



# CHAPTER 23

## ECONOMICS, ENVIRONMENT, AND SUSTAINABILITY

APES 2013

1

### Environmentally Sustainable Economic Development

FIG. 23-1

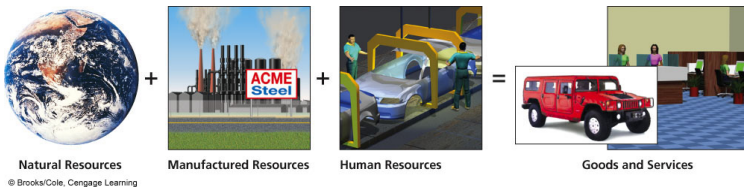


© Brooks/Cole, Cengage Learning

2

### Economic Systems

- \* Supported by three types of resources:
  - \* Natural capital
  - \* Human capital
  - \* Manufactured capital



© Brooks/Cole, Cengage Learning

FIG. 23-2

3

# Market Economic Systems

- \* Depend on interactions between buyers and sellers
- \* Pros and cons of private ownership of all resources (no government interference)
- \* Government involvement in open-access resources and correcting market failures (monopolies)
- \* Private goods vs. public services

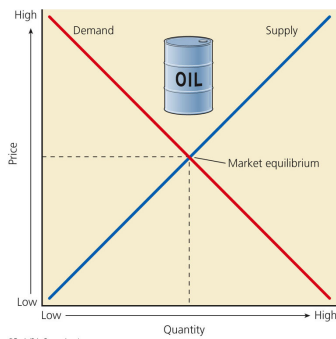
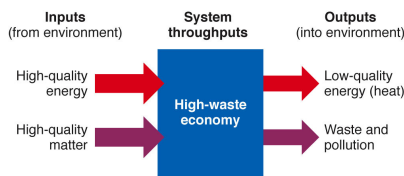


FIG. 23-3

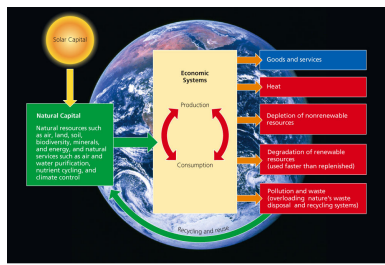
4

# High-throughput Economies

- \* Resources flow through and end up in planetary sinks (air, water soil, and organisms)
- \* Problems:
  - \* Resources are limited
  - \* Economic development needs to consider how practices impact the environment
  - \* Prices need to indicate all indirect costs



FIGS. 23-4 & 23-5



5

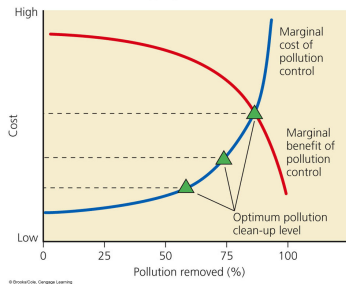
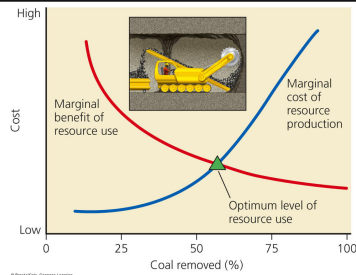
# Estimating Value

- \* Use values
- \* Nonuse values - existence, aesthetic, and bequest
- \* Mitigation cost - cost to offset any environmental damage
- \* Willingness to pay - how much people would be willing to pay to maintain the resource
- \* Discount rate - estimate of resource's value in the future compared to present day (does not take into consideration the ecological services provided)
- \* Optimum levels - where cost of resource production does not exceed benefit of resource

6

# Cost-Benefit Analysis

- \* Comparing estimated costs and benefits for actions
- \* Tries to estimate the optimum level of pollution cleanup or resource use
- \* Guidelines:
  - \* Uniform standards
  - \* State all assumptions
  - \* Estimates of ecological services
  - \* Data reliability
  - \* Examine short-term vs. long-term



FIGS. 23-7 & 23-8

7

# Pricing

- \* Market price (direct price) does not include the indirect (external) costs
- \* Direct and indirect costs of a car
- \* Benefits of full-cost pricing - reduce waste, pollution, and environmental degradation
- \* Problems with full-cost pricing - producers would have to charge more, difficult to estimate environmental costs, most don't connect indirect costs with the things they buy
- \* Informed consumers can vote with their wallets
  - \* eco-labeling and certification programs

8

# Rewarding Sustainable Businesses

- \* Phase out environmentally harmful subsidies and tax breaks
- \* Phase in environmentally beneficial subsidies and tax breaks for pollution prevention
- \* Tax pollution and waste and not wages and profits
  - \* Green taxes (used in Europe)



FIG. 23-9

9

# Laws and Regulations

- \* Could move from “command and control” to “incentive based” regulations
- \* Cap-and-Trade
- \* Changing from a material-flow economy to a service-flow economy



FIG. 23-10

10

# Poverty Reduction

- \* Trickle-down economics is the traditional viewpoint (a growing economy will provide more jobs for the poor)
- \* This philosophy has caused a wealth gap
- \* Developed countries can help by canceling debt to the poorest nations
- \* Combat malnutrition and infectious disease
- \* Provide education resources
- \* Family planning
- \* Reduce ecological footprints
- \* Invest in small scale infrastructure
- \* Microloans

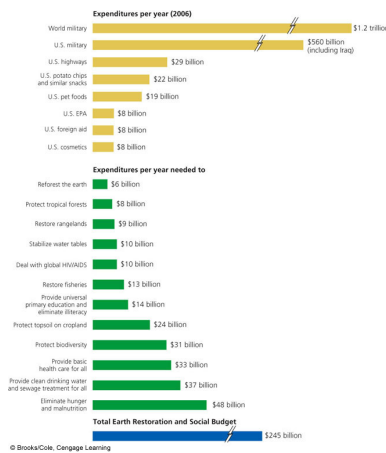


FIG. 23-12

11

# Making the Transition

- \* Temporary solution: convert linear high-throughput economies to circular matter recycling and reuse economies
- \* Long-term solution: make the transition to a low-throughput economy

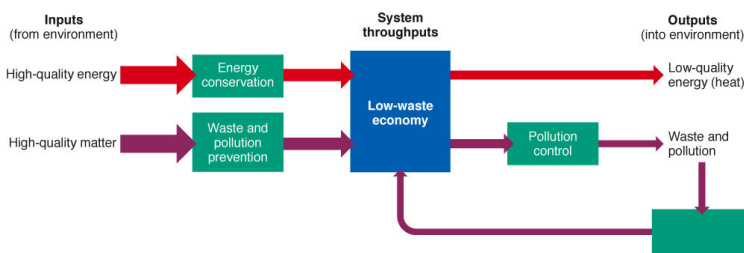


FIG. 23-13

12