

Resources, Economics, and Ecological Footprints

Natural Resources

- Anything **obtained from the earth** to meet human needs & wants
 - Ex: Food, water, shelter, manufactured goods, transportation
- 3 Types:
 - **Perpetual**: replenishes continuously
 - **Renewable**: replenishes if used sustainably
 - **Nonrenewable**: fixed amount available; does not replenish so. . . reduce, reuse, recycle, or refuse

Sustainable yield

- The **highest rate** at which a potentially renewable resource can be **used *indefinitely*** without reducing its available supply
- **Environmental** degradation → results when a resource's natural replacement level is exceeded
- **Economic** degradation → results when 80% of a mineral is used up, making it more expensive to retrieve than it is worth

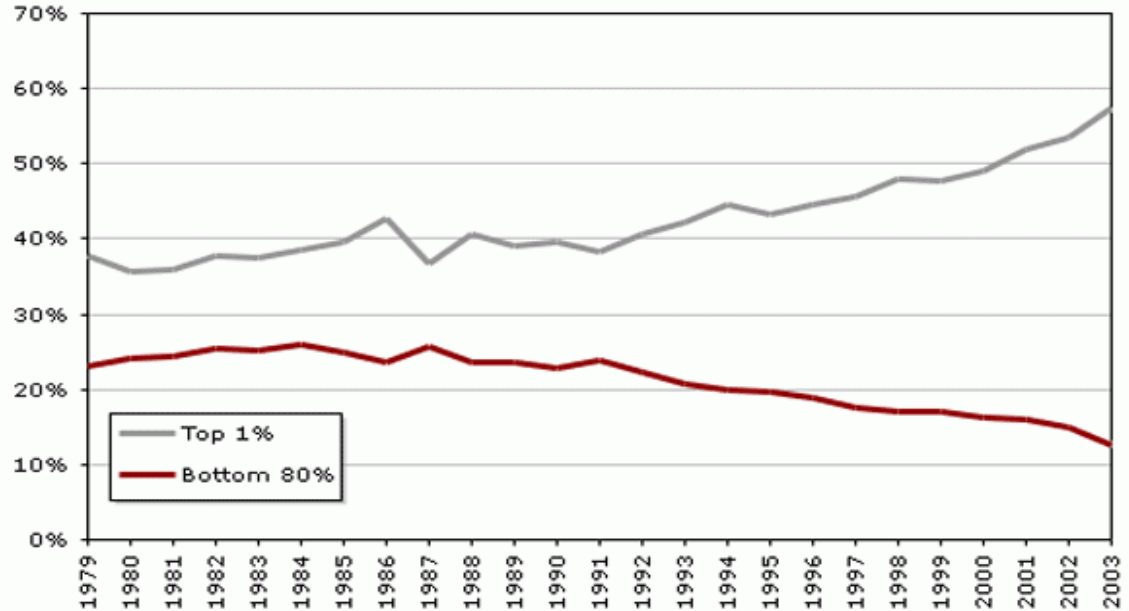
Wealth

- **Capital** is the **assets possessed** by a particular entity, usually designated for use toward an end
- **Capital** → **wealth**
- Types of capital
 - **Financial**--money, stocks
 - **Solar**--energy from the sun; provides 99% of the energy on earth, including wind, hydro & biomass
 - **Earth**--natural resources & services (air, water, soil, wildlife, minerals, natural purification, recycling, pest control, etc.)

Wealth Gap

- The gap between the rich, middle-income, and poor has widened
- More than 1 billion people survive on less than \$1/day
- Poverty & environmental degradation go hand in hand

Figure 5: Share of capital income earned by top 1% and bottom 80%, 1979-2003
(From Shapiro & Friedman, 2006.)



Economic Growth

- The **increase** in a country's capacity to provide **goods and services** for its population's use
- Measured by **Gross National Income** (formerly Gross National Product)--market value of all goods & services produced within a country for final use during a year
- Usually calculated per capita:
 $\text{GNI} \div \text{total population}$

Economic Development

- **Uses** economic **growth** to **improve** living standards.
- A country's economic status (developed vs. developing) is based on its degree of **industrialization & GNI**
- Move **from** rural, agricultural, illiterate, and poor with a rapidly growing population **to** urban, industrial, educated, and wealthy with a slow-growing population

Developing vs. Developed

- Low to moderately industrial
 - Low per capita GNI
 - 80% of world's population
 - 15% of world's wealth & income
 - Use 12% of all natural resources
 - Generate 25% of all pollution & waste
- Highly industrialized
 - High per capita GNI
 - 20% of world's population
 - 85% of world's wealth & income
 - Use 88% of all natural resources
 - Generate 75% of all pollution & waste

Connections between Environmental Problems and Their Causes

Developing Countries



x



x



=



Population (P)

x

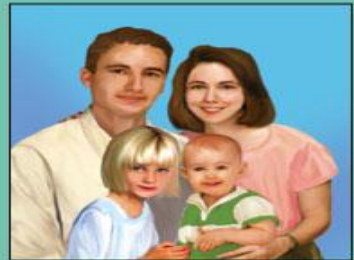
Consumption per person (affluence, A)

x

Technological impact per unit of consumption (T)

=

Environmental impact of population (I)



x



x



=



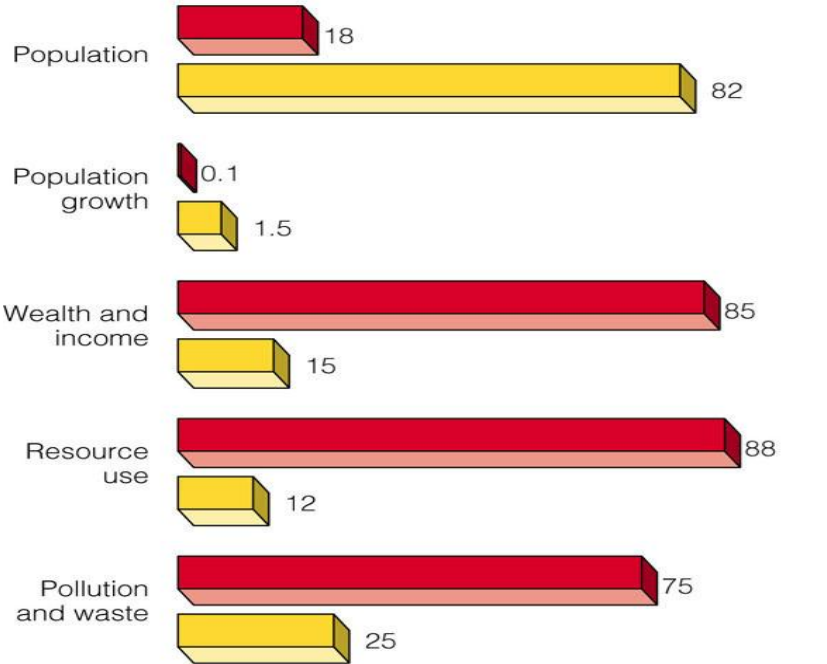
Developed Countries

Globalization

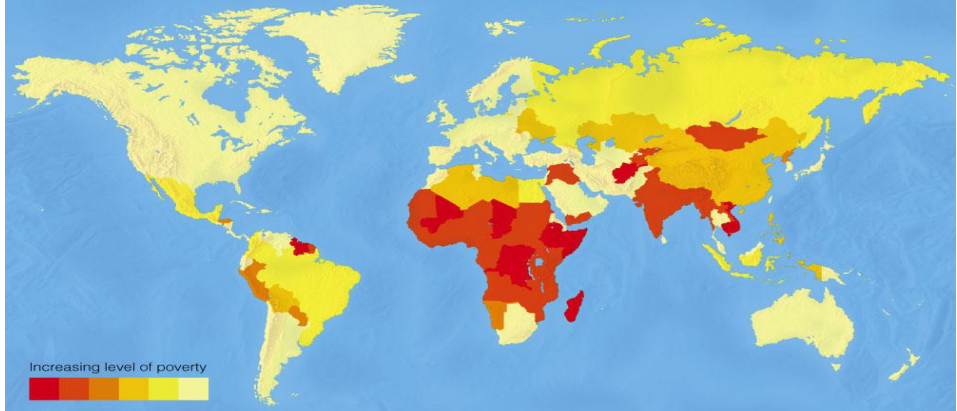
- The process of global social, economic, & environmental change that leads to an increasingly **integrated world**.
 - **Economic** indicators - global economy has grown; many transnational corporations
 - **Information & communication** - internet access
 - **Environmental** effects - diseases and pollutants transported across international borders; global climate change

Global Outlook

Percentage of World's



Developed countries Developing countries



Developed vs. Developing Countries

Resource Consumption & Environmental Problems

- Underconsumption
- Overconsumption
 - Affluenza: unsustainable addiction to overconsumption and materialism

Causes of Environmental Problems

Developing Countries

- Increasing population
- Poverty
- Exploit resources for survival
- Lack of education
- Disease/poor health care



Causes of Environmental Problems

Developed countries

- High per capita resource use & resulting pollution & environmental degradation
- Technology → pollution
- NOTE: affluence can also lead to environmental improvements!



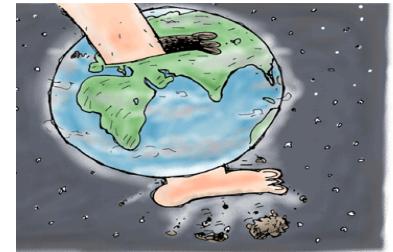
Results

- Developing countries have more people but use less resources per person
- Developed countries have less people but use more resources per person
- Both impact the environment but in different ways/amounts

What is Your Ecological Footprint?

It is YOUR impact on the environment

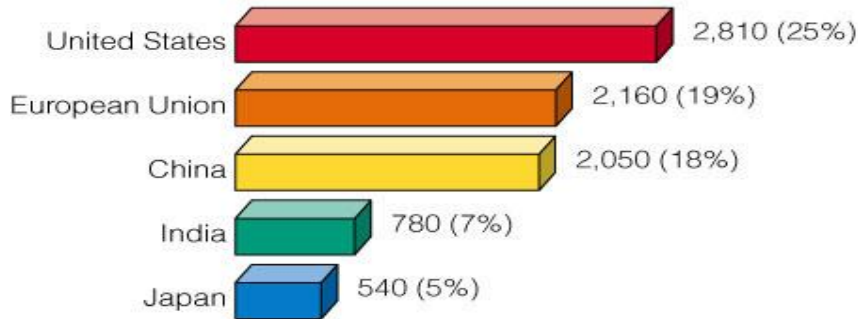
- The **amount of biologically productive land and water needed to supply renewable resources and absorb waste** for YOU personally!
- Currently, the **average** person's ecological footprint is **20% greater** than can be sustained indefinitely.
- **Result?** polluted air and water, waste overload, poorer health, less biodiversity, etc.
- We need **four more** planet Earths to meet the consumption levels of the **U.S.**



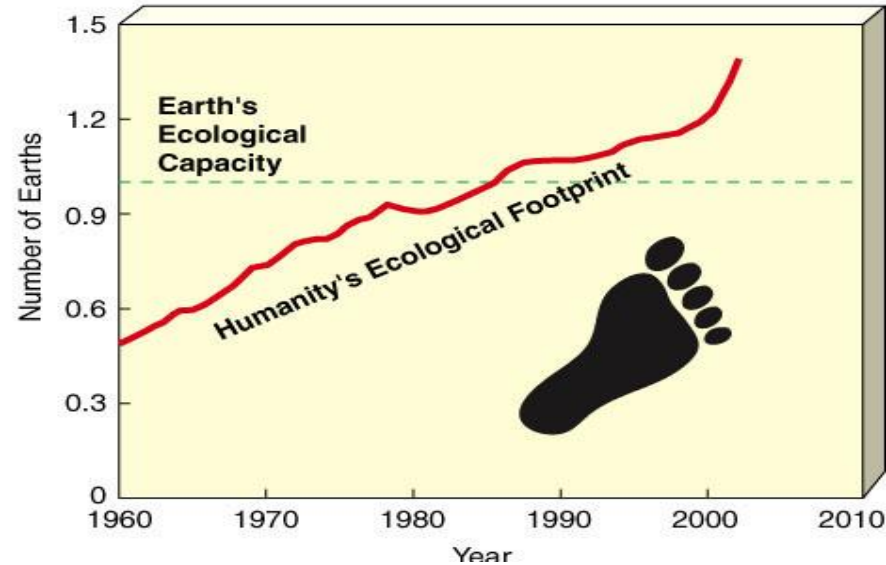
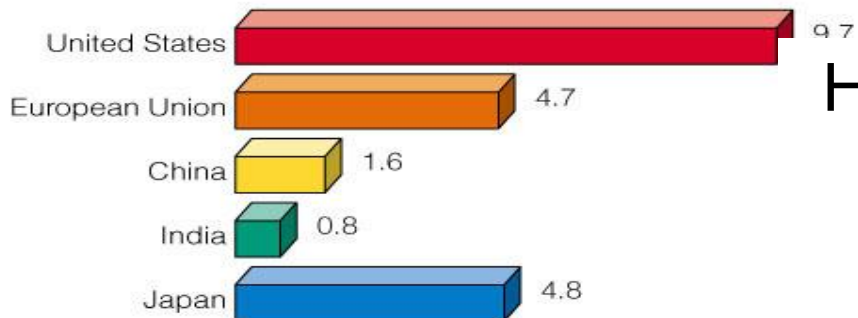
Man's footprint on the planet today.

Our Ecological Footprint

Total Footprint (million hectares) and Share of Global Ecological Capacity (%)



Footprint Per Person (hectares per person)



Humanity's ecological footprint has exceeded earth's ecological capacity.