

ENVIRONMENT, DEVELOPMENT, & SOCIETY [ESD]

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LECTURE SLIDES: I-2



HUMAN PROGRESS – WHAT IS IT, A GOAL, A PATH?



---discussions often refer to stages of human and social evolution, material development and the appropriation of nature ---in space and time

society is dynamic and our knowledge of the world has evolved over time

See: <https://datacommons.org/place/Earth?category=Demographics>, for some changes in population stats

A word cloud centered around the word "development". The word "development" is the largest and most prominent, rendered in a light gray, sans-serif font. Surrounding it are various other words in different sizes, orientations, and colors (primarily dark red and black). The words are arranged in a roughly circular pattern around the central word. The background is white, and the entire image is set against a dark gray border.

development

needed
world
subjective
perspective
common
process
leading
potential
managing
capabilities
Vulnerability
participation
collective
Empowering
happiness
opportunities
shape
Assets
values
Sustainable
known
program
lived
targetable

NATURE VS HUMANS HAVE CULTURE

- **Ecology** understands the relationship of living organisms to one another and to their physical environment [biotic and non-biotic components]
- **Environment** refers to surroundings, or the contexts within which humans, animals, plants, and other material objects exist. Also commonly used to refer to the conditions under which we live and work.
- **Human-nature relationships** have evolved and changed over time and science and technology has bred an ethic of not merely knowing but also mastery, dominance, and supremacy on planet Earth and in the Universe
- **Culture** (religion, science, philosophy, politics, market) has shaped our relation with the environment and others (societies, groups) that has been value-laden & hierarchical (devalued, dehumanized, colonized, subjugated some)
- Humans first [anthropocentric and chauvinistic) and placed at centre of everything or we account for intrinsic non-instrumental value of non-human living beings and bio-physical environment [biocentric; nature-centered and eco-centric view]

GROWTH – NATURE AND FORM

- Growth as a linear process
- a quantity is growing linearly when it increases by a constant amount in a constant time period [child's height]
- A quantity exhibits exponential growth when it increases by a constant percentage of the whole in a constant time period [growth of bacteria] – is common in financial, biological and many other systems.

People refer to it as doubling time or the time it takes a growing quantity to double in size [rate of growth].

Dynamic system as it involves elements that change over time as many quantities are growing/changing simultaneously in a system

Malthus - Population naturally tends to grow geometrically and exponentially.



CONCEPTS

- Cumulative knowledge and intelligence transmission over generations distinguishes us and makes us masters/custodians of earth's heritage
- Growth and Economic Growth
- Development and Human Development
 - Are their limits to growth?
 - Are their limits to earth's carrying capacity?
- Environmental quality [degradation, depletion, conservation, sustainability] and Sustainable Development
- Age of Anthropocene
- From Millennium development goals to Sustainable Development Goals – “One Earth and One world”

GROWTH AND DEVELOPMENT



OVERVIEW

- Growth often denotes the process of creating wealth
- Growth of human population and sub-division into nations (sub-division into territories, markets, income and trade) and competition over scarce resources
- Economic growth is an increase in the production of quantity and quality of economic goods and services that a society produces. Total income of a nation corresponds to the total sum of goods and services produced.

...Linear assumption of economic growth and development has been replaced...development as modernization [following western model of development]

BEYOND ECONOMIC DEVELOPMENT

- Economic development refers to programs, policies, and activities that seek to improve the well-being and quality of life of a community. Each community has its own opportunities, challenges, and priorities.
- Development, and under-development have co-existed pushing for a more complex understanding of socio-economic and political systems on a global level
 - ❖ *Field of development economics was born after WWII in late 1940s and was critiqued by political economists and sociologists*
 - ❖ *Macro-economic approach focused on national economic growth and increasing wealth of nations to overcome vicious cycle of poverty [1950-1975] but this was superseded by micro-perspective focusing on meeting human needs as growth failed to trickle down and was enhanced by idea of promoting human capital and achieving comprehensive development.*

HISTORICALLY..

Using the yardstick of development, historically divisions have persisted between :

- A. imperial North and colonized South;
- B. developing and developed countries;
- C. Four worlds: First World (capitalist economies), Second World (socialist economies), Third World (newly independent developing countries), and Fourth World (indigenous people within first world; synonymous with stateless, poor, and marginal nations. It can denote nations without a sovereign state, emphasizing the non-recognition and exclusion of ethnically- and religiously-defined peoples from the politico-economic world system, e.g. the Romani people worldwide)

...our world is evolving ...today we have a European Union; dominance of Chinese manufacturing sector in global economy – we are dealing with Russian invasion and attack on Ukraine [geo-political factors]

DIFFERENTIATING DEVELOPMENT FROM GROWTH



Amartya Sen: “economic growth is one aspect of the process of economic development”

Economic development is a policy intervention endeavor with aims of economic and social well-being of people, while economic growth is a phenomenon of market productivity and rise in GNP.

SEN & HUMAN DEVELOPMENT THEORY

- People are the real wealth of any nation
- **Capabilities** is an aggregation of abilities for an individual to realize what she wants/values.
- Development is thus about expanding the choices people have, to lead lives that they value, and improving the human condition so that people have the chance to lead full lives.
- Development can be seen as a process of expanding the real freedoms that people enjoy.
- Development is a continuous and momentous engagement with freedom's possibilities.
- **The basic objective of development is to create an enabling environment for people to enjoy long, healthy and creative lives.**

Internationally, an income of less than \$1.25 per day per head of purchasing power parity is defined as extreme poverty.



COMPREHENSIVE NATURE OF DEVELOPMENT

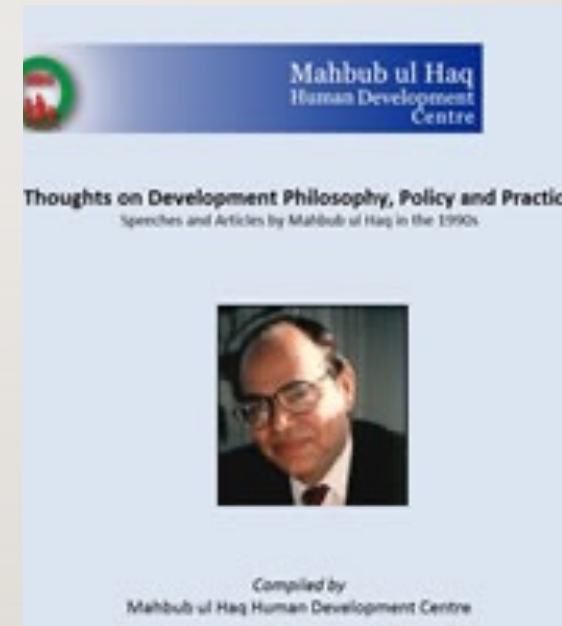
- ❖ Development is both an objective and the means of achieving freedom and developing capabilities
 - Enhanced by democracy and protection of human rights

DEVELOPMENT as FREEDOM

- constitutive (life and wellbeing)
- instrumental aspects (political, social, economic, transparency, human security)

DEVELOPMENT, CAPABILITIES, CHOICES

Amarty Sen and Mahbob Al Haq developed the HDI in 1990 while others such as Martha Nussbaum have added to our understanding and conceptualization of Human Development.



HUMAN DEVELOPMENT INDEX [HDI]

- ❖ Human development Index is created to empathize that people and their capabilities should be the ultimate criteria for assessing the development of a country, and not merely increase in wealth and economic growth
- ❖ Summary measure [geometric mean] comprising average achievement in three dimensions of human development, namely healthy and long life, being knowledgeable and having a decent standard of living
 - Health index – healthy life is measured by life expectancy at birth
 - Education index - Mean of years of schooling for adults aged 25 years and more and expectations of schooling for children of school-going age
 - GNI Index - Standard of living is measured by gross national income per capita
 - India's rank has fallen in range of 125-140 among 180-195 nations over last 2 decades

FACTORING ECOLOGICAL ISSUES IN DEVELOPMENT DISCOURSE



GOING BEYOND THE IPAT FORMULA



- The idea that the market will decide and arrive at ecological optimum is now disputed widely.
- Assessing ecological impact by the IPAT formula [$\text{Impact} = \text{Population} \times \text{affluence} \times \text{technology}$].
- Resource exploitation can lead to increased environmental degradation and impacts even if the overall consumption remains the same.

ARE THERE GOING TO BE LIMITS TO GROWTH?

FIVE MAJOR TRENDS OF GLOBAL CONCERN

(HAVING VARYING LOCAL IMPLICATIONS)

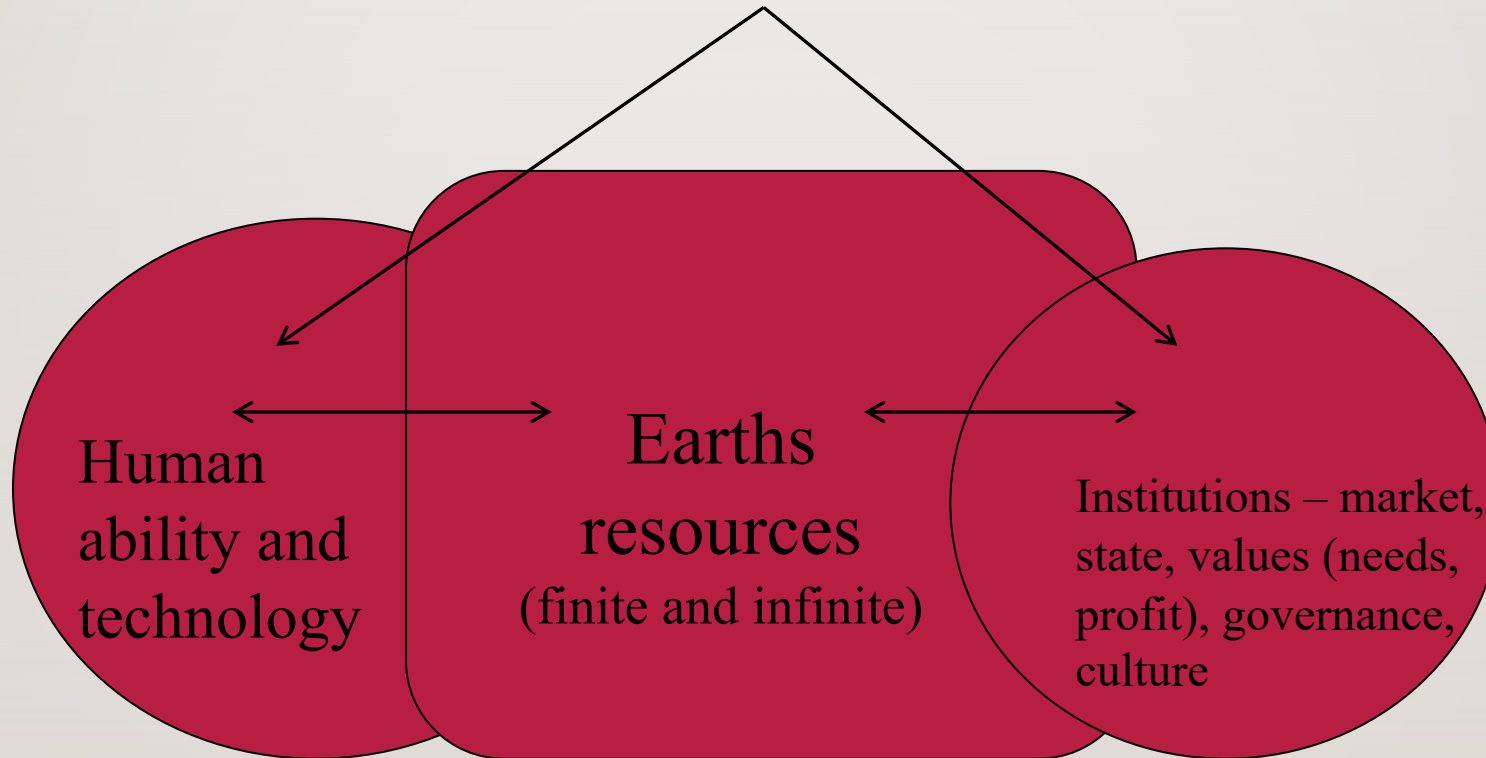
1. Accelerating industrialization
 2. Rapid population growth
 3. Widespread malnutrition
 4. Depletion of non-renewable resources
 5. Deteriorating environment
- All these are reporting exponential growth [a quantity exhibits exponential growth when it increases by a constant percentage of the whole in a constant time period] and constantly interacting with each other – system dynamics model
 - Each of these factors also feeds back to influence itself – how do we predict?
 - Faith in technology: Will new technology alter this tendency of growth and collapse? Is material growth desirable if it comes at a heavy ecological price?
 - Population has been modelled and studied in this model [pressure on resource base] – population growth and industrialization at current rate is not possible to sustain [Choices: mobility through a car such as Tata consuming fossil fuels vs EV and or solar battery powered car/e-rickshaw; can nuclear energy power the world?]
 - Limits to growth are visible – do we fight them or learn to live with them [lifestyle changes]

ECONOMIC GROWTH, CARRYING CAPACITY & RESILIENCE OF ENVIRONMENT [ARROW ET AL 1995]

- Inverted U shape curve: as income goes up there is increasing environmental degradation up to a point after which environmental quality improves. This applied to a few cases - North.
- In early stages of economic development, increased pollution is regarded as an acceptable side-effect of economic growth. When the country has achieved a certain high standard of living people start giving greater attention to environmental degradation and amenities. This leads to environmental legislations, and new regimes for regulating resource extraction etc.
- Stabilizing world population is a critical factor for achieving equilibrium [which countries have highest population growth rate? Look at Southern Asia & Sub-Saharan Africa and Southern America where majority of the world poor are also living [more than 60%]
- Market can not determine and we can not wait for it to decide levels of acceptability - Delays in society for society to absorb and adapt to change [policies, technology, shifts in norms]

Dynamic Systems

Human Population



Sustainable Development

CARRYING CAPACITY & ECOSYSTEM RESILIENCE

[ARROW ET AL 1995]

-
- Can we design global equilibrium? Such that basic needs of an individual are met while people have an equal opportunity to realize their human potential.
 - If human activities are to be sustained then we need to ensure that the ecological systems on which our economies depend are resilient. Our ecosystem comprises several inter-locking dynamic local systems.
 - Resilience is the magnitude of disturbance that can be absorbed before a system centered on one locally stable equilibrium flips to another.
 - Population has been modelled and studied in this model [pressure on resource base] – population growth and industrialization at current rate is not possible to sustain [Choices: mobility through a car such as a car consuming fossil fuels vs EV and or solar battery powered car/e-rickshaw; can nuclear energy power the world?]

Social side-effects of new technologies such as widening disparity and problems of shortages for poor and impact of environmental degradation on them

- Economic growth is not the panacea for environmental quality. What matters is the content of the growth?

The Ecological Footprint

MEASURES

how fast we consume resources and generate waste



Energy



Settlement



Timber & paper



Food & fibre



Seafood

COMPARED TO
how fast nature can absorb our waste and generate new resources.



Carbon Footprint

Built-up land



Forest

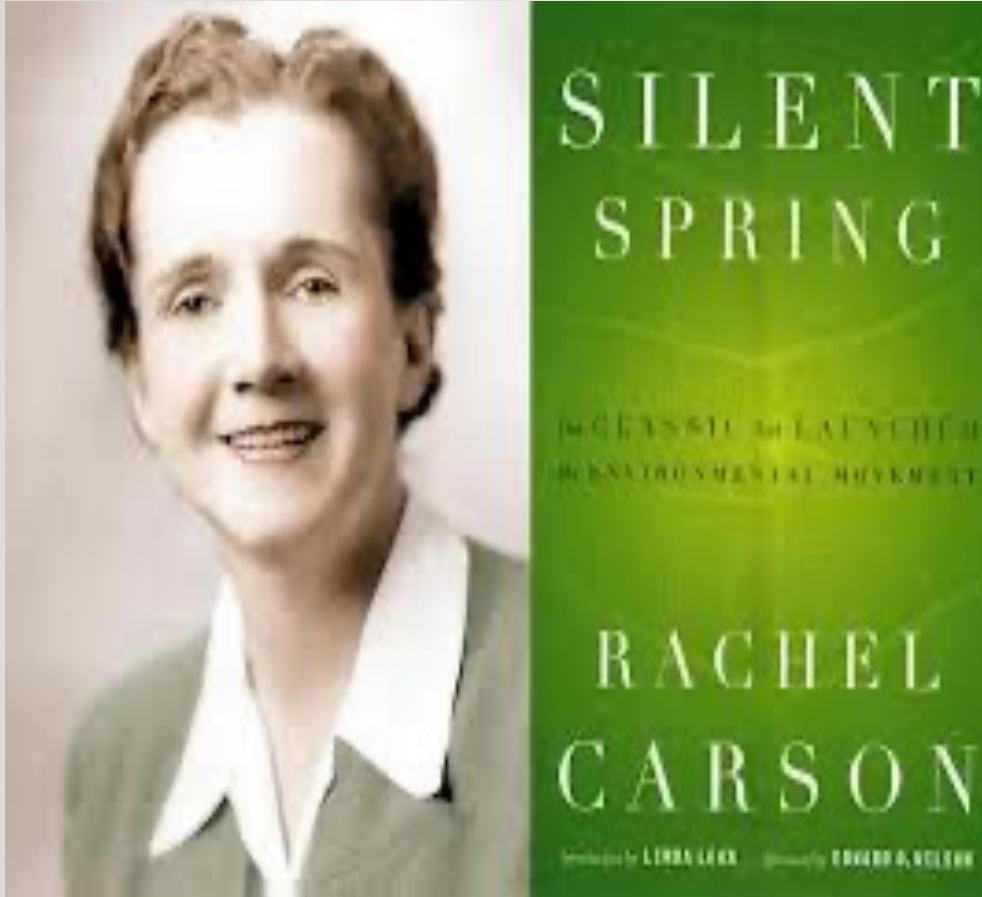
Cropland & pasture



Fisheries

IDEA OF ECOLOGICAL FOOTPRINT

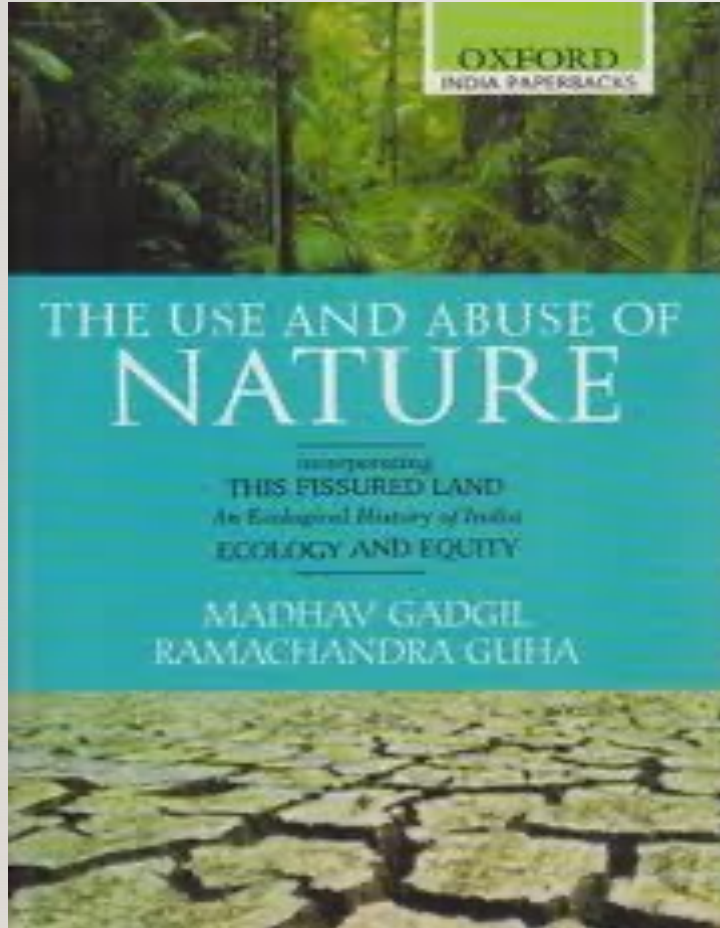
- Ecological footprint – measures human demand on the environment and ecosystem; appropriated carrying capacity /measuring bio-capacity.
- It is a standardized measure of demand for natural capital that may be contrasted with ecological capacity to regenerate.
- How much biologically productive land and sea area are necessary for sustaining and providing for a human population (consumption) and waste generated? While human population is ever-growing!



1960-80s: Technology was seen as the magic wand!

Silent Spring (1962) documented the detrimental effects of pesticides on the environment, particularly on birds. It facilitated the ban of the pesticide DDT in agriculture in the US.

The book is widely credited with helping launch the contemporary American environmental movement.



- Over-used resources of the planet. There is serious ecological debt of some nations such as UAE, USA and Finland that have the largest ecological footprints.
- WWF claims that human footprint has exceeded the biocapacity of the planet already by 20%.
- Calculate for yourself by going to www.earthday.org



In 1987, the famous Brundtland Report entitled *Our Common Future* argued that the development process should be aimed at meeting the needs of the present generation without compromising the ability of the future generations to meet their own needs



M.K. Gandhi

Earth provides enough to satisfy
every man's *need*, but not every

IN 1947, GANDHI WAS ASKED...

Would India be following the British model of development?

His reply, “It took Britain half the resources of the planet to achieve this prosperity. How many planets would a country like India require?”

