

# *ENV 301: Environmental Science*

## *A Study of Interrelationships*

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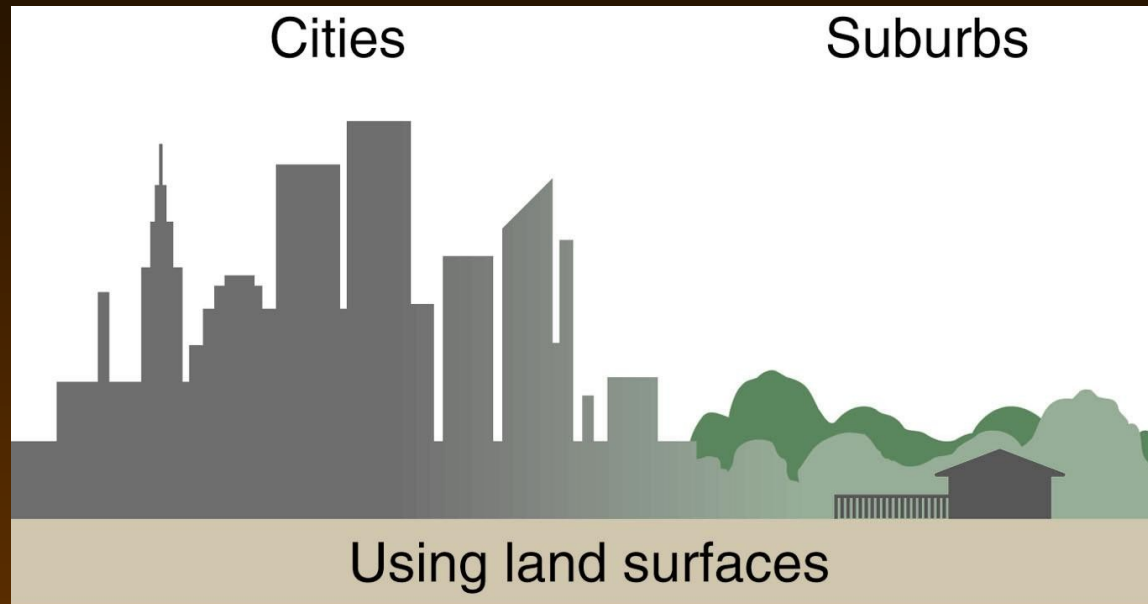
Text: Enger • Smith  
Ninth Edition

## Chapter 13

### Land Use & Planning

# Land-Use Planning

## Chapter 13



### Conflicting desires

- Industry
- Housing
- Transportation
- Commercial development
- Recreation

} Planning  
resolves  
conflicts

# Chapter Outline

- Need For Planning
- Historical Forces
- Rural to Urban Shift
- Urban Sprawl
- Problems With Unplanned Growth
- Land-Use Planning Principles
- Urban Planning Issues
- Federal Government Land Use Issues

# The Need For Planning

- 1/3—1/2 world's surface altered by humans.
  - Most change done with minimal forethought to consequences.
- Most land-use decisions are still based primarily on economic considerations or short-term needs rather than on unique analysis of the landscape.
  - Natural ecosystems should be considered a non-renewable resource.

# Historical Forces That Shaped Land Use In North America

- First U.S. colonists converted landscape to farming, and then to towns and cities.
- Waterways provided primary method of transportation.
  - Allowed exploration and development of commerce.
  - Early towns usually built near water and at transfer points between water systems.

# Water and Urban Centers



# Rural-To-Urban Shift

- North America remained essentially rural until industrial growth began in last 1/3 of 1800s.
- **Industrial Revolution**
  - Industrial jobs to be found in cities.
- **European Immigrants**
  - Congregated in, and subdivided cities.
    - ❖ Offered variety of cultural, social, and artistic opportunities.

# Migration from Central City To The Suburbs

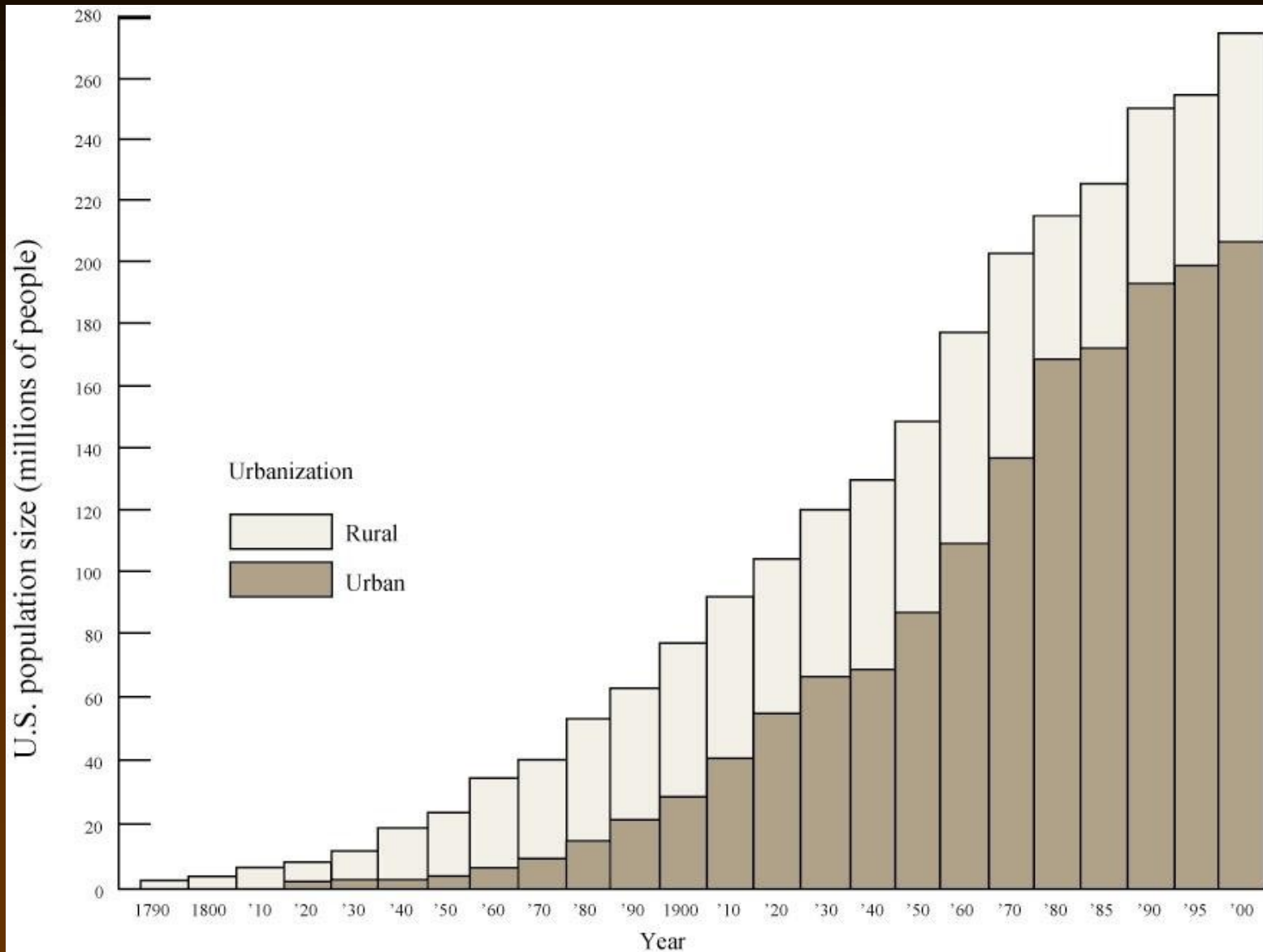
- Industrial Revolution led to polluted, undesirable waterways.
  - As roads and rail transport became more common, many left the waterway areas.
- As land prices in the city rose, people began to look for cheaper areas away from the city.
  - 1950—60% urban population lived in central cities.
  - 1990—30% urban population lived in central cities.



# Migration from Central City To The Suburbs

- Agricultural land surrounding towns was converted to housing.
- Land began to be viewed as a commodity, not a non-renewable resource to be managed.
- Most single family houses after WWII were built on large lots away from city congestion.

# Rural-to-Urban Population Shift



# Suburb Migration

- Convenience and personal automobiles escalated decentralized housing patterns and diminished importance of mass transit.
  - Decreased energy efficiency.
  - Increased cost of supplying utility services.



# Urban Sprawl

- **Urban Sprawl**—Pattern of unplanned low density housing and commercial development outside of cities.
  - Usually takes place on undeveloped land.
  - Wealthy **suburbs** adjacent to the city.
  - **Tract Development**—Construction of similar residential units over large areas.



# Urban Sprawl

- **Ribbon Sprawl**—Commercial / industrial buildings line side of highways connecting housing developments to central city.
- **Megalopolis** Merge of cities into large, urban areas.



# Factors That Contribute to Sprawl

- **Lifestyle**
  - Increased wealth of population.
- **Economic**
  - Building on agricultural land less expensive.
  - Tax laws encourage home development.
- **Planning and Policy**
  - Historically, little coordination of effort.
  - Zoning ordinances prohibit land use mixing.
  - Government subsidies.

# Problems Associated With Unplanned Growth

- **Transportation**

- Little thought to transportation corridors.
- Establishment of new corridors stimulates growth in nearby areas.
- Average person in U.S. spends 9 hrs/wk in an automobile.

- **Air Pollution**

- As traffic increases, so does air pollution.

# Problems Associated With Unplanned Growth

- **Energy Efficiencies**
  - Automobiles are inefficient transportation.
  - Decentralized cities—longer commutes.
  - Stop and go traffic patterns.
  - Single family homes less efficient.
- **Loss of Sense of Community**
- **Death of Central City**
  - Less income to support public services.



# Problems Associated With Unplanned Growth

- Higher Infrastructure Costs
- Loss of Open Space
  - Often times open space planning left out of development plans.
- Loss of Farmland
  - Flat, well-drained land ideal for both farmland and urban development.
  - Partial transformation often leads to whole transformation.

# Problems Associated With Unplanned Growth

- Water Pollution Problems
- Floodplain Problems
  - Many cities located on floodplains.
    - ❖ Flat, nutrient rich.
  - Development increases economic losses.
    - ❖ Many communities have enacted floodplain zoning ordinances.

# Problems Associated With Unplanned Growth

- **Wetlands Misuse**

- Many have been drained, filled, or used as landfills.
- Wetlands play crucial role in reproductive phase of many organisms.
- Provide sediment filtration.

- **Other**

- Building on fault lines.
- Building in dry areas.

# Land-Use Planning Principles

- **Land-Use Planning**—Evaluating needs and wants of a population, as well as land characteristics and value, and various alternative solutions to land uses before changes are made.



# Land-Use Planning Principles

- Evaluate and record unique features.
- Preserve unique cultural or historical features.
- Conserve open space and env. features.
- Calculate additional charges for altering land.
- Plan for mixed uses in close proximity.
- Plan variety of transportation options.
- Set limits and managed growth patterns.
- Encourage development in areas of existing infrastructure.

# Mechanisms For Implementing Land-Use Plans

- Establish state or regional planning agencies.
- Purchase land or use rights.
- Regulate Use
  - **Zoning**—Designating land for specific uses.
    - ❖ Often planners represent business or developing interests.

# Special Urban Planning Issues

- Urban Transportation Planning
  - Four Goals
    - ❖ Conserve energy and land resources.
    - ❖ Provide efficient / inexpensive transportation.
    - ❖ Provide suburbanites efficient transportation opportunities.
    - ❖ Reduce urban pollution.

# Urban Transportation Planning

- **Problems with Mass Transit**
  - Only economical along heavily populated routes.
  - Extremely expensive to build / operate.
  - Often crowded and uncomfortable.
  - U.S. government encourages personal autos by financing highways, maintaining cheap energy policy, and not funding mass-transit projects (hidden subsidies).



# Urban Recreation Planning

- Nearly 3/4 of North American population lives in urban areas.
- Until recently, urban parks were considered an uneconomical use of the land.
- New outgrowth of urbanization is the development of urban nature centers.



# Redevelopment of Inner City Areas

- Many industrial cities are plagued by high cost of cleanup and renovation of **brownfields**.
  - Vacant industrial and commercial sites.
    - ❖ **Brownfield Development**—Degree of clean-up required to support intended use of the site.

# Smart Growth

- Smart Growth recognizes benefits of growth.
- **Smart Growth Principles**
  - Mix land uses.
  - Take advantage of compact designs.
  - Create range of housing opportunities.
  - Create walkable neighborhoods.
  - Foster distinctive, attractive neighborhoods.
  - Preserve open space and critical areas.

# Smart Growth Principles

- Strengthen development of existing areas.
- Provide variety of transportation choices.
- Make fair, cost-effective decisions.
- Encourage community collaboration.

# Federal Government Land-Use Issues

- **Multiple Use Sustained Yield Act**
  - 1960—Divided use of national forests into (4) categories:
    - ❖ Wildlife Habitat Preservation
    - ❖ Recreation
    - ❖ Lumbering
    - ❖ Watershed Protection

# Federal Government Land-Use Issues

- **1872 Mining Law**

- “Miners” allowed to purchase mineral extraction rights to public land for \$5.00 per acre and keep rights as long as minimal maintenance continued.
  - ❖ Encouraged mining and mineral supplies.

# Public Land for Outdoor Recreation

- Conflicts develop because some activities cannot occur in the same place at the same time.
- Both groups argue they pay taxes, thus “own” the land and have a right to use it.
- Solution must be land-use allocation and enforcement of such allocations.

# Chapter Summary

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