Sustainable Cities: Urban Land Use & Management

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OUTLINE

1. Urbanization
2. Urban Resource & Environmental Problems
3. Transportation & Urban Sprawl
4. Ecological Land Use Planning
5. Livable & Sustainable Urban Areas

1. Urbanization

Worldwide urbanization trends

- 44% of the global population lives in urban areas
- the number of megacities (over 1 million people) is increasing
- developing countries should reach 57% urbanization by 2025
- developed countries should reach 84% urbanization by 2025
- poverty is becoming increasingly urbanized

Urbanization

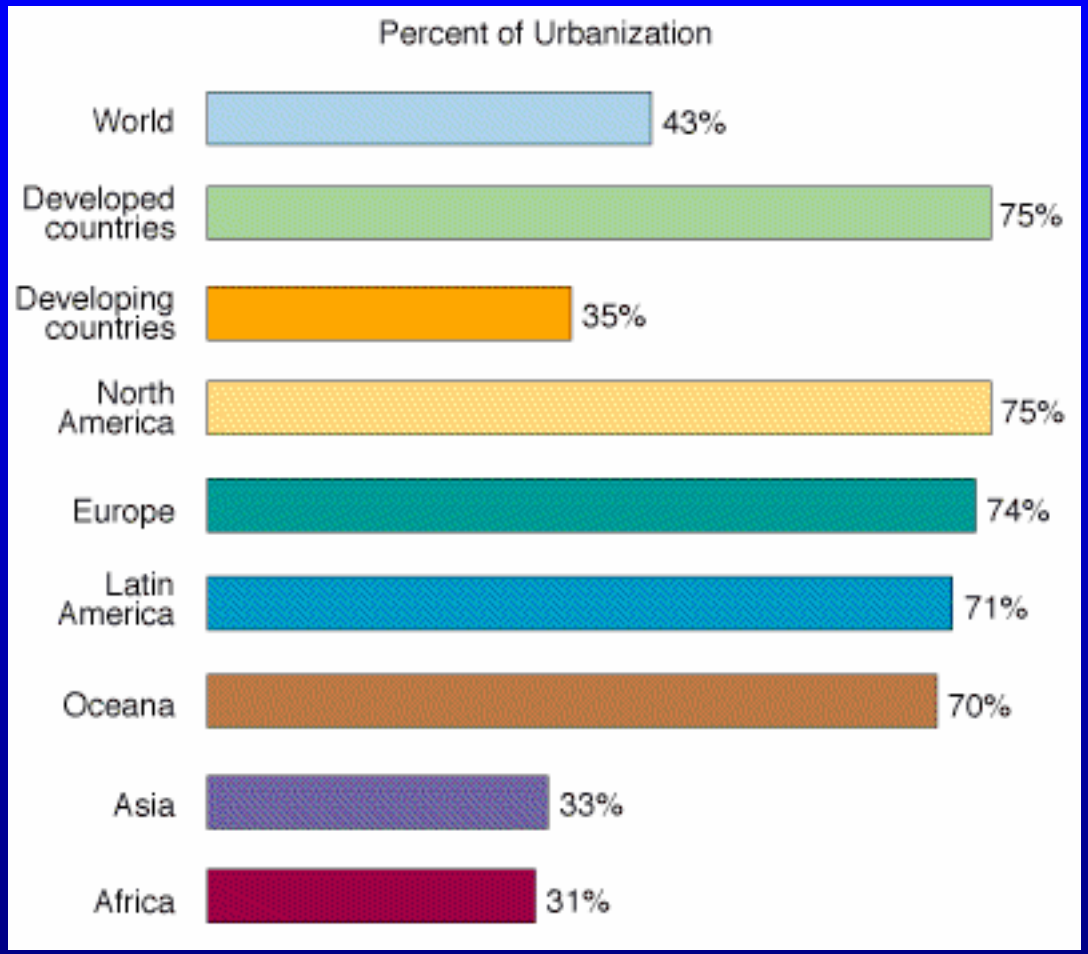


Fig. 26–2

Urbanization

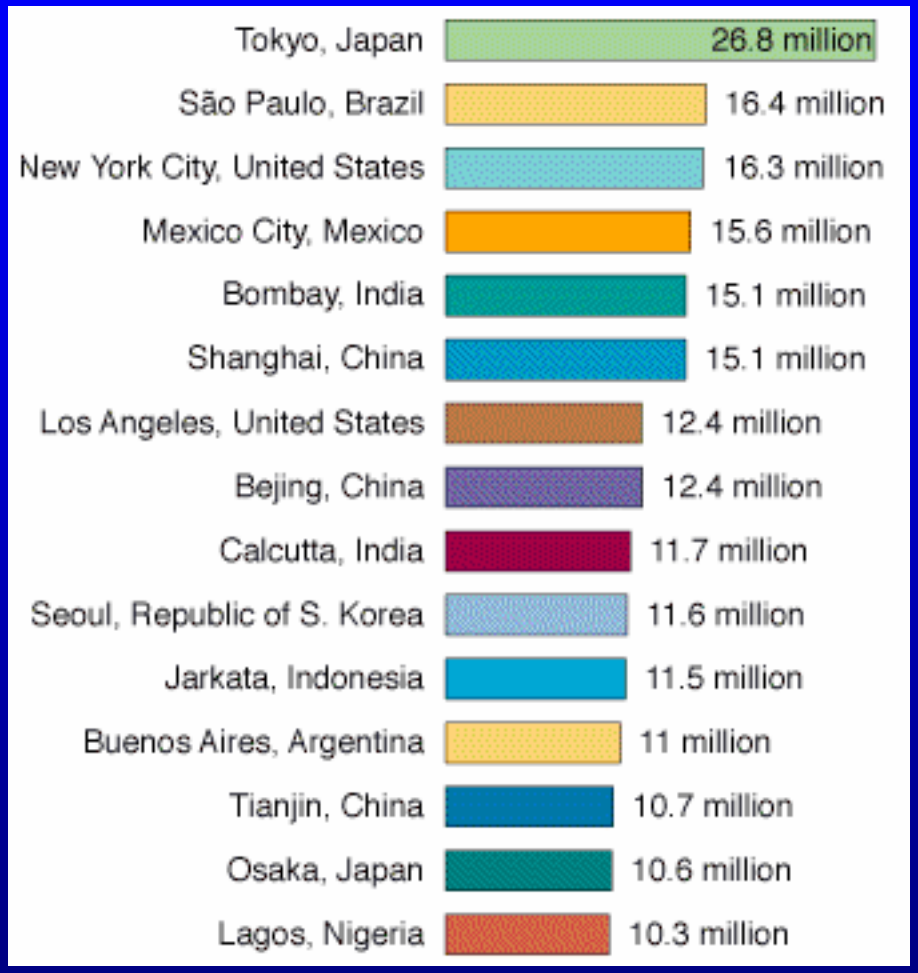


Fig. 26–3

Urbanization

Causes of urban growth

natural increase

- better sanitation & health care in cities lowers the death rate

immigration

- cities are centers for new jobs, education, higher incomes, culture

Urbanization

Focus on the United States

- 75% of the population live in 350 metropolitan areas (cities & towns with at least 50,000 people)
- almost 50% of the population lives in consolidated metropolitan areas containing 1 million or more people

(see Fig. 26–5)

Urbanization

Focus on the United States

Current general migration patterns

- from central cities to suburbs & small cities
- from the North & East to the South & West
- form urban areas back to rural areas

Urbanization

Focus on the United States

Current general migration patterns.

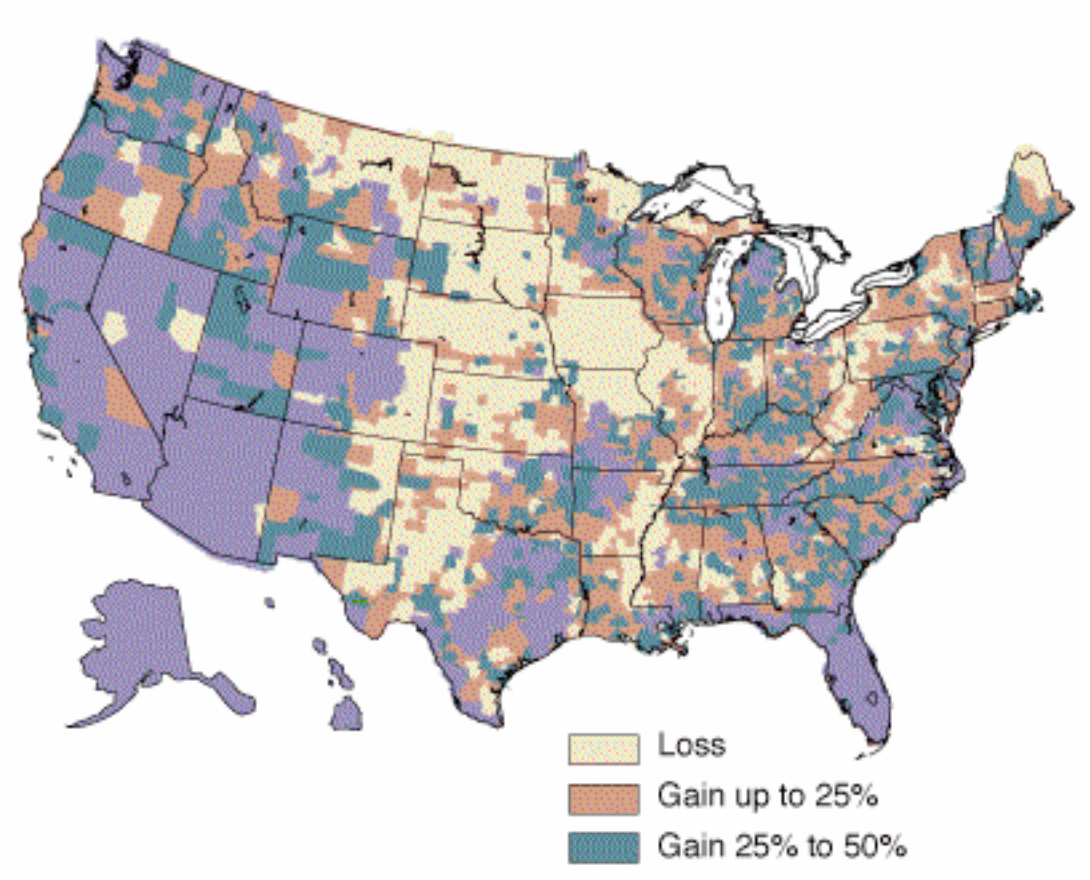


Fig. 26–6

Urbanization

Fig. 26-8

Urbanization

Focus on the United States

Spatial patterns of development

1) Concentric–circle city

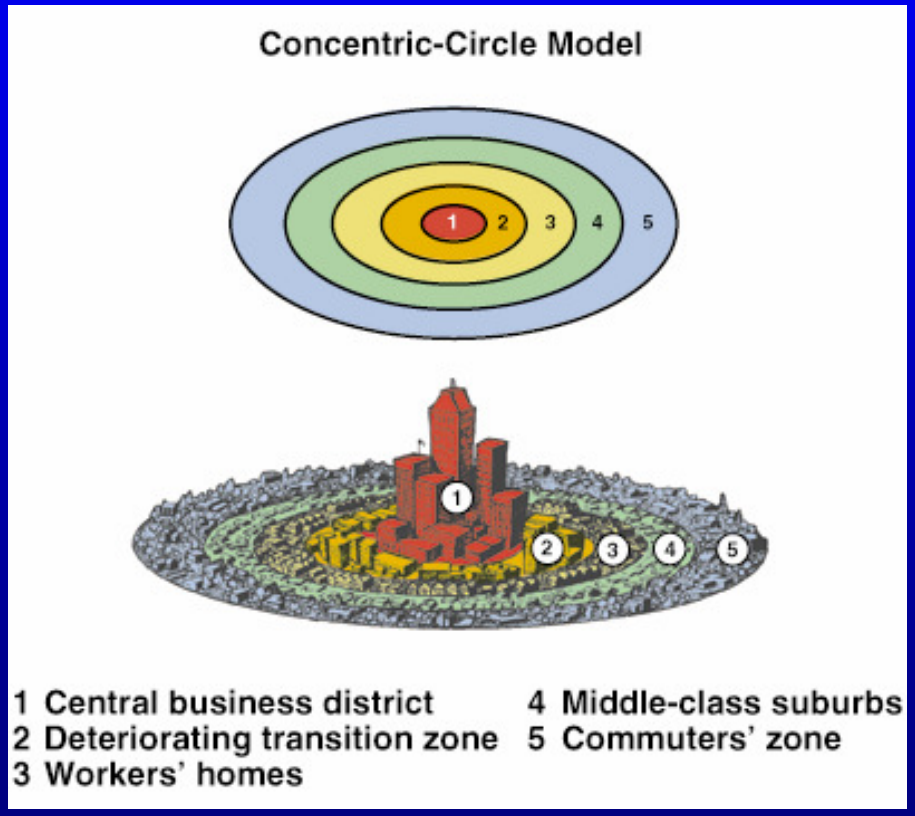


Fig. 26–7a

Urbanization

Focus on the United States

Spatial patterns of development

2) Sector model

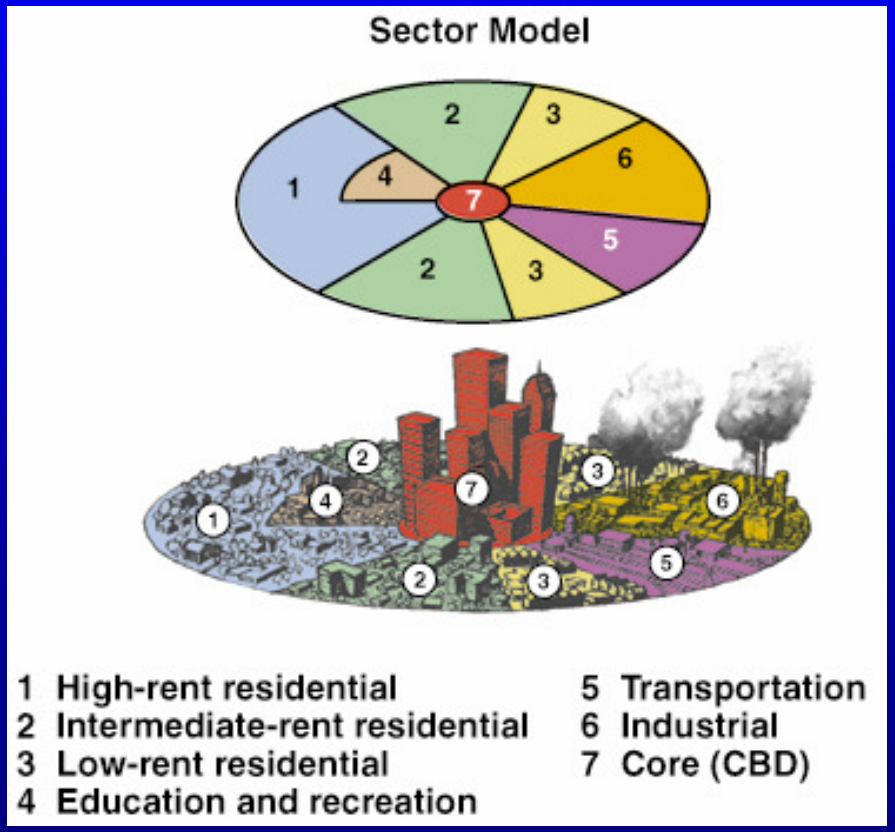


Fig. 26–7b

Urbanization

Focus on the United States

Spatial patterns of development

1) Multiple–nuclei model

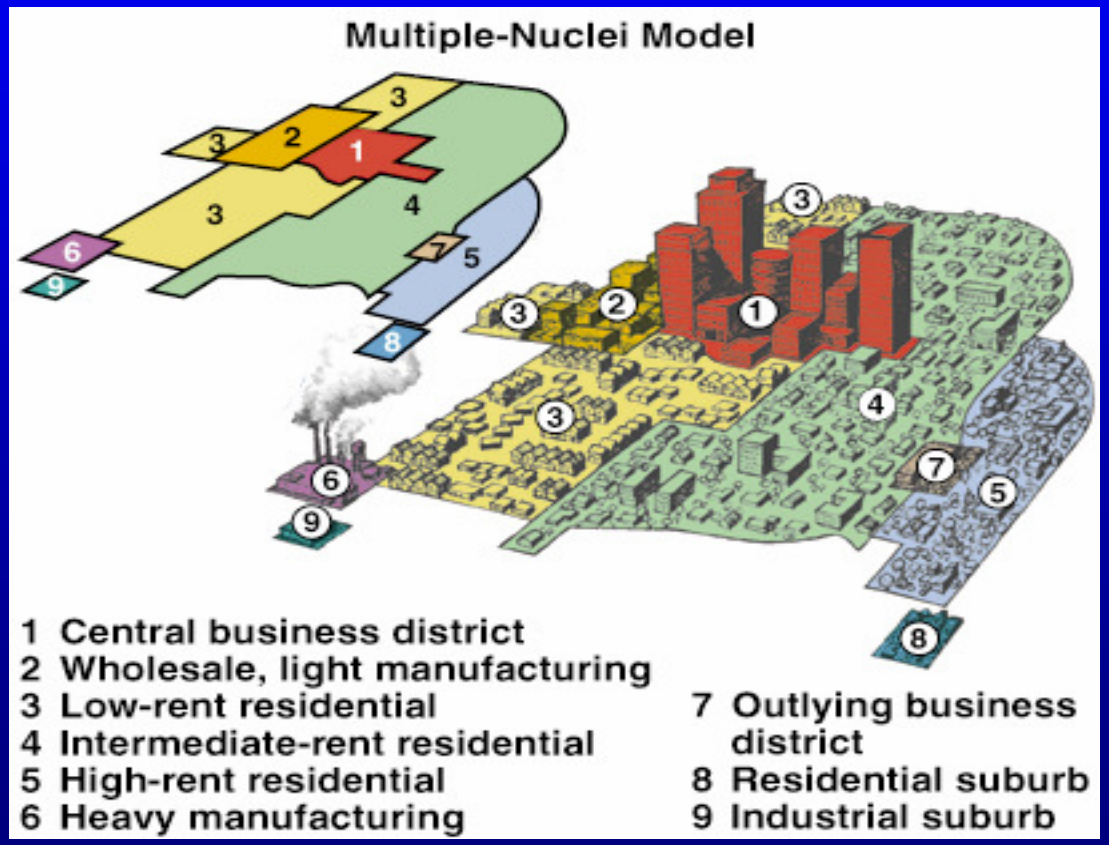


Fig. 26–7c

2. Urban Resource & Environmental Problems

Urban pros:

- recycling is economically feasible
- birth rates are lower
- concentrated people take up less space

Urban cons:

- a great deal of land is used to provide food, energy, & water
- production of enormous quantities of waste that pollute air, water, & land in & outside boundaries
- urban heat islands & noise pollution

Resource & Environmental Problems

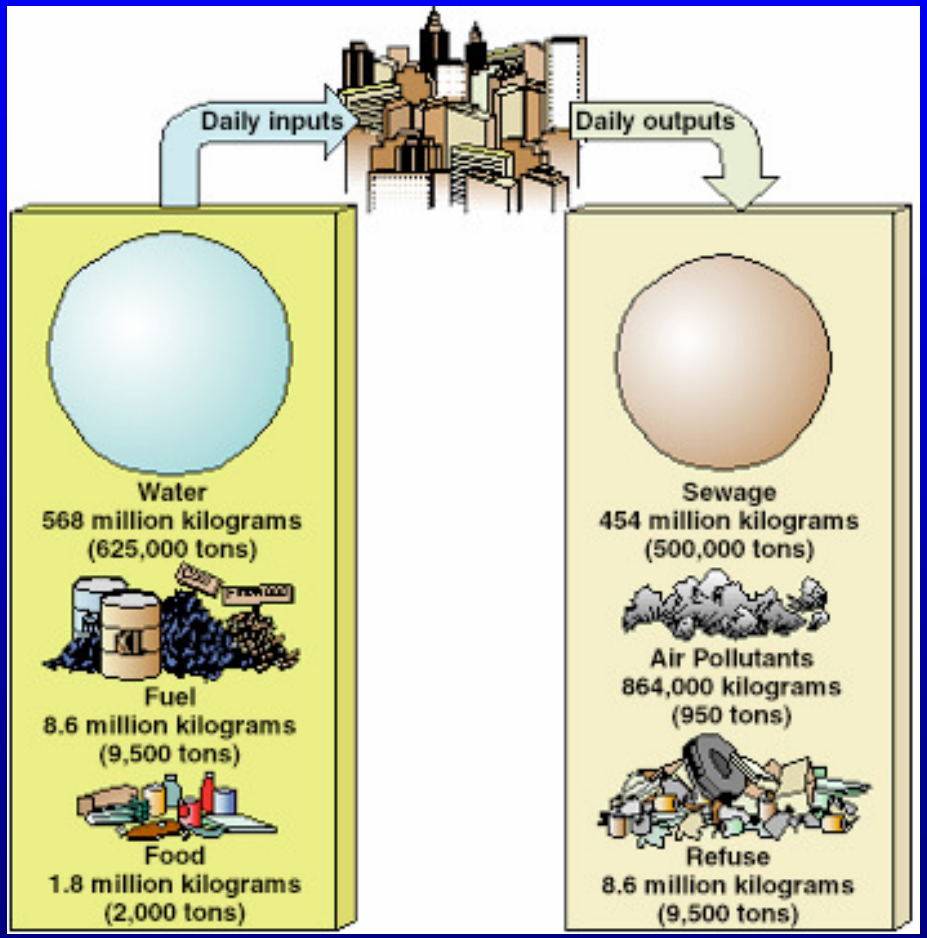


Fig. 26–9

3. Transportation & Urban Sprawl

Urban sprawl

A combination of cheap gasoline, plentiful land, & a network of highways produces dispersed, automobile–oriented cities with low population density.

Transportation & Urban Sprawl

Characteristics of urban sprawl

single family housing

- unshared walls are not energy efficient
  houses & lawns replace natural landscapes & farmland

dependence on the automobile

- residents must drive to work, services, & recreational facilities
- contributes to expanding development, air pollution, global warming, & non–renewable resource use

Transportation & Urban Sprawl

Environmental impacts of the automobile

- largest source of air pollution – 15% of global carbon dioxide emissions
- 2/3 of the oil used in the U.S. & 1/3 of the world's total oil consumption for transportation
- makes urban sprawl possible – in U.S. more land is devoted to cars than housing
- cars are becoming more fuel efficient, but people are driving more & for longer distances

Transportation & Urban Sprawl

Alternatives to the automobile

bicycle transportation

- the most energy efficient form of transportation
- produces no pollution when in operation & requires few resources to produce
- bike lanes in Denmark allow 25% of urban trips to be made by bicycle
- bike lanes, bike storage, & bike–&–ride combinations with mass transit encourage bicycling
- highly populated countries like China are increasingly giving up bicycles in favor of cars as the population's affluence increases

Transportation & Urban Sprawl

Alternatives to the automobile

mass transit

- 3% of travel in U.S., 15% in Germany, 47% in Japan
- mass – transit options include
  - – rail systems
  - – regional trains
  - – buses
- advantages
  - – more energy efficient than the automobile
  - – use less land & create less pollution
  - – provide transportation for those that cannot drive

NY Subway: http://thefutureschannel.com/dockets/hands-on_math/new_york_city_subway/swf/video.swf

Transportation & Urban Sprawl

Potential routes for high-speed bullet trains in the United States and parts of Canada. Such a system would allow rapid, comfortable, safe, & affordable travel between major cities in a region. It would greatly reduce dependence on cars, buses, & airplanes for trips among these urban areas.

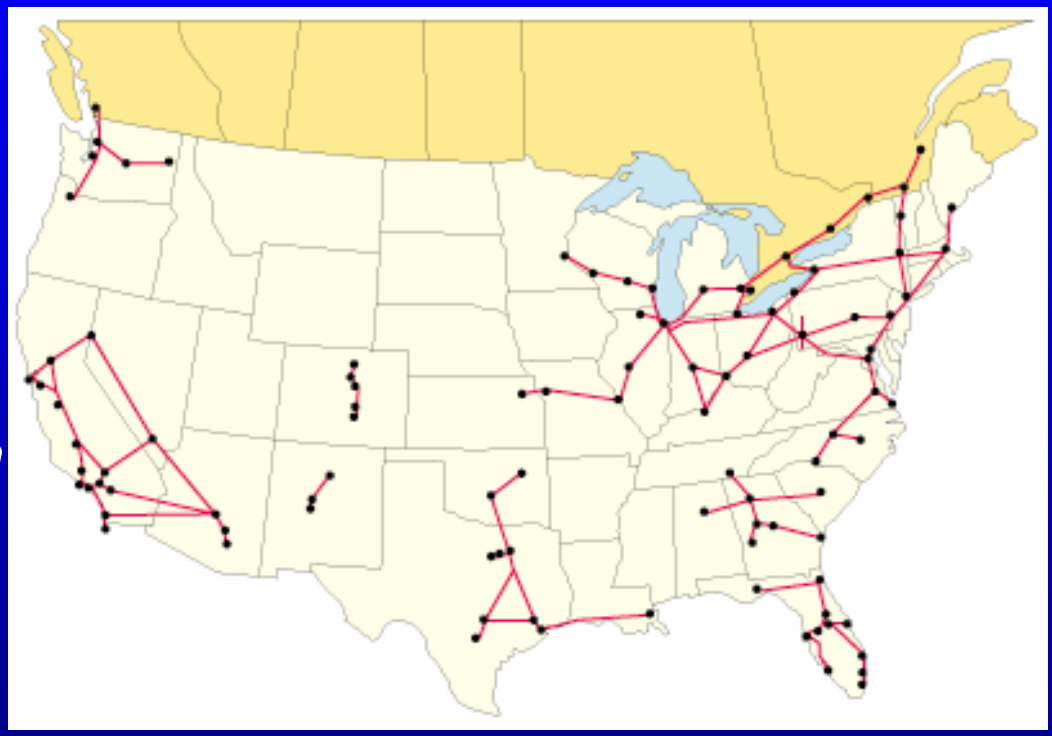
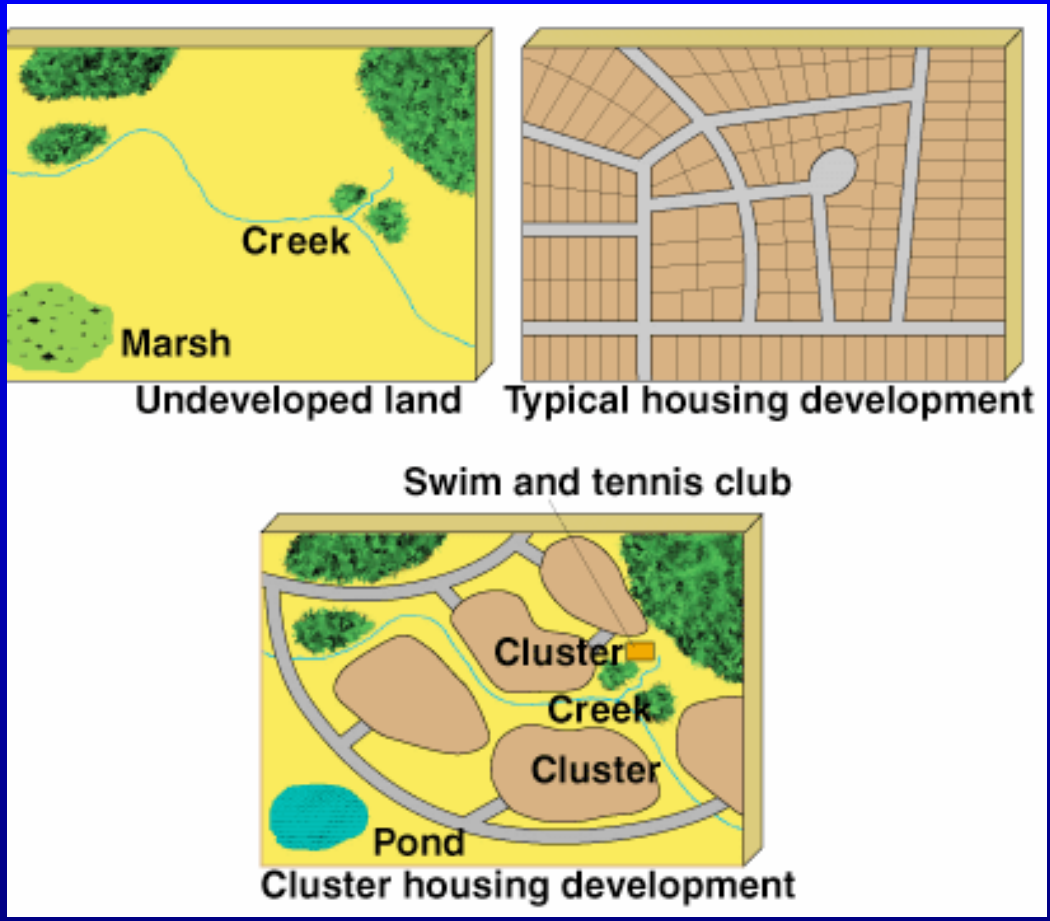


Fig. 26-12

Transportation & Urban Sprawl

Conventional and cluster housing developments as they might appear if constructed on the same land area. With cluster development, houses, townhouses, condominiums, & two- to six-story apartments are built on part of the tract. The rest, typically 30% of the area, is left as open space, parks, and cycling and walking paths.



Chicago Wilderness: http://video.nationalgeographic.com/video/player/places/parks-and-nature-places/wildlife/us_chicagowilderness.html

4. Ecological Land Use Planning

Ideal planning process takes into account geological, ecological, economic, health, & social factors

six steps:

1) make an environmental & social inventory

identify & protect areas critical for preserving water quality, supplying drinking water, preserving wildlife habitat & identify areas vulnerable to pollution & flooding

2) identify & prioritize goals

goals might include preserving cropland & forest or reducing sprawl

Ecological Land Use Planning

Ideal planning process takes into account geological, ecological, economic, health, & social factors

six steps (continued):

3) develop individual & composite maps

   one each for geological, ecological, & socio–economic factors

4) develop a master composite

5) develop master plan

6) implement master plan

Ecological Land Use Planning

Example: Portland, Oregon

- all rural land is zoned as forest, agriculture, or urban
- urban growth boundary limits sprawl
- mass–transit system in place
- high–density development along transit lines
- mixed development of offices, shops, & residences in the same area to provide access that is not car dependent
- limit on downtown parking spaces

5. Livable & Sustainable Urban Areas

- establish rapid rail transit between cities
- establish mass – transit for transport within urban areas
- encourage bicycling & walking
- develop recycling & waste prevention programs
- concentrate housing to preserve open space
- discourage automobile traffic
- zone for mixed use development