

## **Unit I: Natural and Human Systems**

### **1.2 Identify and Describe Human Systems**

(pgs. 58 - 63)

#### **Human Systems**

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

#### **Synergy**

- The phenomenon wherein the set of several elements that produces superior affect these components alone.
- Example: A house.
- All parties work (together) to provide a secure and comfortable shelter.

#### **Types of Human Systems:**

##### **1. Communication:**

###### *a. Satellite:*

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

###### *b. Cell Phones:*

- Early users of wireless technologies.
- Wireless saves the trouble of filling our country with wires and poles for communication.
- People choosing to have cell phone as their main phone.
- Centre of entertainment

c. *Internet:*

- Used in daily lives of Canadians.
- World of information.
- E-mail and texting is common way to communicate.
- More affordable way to stay connected to people.
- Used in educational settings (smart board).
- Blogs, on-line journals, audio files and podcasts are ways we communicate.
- Banking moved online (i.e: President's Choice Financial).
- Video conferencing among groups of people.
- Changing the world of work (people working from home).

2. **Transportation:**

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

a. *Roadways:* (figure 8.22)

- Cars single most popular form of transportation.
- Not enough people to warrant things like high speed trains-too expensive.
- Highway 401 busiest highway in North America (450 000 vehicles a day).
- Problems with gridlock (backup of traffic in urban areas).
- What are the advantages and disadvantages of owning your own car?
- What are some alternatives to using our cars so much? - Buses and subways, etc...

b. *Waterways:*

• Advantages:

1. Carry lots of cargo.
  2. Less pollution.
  3. Less expensive.
- Great for goods long-lasting (non-perishable).
  - International export.
  - Ports are busy: St. John's sees about 1300 ships annually (1.4 million tons of cargo)

c. *Airways:*

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

d. *Pipelines:*

- Transport oil and gas to refineries and water to and from purification plants.
- 540 000 km in Canada.
- Disturb wildlife habitat and migration patterns.

**3. Economic:**

- Anything to do with the economy of a country.
- Example: banks, trade, jobs, manufacturing, service, tertiary, quaternary, finances (money and the transfer of money)

**4. Energy:**

- All these will be discussed further in the section of the course dealing with energy resources (6.1)
- Oil
- Natural gas
- Wood
- Hydro
- Nuclear
- Coal
- Solar
- Wind power
- Geothermal
- Tidal power
- Biogas power
- Ethanol
- Hydrogen fuel cell

**5. Infrastructure:**

- The structures or networks of basic services needed for the functioning of a community or economy.
- Much of our infrastructure is underground.
- The day to day operation of our society is based on the services that infrastructure systems provide.
- The buildings, roads, bridges, schools, houses, hospitals, water systems, sewage systems, electrical systems, that make up our human systems.
- The next time you are walking through your town, imagine that the ground under your feet is transparent - looking down you would see the many layers of pipes, cables, sewers, drains.
- Look over head and you would find electric wires, phone wires, and cell phone towers.

**Worksheets:**

**#5: Human Systems**

**#6: Water Crisis**