



# Chapter 20

## Sustainability, Economics, and Equity



# North American Free Trade Agreement (NAFTA)

- In 1994, U.S., Canada, & Mexico passed NAFTA that was intended to **increase trade (export vs. import) among the 3 countries by reducing tariffs, regulations and other taxes.**
- **Pros:** *jobs* in developing countries increase economically depressed areas
- **Cons:** *industrial pollution* (disposal of toxic chemicals and heavy metals into ground & surface water...damage to human health), *poor working conditions* (exposure to toxic chemicals at the workplace, hazardous conditions), *discrimination* (lack of “right to know” laws, absence of warning labels in Spanish, approx. \$3/day), *profits sent to “owner”* (Mexico pays the social & environmental prices, while corporations reap the benefits)

Free trade & globalization agreements like NAFTA are designed to enhanced developing economies by facilitating international business.

- **Is it worth it????**

- *If we could give equal attention to economic profit, environmental integrity and human welfare, could we ultimately create more sustainable developments?*

# Sustainability

- Something is sustainable when it **meets the needs of the present generation without compromising the ability of future generations to meet their own needs.**
- **Basic human necessities** are *food* (productive land for growing food), *water* (drinkable water) *shelter*, *education and healthy, disease-free existence* (breathable air)
- Understand where human well-being (status of being healthy, happy and prosperous) and condition of environmental systems are in conflict.
  - Economic theory, ecological economics, ecosystem services, role of regulatory agencies (environmental protection & regulations).

# Scarcity resources –

## Based on Supply & Demand

- A market occurs whenever people engage in trade.
- In a market economy, the cost of a good is determined by supply and demand.

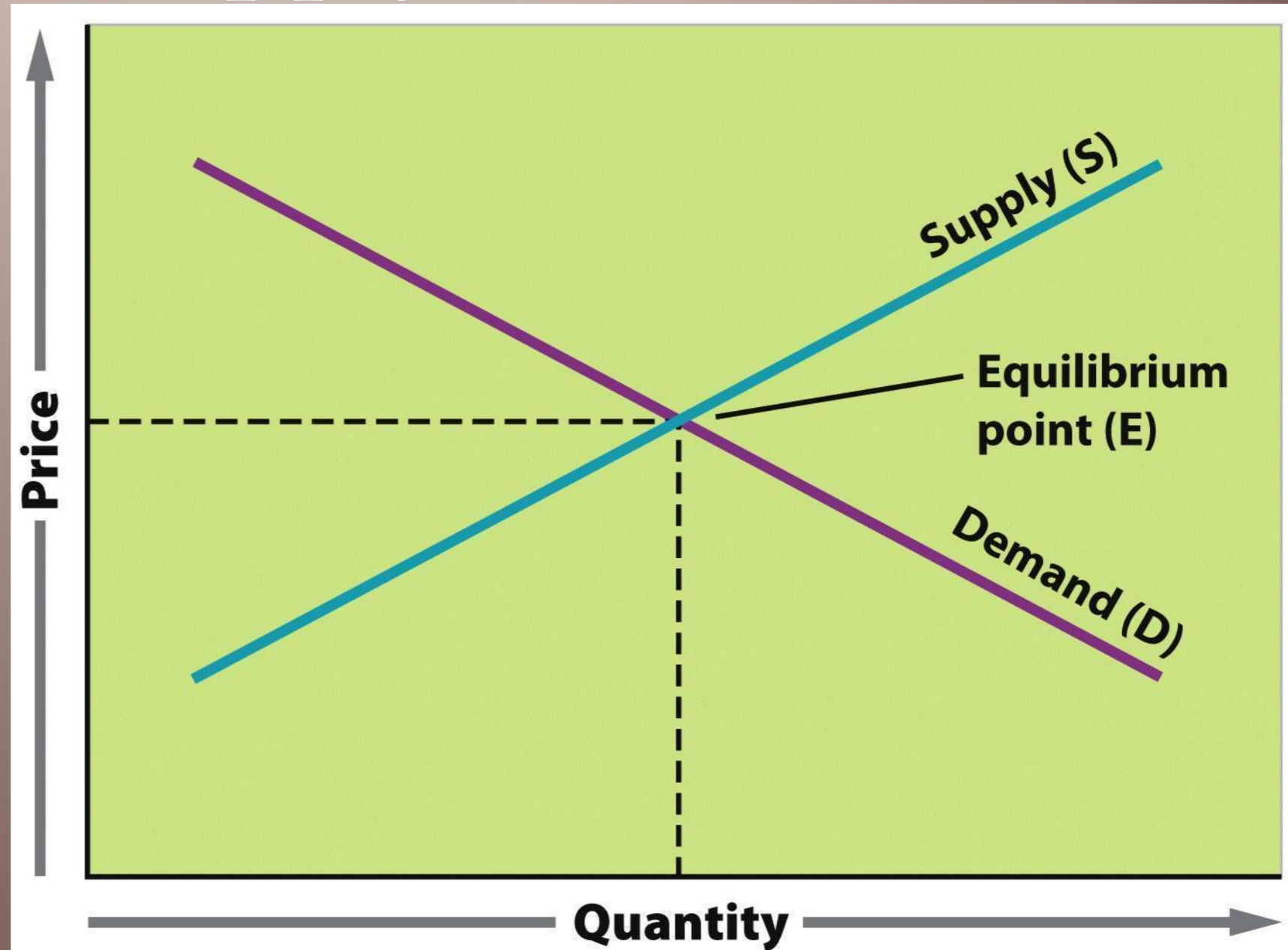


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A **manufacturer will SUPPLY** a certain # of units, the **consumer will DEMAND** a certain # depending upon the price point, intersecting lines determines the **markets equilibrium point** for that item.



# The Law of Demand

-The demand curve (D) shows how much of a good consumers want to buy.

-When the price of a good rises, the quantity demanded falls and when the price falls, demand rises.

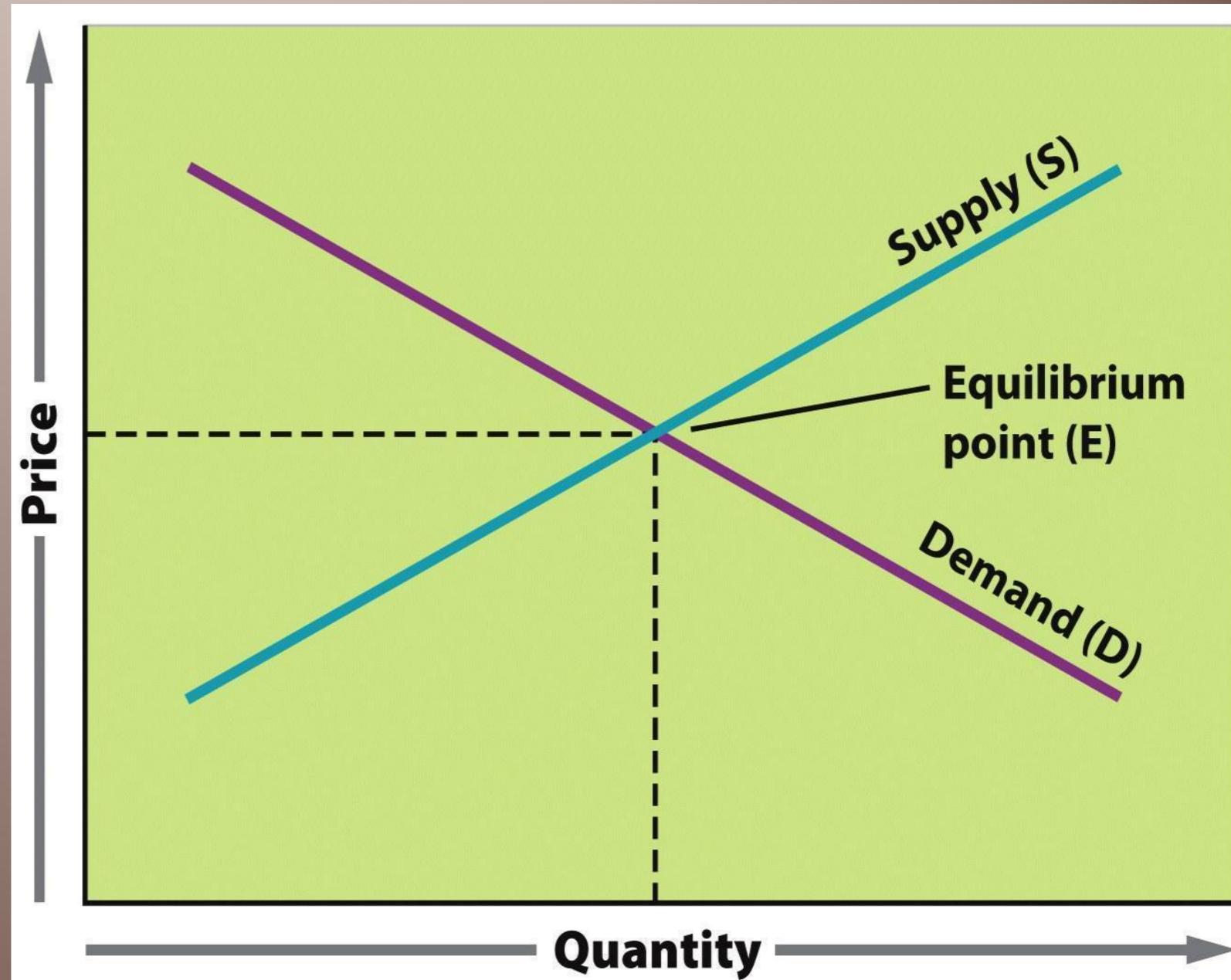


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Factors that determine demand include income, price of the good, tastes, expectations, and the number of people who want the good.

# The Law of Supply

-The supply curve (s) shows how many units that suppliers of a given product or service are willing to supply.

-When the price of a good rises, the quantity supplied of that good will rise and when the price of a good falls, the quantity of the good supplied will also fall.

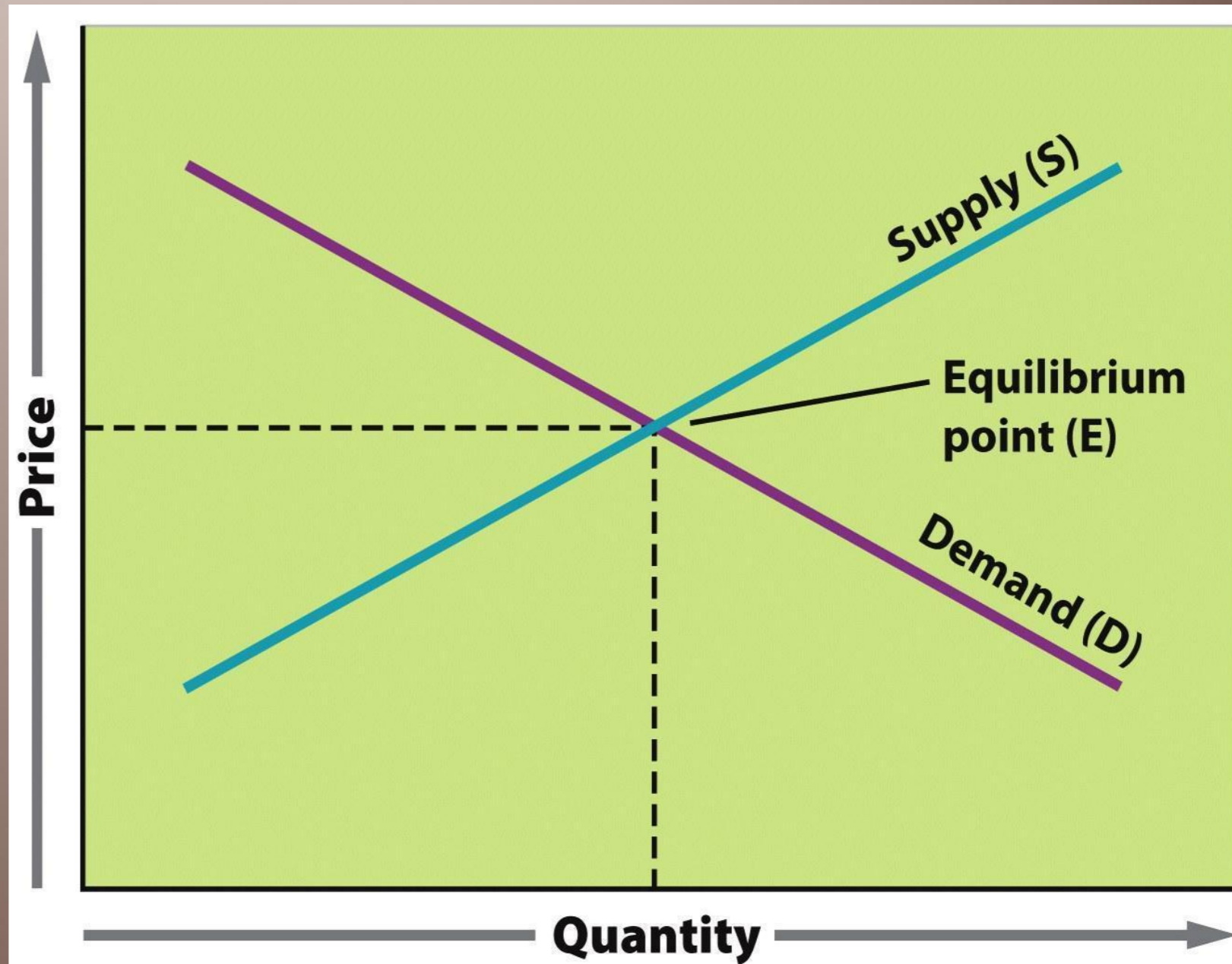


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**\*\*\*competition** - share the market with other suppliers

# Equilibrium

- When the price of a good comes to an equilibrium point and the two curves (S and D) intersect on the graph.
- At this price, suppliers find it worthwhile to supply exactly as many of the product as consumers are willing to buy.

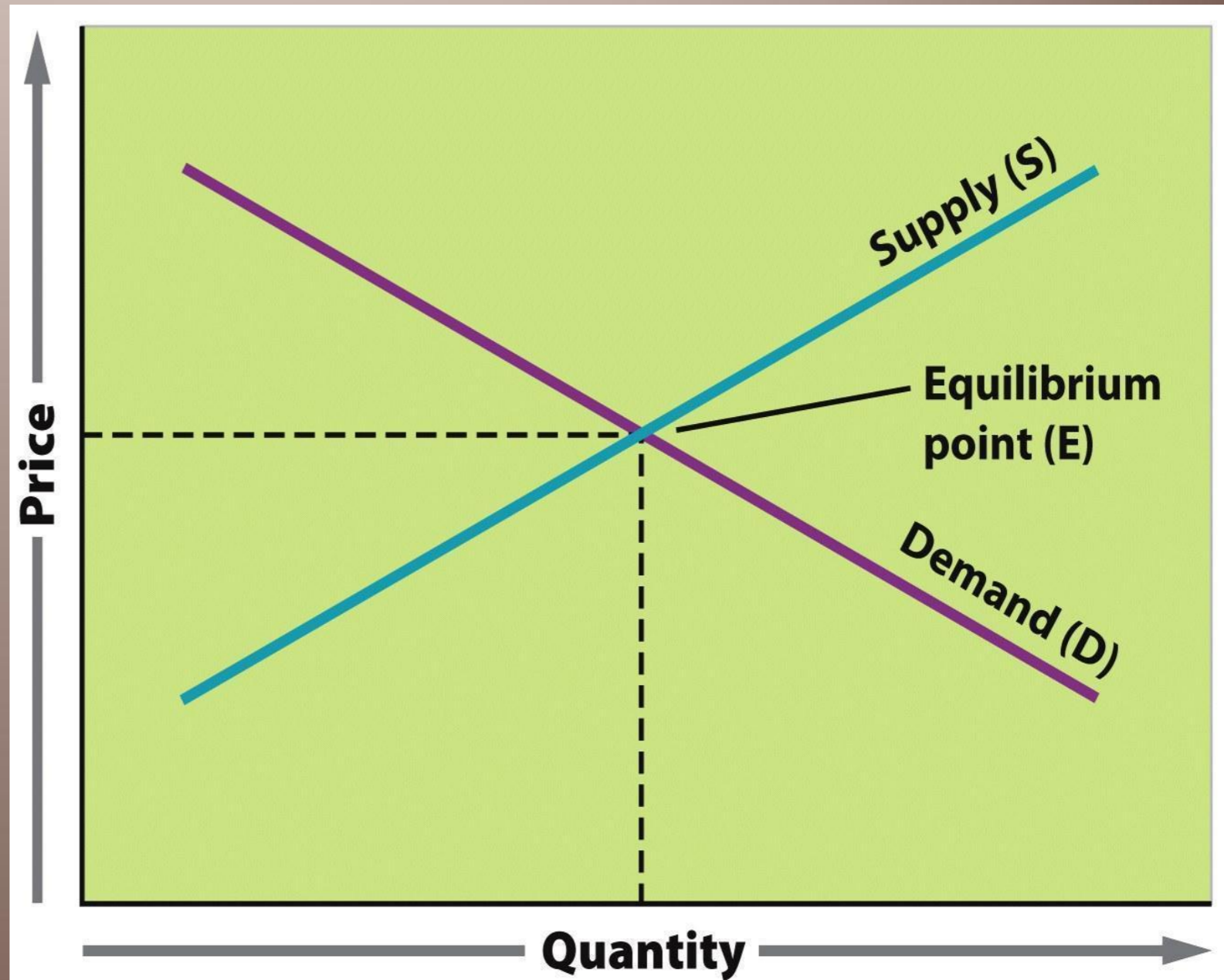


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# Externalities

- **The costs or impact of a good or service on people and the environment** not included in the economic price of that good or service.
- Ex. costs of using common resources such as water, air, land, or the oceans and the costs of air and water pollution or solid waste products.

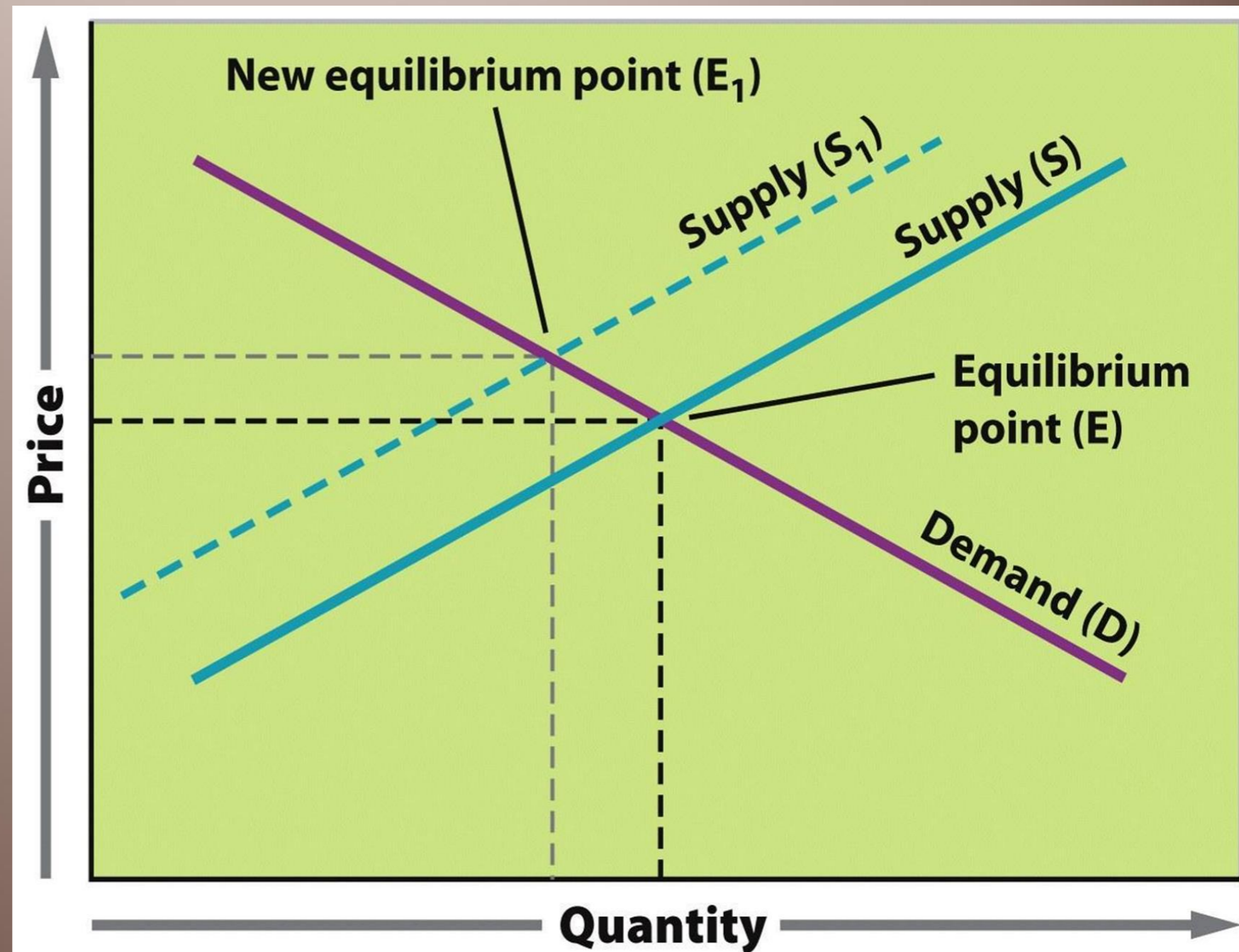
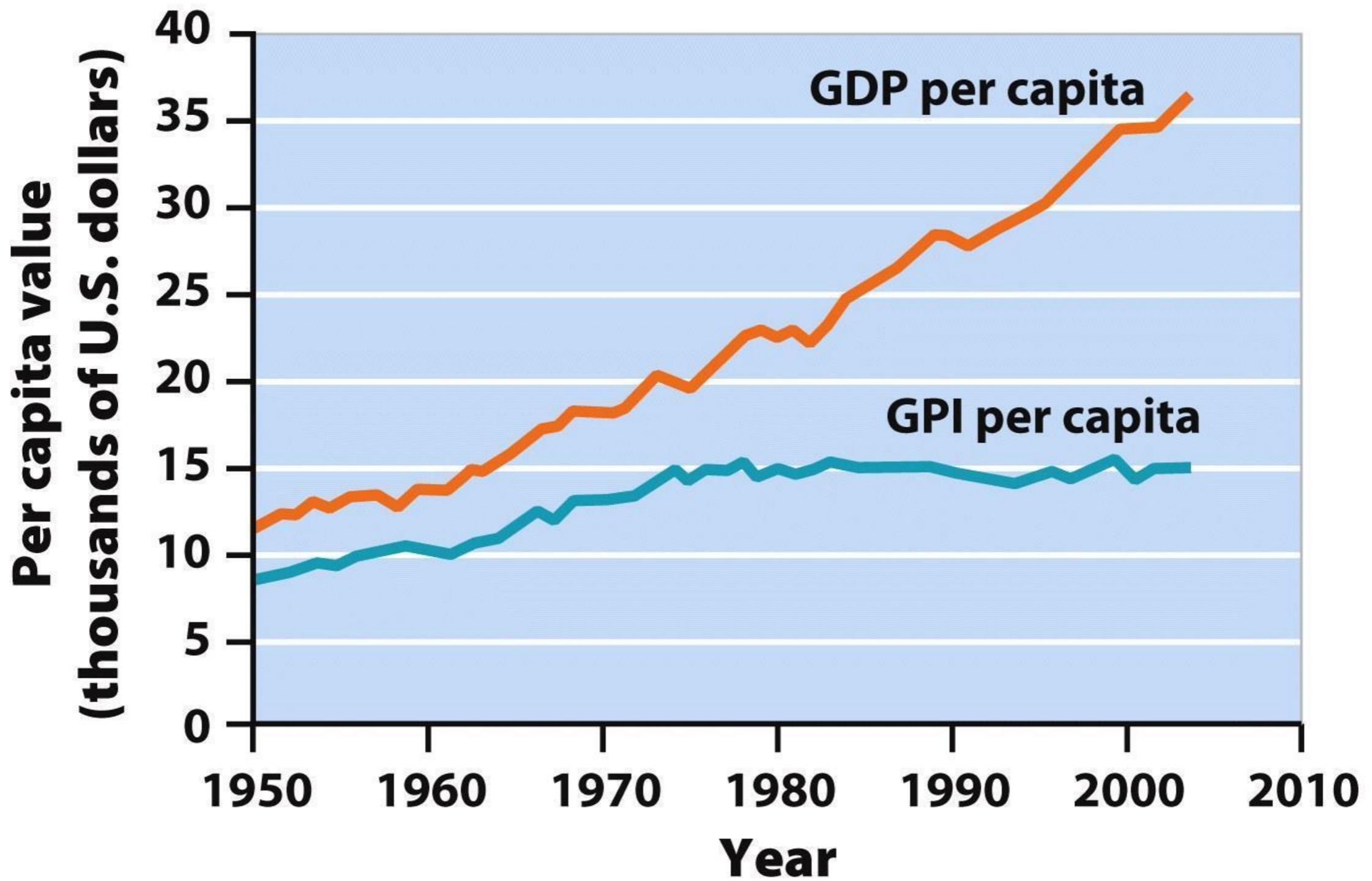


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The cost of emitting pollutants is included in the price of a good, for any given quantity of items, the price increases.

# Wealth and Productivity

- **GDP** (*gross domestic product*)- the value of all products and services produced in a year in a given country. GDP does not reflect externalities such as pollution.
- As GDP increases, population growth slows (rising income, falling birth rates)
- **GPI** (*genuine progress indicator*)- attempts to address this shortcoming by including measures of personal consumption, income distribution, levels of higher education, resource depletion, pollution, and the health of the population.
- Developed countries use many more resources than developing countries, which leads to more environmental degradation.



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**Environmental degradation**

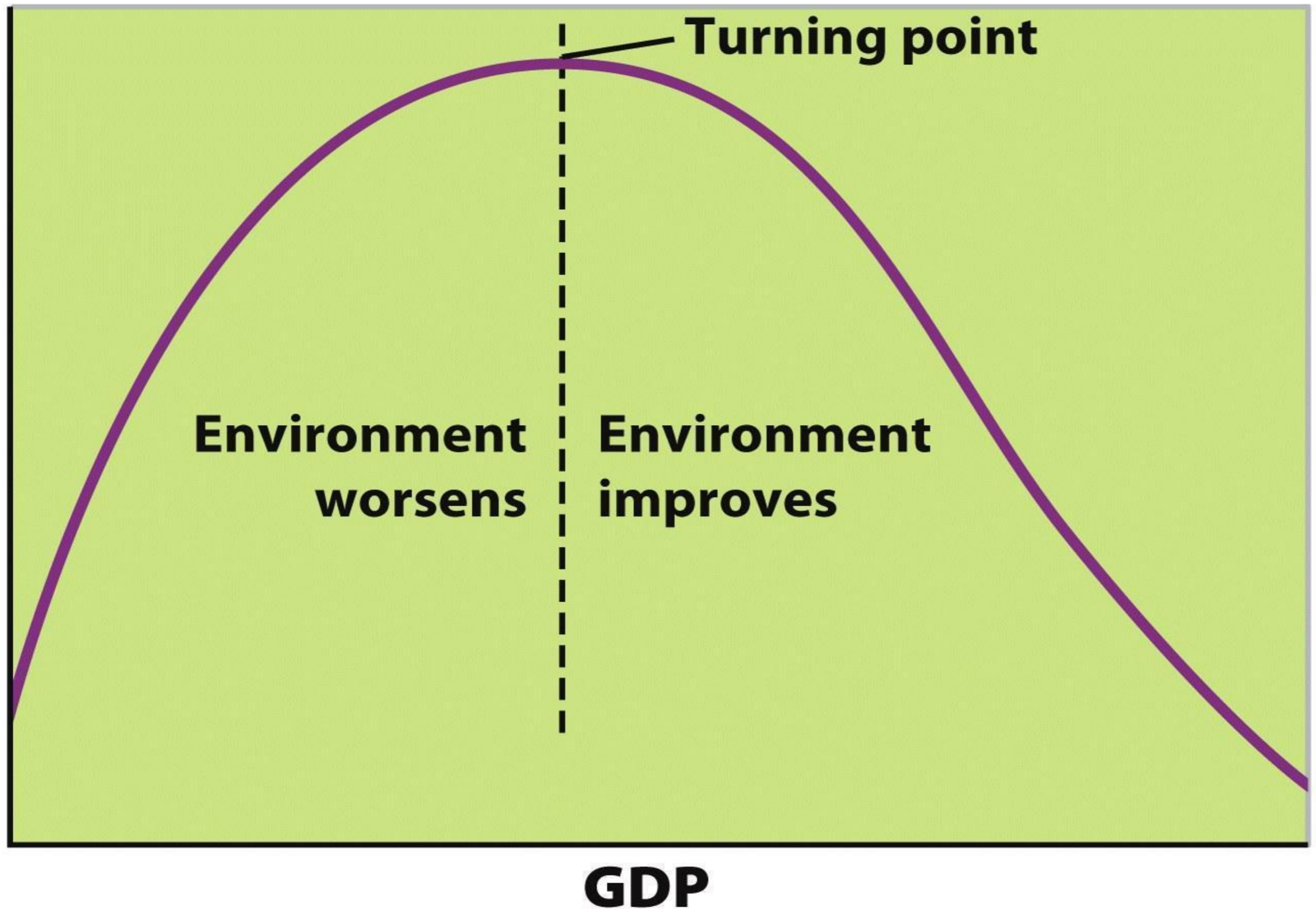


Figure 20.4  
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**Kuznets Curve** – per capita income in a country increase,

environmental degradation first increases and then decreases.

Ex. China is on the first place of the curve, U.S. is on the second part.

# Microlending

The practice of loaning small amounts of money to people who intend to start a small business in less developed countries.

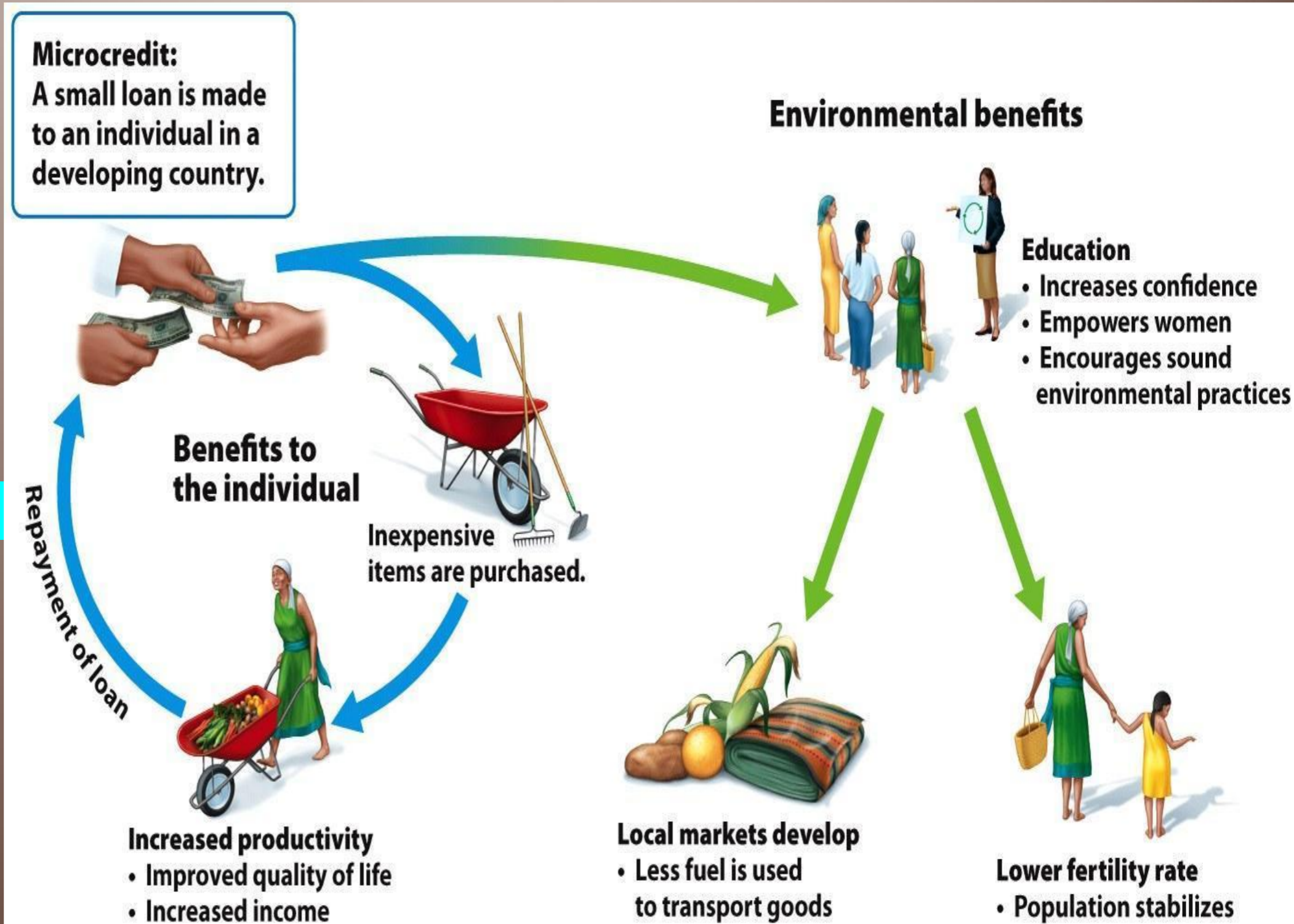


Figure 20.6

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## Inputs

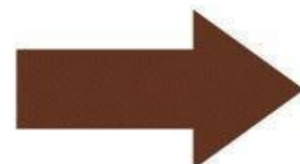
Energy



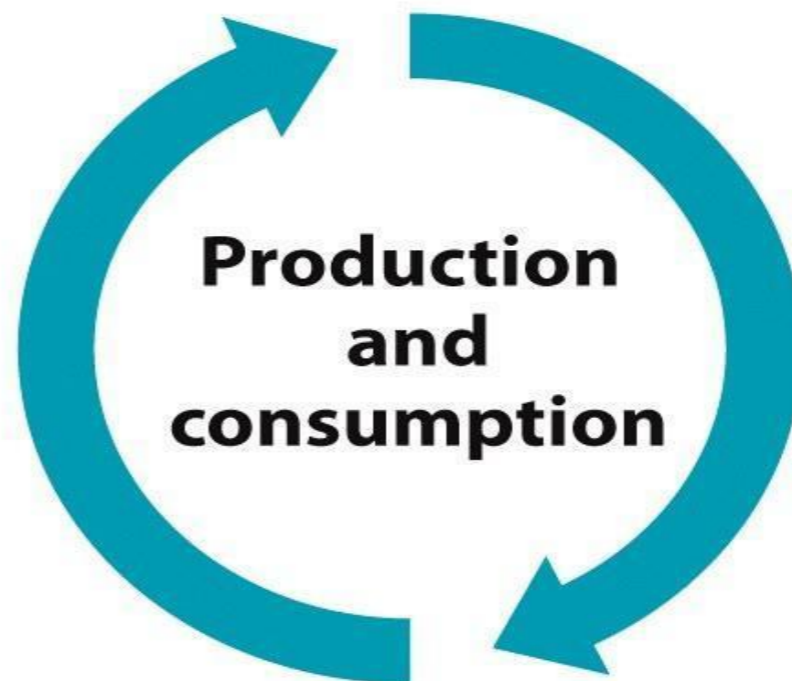
Ecosystem services



Resource extraction



### Less sustainable economy



## Outputs

Waste



Maximizing the utilization of resources & resulting in a large waste (current economy)

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## Inputs

Energy



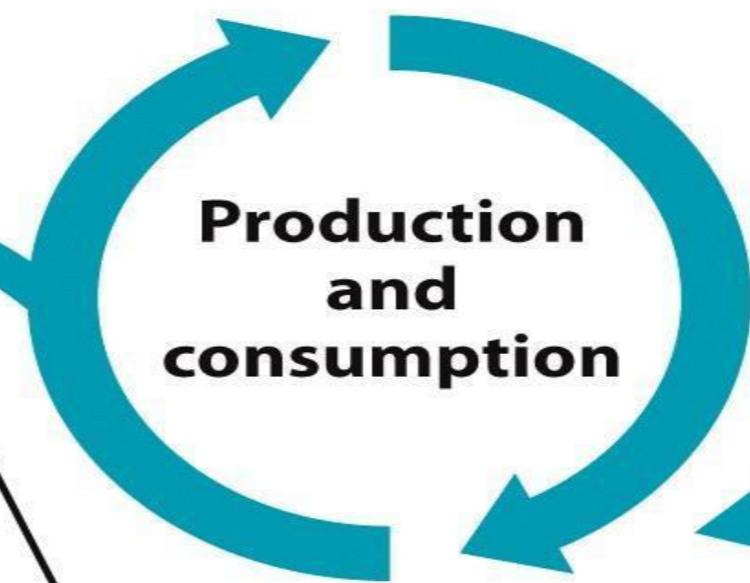
Ecosystem services



Resource extraction



### More sustainable economy



## Outputs

Waste



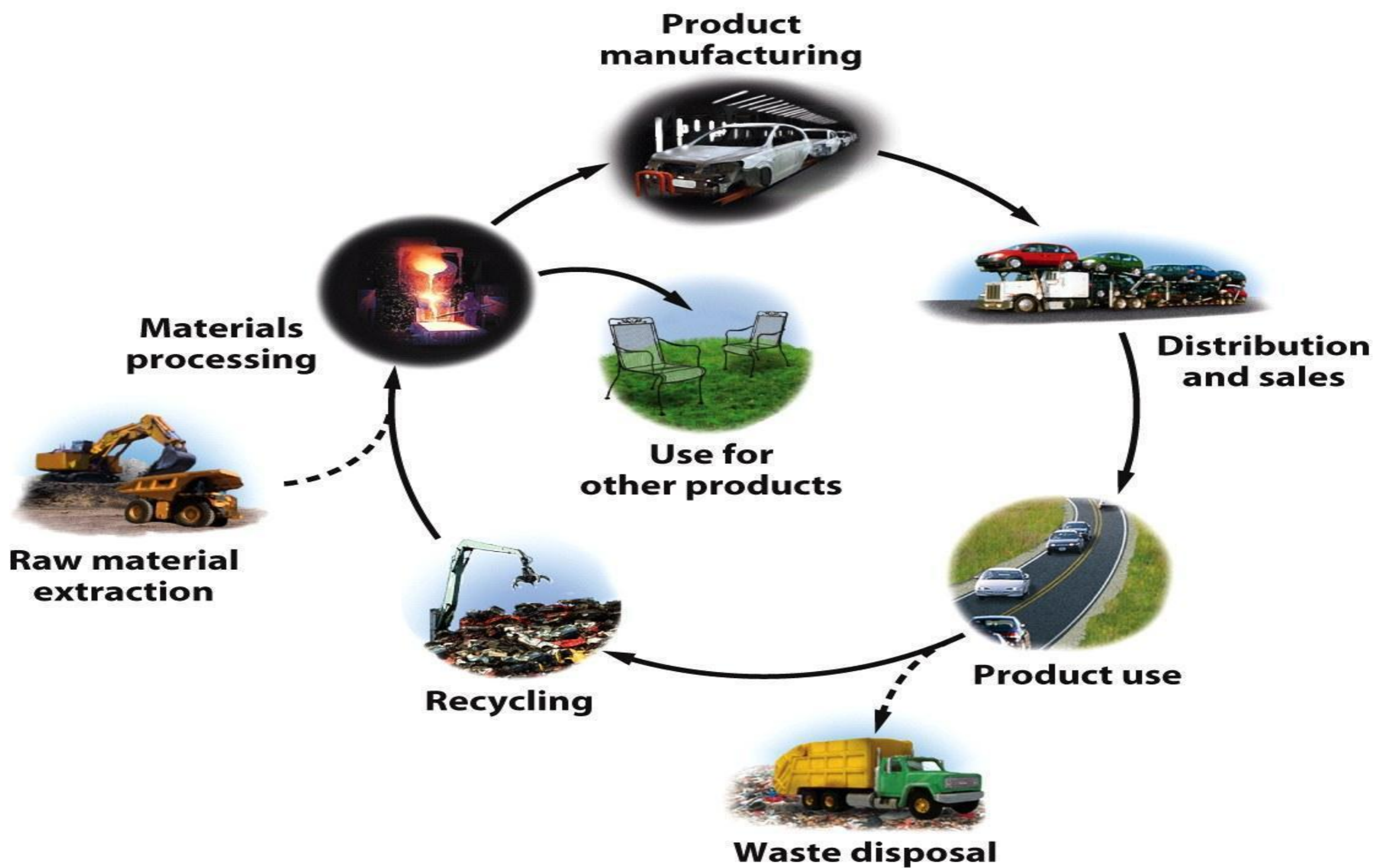
Natural capital investment

Waste stream recycling

Greater use of ecosystem systems, less resource extraction, and minimizing the waste

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**Cradle-to-Cradle System-(material use & waste recycling Ex. manufacture of automobiles) products made at a factory are made from recycled materials whenever possible. Energy costs are all taken into consideration when designing the automobiles**

# Environmental Worldviews

- Anthropocentric- **human-centered**, considers that human beings have intrinsic value and nature should provide for our needs.
  - **Stewardship** - (subset of human centered) careful & responsible management & care for Earth & its resources (natural world protection & ethical responsibly).
- Biocentric- **life-centered**, says humans are just one of many species on Earth, all of which have equal value.
- Ecocentric- **Earth-centered**, places equal value on all living organisms and the ecosystems in which they live, and it demands that we consider nature free of any associations with our own existence.

# World Agencies

- United Nations (UN) - communication among countries with goal of maintaining world peace.
- United Nations Environment Program (UNEP) - gathering environmental info, conducting research, & assessing environmental problems.
- The World Bank - provides technical and financial assistance to developing countries with the objective of reducing poverty & promoting growth.
- The World Health Organization (WHO) - improve human health by monitoring & assessing health trends and providing medical advice to countries.
- The United Nations Development Program (UNDP) - advocate change that will help people obtain a better life through development around the world.



# United States Agencies

- The Environmental Protection Agency (EPA)- oversees all government efforts related to the environment including science, research, assessment, and education (writes & develops regulations)
- The Occupational Safety and Health Administration (OSHA) - (*dept. Of Labor*) federal agency responsible for the enforcement of health and safety regulations to prevent injuries, illness and death at the workplace.
- The Department of Energy (DOE) - advance energy and economic security of the U.S. through science discoveries, innovation and environmental responsibilities.

# Other Agencies

Non-governmental organizations (NGOs) that work on worldwide environmental issues:

- Green Peace
- International Union for Conservation of Nature
- World Wide Fund for Nature (formerly World Wildlife Fund)
- Friends of the Earth International

**TABLE 20.1 Major U.S. legislation for promoting sustainability**

Act	Abbreviation	Year enacted	Purpose	Prime example of a success
National Environmental Policy Act	NEPA	1970	Enhance environment; monitor with a tool: the Environmental Impact Assessment	Protection of coral formation and sea turtles has occurred.
Occupational Safety and Health Act	OSHA	1970	Prevent occupational injuries, illness, death from work-related exposure to physical and chemical harm	Worker training and knowledge of toxins has increased.
Endangered Species Act	ESA	1973	Protect animal and plant species from extinction	Bald eagle, peregrine falcon, and gray wolf populations have recovered.
Clean Air Act	CAA	1970	Promote clean air	Sulfur dioxide reductions from cap-and-trade have occurred.
Clean Water Act	CWA	1972	Promote clean water	Swimmable and fishable rivers across the United States have increased.
Resource Conservation and Recovery Act	RCRA	1976	Govern tracking and disposal of solid and hazardous waste	Numerous brownfields and contaminated lands have been cleaned up.
Comprehensive Environmental Response, Compensation, and Liability Act	CERCLA, also called Superfund	1980	Force and/or implement the cleanup of hazardous waste sites	Dozens of Superfund sites have been cleaned up around the United States.

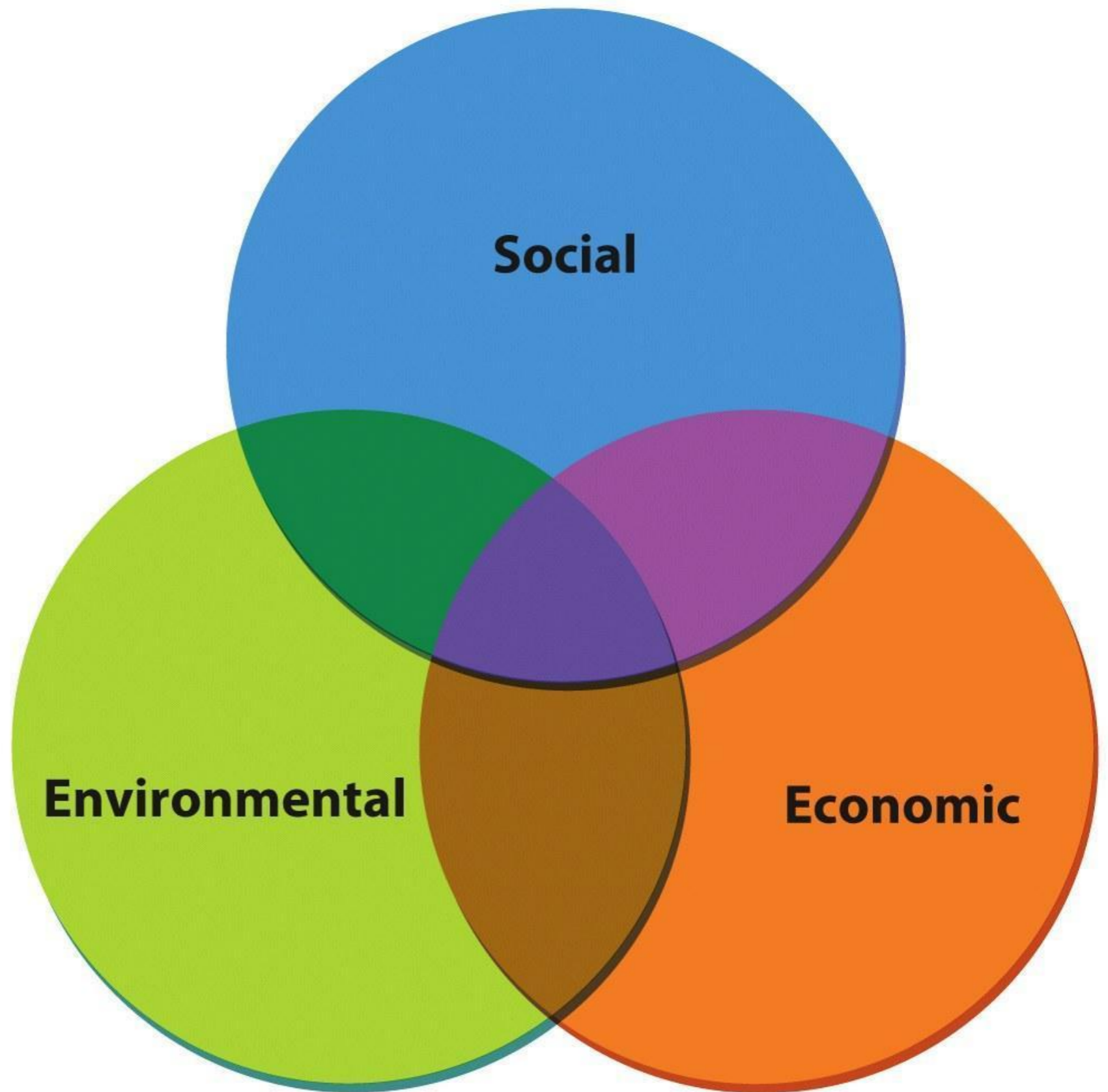
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**Triple bottom line:** when making decisions about business, the economy, and development *(true success, there must be adequate treatment of both humans and environment).*

Sustainability is believed to be achievable at the intersection of the three circles.

Ex. Several major U.S. automobile manufacturers are considered to be prime examples of unsustainable business practices



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# Deterrents and Incentives

Ways to protect the environment, promote human safety and welfare and in some cases, internalize externalities:

*(combination of both is most desired results)*

1. **Command-and-Control approach** - sets regulations for emissions, and then controls them with fines or other punishments.
2. **Incentive-based approach** – constructs financial and other incentives for lowering emissions based on profits and benefits.

Taxation is a major deterrent used to discourage companies from producing pollutions and other negative impacts....

**Green Tax-** is a *tax placed on environmentally harmful activities or emission* in an attempt to internalize some of the externalities that may be involved.

~a tax alone may not be sufficient, **rebates and/or tax credits** are given to individuals & businesses purchases certain energy-efficient items such as lights, windows and doors.

# Millennium Development Goals

**Challenges:** reducing poverty & stewarding the environment!!

- Eradicate extreme poverty and hunger (*roughly 1/6<sup>th</sup> of the world's pop. lives in unsanitary conditions-informal settlements, slums, & earns less than \$1/day*)
- Achieve universal primary education
- Promote gender equality and empower women
- Reduce child mortality
- Improve maternal health
- Combat HIV/AIDS, malaria, and other diseases
- Ensure environmental sustainability (*The Green Belt Movement - replanting large land plots in Africa to reduce erosion & improve soil conditions - ex. moisture retention*).
- Develop a global partnership for development



# Environmental Justice

- The typical North American uses many more resources than the average person in many other parts of the world... this situation is not equitable (environmental equity)
- The inequitable distribution of pollution and of environmental degradation with their adverse effects on humans and ecosystems.
- People that are of lower incomes and minorities that have a disproportionate exposure to environmental hazards.