

# Natural Resource Accounting in the System of National Accounting of Bangladesh

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# Objectives:

- TO enhance the emergence of ecological economics in BBS governance work
- To carry out independent research on integrating natural resource stock and depletion accounts in the National Accounting System of Bangladesh which falls under PUBLIC SECTOR INSTITUTION AND CAPACITY BUILDING

# 1st part-

## Enhance the Emergence of Ecological Economics in Bangladesh

- A Paradigm Shift
- Discussion on Agricultural Crop Production

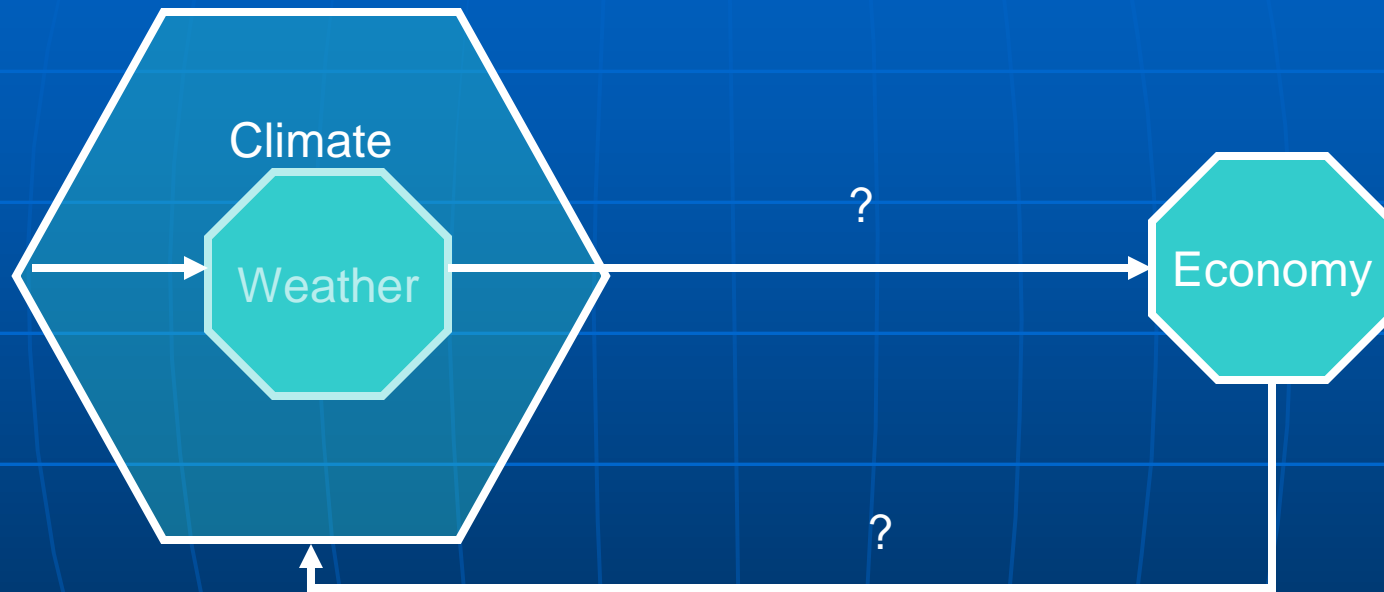
# Why Study Economics?

- “The purpose of studying economics is not to learn ready-made answers to economic questions. Rather, it is to learn how to avoid being fooled by (second-rate) economists.”



(Joan Robinson)

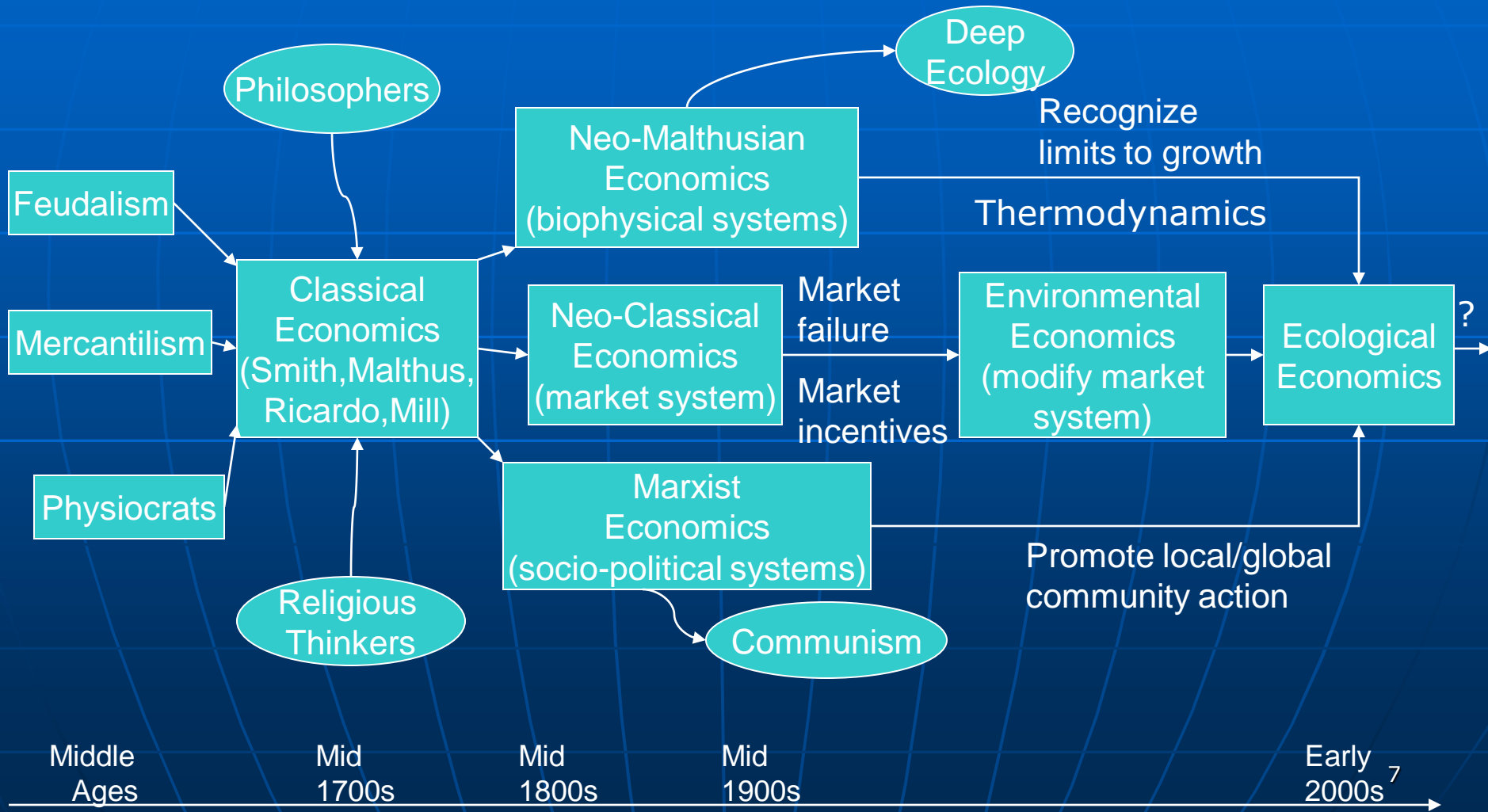
What is the implication of climate to economy and what is the implication of economy to weather



# Why Study Ecological Economics?

- Ecological Economics is a new transdisciplinary field of study that addresses the relationships between ecosystems and economic systems in the broadest sense. These relationships are central to many of humanity's current problems. As far we know most of the nations have excessive commitment to GDP growth but neglect of biophysical systems in which the economy is embedded.
- Ecological Economics gives more emphasis to biophysical systems. The theory and principles of Ecological Economics have already emerged as a useful analytical framework for programmes and policies aimed at sustainable development and the implementation of Agenda 21.

# The Evolution of Economic Paradigms

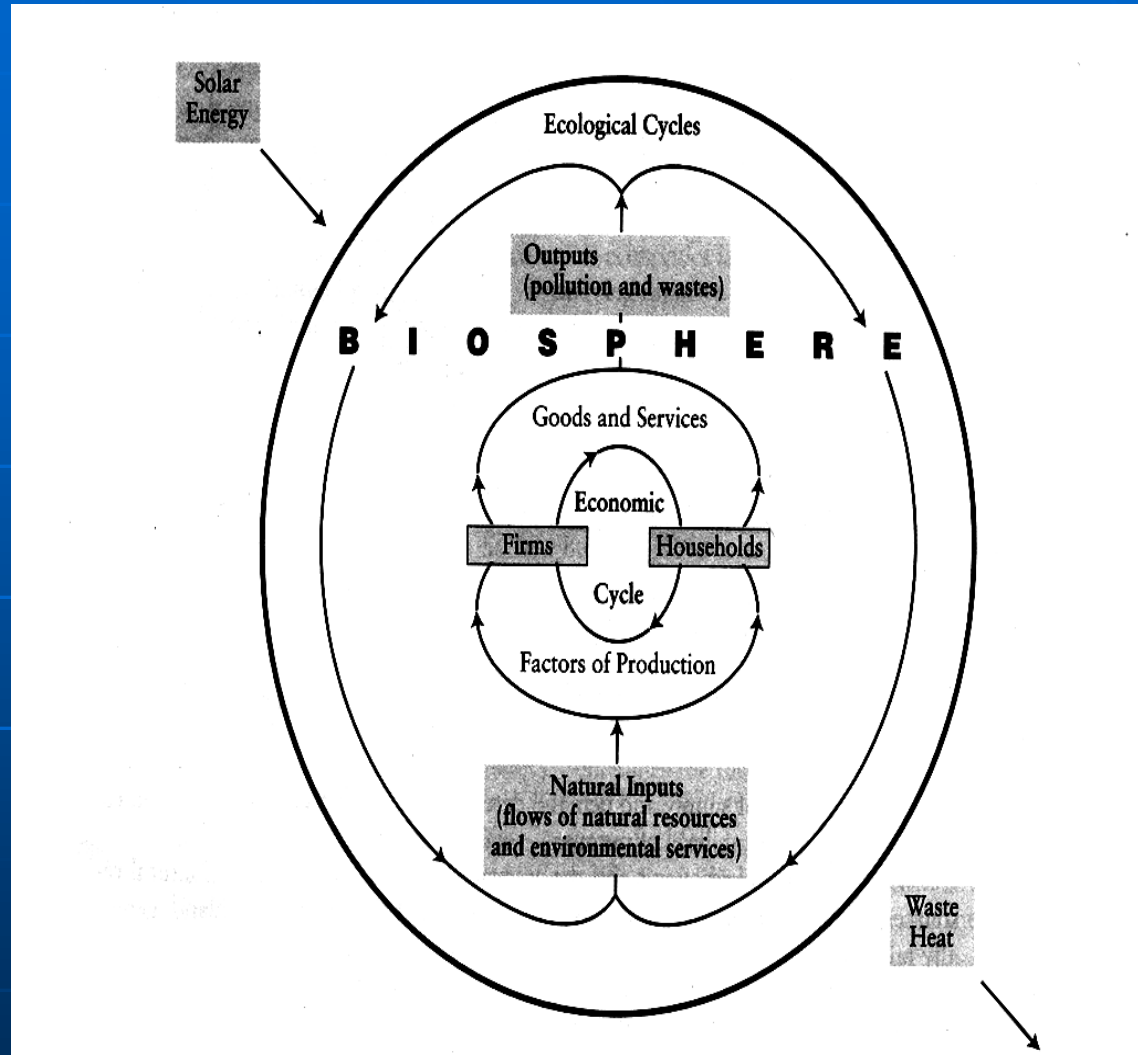


## Markets fail:

- Scale: Sustainability
- Distribution: Justice
- Allocation: efficiency

## Which policy comes first?

Once NR are scarce, they become valuable assets, and the question of who owns them must be answered. That is an issue of distribution







**The MS Emma Maersk, which weighs 170,000 tons (190,400 U.S. tons) and is operated by a crew of 13 is the largest vessel at sea, a quarter of a mile long, 200ft (60 meters) high and powered by the biggest diesel engine ever built. Among goods packed into 11,000 containers are two million Christmas decorations, 12,800 MP3 players, 33,000 cocktail shakers, 150 tons (168 U.S. tons) of New Zealand lamb, thousands of frozen chickens and 138,000 tins of cat food.**

Too much cargo or inefficient allocation?



# Agricultural crop sector

In FY 1996-1997 Crop contribution to GDP was 15.21% and In FY 2005-2006 it was 12.19%

In FY 1996-1997 Fertilizer use was 30.23 lakh mt and In FY 2005-2006 it was 36.83 Lakh mt

In FY 2005-2006 Tk 1200 crore has been provisioned to ensure the availability of agricultural input.

Source: Bangladesh economic review 2006

- High Yield crop production requires excessive use of inorganic fertilizers which cause soil degradation.
- Classical and Neo-classical Economy does not consider the cost of soil degradation



# 2nd part— Independent research

## Natural Resource Stock and Depletion Accounts in the National Accounting System of Bangladesh

- study and examine current practices and methodologies of BBS
- identify possible shortcomings and barriers
- identify possible gaps between the supply of and demand for the tools of environmental accounting and social accounting
- interview, consult and discuss with key decision makers, experts, researchers and scientists about the utility and importance of natural resource accounts.

# Examination

Natural resources are under pressure

- Land degradation
- Desertification
- Deforestation
- Loss of wetlands
- Loss of species
- Underground water scarcity and water degradation
- Loss of agricultural land
- Loss of forest land
- Decline in fisheries

There is no clear official statistics on the issues. But many academic literatures, media report made serious concern about resource scarcity, degradation and depletion.

Bangladesh Country  
Environmental Analysis,  
The World Bank, 2006

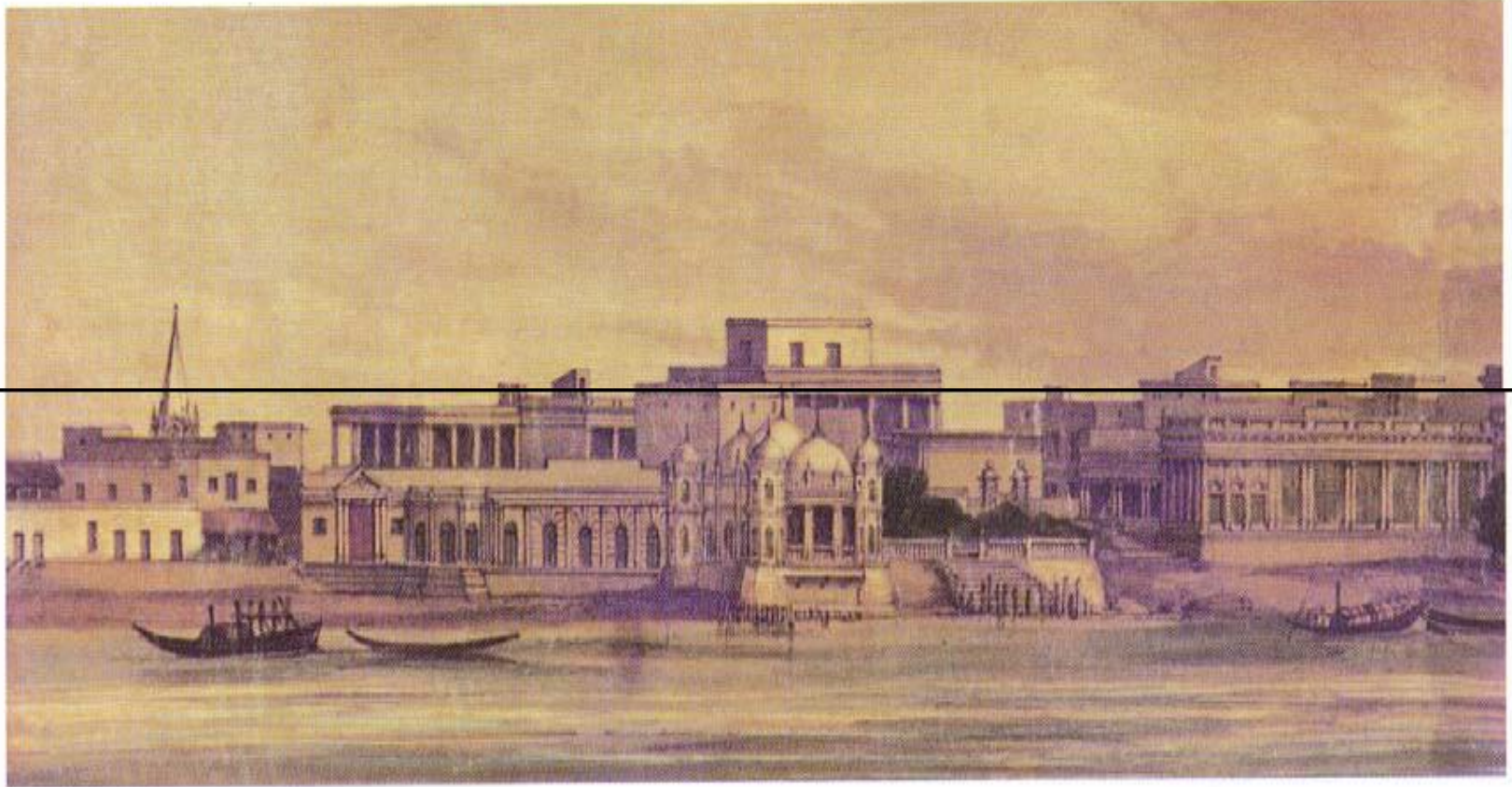
Bangladesh National  
Conservation  
Strategy ,2007

# Diagnosis

What Bangladesh is doing  
with its natural resources

Case of Buriganga River

## The Buriganga River, Dhaka, 1840



*The Babubazar area of Dhaka in 1840, showing the residence and mosque of Mirza Ghulam Pir and Rev. Leonard's residence*

# The Buriganga River, Dhaka, 19<sup>th</sup> Century



*The Dhaka Sugar Company works (popularly known as the mill barracks) and the manager's residence*



Today...



Lets examine why the situation is so dire.

# Unregulated disposal of solid waste, industrial waste in rivers around Dhaka



# Boats/Ships Transportation, Dredging, Spoil Disposal, Sandmining, Upstream Erosion and Sedimentation

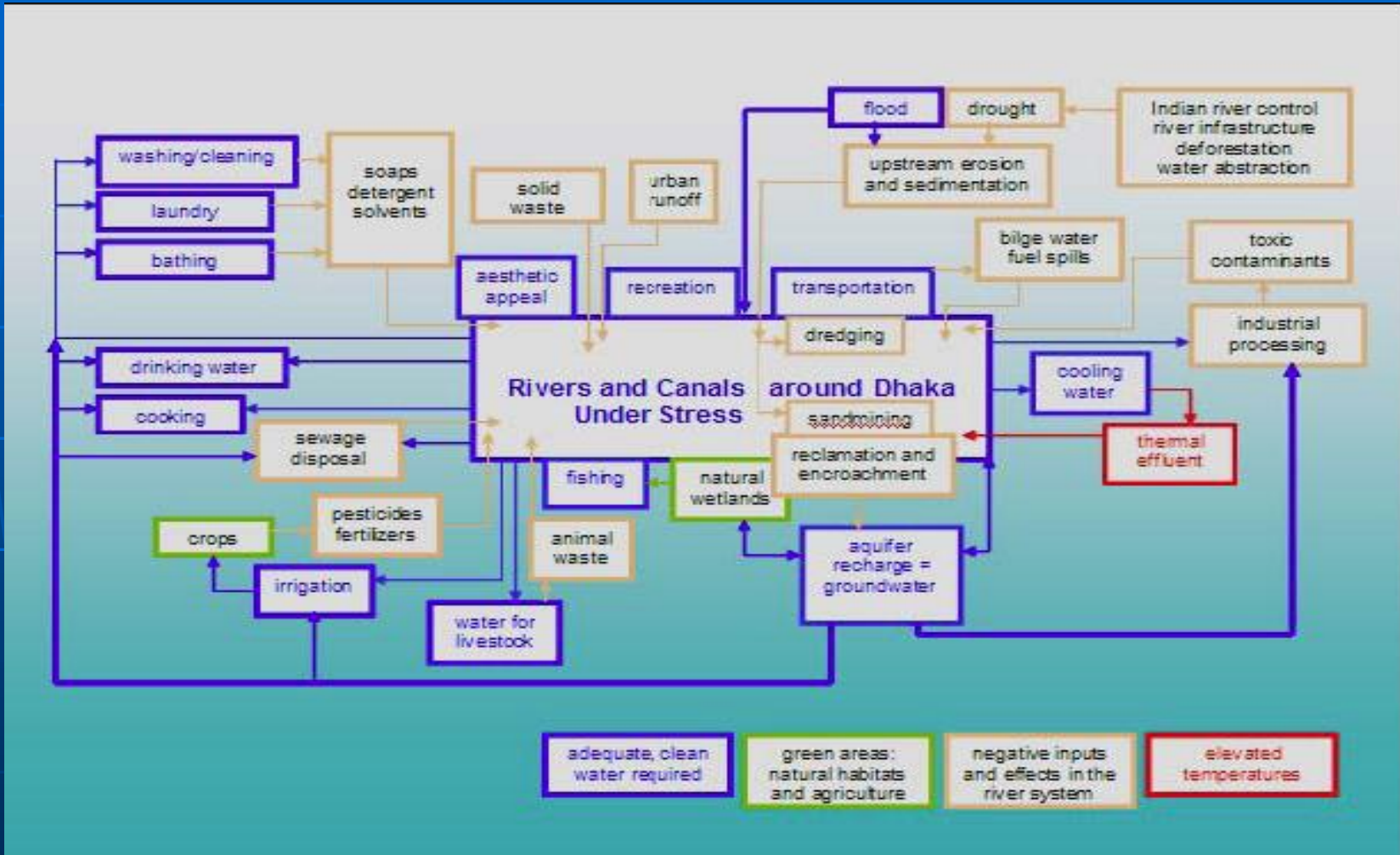


# Unregulated development ,Decreasing the Quality of Fish Habitat in the Buriganga river.

## Discharge of thermal effluent , oil, fuel, and grey water



All the issues that affect the quality of the water in the Buriganga River are depicted in the conceptual model below.



While intensive forest plantation and conservation efforts are on the rise, primary forests continue to become degraded or converted to other purposes at alarming rate in some regions



Illegal felling



Plantation in Gazipur sal forest zone during harvest  
Clear-cut is a fundamental feature of plantation



Illegal papaya plantation on the public forest land in Modhupur



Banana plantation in Modhupur sal forest has replaced a vast tract of forestland

# Natural resource accounting

## **Objectives:**

- A major purpose of expanding natural resource stock and depletion accounts in the national accounting system is its capability to assist in the understanding and management of potential trade offs between conventional economic development and environmental goals as a tool of policy formulation.

# Classification of Natural Resources

- **Natural Resources as economic asset:**

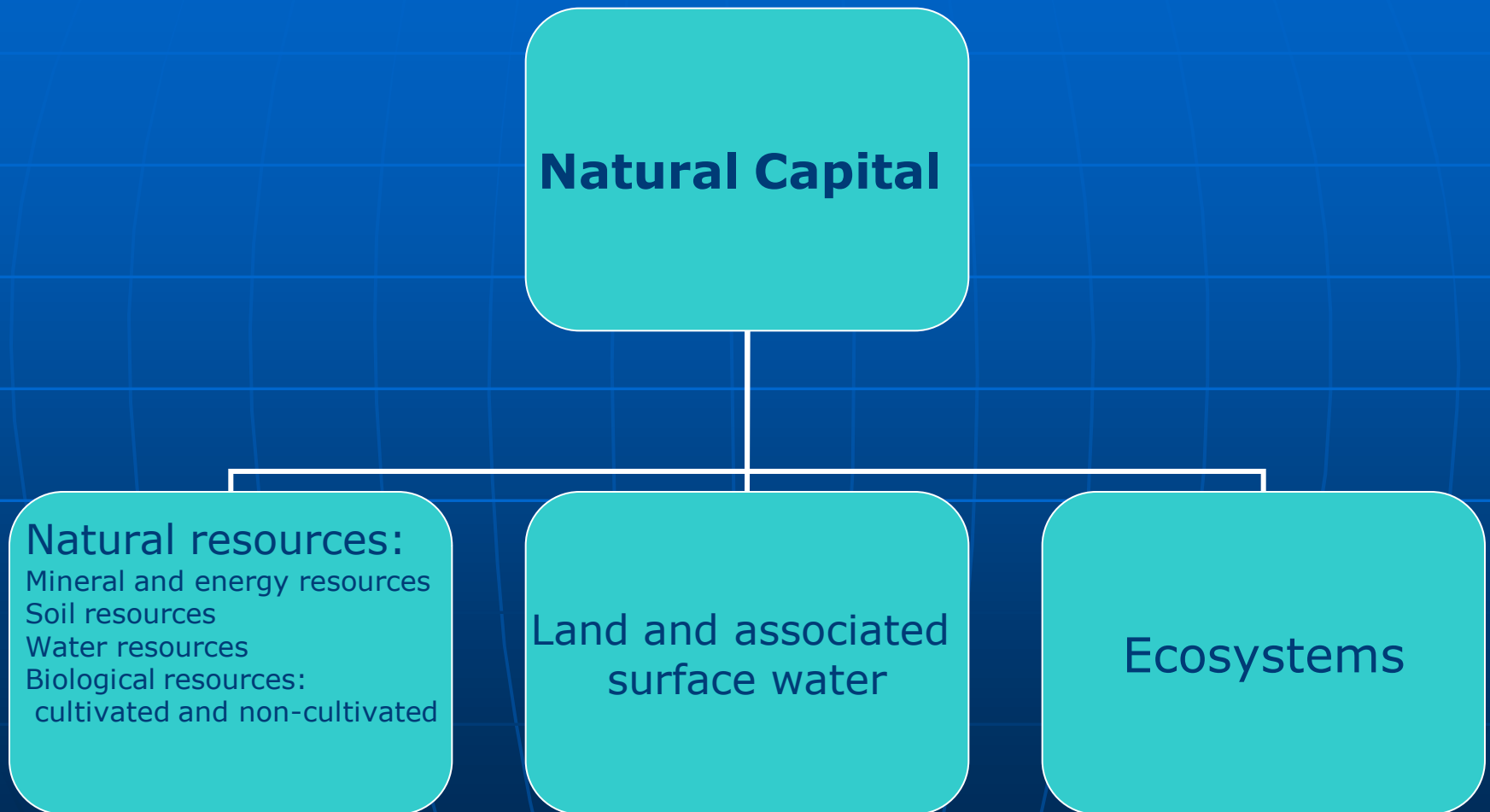
According to SNA 93, naturally occurring assets over which ownership rights have been established and are effectively enforced, are qualify as economic assets and are to be recorded in balance sheets such as land, water, timber.

- **Natural Resources as non-economic asset:**

Natural resources over which ownership rights cannot be considered economic assets in the SNA93 senses. These include resources such as air, major water bodies and ecosystems that are so vast or uncontrollable that effective ownership rights cannot be enforced. Likewise whose existence has not been proven by exploration and development or that are currently inaccessible are also not considered economic assets.



# Broad classification under SEEA



# Natural Resources:

## Renewable :

- agricultural lands,
- recreational areas,
- forests,
- lakes,
- streams,
- grasslands,
- wetlands,
- fisheries, and
- wildlife

## Nonrenewable:

- reserves of mineral fuels (petroleum, natural gas, coal, and uranium),
- nonfuel minerals (namely lead, copper, and gold), and groundwater.

# Evolution of Natural resource accounts

- In classical economics, economists had regarded income as the return on three kinds of assets: natural resources, human resources, and invested capital (land, labour, and capital, in their vocabulary).
- The neo-classical economists identified externalities in economics (emergence of environmental economics) but virtually dropped natural resources from their model and concentrated on labour and invested capital.
- When these theories were applied after World War II to problems of economic development in the third world, human resources were also left out on the grounds that labour was always surplus, and development was seen almost entirely as a matter of savings and investment in physical capital. As a result, there is a dangerous asymmetry today in the way we measure economic progress, and hence, in the way we think about the value of natural resources.

# The Institutional History of natural resource accounting

- The notion of quantifying and valuing the environment is not new – discussions and theories have been around for at least 60 years- only since the early 1970s. After a period of rapid economic development following the Second World War, voices of concern were to be heard on behalf of the environment.
- At the international level, several important books “Resources for the Future, “The Silent Spring” (Carson, 1962), and Limits to Growth (Meadows et al., 1972) provided background for this concern.
- The 1972 UN first (Stockholm) Conference on the Human and Environment to consider the state of the earth.
- The 1987 World Commission on Environment and Development, made a highly influential report “Our Common Future”. In this report the commission noted the integrated environmental and economic accounting with its call for “an annual report and audit on changes in environmental quality and in the stock of the nation’s environmental resource assets are essential to obtain an accurate picture of the true health and wealth of the national economy (World Commission on Environment and Development, 1987: p. 314).
- The 1992 Rio earth summit: proposed “a programme to develop national systems of integrated environmental and economic accounting in all countries” (UN, 1994, Para. 8.41).
- The 2002 Johannesburg Summit did not mention environmental accounting but encourage further work on indicator for sustainable development” (UN, 2003, Para. 130).

# Let's see what the position of Bangladesh in this arena is

- The National Environmental Management Action Plan (NEMAP), 1995, is a plan of the Government of Bangladesh prepared by the Ministry of Environment and Forest to identify key environmental issues to promote sustainable development. It is an initiative that reiterates Bangladesh's commitment to Agenda 21.
- Follow up of NEMAP, A large umbrella projects: SEMP. Among 26 components of SEMP, **Main-streaming environment in national planning: Natural resource accounting, environmental statistics**. Implemented by BBS. The first Compendium of Environment Statistics, 1997 was prepared. It was first and last initiatives.

## Academic literature:

- Ahmad, Q. K., Nishat, A., Chowdhury, Q.I., Haque, A.K. and Rahman, A. (Eds., 1999). *Environmental Economics in Bangladesh*. Dhaka, Bangladesh. IUCN and AGAB.
- Billah M, 2003, Green accounting: Tropical Experiences, Palok Publisher, Dhaka

# Lets examine why this area is not progressed

- Most of the policy makers are not fairly aware about the utility or importance of this accounting. They never raised this issue in policy process.( Except, M/0 agriculture, Environment)
- Bureau of Statistics does not have any vision for such accounts
- If the demand for these data had been forthcoming from the powerful planning agencies instead of from the much weaker environmental protection agency, the avoidance behavior of Statistical offices would not have happened (CIDA, 1993)
- Natural resource accounting should be demand use, not supply use (IUCN,)

# Identify Possible Shortcomings and Barriers of BBS

- The great aggregates of BBS analysis are consumption, savings, investments, and government expenditure are carefully defined and measured.
- Man made assets –buildings and equipments are valued as productive capital, and are written off against the value of production as they depreciate
- BBS largely ignored the productive role of natural resources. Their loss entails no debit charge against current income. We cut down our trees, erode its soil, hunt its wildlife and fisheries to extinction, but measured income would not be affected as these assets disappeared.
- BBS takes no account of the depletion of natural resources;
- Lack of reliable micro data to initiate a new accounts
- Lack of more realistic input-output balance sheet
- Lack of expertise
- Lack of efficient manpower
- Lack of resources
- Lack of political and bureaucratic commitment
- Lack of freedom of BBS

# Natural Resource Asset Accounts

- Natural Resource Asset Accounts follow the structure of the asset accounts of the SNA, with data for opening stocks, closing stocks, and changes during the year.
- The changes that occur during the period are divided into those that are the result of economic activities, for example extraction of minerals, harvesting of forests. And those that are the result of natural processes for example, growths, births and deaths.



# Should a farmer cut and sell the timber in his wood to raise money for a new shelter

- The acquisition of a new asset, the shelter
- The loss of an old asset, the timber
- In the national accounts, however, income and investment would rise as the shelter is built, but income would also rise as the wood is cut.
- Nowhere is the loss of a valuable asset reflected.
- This can lead a serious miscalculation of the development potential of resource-dependent economies by confusing gross and net capital formation.
- If the same farmer used the proceeds from his timber sale to finance a winter clothes, he would be poorer and no longer able to afford the shelter, but national income would only register a gain, not a loss in wealth.
- So income generated from running down capital should not be added to income



Example of Asset Use and Income Concept

# Forest benefits:

- Renewable raw material
- Energy
- Protect land and water
- Provide recreational facility
- Mitigate Climate Change
- Maintain biological diversity
- Improve air quality
- Create tourism
- Education
- Help alleviate poverty
- Conservation of cultural and spiritual sites
- Social services

# Forest Account:

- We are taking into account forest products in the national accounts classified into two major groups: 1) Major products comprising industrial wood( timber, round wood, match and pulp) and fuelwood( firewood and charcoal wood) and 2) minor products such as bamboo, fodder, sandalwood, honey, gum, leaves etc.
- But much of this consists of non-market production, which should be fully included in the national accounts according to SNA 93. But in practice, much of the production, and use of non-market forest products is poorly measured and , hence, underestimated in national accounts. Hence, there is a need for incorporating the forest resources into the national accounts.

# How forest resources can be integrated into the national accounts using the SEEA framework

## Physical Accounts:

It include information about natural characteristics of the forest and its uses

## Physical Asset Accounts generally have the following format:

- Opening Stocks
  - Changes due to economic activities
  - Other changes
- Closing stocks

While the physical accounts for forestland and timber all follow this general format, the detailed components are slightly different for each

# Physical accounts for forest land

Opening stock

- + Changes in forest land
  - + Natural expansion and afforestation
  - Net transfer of forest land to non-forest uses (through deforestation or degradation)
  - Loss of forest land due to shifting cultivation
  - + Net reclassification and other changes
- = Closing stocks

# Physical Accounts for Timber

Opening stock

+ Changes due to economic activities

- Logging and logging damage
- Forest encroachment and shifting cultivation
- Loss due to livestock grazing

+ Afforestation

+ Other accumulations

+ Changes due to natural causes

- + Natural growth
- + Natural regeneration

+ Changes due to reclassification

+ Net transfer of land

+ Other volume changes

- Stand mortality
- Forest fires and pest damage

= Closing stocks

# Measuring depletion

Depletion is defined in the SNA93 (12.29 and 12.30) as the:

'...reduction in the value of deposits of subsoil assets as a result of the physical removal and using up of the assets, ... the depletion of water resources, and the depletion of natural forests, fish stocks in the open seas and other non-cultivated biological resources as a result of harvesting, forest clearance, or other use.'

# Measuring depletion

- The valuation of the depletion of renewable assets presents a different set of issues to non-renewable assets, as it may be possible to replace (over time) the part of the asset that is used in the current period. Where a forest is harvested sustainably, no depletion adjustment is required.
- In principle, the best approach would be to calculate both depletion and addition adjustments as this allows for the two impacts to be explicitly identified. Depletion is calculated as the change in the NPV of the forest arising from the harvesting of timber (similar to subsoil assets). The value of additions is the NPV of the growth in any one year. The compilation of this series requires data on the annual increase in forest cover.
- SEEA suggests that either depletion and additions can be calculated separately, or that just the net depletion could be calculated. Where old-growth will not be replaced, only a depletion adjustment will apply. In some areas, however, old-growth forest will become second-growth forest. Where extractions (i.e. timber harvesting) still exceed growth, depletion should exceed additions. Once the transition period from old-growth forest to second-growth forest is complete, growth may exceed harvest. In this case yield can be considered economically sustainable.



# Why a National Accounting approach to the Natural Resource Accounts?

- First, the national accounting framework is well-established, having a history of more than 50 years of implementation around the world.
- Second, the national accounts are a very influential source of economic information. Environmental information linked with the national accounts can, therefore, be quickly and easily integrated into existing economic decision-making processes.

# Policy uses of Natural Resource Accounting

- # Measuring physical scarcity of natural resources;
- # Improving resource management: generating empirical evidence of over exploitation;
- # Establishing a balance sheet of resource sectors: analysis of sectoral economic performance ( e.g. productivity) taking into account resource depletion;
- # Measuring total wealth in examining policies for sustainable development;
- # Measuring the efficiency of natural resource use by economic sector
- # Dealing with aspects of international trade;
- # Analyzing structural changes in the economy
- # Measuring the sectoral costs associated with government regulation and policy

# The following questions the Natural Resource Accounts may help to answer

- Are stocks of natural capital, in both value and physical terms, being maintained in Bangladesh?
- What are the flows of raw materials associated with economic activity? Who uses these flows (industries, households or government)? Are these flows on the increase or decrease, both in total and per unit of economic activity?
- What are the patterns of land use in Bangladesh? Are stocks of important land types, high quality agricultural land for example, being maintained?
- How much is spent to protect the environment? Who makes these expenditures? Are they increasing or decreasing and why?

# Importance of Natural Resource Accounting in Fiscal policy making

## A suicidal decision

- An interministerial meeting in April 1990 permitted KNM to extract 133,140 m<sup>3</sup>/A until there was a noticeable decrease in the growing stock. At this reduced level of harvesting there was no Gewa available to the factories.
- Now the production of KNM is totally closed due to shortage of raw material.
- Khulna Newsprint Mills Ltd. production was adversely affected due to shortage of Gewa wood supply from forest department



# Prescription for the new accounts

- Institutional reform

Environmental accounting division with specific natural resource account units under national accounting wing (**Specialist Requirements within the Divisional Structure**). **Valuation Specialist requires this specialised knowledge for the valuation of existing natural resource stock accounts. New funding via BBS.** Build a team to compile the accounts

- Some first steps for natural resource stock accounts.

- # Inventory of natural resources

- # Start with a sectoral accounting with physical and monetary accounts

- # Follow the methodology of SEEA 2003.

- # Follow developed countries( Canada, Australia) methodology to measure depletion of natural resources

- Learning by doing is the best approach

# Reference for future work

- 1. London group on Environmental Accounting  
<http://unstats.un.org/unsd/envaccounting/londongroup/>
- 2. United Nations, Handbook on Integrated Environmental and Economic Accounting (specifically, chapter 10, pages 490-510)  
<http://unstats.un.org/unsd/envAccounting/seea2003.pdf>
- 3. Australian Bureau of Statistics - Accounting for the environment in the national accounts  
<http://www.abs.gov.au/AUSSTATS/abs@.nsf/Previousproducts/5206.0Feature%20Article80Sep%202002?opendocument&tabname=Summary&prodno=5206.0&issue=Sep%202002&num=&view=>

**I appreciate your kind attention and  
cooperation**

**Thank You**

**"Learning to live within the limits of planet  
Earth in justice and in peace is the  
fundamental challenge of the twenty first  
century."**