty

- Since 1950, the estimated population in developing economies on “ecologically fragile lands” has doubled.
- Well over 600 million of the rural poor currently live on lands prone to degradation and water stress, and in upland areas, forest systems and drylands that are vulnerable to climatic and ecological disruptions.
- Around three-quarters of the developing world’s poor still live in rural areas, and twice as many poor people live in rural than in urban areas.
- By 2025, the rural population of the developing world will have increased to almost 3.2 billion, placing increasing pressure on a declining resource base

# Rural poor and population on fragile lands



Developing economies are all economies from East Asia and the Pacific, Latin America and the Caribbean, Middle East and North Africa, South Asia and Sub-Saharan Africa with 2006 per capita income of \$11,115 or less, following World Bank (2008).

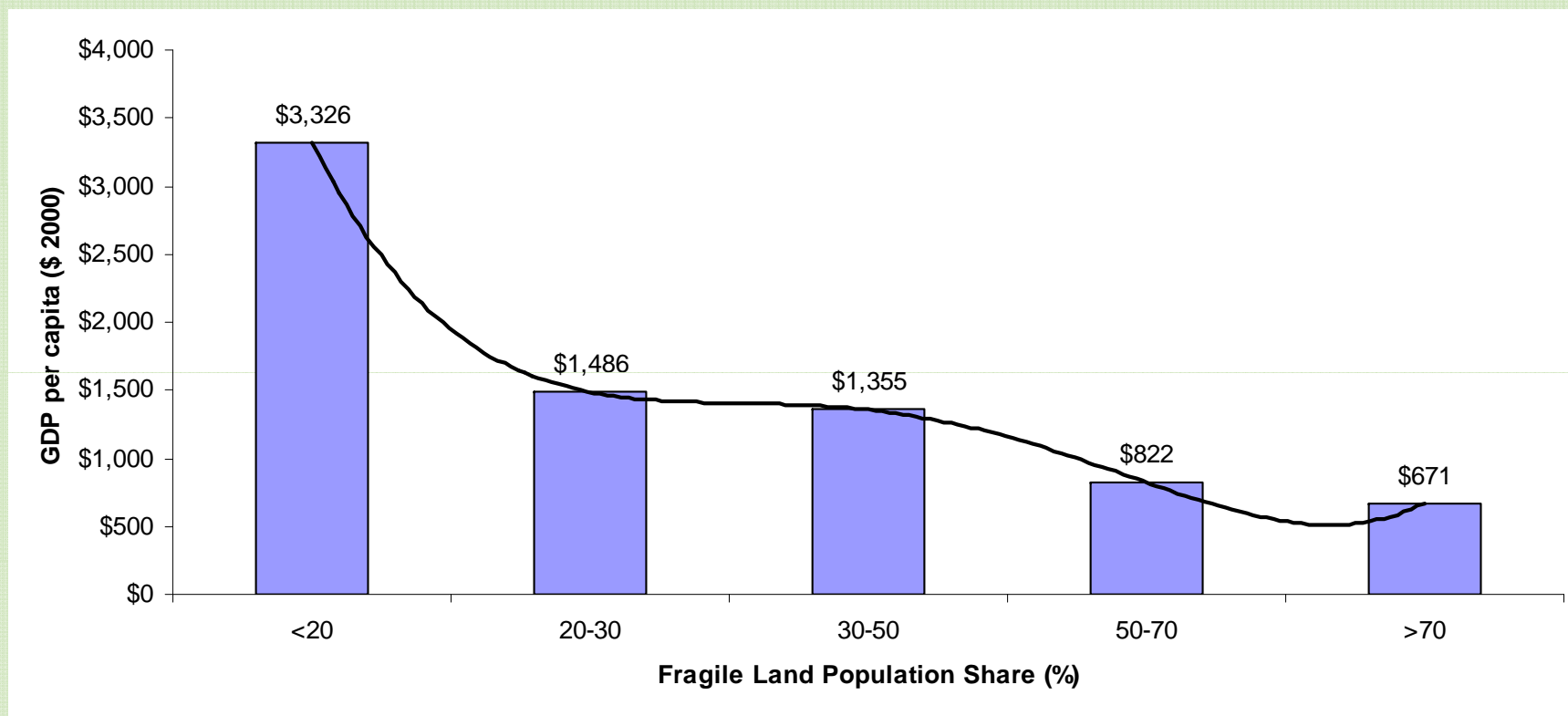
Percentage of rural population in poverty is from World Bank (2008).

Percentage of population on fragile land is from World Bank (2003).

Number of observations = 76 countries, of which 12 (<20% of population on fragile land), 26 (20-30%), 28 (30-50%), 7 (50-70%) and 3 (> 70%).

The average rural poverty rate across all countries is 45.8%, and the median is 42.6%.

# Fragile land population and GDP per capita



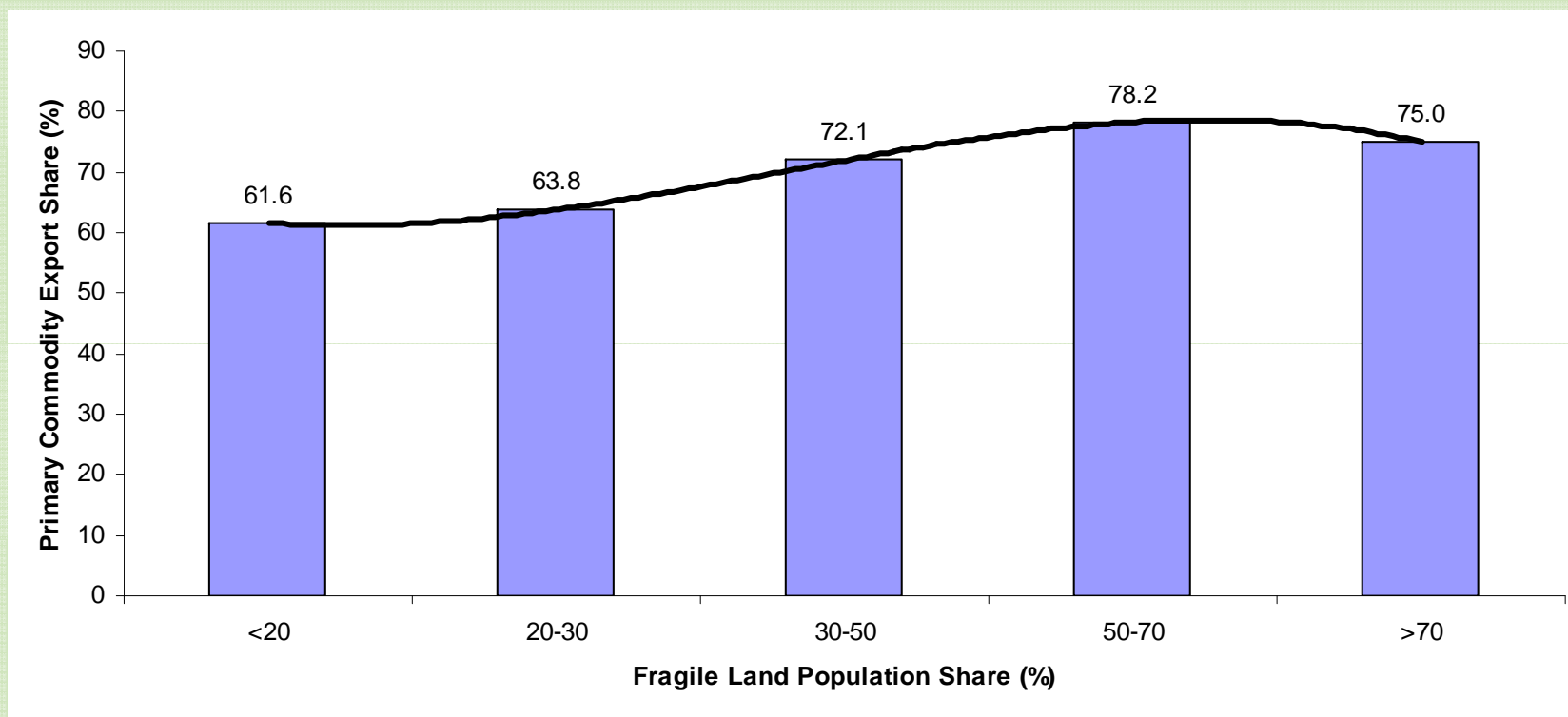
Developing economies are all economies from East Asia and the Pacific, Latin America and the Caribbean, Middle East and North Africa, South Asia and Sub-Saharan Africa with 2006 per capita income of \$11,115 or less, following World Bank (2008).

GDP per capita (\$ 2000), latest year, is from World Bank (2008).

Percentage of population on fragile land is from World Bank (2003).

Number of observations = 90 countries, of which 12 (<20% of population on fragile land), 27 (20-30%), 37 (30-50%), 9 (50-70%) and 5 (> 70%).  
The average GDP per capita (\$ 2000) across all countries is \$1,566 and the median is \$661.

# Resource dependency and fragile land share



Primary product export share is the percentage of agricultural raw material, food, fuel, ore and metal commodities to total merchandise exports, latest year (average = 69.1%, median = 80.1%), from World Bank (2008).

Share of population on fragile land is from World Bank (2003). Fragile land is defined in World Bank (2003, p. 59) as "areas that present significant constraints for intensive agriculture and where the people's links to the land are critical for the sustainability of communities, pastures, forests, and other natural resources".

Number of observations = 93, of which 5 (> 70%), 11 (70-50%), 37 (30-50%), 28 (20-30%) and 12 (< 20%).



## The “assetless” rural poor

- Poorest rural households have very few productive assets, except land and unskilled labor.
- Almost all households engage in some form of agriculture, but the size of landholdings tends to be very small.
- Poor rural households tend to rely on selling their only other asset, unskilled labor.
- Permanent migration for work is rare for most poor rural households.
- Given the lack of ownership of assets by the rural poor, and their tendency to stay where they are located, the livelihoods of the "assetless" poor are often dependent on their surrounding natural environments.

Banerjee, A.V. and E. Duflo. 2007. The economic lives of the poor. *Journal of Economic Perspectives* 21(1):141-168.

# The “assetless” poor and natural capital

- The range of choices and tradeoffs available to the poor is affected by:
  - their access to key markets (e.g., for land, labor, credit as well as goods and services)
  - the quality and state of the surrounding environment on which their livelihoods depend.
- In the absence of well-functioning local labor, capital, land and credit markets , the rural poor depend critically on the use of common-property and open access resources for their income and nutritional needs.
- it may be the “assetless” poor who end up most dependent on exploiting the surrounding environment and its ecological services for survival.

## Poverty-environment trap

- Agriculture on marginal lands is prone to land degradation, and many resource commons are subject to overexploitation or threatened by development activities.
- Labor productivity of poor households in resource activities and agriculture will fall.
- More labor will be allocated to outside employment.
- But if there are many workers looking for paid work, the wage for hired labor will decline.
- Many households will switch back to resource activities and agriculture, but only enough to cover subsistence needs.
- Underemployed labor and resource degradation deepens the poverty-environment trap.

## The poor and ecological risks

- The assetless poor are also highly vulnerable to natural disaster shocks, such as droughts, hurricanes, tsunamis, floods and other extreme events .
- Around 14% of the population and 21% of urban dwellers in developing countries live in low elevation coastal zones that are exposed to climate-driven risks.
- In some cases, the poor rely on “natural barriers” for protection; e.g. mangroves for coastal protection, forests to control flooding.
- Poor households also rely on natural resources as insurance and coping strategies for avoiding the income and subsistence losses associated with natural disasters.

## Towards a policy strategy

- Provide financing directly, through involving the poor in payment for ecosystem services schemes and other measures that enhance the environments on which the poor depend.
- Target investments directly to improving the livelihoods of the rural poor, thus reducing their dependence on exploiting environmental resources.
- Improve access of the rural poor in less favored areas to well-functioning and affordable markets for credit, insurance and land .
- Reduce the high transportation and transaction costs that prohibit the poorest households in remote areas to engage in off-farm employment.
- Provide effective institutions and governance in support of poor communities use of common pool resources.

# Payment for ecosystem services

- There are three ways in which market mechanisms for ecosystem services might also alleviate poverty:
  - If payments for ecosystem services are made directly to poor rural households to maintain or enhance these services, then they provide needed cash income
  - Whether or not the rural poor receive direct payments, they may benefit indirectly from any resulting improvement in the provision of ecosystem services
  - The rural poor may also gain from any additional economic opportunities created by payment schemes, such as the employment created by reforestation or other conservation investments
- However, there are limits to using PES to alleviate poverty, as their principal aim is to compensate land users for foregoing ecological degradation and preserving valuable ecological landscapes

# Targeting investments

- Under-investment in human capital and lack of access to financial credit are persistent problems for the extreme poor, especially in fragile environments.
- Several key targeted investments:
  - Investments in renewable energy can be targeted to improve clean and affordable energy for the “energy poor”, the 2.4 billion people, who rely on traditional biomass fuels for cooking and heating and the 1.6 billion people who do not have access to electricity.
  - Investments in clean water and sanitation can overcome child mortality, water-borne disease, save time and costs of poor households.
  - A comprehensive and targeted safety net that adequately insures the poor in time of crisis.
  - The maintenance, and if possible expansion, of long-term educational and health services targeted at the poor

# Investing in other forms of capital

- Extend well-functioning and affordable markets for credit, insurance and land to the rural poor in less favored areas.
- Improve transportation and roads to enable the poorest households in remote areas to engage in off-farm employment and market products.
  - Nearly half (49.1%) of rural populations living with poor market access, requiring five or more hours to reach a market town of 5,000 or more, are located in less favored agricultural areas.
- Enabling the poor to access micro-insurance coverage against natural disasters and catastrophes is also important .



## Protecting *de facto* commons management

- Forests, mangroves, fishing grounds, coral reefs, and even agricultural land (e.g. in Africa) are governed by customary tenure arrangements and not *de jure* ownership rights.
- Imposing formal tenure security, commonly associated with possession of land title, as a requirement for communities to use and manage resource commons tends to exclude millions of indigenous people where customary tenure without clear titles prevails.
- Recognizing and working with customary tenure arrangements and protecting against outside encroachment may be especially important for the rural poor in remote and less favored areas.