

# GREEN NATIONAL ACCOUNTS:

SESSION 1: ARE WE REALLY GROWING? MEASURING AND ACCOUNTING FOR WELL-BEING AND THE ENVIRONMENT

SANDEE-POVERTY ENVIRONMENT INITIATIVE (PEI)  
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Pranab Mukhopadhyay (with Priya  
Shyamsundar)

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# GDP per capita average annual growth rate

COUNTRY	1970-1990	1990-2009	
Bangladesh	0.4	3.4	
Bhutan		5.3	
India	2.1	4.9	
Maldives		5.9	
Nepal	1	1.9	
Pakistan	3	1.7	
Sri Lanka	3	4.1	

Source: <http://data.un.org/Data.aspx?d=SOWC&f=inID%3A93>

and Mukhopadhyay, P. (2011) EAERE Newsletter, Autumn, "Challenges and Initiatives in South Asia", page 15-16.

# Ultimate Social Goal

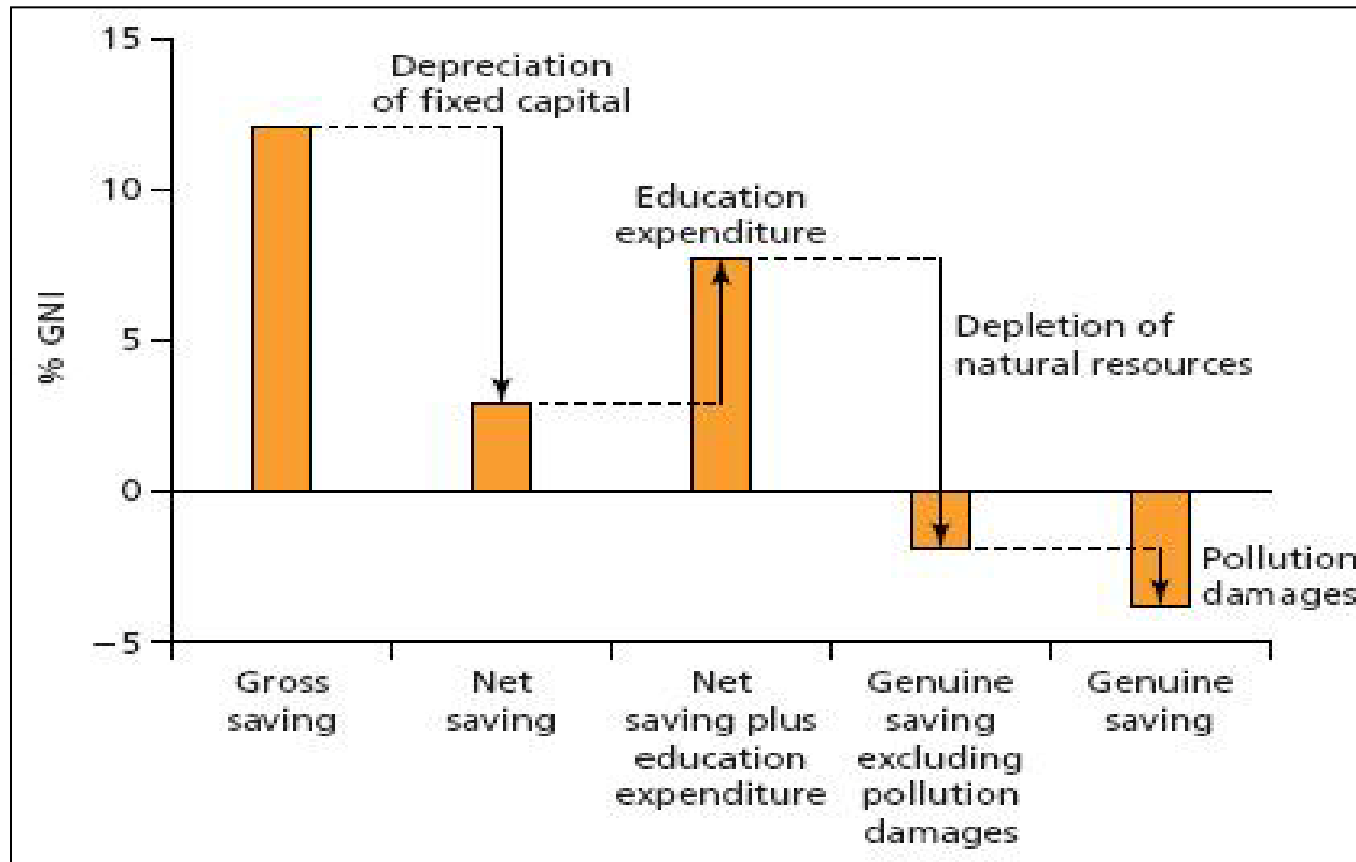
- Increase welfare
- Q: Today or in Future ?
- A: Choice between consumption (today) and Investment (future consumption)
- Issue of Sustainability: What are we sustaining ?

# One more National Income measure ?

- GDP, GNP, NDP, NNP, NI – all measures of aggregate activity.
- $NDP (NNP) = GDP (GNP) - \text{Consumption of fixed (man-made) capital.}$
- Current measures do not account for consumption of natural capital also.
- Hence the need for Green NNP.

- In fact many believe that revenues earned from extraction of finite natural resources should actually be debited from the NNP to arrive at a adjusted Green NNP.
- However, if these resource rents were re-invested then the problem of resource depletion can be avoided – as long as net Investment is positive we are on a sustainable path.

# How to calculate adjusted net saving (Investment)




# Estimating Green NNP and Savings ?

- (Green/Inclusive) NNP
  - = Regular NNP + Increase in human capital - Depletion of resources – Damage caused by increases in pollution
  - (Ref: World Bank)
- Green NNP also called Adjusted NNP, etc.
- Green (or Genuine) Savings =
- Net National Savings + Increase in human capital - Depletion of resources – Damage caused by increases in pollution

# Genuine Savings or Investment

- A comprehensive measure of net annual savings in all forms of capital (human, produced and natural) in a country
- Gross National Savings - value of consumption of fixed capital - depletion of renewable resources - pollution damages + expenditure on education
- Positive Genuine Savings implies average future consumption will be higher than current because of net increases in capital stock
- Provides a forward look at consumption and therefore a *leading* indicator of sustainable development



- 
- If growth in GNP is positive or Genuine Savings is positive is society on a Sustainable path ?

# The Sustainability debate

- One school believes that Sustainability is ensured (sufficient requirement) if Genuine savings is positive.
- The Comprehensive Wealth school (e.g. Arrow, Dasgupta, Maler) argues that use of Green Saving could be positive and yet unsustainable.
- Therefore, misleading as a Sustainability Indicator

# Comprehensive Wealth

- The only way to ensure **sustainable** welfare across generations (sufficient condition) is to ensure preservation of capital – the sum of physical, natural, and human valued at their “true prices”.
- Is substitution possible between different forms of capital (produced/in-tangible and natural capital in an economy)? (Weak substitution vs Strong Substitution).

# Ok ! So lets do it. Ooops --

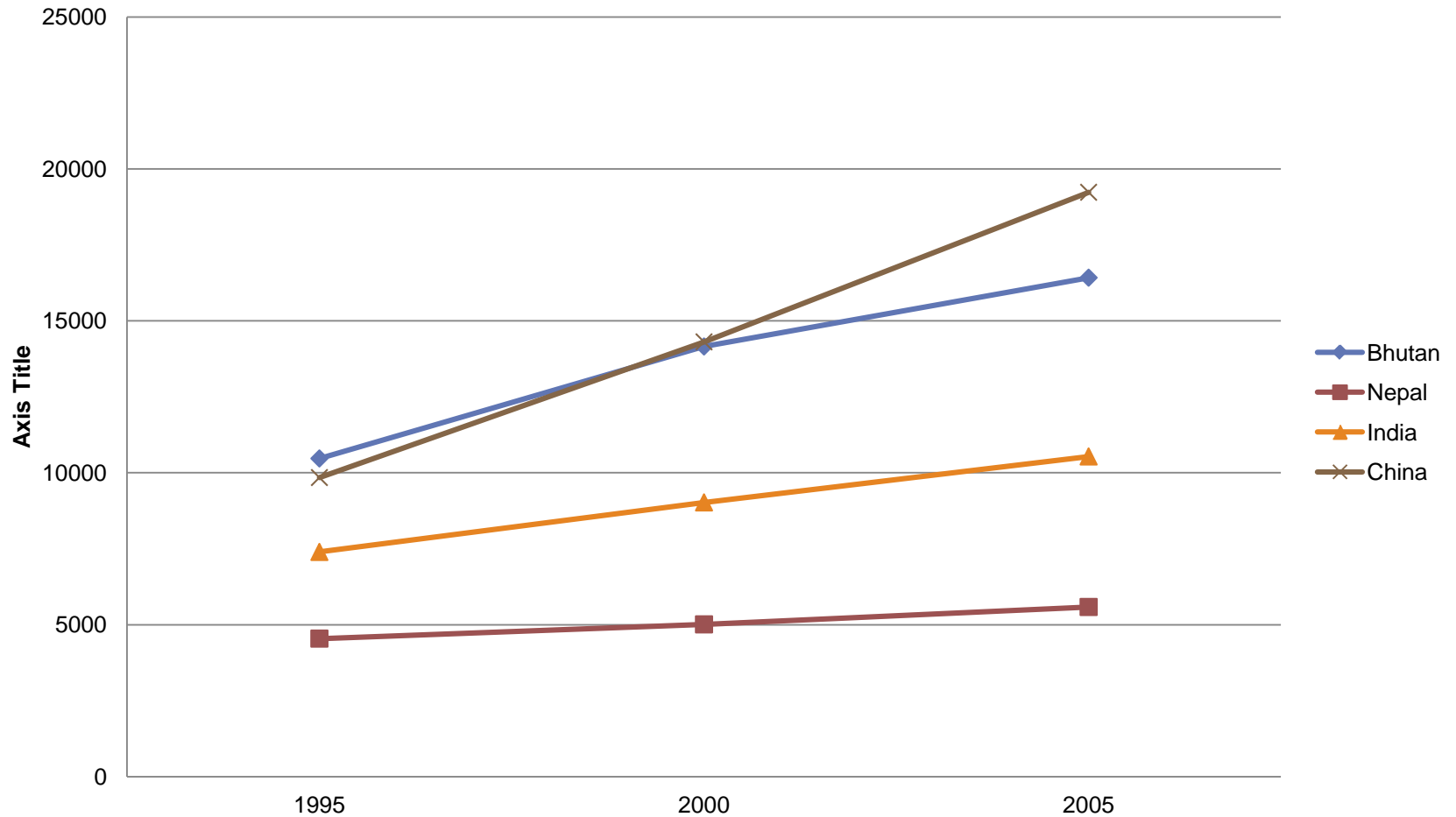
## Data ?

- Green accounting is fraught with data problems:
  - Physical Data (easier)
  - Economic Values (harder)
  - Integration to National Accounts (easy if above are available)

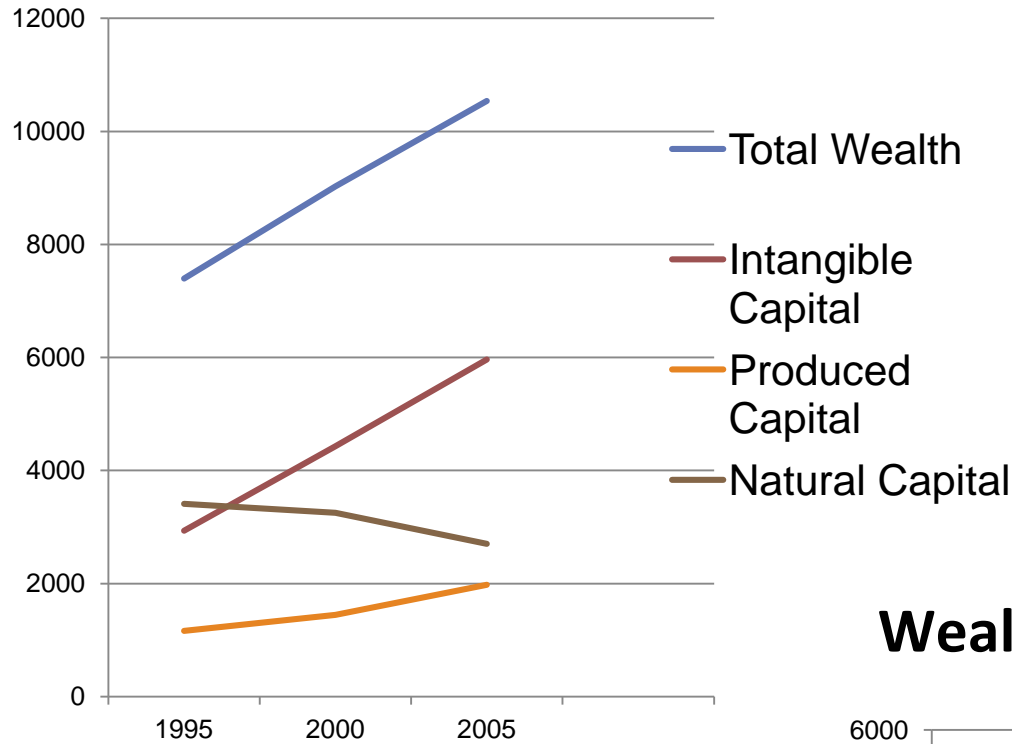
WB now publishes Genuine Savings data for XXX countries.

# Wealth Per Capita is Growing

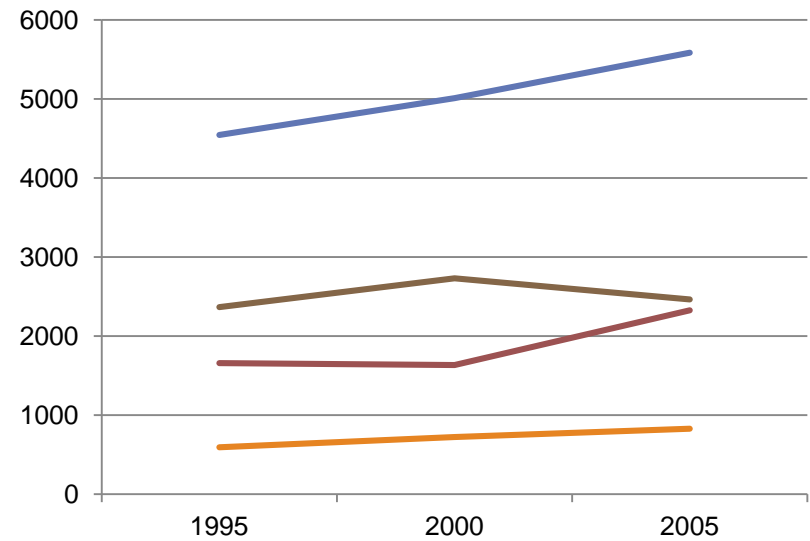
## Wealth Per Capita



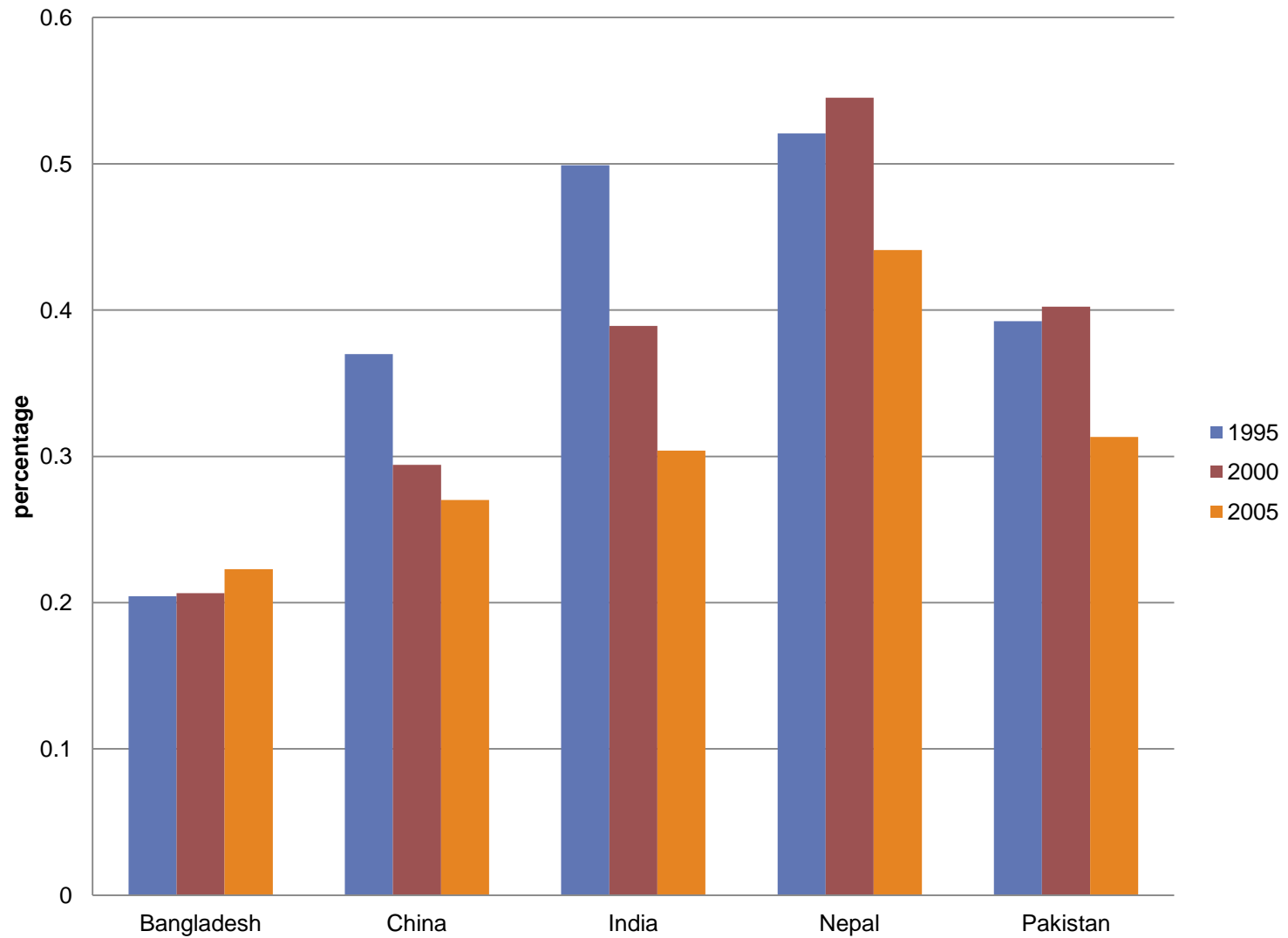
# Wealth per capita India



# Wealth per capita Nepal

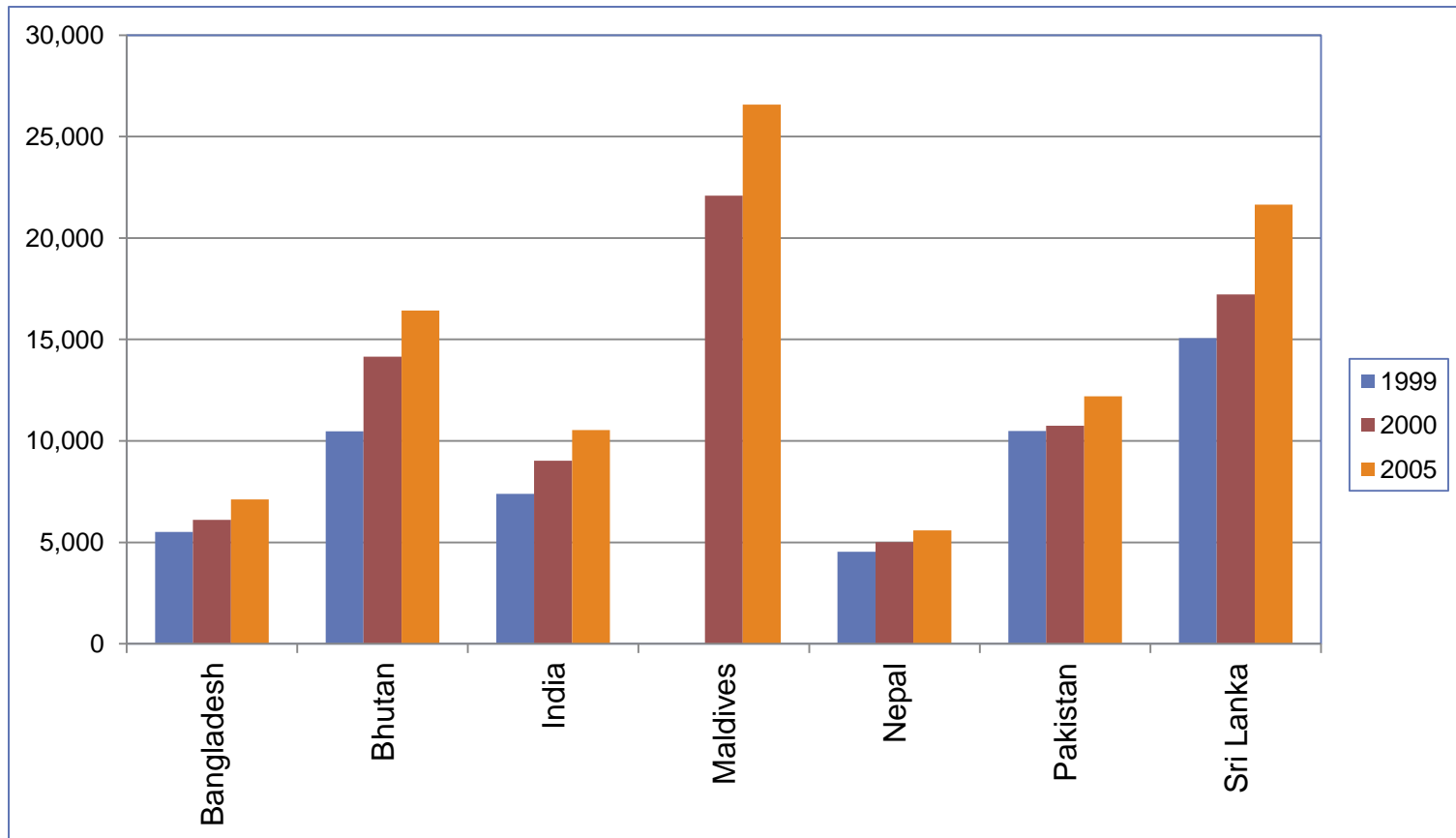


# Natural capital as percentage of Total Wealth



# Islands are doing better !

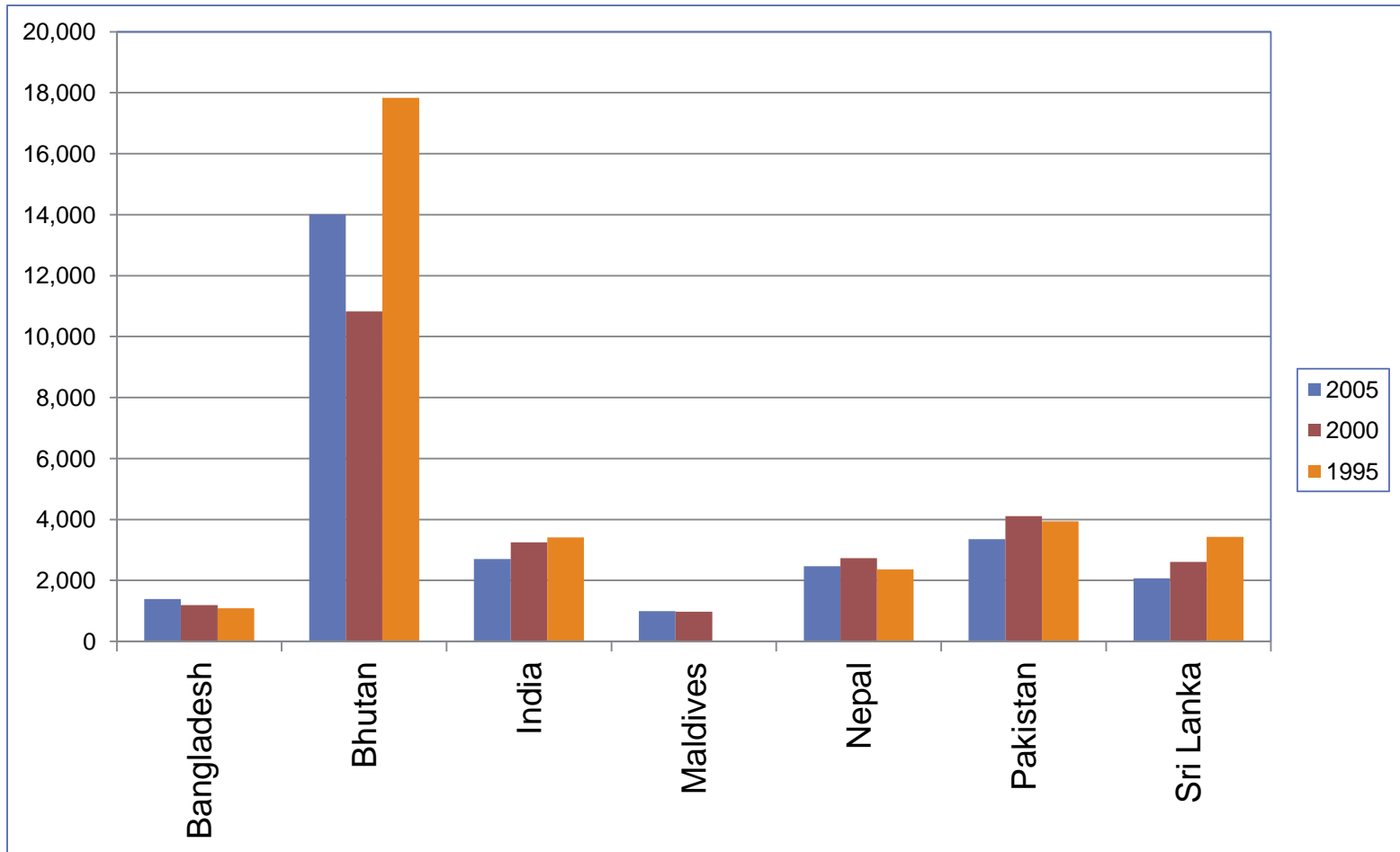
Per capita Stock of Total Capital (in 2005\$)



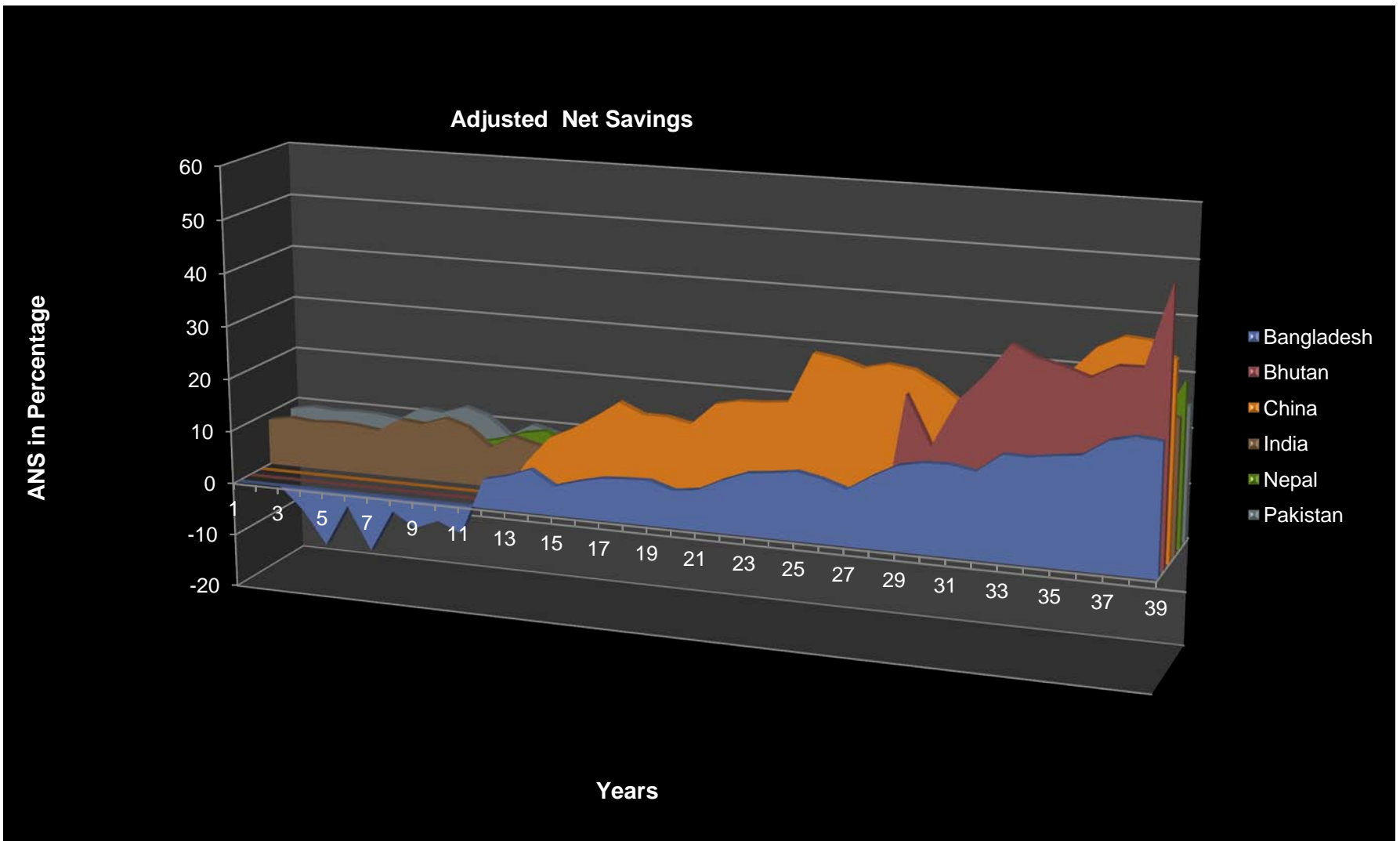


# Wait a minute !

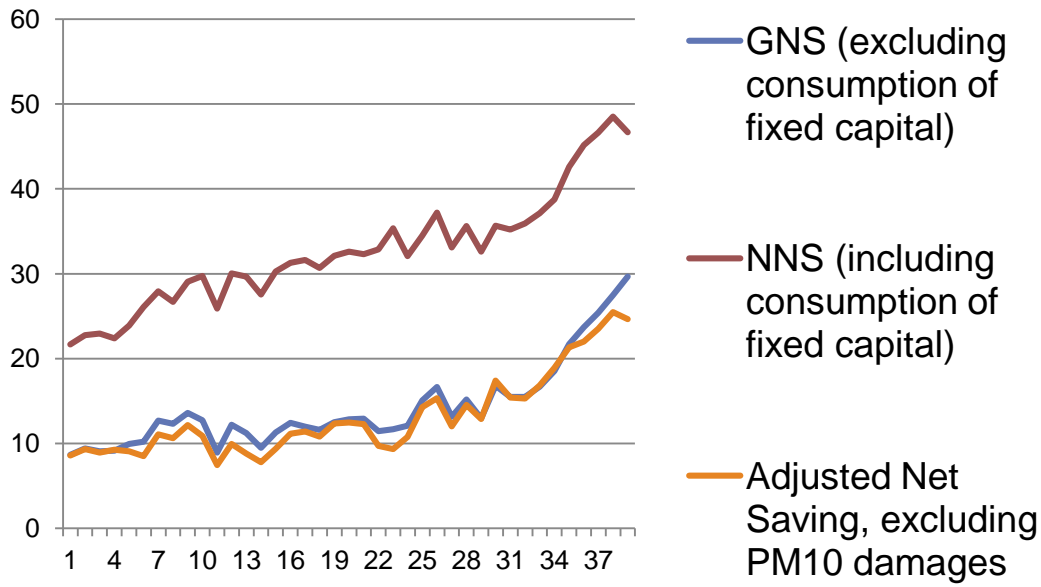
Per capita Stock of Natural Capital (in 2005\$)



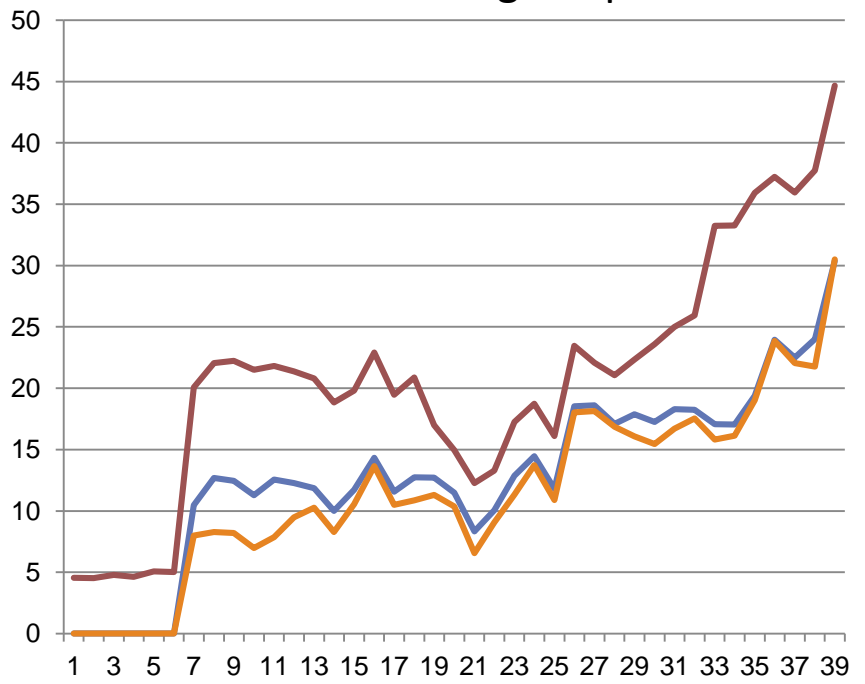
# Genuine Savings for HKH Countries



## Genuine Savings India

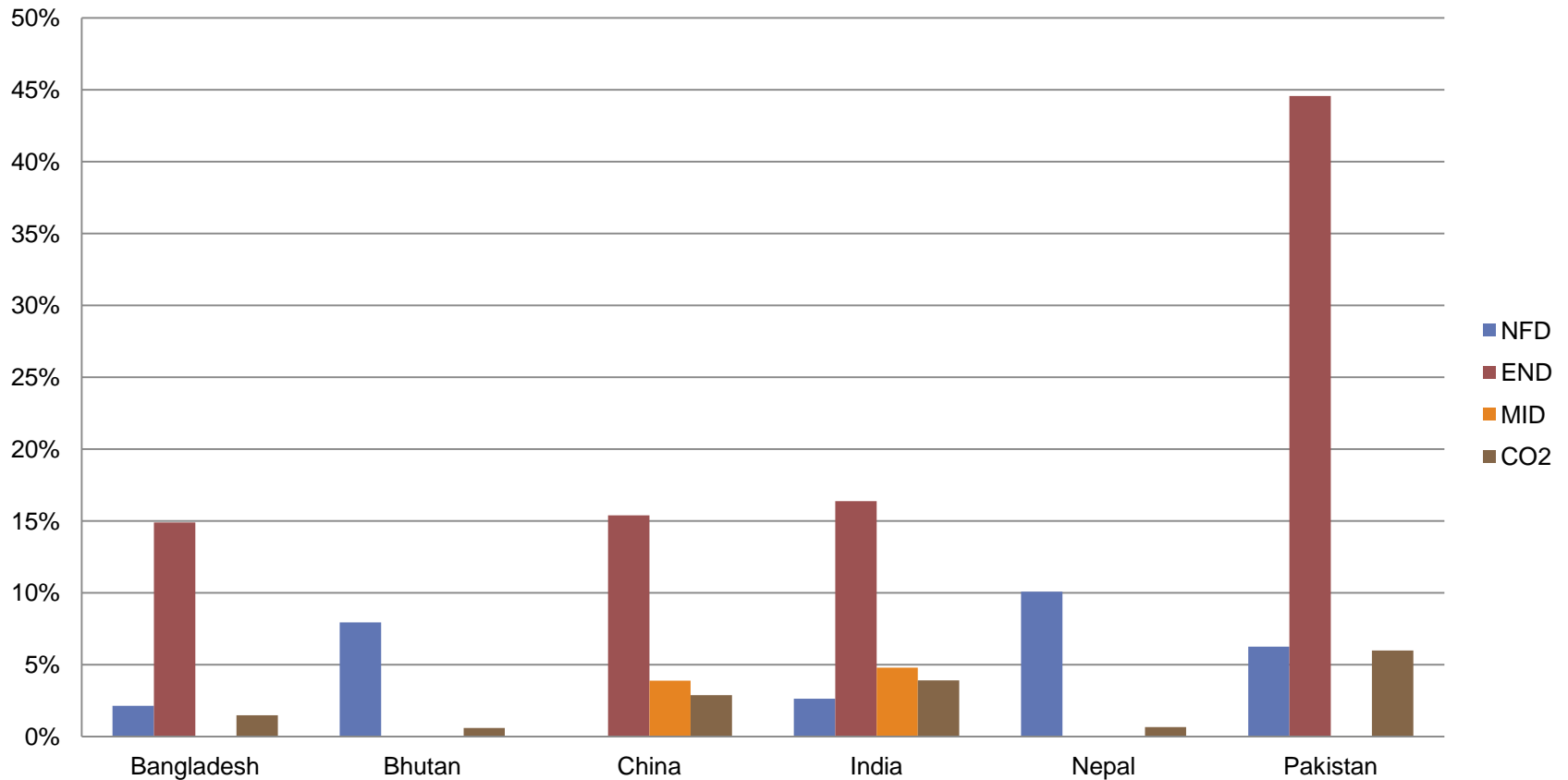


## Genuine Savings Nepal



# What resource changes pull down savings?

Depletion as a Percent of NNS 2008



# Challenges for Greening Accounts

- Some 30 countries have wealth accounts
- Forests and Water
  - ▣ Physical and Monetary Accounts
- Ecosystem services –
  - Regulating services problematic
  - Start with provisioning services – recreation and fuelwood?

# Monetary Accounts and Valuation

- ▣ Markets are missing
- ▣ Replicable numbers
- ▣ Benefit Transfer
  - Do we transfer estimates for different watersheds?
- ▣ Multiple Valuation techniques
- ▣ Data
  - Secondary data limited
  - Matching of environmental and household data
- ▣ How do we scale up in practice? What are some aggregation issues?

# Sources

- Manual for Calculating Adjusted Net Savings, Katharine Bolt, Mampite Matete, and Michael Clemens, Environment Department, World Bank, September 2002

<http://siteresources.worldbank.org/INTEEI/1105643-1115814965717/20486606/Savingsmanual2002.pdf>