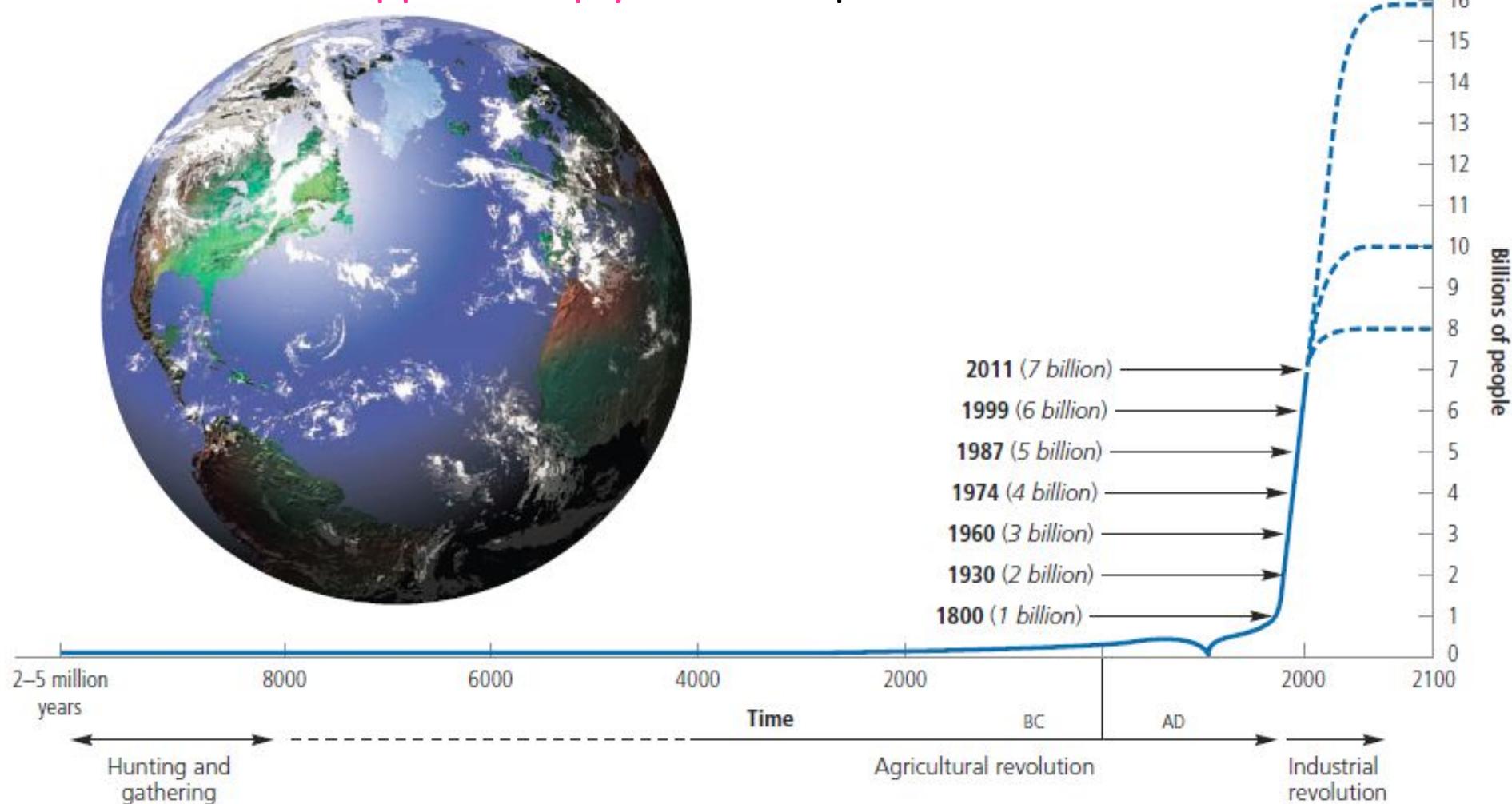


Module-4: Human Population and Environment

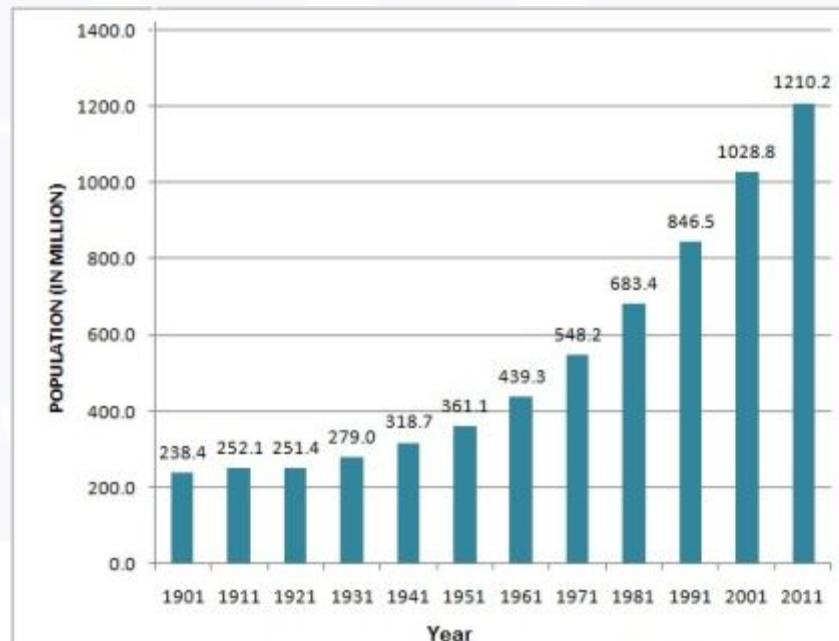
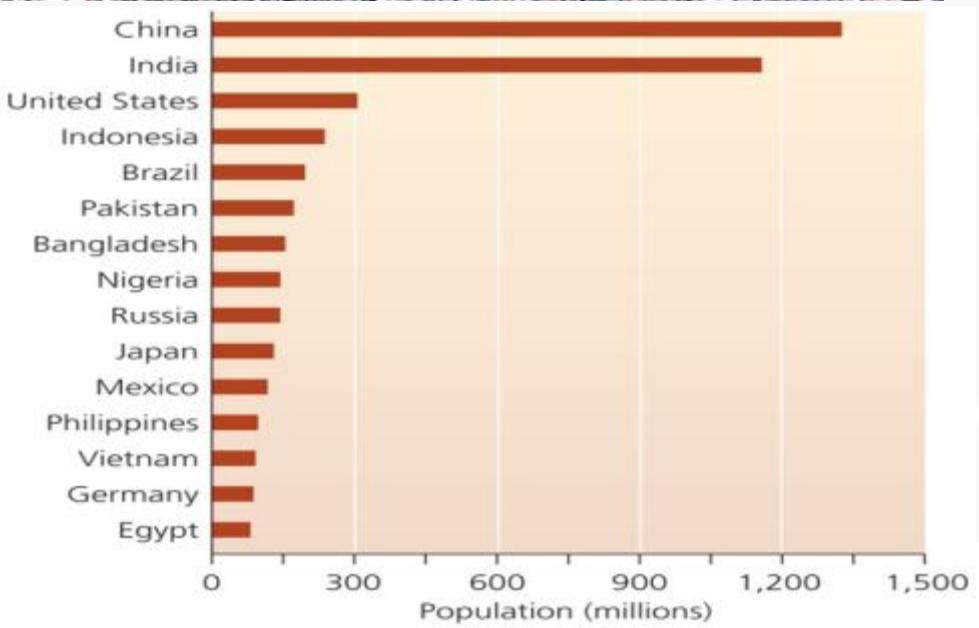
Dr. Dipankar Sutradhar
VIT Bhopal University

Global Population Growth

- Humans developed the **ability to expand into all climate zone** and habitat.
- Modern agriculture and technology allowed us to feed more people.
- Death rates dropped sharply due to improved sanitation and health care.



Population



Are there physical limits to human population growth and economic growth on a finite planet?

Reducing biodiversity



Increasing use of net primary productivity



Increasing genetic resistance in pest species and disease-causing bacteria



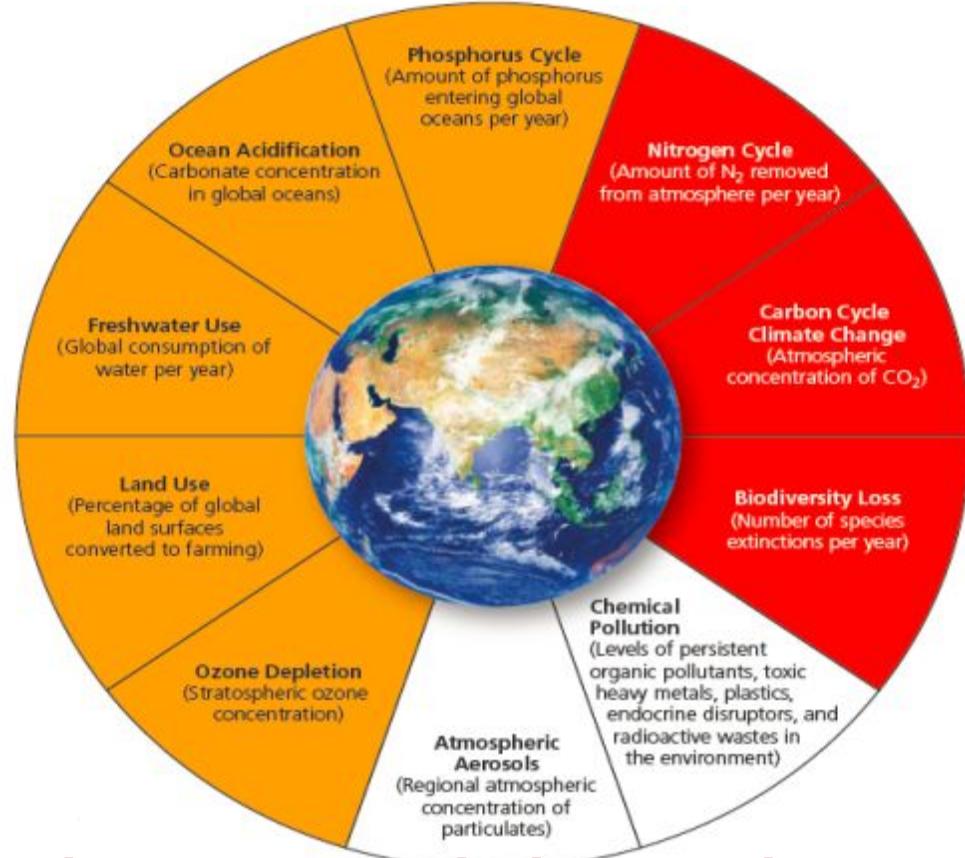
Eliminating many natural predators

Introducing harmful species into natural communities

Using some renewable resources faster than they can be replenished

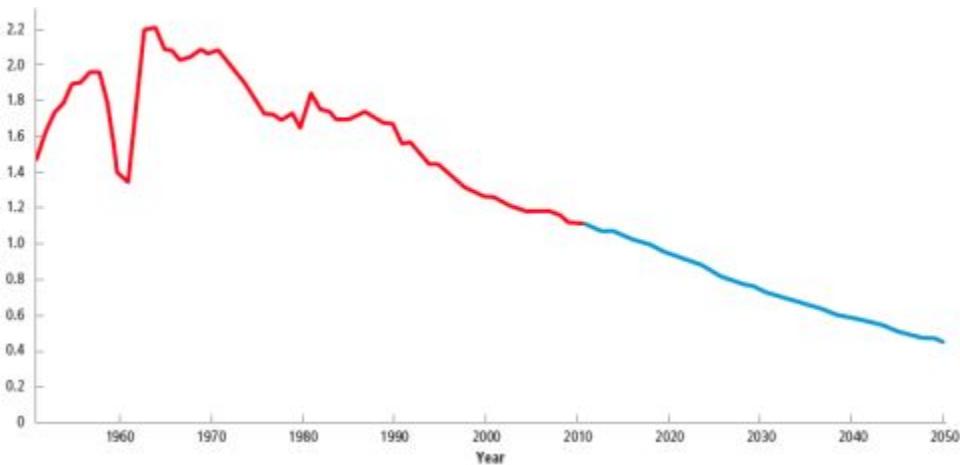
Disrupting natural chemical cycling and energy flow

Relying mostly on polluting and climate-changing fossil fuels



Do you think there are environmental limits to human population growth? If so, how close do you think we are to such limits? Very close, moderately close, or far away?

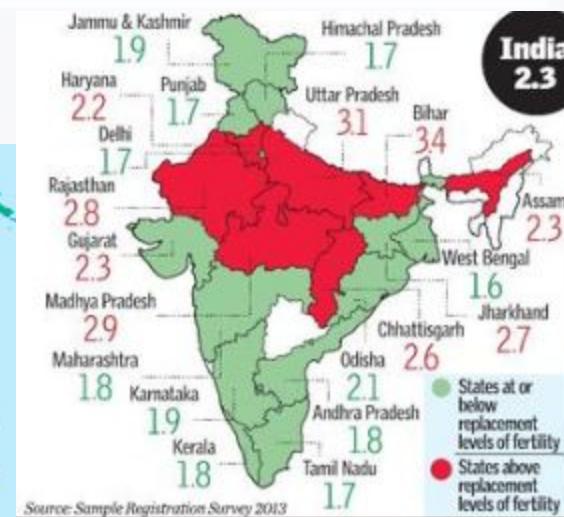
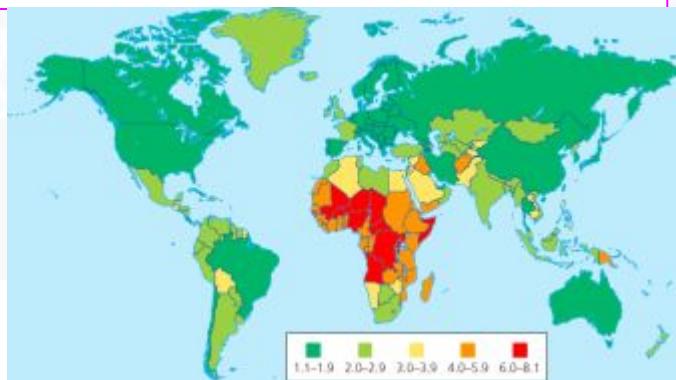
Global Population growth rate



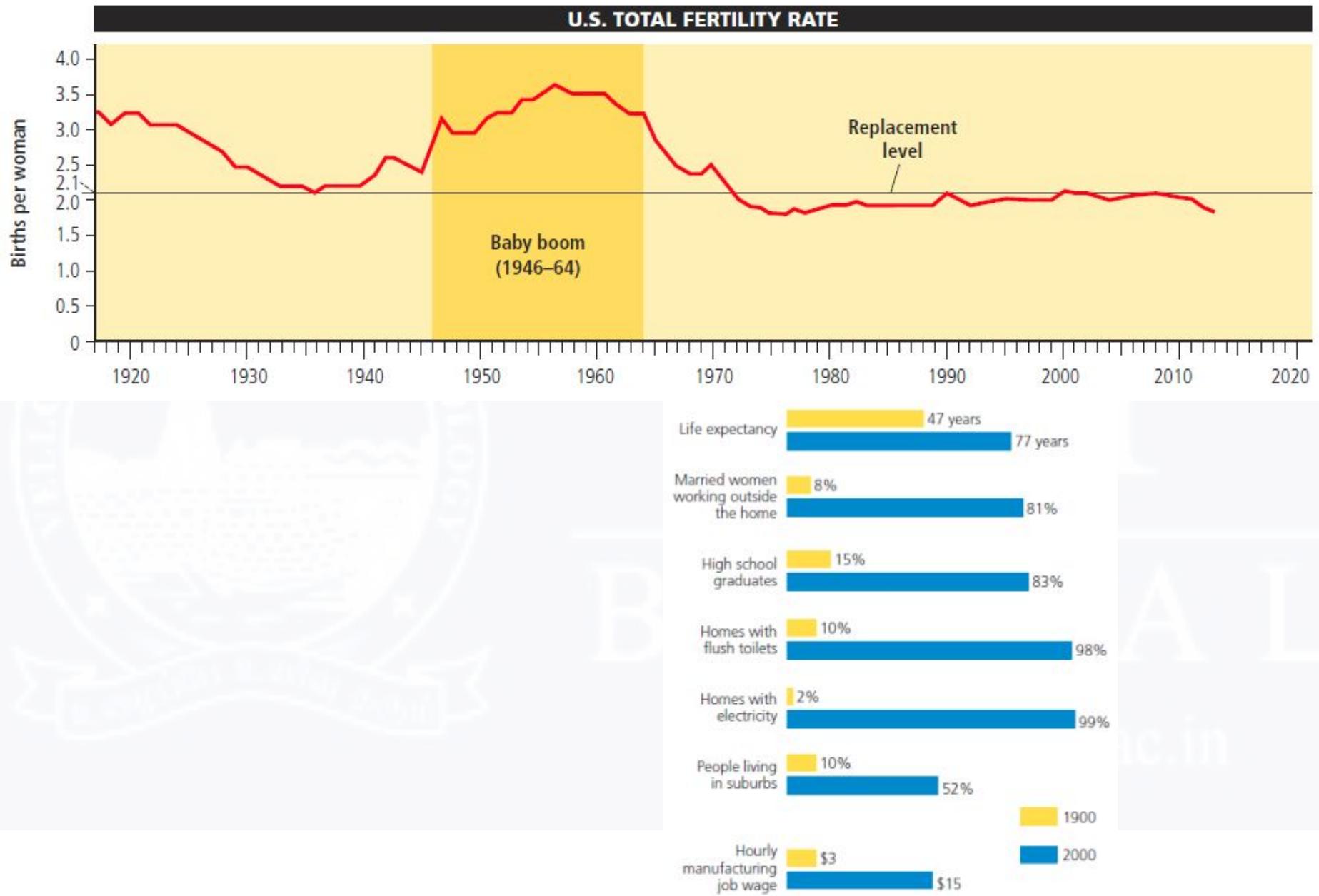
Country	Population Size	Population Growth Rate	Resource Use Per Person	Use of Harmful Technology	Use of Beneficial Technology	Overall Environmental Impact
High-Income Countries						
United States	316 million	Moderate (0.5%)	Very high	Moderate	High	High
Japan	128 million	Negative (-0.2%)	High	Moderate	High	Moderate
Germany	82 million	Negative (-0.2%)	High	Moderate	High	Moderate
Middle-Income Countries						
China	1.35 billion	Moderate (0.5%)	Low	High	Moderate	High
India	1.26 billion	High (1.5%)	Low	High	Low	High
Brazil	194 million	Moderate (1%)	Low	High	Moderate	Moderate
Low-Income Countries						
Nigeria	402 million	High (2.6%)	Very low	High	Low	Moderate
Bangladesh	228 million	High (1.6%)	Very low	High	Low	Moderate
Congo	194 million	High (2.8%)	Very low	High	Low	Moderate

- Population size **increases** through births and immigration,
 - Population size **decreases** through deaths and emigration.
 - **Total fertility rate:** size of a human population is the average number of children born to the women in that population.
 - TFR is 1.9 in developed nations and 4.7 developing nations, 1950 it was 6.1
 - **Replacement Level :**
 - **Infant Mortality Rate :**
 - The numbers of males and females in young, middle, and older age groups determine how fast a population grows or declines.

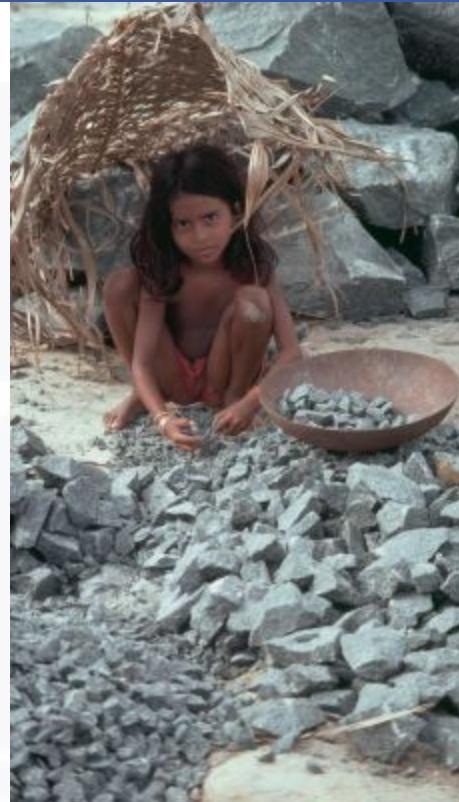
$$\text{Population change} = (\text{Births} + \text{Immigration}) - (\text{Deaths} + \text{Emigration})$$



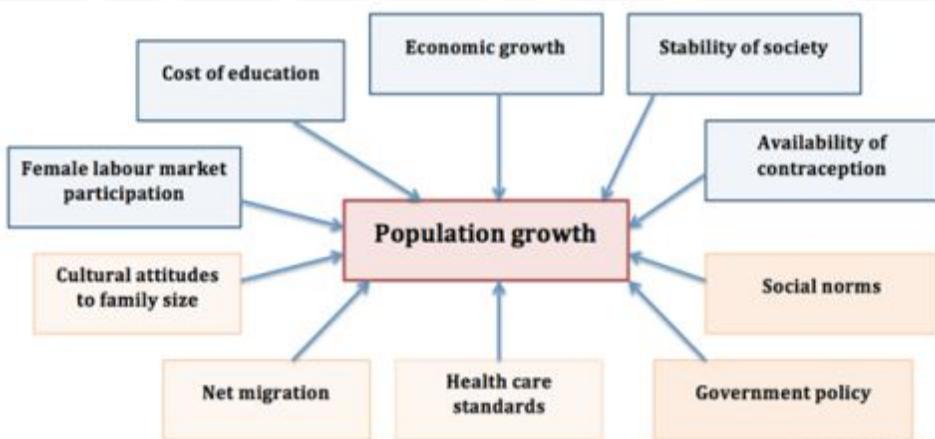
Critical Thinking



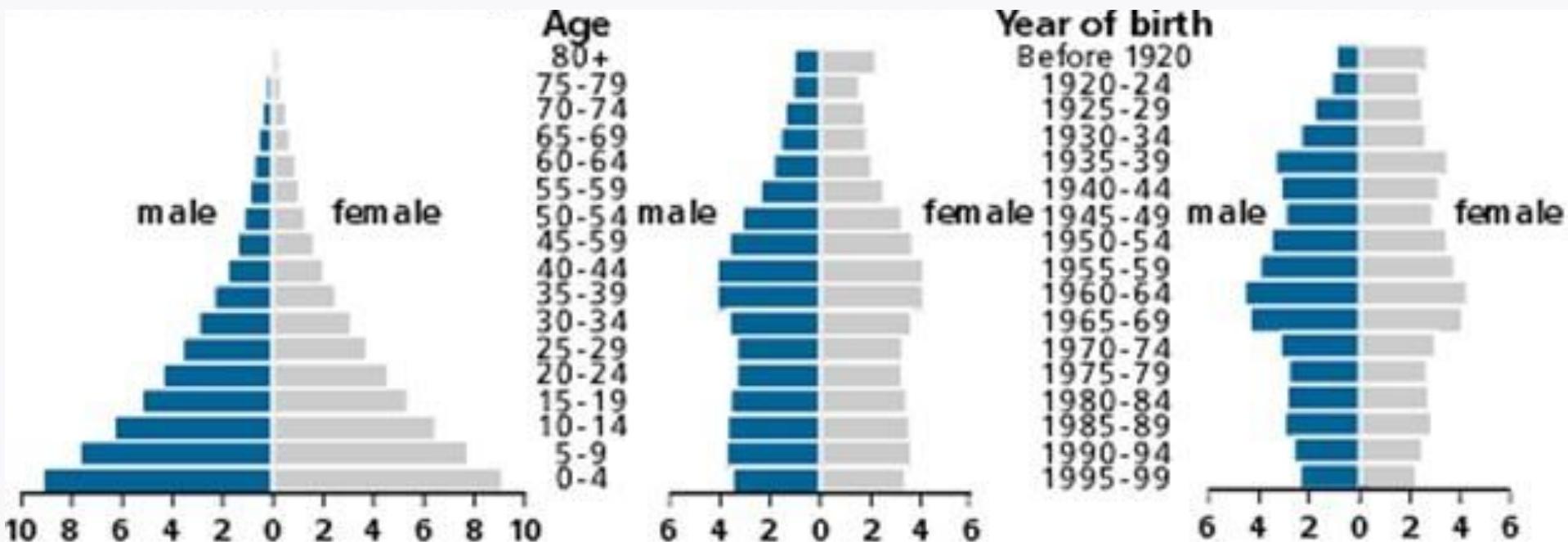
Factors Affect Birth and Fertility Rates



- *importance of children as a part of the labor force*
- *cost of raising and educating children.*
- family planning services
- Male female ratio
- Infant mortality ratio
- *Women empowerment.*
- *Average age at marriage*
- *Availability of legal abortions.*
- *Religious beliefs, traditions, and cultural norms*
- **Doubling time**
- **Total Fertility rates**
- **Age structure**

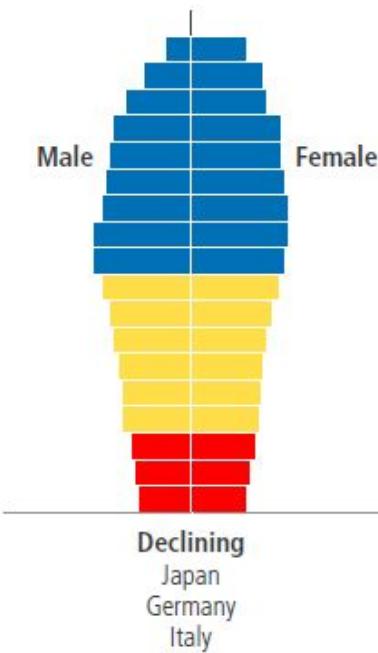
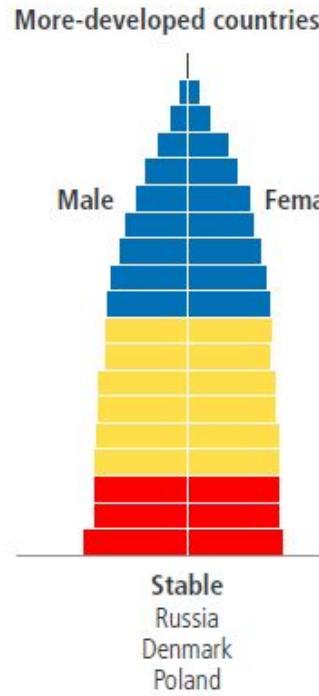
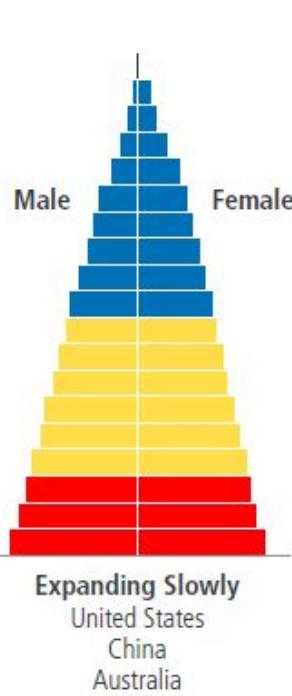
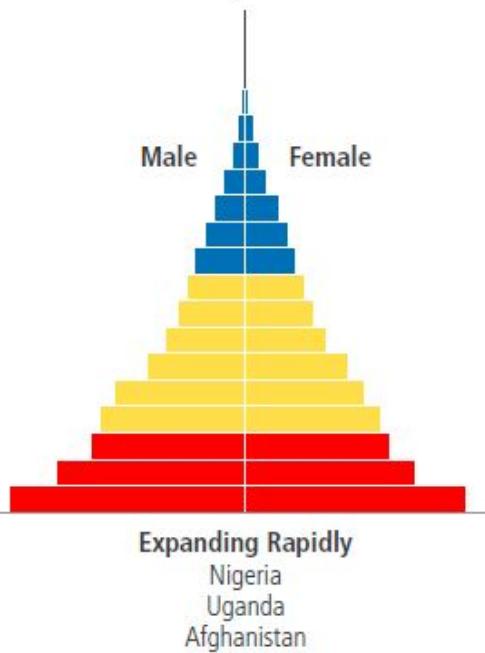


Growth Rate



Age structure Vs population growth/decline

Less-developed countries



Prereproductive ages 0-14

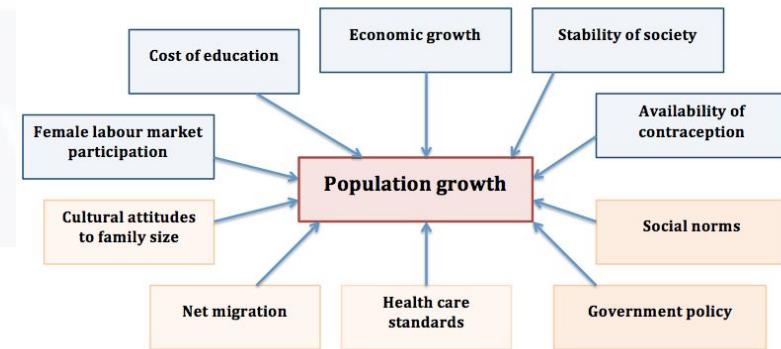
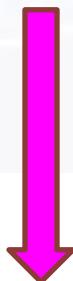
Reproductive ages 15-44

Postreproductive ages 45-85+

large percentage of its people younger than age 15 (wide base) will experience rapid population growth unless death rates rise sharply.
percentage of people age 65 or older increases, more countries will begin experiencing population declines.

Limiting the population growth

- only one way to limit the population growth / size
 - decrease the birth rate,
 - promoting the importance of medical care,
 - family planning,
 - use of contraceptives.
- Reproductive rights and right for **abortion are very sensitive**
 - emotionally charged issues.
- The question of practicing **birth control is complex**,
 - often is not supported by religion or the culture.
- **one-child policy** practiced in China affected greatly.
 - Rapid Population Decline
 - Economic growth
 - Labor
 - Government Revenue
 - Entrepreneurship
 - New technology development



- reducing poverty through economic development,
- Elevating the status of women,
- encouraging family planning.

- Researchers claim that the solution to growth is industrialization and economic development.
- in developed countries:
 - per capita incomes rise,
 - poverty declines,
 - populations tend to grow more slowly.
 - people tend to choose a better standard of living instead of having a large family.

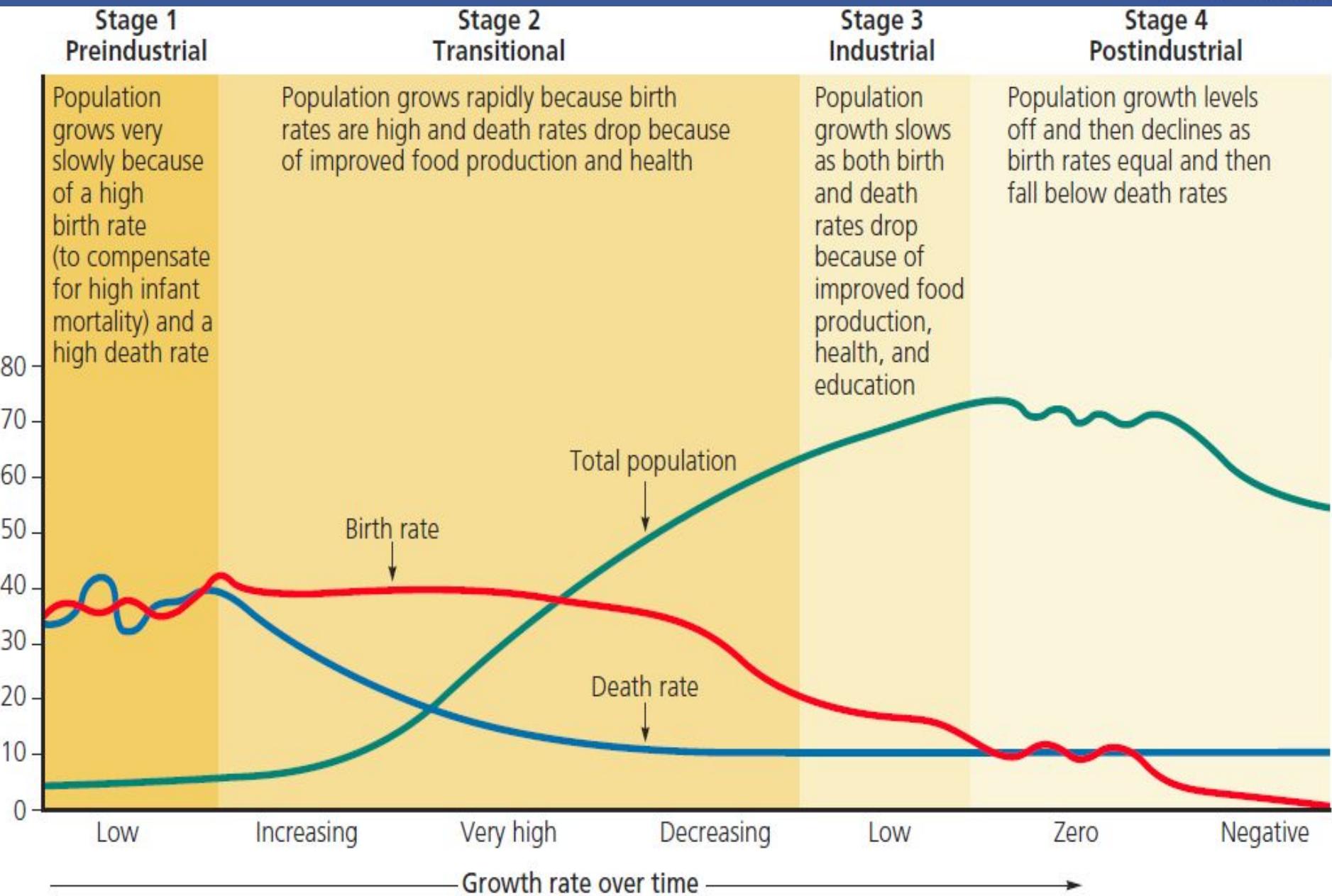


Other Aspect:

improved standard of living may lead to **increase the carrying capacity of the Earth** and lack of water and food !!!!!!



Population control via economic development



Evolution of Karl Marx theory

- There are two principal classes in the society. (1) capitalists and (2) labours.
- labour generates development.
- Factors of production are owned by the capitalists.
- Capitalists exploit the workers.
- National income is distributed in terms of wages and profits.
- Class conflicts increase. Labour conflicts start and there is class revolts.
- Ultimately, there is a downfall of capitalism and rise of socialism.

Karl Marx Theory

Population growth is a symptom rather than the cause of poverty, resource depletion, pollution and other social ills

Social exploitation and domination to the less privileged people leads to poverty, Overcrowding, unemployment, environmental degradation that in turn causes over population.

All the factors are interrelated and interdependent – Equity and social justice to all and allowing everyone to enjoy a good standard of living is the need of the hour that can help in achieving stable population.

- A number of studies show that underdeveloped **women who cannot read often have an average of five to seven children**
- A growing number of women in less-developed countries are **taking charge of their lives and reproductive behavior.**
- women tend to have **fewer children if they are educated.**
- They have the **ability to control their own fertility.**
- individual women will play an important role in **stabilizing populations, improving human health, reducing poverty and environmental degradation, if they are empowered.**

- In most societies, **they have fewer rights**, educational and economic opportunities than men have.
- Women do almost all of the world's domestic work, child care and provide health care at free of cost.
- "For most women, the only holiday is when you are asleep."
- While women account for **66% of all hours worked**,
- they receive only **10% of the world's income**
- own just **2% of the world's land**.
- They also make up 70% of the world's poor
- 66% of illiterate adults.

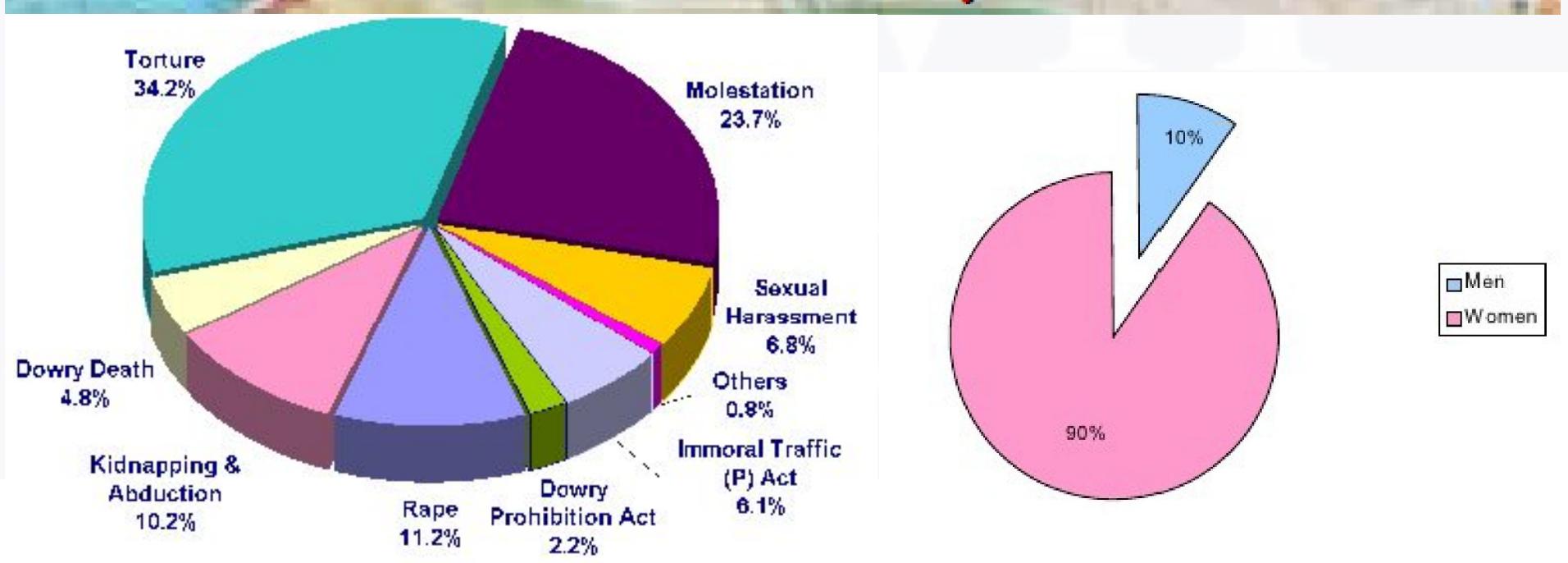
What Is Women Empowerment or Gender Empowerment?

It is the process, and the outcome of the process, by which women challenge gender-based discrimination against women/men in all the institutions and structures of society.



Crime against woman

- ❖ *Gender discrimination*
- ❖ *Women education*
- ❖ *Female infanticide*
- ❖ *Dowry*
- ❖ *Marriage in same caste and child marriage*
- ❖ *Atrocities on women: With their age, they have been raped, kicked, killed, subdued & humiliated almost daily.*



What are the main problems?

- Lack of education,
- Financial constraint,
- Family responsibility,
- Low mobility,
- Low ability to bear risk,
- Low need for achievement,
- Absence of ambition for the achievement,
- Social status



SDG for a Directive on
Violence Against Women
sociedaddenormas.eu

60 % of the Girls are married before the age of 16

Nearly 60% of the married girls bear children before they are 18

125,000 women die from pregnancy and related causes every year

Maternal mortality in India is the 2nd highest in the world

Rights of Women

- the right to work as a human being.
- The right to the same employment opportunities, including application of the same criteria for selection.
- The right to free choice of profession and employment, the right to promotion, job security and all benefits and conditions of service and right to receive vocational training and retraining.
- The right to equal remuneration.
- The right of social security as well as the right to paid leave.
- The right to protection of health and to safety.

6S Model for Women Empowerment



Shikshya= Education
Swasthya= Health
Swavalamban= Self Reliance
Samajik Nyay= Justice
Samvedana= Sensitivity
Samata= Equality

AN INITIATIVE BY INDIAN GOVT.

Women and Child Welfare Schemes in India!

- The development of women has been receiving attention of the Government of India from the First Plan.
- The Second to Fifth Plans continued this strategy, besides giving priority to women's education, and launching measures to improve material and child health services, supplementary feeding for children and expectant and nursing mothers.
- In the Sixth Plan, there was a shift in the approach from 'welfare' to 'development' of women. The Sixth Plan adopted a multi-disciplinary approach with special emphasis on the three core sectors of health, education and employment.
- The Seventh Plan stressed on raising their economic and social status and bringing them into the mainstream of national development. One of the significant steps in this direction was to identify/promote the 'Beneficiary Oriented Schemes' in various developmental sectors which extended direct benefits to women.

- The Eighth Plan ensured that the benefits of development to women should flow from other development sectors and enable women to function as equal partners and participants in the development process. The strategy also included the generation of both skilled and unskilled employment through proper education and vocational training.
- The Ninth Plan made two important changes in the strategy of development of women. The first was the 'Empowerment of Women'. Its aim was to create an enabling environment where women could freely exercise their rights both within and outside home, and are equal partners along with men.

Women and Child Development SCHEMES

1. Swayamsidha:

empowerment of women through self-help groups. promotes micro-enterprises.

2. Swashakti Project:

women's access to resources like health and education, for better quality of life

3. Child Development Services Scheme (CDS):

integrated package of services consisting of immunization, health check-ups, nutrition and health education and refreshment services to child and pregnant women.

4. Support to Training and Employment Programme for Women:

It provides new skills and knowledge to poor assetless women in agriculture, animal husbandry, dairying, fisheries, sericulture, handlooms, handicrafts and khadi and village industry sectors of employment.

5. Swavlamban:

obtain employment or become self-employed. The trades in which training is imparted include computer programming, medical transcription, electronic assembling, electronics, radio and TV repairs, garment making, handloom weaving, handicrafts, secretarial practice, embroidery and community health.

6. Day Care Centres for the Children of Working and Ailing Mothers:

7. Hostels for Working Women:

8. Swadhar:

This scheme provides integrated services to women without support from their families such as widows living at Vrindavan and Kashi; prisoners released from jail; survivors of natural calamities; women/girls rescued from brothels and other places; victims of sexual crimes, etc. The scheme includes such services as food, clothing, shelters, health care, counselling and legal aid and rehabilitation through education awareness, skill formation and behavioural training.

9. Rashtriya Mahila Kosh:

- The National Credit Fund for Women is meant to facilitate credit support or micro-finance to poor women to start such income generating schemes as agriculture, dairying, shop-keeping, vending and handicrafts.

10. Welfare of Street Children:

MEN WHO LOVE THEIR
MOTHERS TREAT
WOMEN WONDERFULLY.
AND THEY HAVE
ENORMOUS RESPECT
FOR WOMEN.

Men of quality

respect women's equality.

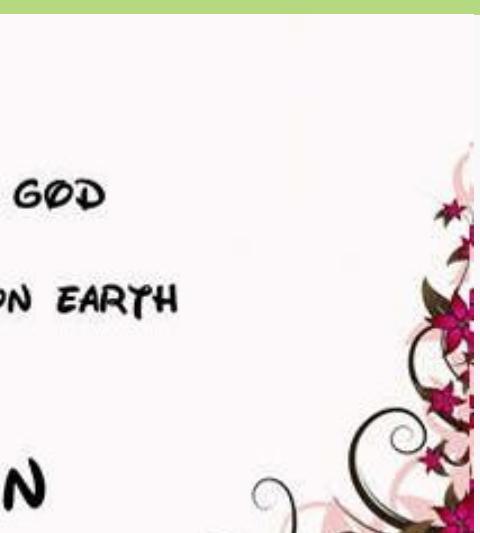


A SISTER IS LIKE THE PRIDE OF OUR LIFE

A DAUGHTER IS THE BEST BLESSING FROM GOD

A MOTHER IS THE FIRST TRUE GOD WE MEET ON EARTH

RESPECT A WOMAN



... SHE IS THE SMILE OF YOUR LIFE

- provision of education and clinical services that can help couples to choose how many children to have and when to have them.
- Such programs vary from culture to culture, but most of them provide information on **birth spacing, birth control, and health care for pregnant women and infants**.
- Family planning has been a major factor in reducing
 - the number of unintended pregnancies and births,
 - the number of safe and unsafe abortions,
 - the number of mothers and fetuses dying during pregnancy,
 - rates of infant mortality,
 - rates of HIV/AIDS infection, and
 - population growth rates.

Slowing Population Growth in India

- **1952:**
 - Indian population 40 crore
 - National family planning program began in India
- **2017:**
 - 132 crore, world's second largest population and a TFR of 2.4.
 - Much of this increase occurred because the country's declining death rates.
- **2030:**
 - 165 crore, India will be the world's most populous country
- **Present time:**
 - India faces serious poverty, malnutrition, and environmental problems
 - Will worsen as its population continues to grow rapidly.
 - India is home to one-third of the world's poor
- **larger families in India due to:**
 - couples believe they need several children to work and care for them in their old age.
 - couples keep having children until they produce one or more boys.
- **India is undergoing rapid economic growth:**
 - may help India to slow its population growth by accelerating its demographic transition

Urbanisation

- Enhancement of population in cities by *natural increase* or by *immigration* from rural areas.
- It is the **process by which towns and cities are formed** and become larger as more people begin living and working in central areas.

Natural increase

High Birth Rate

Low death Rate

Better health care

Urban Sprawl

Immigration

jobs,
food,
housing,
educational opportunities,
Better health care,
entertainment.

Most cities are unsustainable because of high levels of resource use, waste, pollution, and poverty.



Urbanisation

World

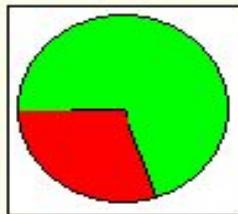


Percent Urban

Year

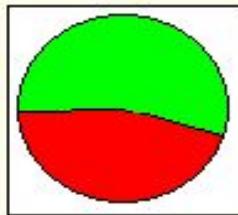
29.7

1950



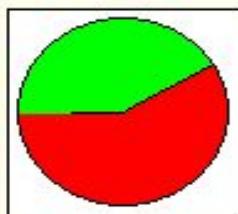
47.4

2000

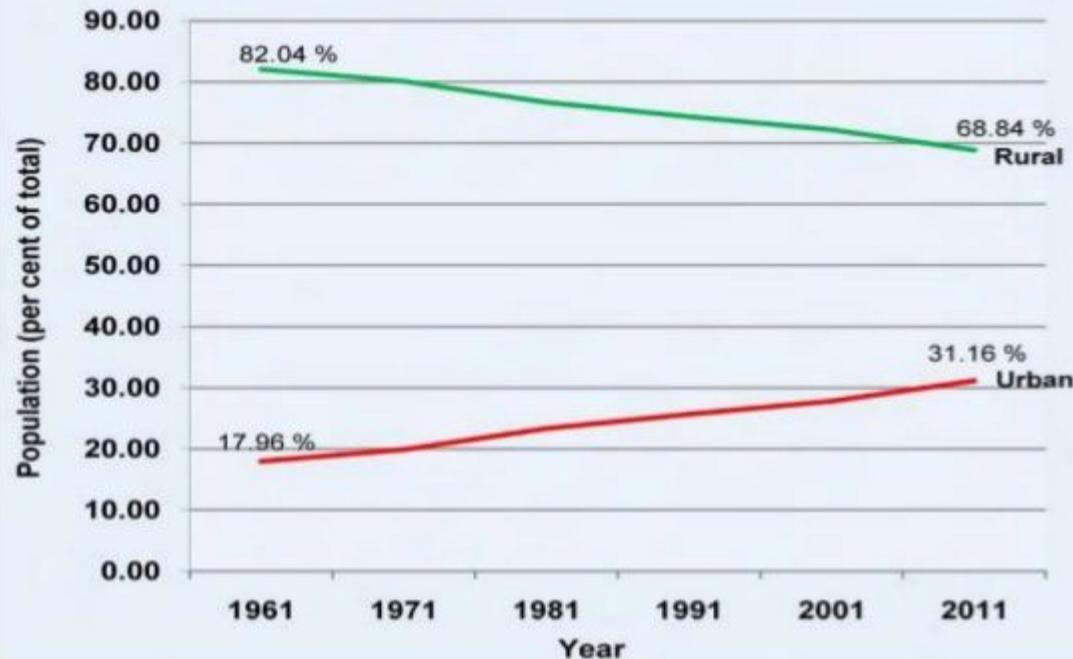


61.1

2030



Rural & urban population in India



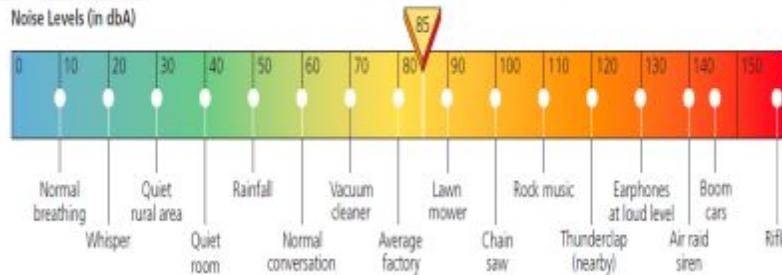
- ✓ About 52% of the world's people, 81% of all Americans, 37% Indians, and 53% of China's population live in urban areas.
- ✓ Every day there are about 200,000 more urban dwellers.

- ✓ Urban populations occupy only about 3% of the earth's land area
- ✓ consume about 75% of its resources
- ✓ produce about 75% of the world's pollution and wastes.



Urbanization Has Disadvantages

- Most Cities Lack Vegetation.
- Many Cities Have Water Problems
- Concentrate Pollution and Health Problems.
- Cities Have Excessive Noise
- Affect Local Climates
- Life Is a Desperate Struggle
- **Housing Problem,**
- **solid wastes and hazardous wastes.**
- Transport problems
- Urban decay
- Social problems



Environmental Impact

Impact on atmosphere and climate

- Creation of heat island.
- Change in air quality.
- Change in patterns and precipitation.

Impact on lithosphere and land resources

- Erosion and other changes in land quality.
- Pollution

Impact on hydrosphere and water resources

- Flow of Water into Streams.
- Flow of Water through Streams.
- Degraded Water Quality.

Impact on biosphere

- Modification of Habitats.
- Destruction of Habitats.
- Creation of New Habitats.
- Loss of public space. The majority of roads are publicly owned and free of access.

Nature of housing problems

- Shortage of accommodation
- Substandard houses made of any materials
- Unobtainable to basic facilities such as clean water, electricity and sewage system
- Unobtainable to urban resources such as job opportunities, transport, education, medical and social services

shortage of accommodation

- Growing squatter and slum population
- most immigrants tend to build themselves a shelter on land which does not belong to them.
- Or rent a single room in overcrowded and deteriorated slums near the CBD.



Problems related to substandard houses

- Risk of collapse,
- Risk of landslide
- Risk of fire
- overcrowding



unobtainable to basic facilities

- Poor sanitation
- Poor living environment
- Outbreak of diseases



- Unemployment and underemployment
- family conflicts, mental distresses
- High crime rate
- Social unrest



Consumerism

- **consumption of natural resources by the people**
- constant purchasing of new goods, with little attention to their true need, durability, product origin, or the environmental consequences of their manufacture and disposal.
- **More population, more consumption; large waste generation**
- with the dawn of industrial era, consumerism has shown an exponential rise in the last few decades
 - increase in the population size
 - changes in life styles



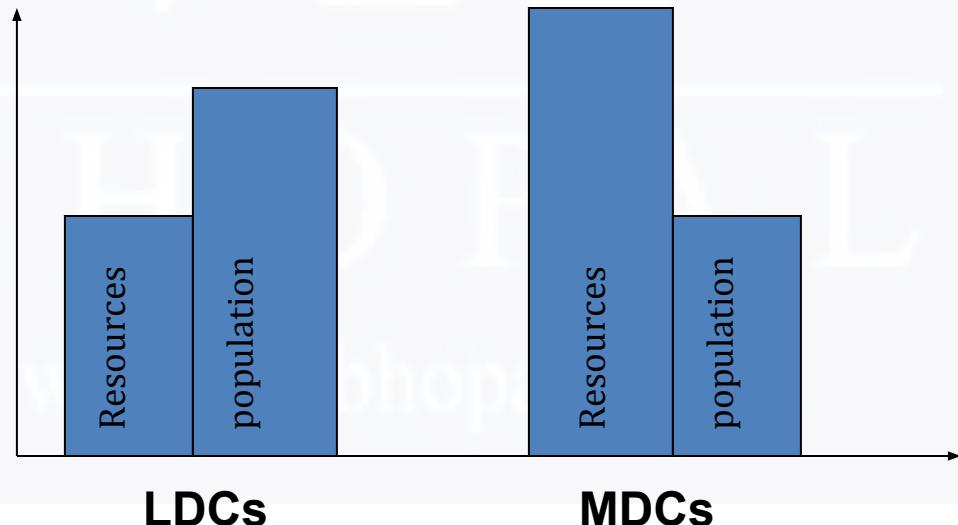
People Over-population– LDCs

- More people than available supplies of food
- there is less per capita consumption although overall consumption is high

Consumption Over-population:

- Less population size and due to a combination of better life styles overall high standards of living and high levels of infrastructure, per capita consumption of resources is very high.

The consumption of resources is positively correlated with waste generation and the degradation of the environment



Overall Environmental Impact

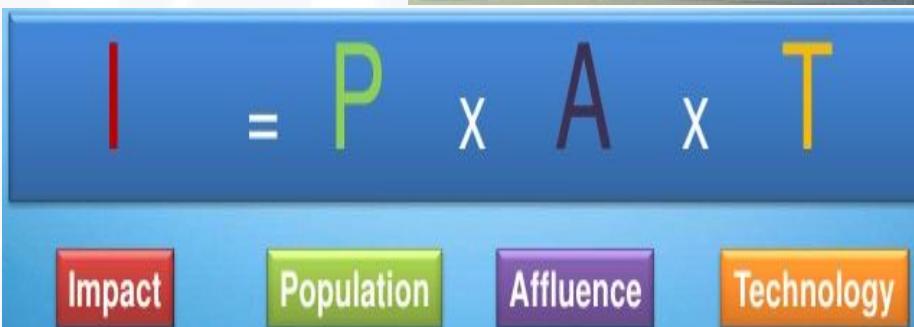
- Impact = Number of people x per capita use of resources x waste generated per unit of resource used
- Impact=Population x Affluence x Technology

$$I = P \times A \times T$$



Comparison of Consumerism and Waste Generation

Parameter	Percent Global Values	
	USA	India
Population	4.70%	16%
Production of Goods	21%	1%
Energy use	25%	3%
Pollutants/wastes	25%	3%
CFC's Production	22%	0.7%



- ❖ Although the population of India is 3.4 times more than that of USA, its overall energy use and waste generation are less than 1/8th that of USA.
- ❖ **Thus more consumerism and not population size influences waste production.**

How to solve consumerism

Population:

- we need to control population growth.

Consumption:

- once we control population growth, the consumption rate would fall down itself.
- Buy for need not for the want

Technology:

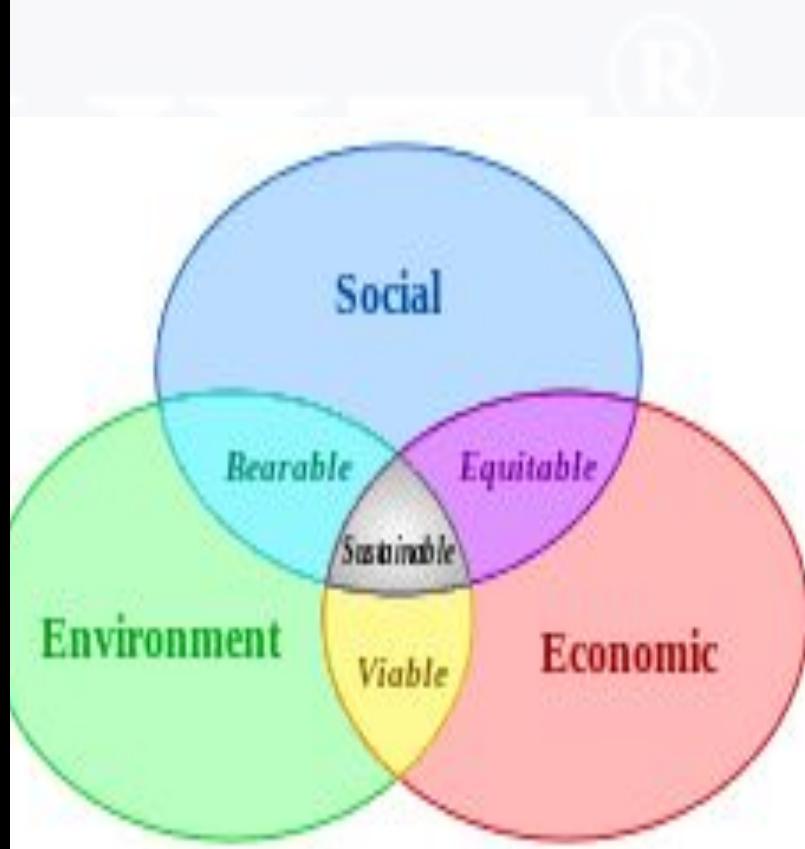
- we should stop at this stage some of the irrelevant and unimportant products, in order to stabilize the environment.

Himachal Pradesh was the 1st state to regulate the manufacture & use of plastics. The State proposed a ban on all types of polythene packing.

The Indian Oil Corporation & the Department of Science & Technology are expected to establish India's 1st plant to convert waste plastic into petrol,diesel & LPG.

Sustaining human societies

- Smart Growth Can Promote Environmental Sustainability
- The Eco-City Concept: Cities for People, Not Cars



THE GLOBAL GOALS

For Sustainable Development

1 NO POVERTY



2 ZERO HUNGER



3 GOOD HEALTH AND WELL-BEING



4 QUALITY EDUCATION



5 GENDER EQUALITY



6 CLEAN WATER AND SANITATION



7 AFFORDABLE AND CLEAN ENERGY



8 DECENT WORK AND ECONOMIC GROWTH



9 INDUSTRY, INNOVATION AND INFRASTRUCTURE



10 REDUCED INEQUALITIES



11 SUSTAINABLE CITIES AND COMMUNITIES



12 RESPONSIBLE CONSUMPTION AND PRODUCTION



13 CLIMATE ACTION



14 LIFE BELOW WATER



15 LIFE ON LAND



16 PEACE AND JUSTICE STRONG INSTITUTIONS



17 PARTNERSHIPS FOR THE GOALS



THE GLOBAL GOALS
For Sustainable Development

Sustaining human societies

Limits and Regulations

Limit building permits

Draw urban growth boundaries

Create greenbelts around cities



Zoning

Promote mixed use of housing and small businesses

Concentrate development along mass transportation routes



Planning

Ecological land-use planning

Environmental impact analysis

Integrated regional planning



Protection

Preserve open space

Buy new open space

Prohibit certain types of development

Taxes

Tax land, not buildings

Tax land on value of actual use instead of on highest value as developed land

Tax Breaks

For owners agreeing not to allow certain types of development

For cleaning up and developing abandoned urban sites

Revitalization and New Growth

Revitalize existing towns and cities

Build well-planned new towns and villages within cities

THANK YOU

B H O P A L

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