

Transportation
Communication
Energy
Economic
Infrastructure

Human Systems

How We Depend on Them

Human Systems- Introduction

- Our human systems depend on natural systems
- We make use of natural systems to meet our “needs” and “wants”
- We are one of the few species on earth that can manipulate our environment



Human Systems- Introduction



- We use technology to harvest natural resources
- We clear forests to build farms
- create chemicals to control pests
- build transportation routes to make connections between places
- build dams to reduce flooding and create hydro-electric power

Characteristics of Human Systems

- Are interconnected in a complex network of relationships
- Depend on natural systems
- Can be affected by outside events and influences
- Are not well understood by humans
- Operate on shorter timelines than natural systems
- May recycle wastes but usually end up with some, and more often with a lot of, harmful waste
- Display synergy

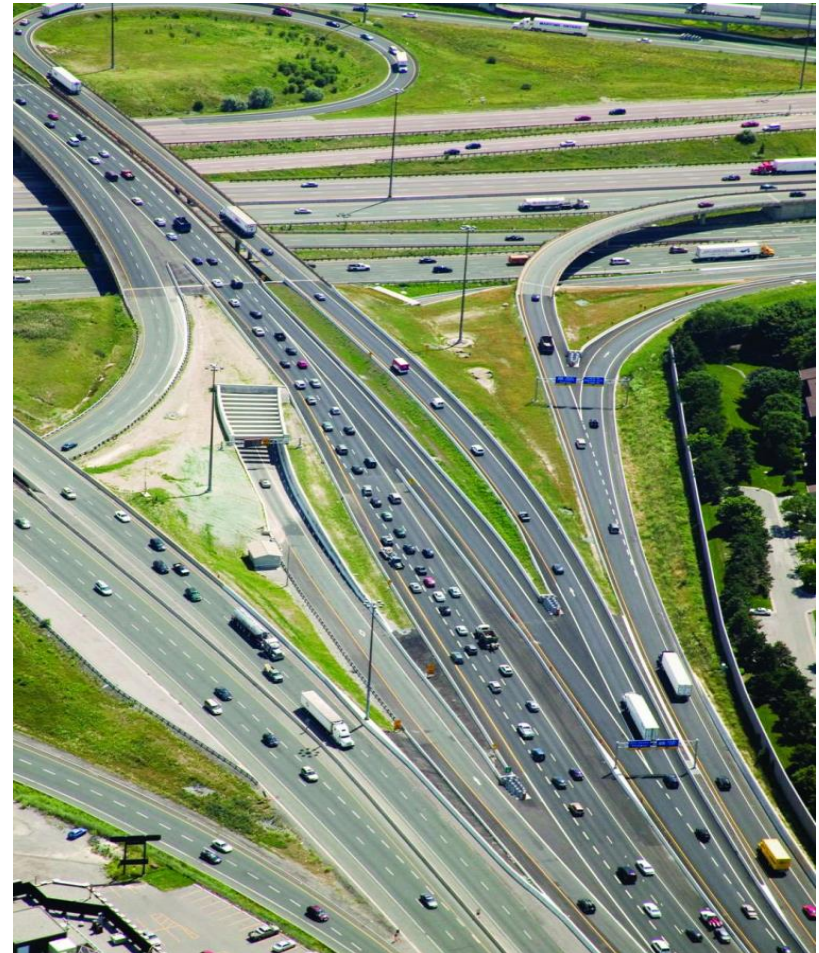
Transportation Systems

- The interconnected networks of roads and the bus, train, airline, and cycling routes that link you with other people and places.



Transportation Systems

- **Roadways** (figure 8.22)
 - Cars are **the single most popular form of transportation**
 - **Highway 401** in southern Ontario is the busiest highway in North America (450 000 vehicles per day)



Transportation System Issues

- Problems with **gridlock** (backup of traffic in urban areas)
- Not enough people in Canada to develop things like **high speed train** systems-too expensive
- **Questions to consider:**
 - What are the advantages and disadvantages of owning your own car?
 - What are some alternatives to using our cars so much?
 - Buses and subways

Transportation

- Waterways (oceans, Great Lakes)
 - Advantages:
 - Carry lots of cargo
 - Less pollution
 - Less expensive
 - Great for **non-perishable** (long-lasting) goods
 - Highly used for **international export**
 - Ports are busy-St. John's sees about **1300** cargo ships annually (1.4 million tons of cargo)



Transportation

- Airways:
 - Planes can go anywhere
 - Fast service for transporting goods and people
 - Important in areas without roads
 - Great for delivering perishable cargo quickly.
 - **80 million** passengers a year in Canada
 - Organized around **HUBS**-major centres used for transfer points (such as Toronto, Montreal, and Vancouver)

Transportation

■ Pipelines:

- Transport oil and gas to refineries and water to and from purification plants
- Very efficient way to transport liquids
- 540 000 km in Canada
- **Major disadvantage:**
Disturb wildlife habitat and migration patterns



An Example of Future Transportation Systems

- Watch the following video and answer the following question.
- Draw a Venn Diagram comparing possible future transportation systems with those we have today.

[A Possible Future of Urban Transportation](#)

Communication

- Satellite
 - Canada: First country in world to build a non-military satellite
 - Help Canadians communicate with one another via radio and television



Communication

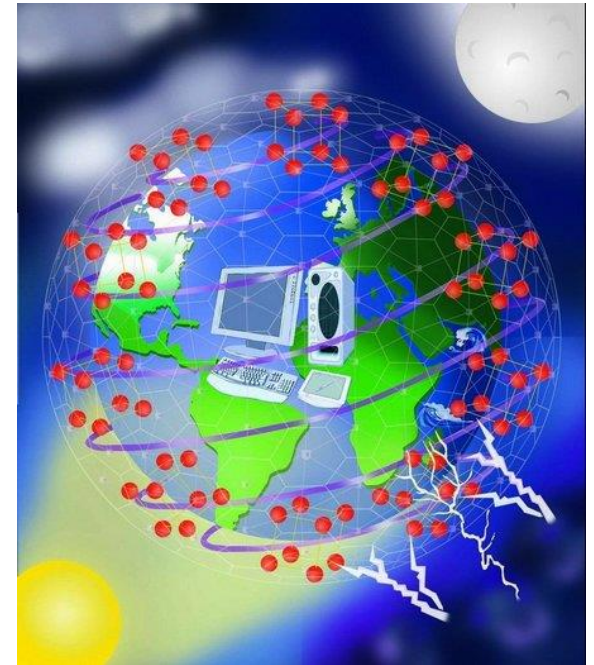
- **Cell Phones**

- Canada: Early users of wireless technologies
- **Advantage:** Wireless saves the trouble of filling our country with wires and poles for communication
- More people choosing to have cell phone as their main phone
- Centre of entertainment



Communication

- **Internet**
 - Used in daily lives of Canadians
 - World of information
 - Email, texting and social media are common ways to communicate
 - More affordable way to stay connected to people
 - Used in educational settings (smart board)



Communication

- **Internet Continued...**
 - Blogs (on line journals), audio files and podcasts are some modern ways we communicate.
 - **Banking** moved online (President's Choice Financial)
 - **Video conferencing** among groups of people
 - Changing the world of work (people working from home)



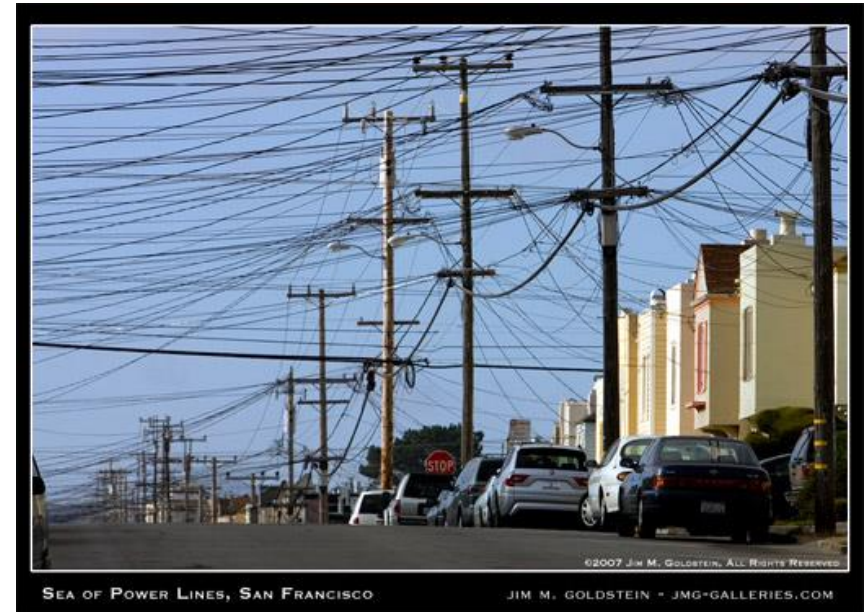
Energy

- Oil
- Natural gas
- Wood
- Hydro
- Nuclear
- Coal
- Solar power
- Wind power
- Geothermal power
- Tidal power
- Biogas power
- Ethanol
- Hydrogen fuel cell
- **All these will be discussed further in the section of the course dealing with energy resources**



Infrastructure

- Where does your water come from?
Have you ever thought about this question?
- How does electricity make its way to our home when we switch on the light?



Infrastructure

- The...
 - buildings
 - roads
 - bridges
 - schools
 - houses
 - hospitals
 - water systems
 - sewage systems
 - electrical systems
- ...that make up our human systems.



Economic

- Anything to do with the **economy** (flow of money) of a country
 - banks,
 - trade,
 - jobs,
 - manufacturing,
 - service,
 - tertiary,
 - quaternary



Class Work

- Read the Media Watch article on p. 62 of your text and then complete question 1, 2, and 3 in your text on p. 63.