

Lecture 15 - Cities and Sustainability

1. What is the Footprint of Cities?
2. How have Cities grown?
3. What Characterizes Urban Sprawl?
4. Why are Modern Urban Areas Problematic?
5. How to support Sustainable Cities?

Key Concepts

- Characteristics of the footprint of cities
- Trends in urbanization
- Characteristics of urban sprawl
- Environmental issues with cities; sustainable solutions
- Support needed for sustainable cities

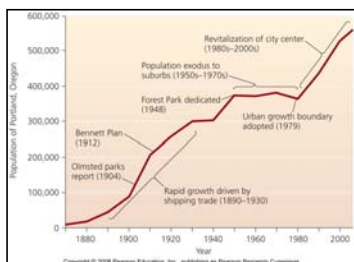
1. What is the Footprint of Cities?

- Urban environments:

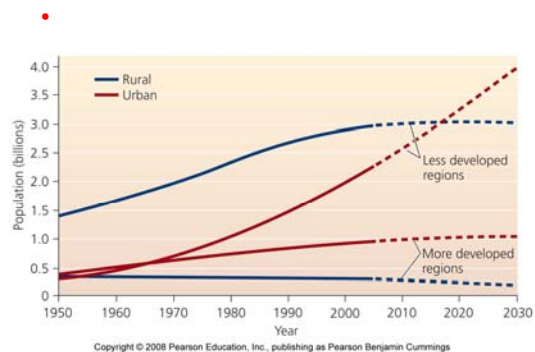


2. How have Cities grown?

- Significant process in Europe and North America over the last century:



Cities in the Developing World



3. What Characterizes Urban Sprawl?

- Land-use patterns:



(a) Uncentered commercial strip development




(d) Sparse street network

Copyright © 2008 Pearson Education, Inc., publishing as Pearson Benjamin Cummings

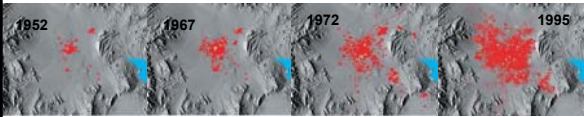
Copyright © 2008 Pearson Education, Inc., publishing as Pearson Benjamin Cummings

What Characterizes Urban Sprawl? (2)

- Uncoordinated land-use patterns
- Based upon car driven transportation





Population Growth & Land-use consumption →





4. Why are Modern Urban Areas Problematic?


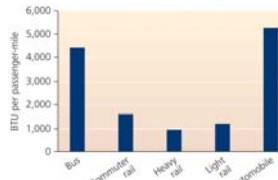
- Cities :




Less Sustainable	More Sustainable
Discharge of sewage into water bodies with low level of treatment	Tertiary treatment of sewage; use of natural means of sewage treatment
	
Channelized urban stream	Natural stream

Less Sustainable	More Sustainable
<ul style="list-style-type: none"> • Destruction of natural landscape; • heavy use of chemical fertilizers, herbicides, pesticides 	<ul style="list-style-type: none"> •
	

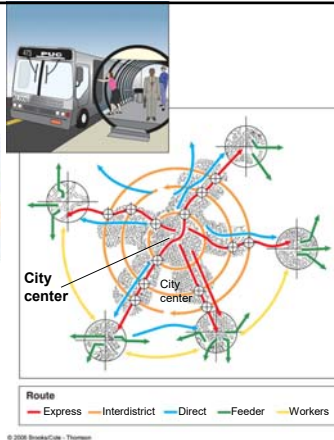
Less Sustainable	More Sustainable
<ul style="list-style-type: none"> • Low-density, spread-out residential development 	<ul style="list-style-type: none"> • Compact forms of residential development
	
<p>"Leap-frog" development</p> <ul style="list-style-type: none"> • 	

Less Sustainable	More Sustainable
Employment based primarily on polluting industry	Employment based primarily on:
 <p>(b) Operating costs for different modes of transit</p>	 <p>(a) Energy consumption for different modes of transit</p>

Bus System of Curitiba, Brazil



- Serves more than 2.9 million people



5. How to support Sustainable Cities?

- E.g.:



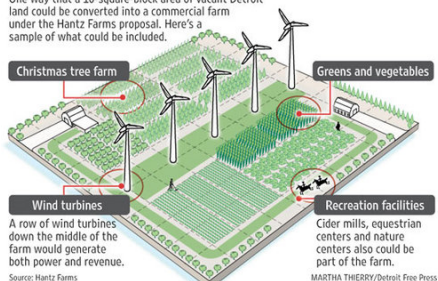
How to support Sustainable Cities?



How to support Sustainable Cities?

Farming on vacant city land

One way that a 10-square-block area of vacant Detroit land could be converted into a commercial farm under the Hantz Farms proposal. Here's a sample of what could be included.



Conclusion

- Urban environments are open systems, which have major environmental impacts
- Cities have steadily grown, and are expected to be where most of humanity will live in the future, therefore increasing the magnitude of these impacts
- Cities can designed to be more sustainable

TO DO!

1. Readings: chapter 13 in Textbook
2. Listen to Podcasts: Urban Environmental Management – Units 1 to 3
3. Quiz #4 ends on Friday, Nov. 17, at 10:00 p.m.
4. Tutorials **this week**: Debates week #2; bring the "Debate Evaluation Form"
5. Tutorials **next week**: Debates week #3 – **only if announced by your TA**; bring the "Debate Evaluation Form".
 - otherwise, no tutorial
