

**Introduction and the Industrial Revolution (Rubenstein p 388 – 389)**

1. **Industry** refers to \_\_\_\_\_
  - a. What does a factory utilize and why? \_\_\_\_\_
2. What was the **Industrial Revolution**? \_\_\_\_\_
  - a. What was the spatial pattern of manufacturing before the Industrial Revolution? \_\_\_\_\_
    - i. What was this system known as? \_\_\_\_\_
  - b. (go back a paragraph) Where and when did this originate? \_\_\_\_\_
  - c. How did it diffuse? \_\_\_\_\_
  - d. What invention was most important for the development of factory-based manufacturing? \_\_\_\_\_
    - i. Why? \_\_\_\_\_
  - e. What effect did the Industrial Revolution have? \_\_\_\_\_
    - i. What previous content is this related to? \_\_\_\_\_
    - ii. What building material became easier to produce due to the steam engine? \_\_\_\_\_
    - iii. What industry was transformed from dispersed cottages to concentrated factories? \_\_\_\_\_
    - iv. What industry developed which helped feed urban factory workers? \_\_\_\_\_
  - f. What two transportation improvement splayed a critical role is diffusing the Industrial Revolution? How? \_\_\_\_\_

**3. Industrial Regions (Rubenstein p 389 – 391)**

- a. In what three world regions is industry concentrated? \_\_\_\_\_
  - i. What four countries produce ½ of the world's industrial output? \_\_\_\_\_
- b. There is lots of info on pgs 390 – 391, I have picked the most important below, use the text, map and captions to answer.
  - i. Along what river is most of Germany's industry located? \_\_\_\_\_
  - ii. What area in Spain is an industrial cluster? \_\_\_\_\_
    - What previous content from Unit 4 Political Geography is this related to? \_\_\_\_\_
  - iii. What region of Ukraine is an industrial cluster? \_\_\_\_\_
    - What current events is this related to (also Unit 4)? \_\_\_\_\_
  - iv. In what areas of North America has industry been traditionally concentrated? \_\_\_\_\_
    - By what term is this vernacular region known (lecture)? \_\_\_\_\_
  - v. In what three countries is East Asian Industry concentrated? \_\_\_\_\_
    - How did Japan become an industrial power in the 1950s and 1960s? \_\_\_\_\_
    - What two factors have led China to being one of the world's leading manufacturers? \_\_\_\_\_
    - What country followed Japan's lead? \_\_\_\_\_ What tier have they elevated themselves into? \_\_\_\_\_

**4. Site Factors in Industry (Rubenstein p 392 – 393)**

- a. What are site factors with regards to industrial production? What are the three main production factors that vary by location? \_\_\_\_\_
  - i. What is the most important site factor on a global scale? \_\_\_\_\_
    - What is a **labor-intensive industry**? \_\_\_\_\_
      - What is the average wage paid to manufacturing workers in developed countries? \_\_\_\_\_
      - What is the average wage in China and India? \_\_\_\_\_

- Does “high-wage” = “labor extensive”, why or why not? \_\_\_\_\_  
\_\_\_\_\_
- What is an industry called that has lower than average expenditures of labor? \_\_\_\_\_
- What is **Fordist** production? \_\_\_\_\_  
\_\_\_\_\_
- What is **post-Fordist** production? \_\_\_\_\_  
\_\_\_\_\_
- ii. What is **capital**? \_\_\_\_\_
- Explain how capital is important to the high-tech industry in Silicon Valley? \_\_\_\_\_  
\_\_\_\_\_
- What factors might prevent financial institutions from lending money to entrepreneurs in developing countries? \_\_\_\_\_  
\_\_\_\_\_
- iii. Besides “terra firma” what other factor is considered within the site factor of “land”? \_\_\_\_\_
- Where were early factories located? How did this effective their physical design and production process?  
\_\_\_\_\_  
\_\_\_\_\_
  - (wait until next paragraph) Why were these central locations attractive? \_\_\_\_\_  
\_\_\_\_\_
- How are contemporary factories designed? How does this affect the production process? \_\_\_\_\_  
\_\_\_\_\_
  - Where is land available to allow this type of design? \_\_\_\_\_
  - How did a change in transportation also support this new industrial location? \_\_\_\_\_  
\_\_\_\_\_

**5. Situation Factors: Inputs and Proximity to Markets (Rubenstein p 394, 396 – 397)**

- a. Situation factors are related to what? \_\_\_\_\_
- b. What two “proximities” are considered when deciding on industrial location?
  - i. \_\_\_\_\_ ii. \_\_\_\_\_
  - What is a **bulk-reducing industry**? What is the goal of locating closer to the industry’s inputs?  
\_\_\_\_\_  
\_\_\_\_\_
    - What industry does the text use as an example of a bulk-reducing industry? \_\_\_\_\_
    - Why? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
  - What is a **bulk-gaining industry**? What is the goal of locating closer to the where the product is sold?  
\_\_\_\_\_  
\_\_\_\_\_
    - What two industries does the text use as examples of bulk-gaining industries? Understand why.  
\_\_\_\_\_  
\_\_\_\_\_
      - What specific industry does the text use as an example of a fabricated metal product that is bulk-gaining? \_\_\_\_\_
  - What two other types of businesses would also locate near their customers (**remember these are NOT “bulk-gaining” industries**)? \_\_\_\_\_
    - \_\_\_\_\_

6. **Truck, Train, Ship or Plane? (Rubenstein p 398 – 399) “Transportation and Delivery Methods/Issues”**

a. Understand the advantages and disadvantages of the following shipping methods:

Method	Best for which distance/products? Why?
Truck	
Train	
Airplane	
Boats	

b. What is a **break-of-bulk** point? \_\_\_\_\_

- i. What sites are usually important break-of-bulk points? \_\_\_\_\_
- ii. What more recent innovation has facilitated the transfer of packages between modes of transportation? Explain. \_\_\_\_\_

iii. What support facilities have often been built near break-of-bulk points? \_\_\_\_\_

c. How does **just-in-time delivery** work? \_\_\_\_\_

i. Where should suppliers in the “just-in-time” system locate? \_\_\_\_\_

ii. What are the two ways that manufacturers save time by using just-in-time delivery with their suppliers?

- \_\_\_\_\_
- \_\_\_\_\_

ii. What are three ways that just-in-time can be disrupted?

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

7. **Why are Industries Changing Locations? (Rubenstein p 422 – 423, 428 – 429)**

a. In 2010 what share of the world’s industry was outside of developed countries? \_\_\_\_\_

i. What have transnational companies been especially aggressive in doing in order to remain competitive? \_\_\_\_\_

ii. What jobs have been retained in developed countries? \_\_\_\_\_

iii. What is this selective transfer of jobs called? \_\_\_\_\_

iv. What is **outsourcing**? \_\_\_\_\_

- What traditional model of mass production does this contrast with? Define. \_\_\_\_\_

- What electronics supplier is an example of this? What abuses have they been accused of? \_\_\_\_\_

v. What three factors have led to increased manufacturing in Mexico?

- \_\_\_\_\_
- **(lecture)** What are these agreements? \_\_\_\_\_

- \_\_\_\_\_
- What are **maquiladoras**? \_\_\_\_\_

- What do labor leaders in the U.S. and Canada fear about the integration of North American industry? \_\_\_\_\_

- \_\_\_\_\_
  - What do environmentalists argue about trade agreements with countries like Mexico? \_\_\_\_\_
- What challenges does Mexico face regarding the new international division of labor? \_\_\_\_\_

- vi. What countries are the BRICS countries? \_\_\_\_\_
- What advantages do these countries have? \_\_\_\_\_

- b. In what direction has industry shifted within the United States? \_\_\_\_\_
- i. How have governments influenced location decisions (see "Debate it" as well) \_\_\_\_\_
- What are the pros and cons of this policy?

In favor of this policy	Against this policy

- ii. What type of laws has been a principal lure for manufacturers? Explain their impact. \_\_\_\_\_
- \_\_\_\_\_
- (review) How do these laws affect manufacturing costs? \_\_\_\_\_

- c. In what direction has industry shifted within Europe? \_\_\_\_\_
- i. What four Central European countries have seen large increases in investment in industry? \_\_\_\_\_
- ii. What important site factor is an advantage for a Central European location? \_\_\_\_\_
- iii. What situation factor is an advantage for Central European location? \_\_\_\_\_
- iv. **(review)** These relocations were encouraged by policy set by the EU. What has been a reaction to this supranational industrial policy? \_\_\_\_\_

**Note to students:** In September, we learned how development was measured and distributed across the world. The next section deals with how countries try to encourage development largely through attracting industry (see above). It would be wise for you to review your Unit 1 Guided Reading and/or reread Ch. 10.1 (Why does Development Vary Among Countries?) and 10.2 (Where are Inequalities in Development Found?) at this time.

**Why do Countries Face Development Challenges? (Rubenstein p 372 – 375)**

**8. Detail the two models that could be followed by countries to encourage development.**

- a. \_\_\_\_\_
- i. What is encouraged/discouraged under the self-sufficiency method? \_\_\_\_\_
- \_\_\_\_\_
- ii. What are four elements in achieving the above goals? \_\_\_\_\_
- \_\_\_\_\_ How is this achieved?
    - \_\_\_\_\_
    - \_\_\_\_\_
    - \_\_\_\_\_
  - \_\_\_\_\_
  - \_\_\_\_\_
  - \_\_\_\_\_
- iii. (skip to p 374) What are the shortcomings of self-sufficiency? Summarize but include a description to understand.
- \_\_\_\_\_
  - \_\_\_\_\_

- \_\_\_\_\_
- \_\_\_\_\_

iv. What country implemented the self-sufficiency model from the 1940s to the 1990s? \_\_\_\_\_

b. (back to p 372) \_\_\_\_\_

i. What do countries following the international trade model need to open themselves up to? \_\_\_\_\_

- When did this model become more popular? \_\_\_\_\_

ii. What must a country identify in order to embark on this model? \_\_\_\_\_

iii. Who pioneered the International Trade Model? \_\_\_\_\_ Details the stages of this model.

Stage	Details
Traditional society	
Preconditions for takeoff	
Takeoff	
Drive to maturity	
Age of mass consumption	

iv. What supranational organization was created to promote the International Trade Model of Development?

- What are the two principal ways it works to reduce barriers to international trade?

- \_\_\_\_\_
- \_\_\_\_\_

- What is a progressive criticism of the WTO? \_\_\_\_\_

- What is conservative criticism of the WTO? \_\_\_\_\_

v. What two groups of countries successfully followed the international trade model to promote development? Detail.

- \_\_\_\_\_

- (see "Japan" on page one of this guided reading) How did this group of countries switch their focus as they developed? \_\_\_\_\_

- \_\_\_\_\_

- How did these countries use their petroleum revenues to further promote development? \_\_\_\_\_

- How did the landscape of these countries change? \_\_\_\_\_

vi. What happened to India's GDP per capita after it switched to the International Trade Model? \_\_\_\_\_

- vii. What was the difference in annual GDP growth between countries oriented towards int'l trade vs. those oriented towards self-sufficiency? \_\_\_\_\_
- viii. What are some of the other arguments for and against the International Trade Model (see "Debate It" p. 379)

In favor of the International Trade Model	Against the International Trade Model

**Financing Development (Rubenstein p 376 – 379)**

**9. From what two sources do developing countries secure financing for development?**

- a. What is **foreign direct investment**? \_\_\_\_\_
  - i. What ratio of FDI goes to developing countries? \_\_\_\_\_
    - In what particular countries is this investment made? \_\_\_\_\_
      - (review) What tier would these countries occupy? \_\_\_\_\_
- b. What are the two major lenders to developing countries? \_\_\_\_\_
  - i. Who does the IMF provide loans to? \_\_\_\_\_
    - What are the goals of these loans? \_\_\_\_\_
  - ii. What does the IBRD arm of the World Bank make loans for? \_\_\_\_\_
  - iii. The IMF and World Bank are agencies of what supranational organization? \_\_\_\_\_
- c. What is an alternative lending source for borrowers too poor to qualify for bank loans? \_\_\_\_\_
  - i. What institution is a prominent example of microfinance? \_\_\_\_\_
    - Who are the recipients of 3/4<sup>th</sup>s of these microloans? \_\_\_\_\_
      - Describe how these loans are used, both economically and socially. \_\_\_\_\_
    - What has been the default rate on these loans? \_\_\_\_\_
- a. Structural Adjustment
  - i. What have some countries been forced to adopt when they are unable to repay loans? \_\_\_\_\_
    - What have many LDCs used borrowed funds to build? Why? \_\_\_\_\_
    - Why has the World Bank judged many of these projects to be failures?
      - \_\_\_\_\_
      - \_\_\_\_\_
      - \_\_\_\_\_
    - Who else could be damaged by the inability of countries to repay loans? \_\_\_\_\_
    - What two strategies must leaders chose between when facing an economic downturn?
      - \_\_\_\_\_
      - \_\_\_\_\_

- Through what program is austerity imposed on a country in exchange for debt relief?

- What do critics claim happens under these programs? Why? \_\_\_\_\_  
\_\_\_\_\_
- According to critics, what are poor people being punished for? \_\_\_\_\_
- Why do international organizations argue in support of structural adjustment programs? \_\_\_\_\_  
\_\_\_\_\_

**Progress toward Development and Sustainable Development/Alternatives (Rubenstein p 380 – 383)**

**10. What has been the trend in HDI since 1980?** \_\_\_\_\_

- a. Note the variations between developed countries and developing countries across the following variables.

Factor	How has this factor varied between developed and developing countries? This information can also be used below as further commentary n the UN Sustainable Development Goals.
GNI per capita	
Education	
Life Expectancy	
HDI	

The graphic organizer on the 17 U.N. Sustainable Development Goals has been moved to the end of this guided reading.

**11. What has been proposed as an alternative to the International Trade Model (Rubenstein p 382 – 383)?**

- a. Who does fair trade provide greater equity for? \_\_\_\_\_
- b. What type of products does the fair trade model focus on? \_\_\_\_\_
- c. Detail the three sets of standards below:
- Producer Standards
    - What is a criticism of the international trade model with regards to the distribution of revenue from the sale of goods produced in developing countries? \_\_\_\_\_  
\_\_\_\_\_
      - For example, what % of the retail price of clothing sewn in India goes to the Indian sewer? \_\_\_\_\_
      - What ratio does fair trade return to the producer? \_\_\_\_\_
    - What are the goals of the producer standards?
      - \_\_\_\_\_
      - \_\_\_\_\_
      - \_\_\_\_\_
      - \_\_\_\_\_
    - What benefits do small time producers receive from joining fair trade cooperatives?
      - \_\_\_\_\_
      - \_\_\_\_\_
      - \_\_\_\_\_
  - Worker Standards
    - What are some criticisms of how workers are treated under the Int'l Trade Model?
      - \_\_\_\_\_
      - \_\_\_\_\_
      - \_\_\_\_\_

- \_\_\_\_\_
- \_\_\_\_\_
- How does fair trade require workers be treated? \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

iii. Customers

- Most fair trade sales are in what products? \_\_\_\_\_
- Which craft products does fair trade supply in North America? \_\_\_\_\_
- How do fair trade prices compare to conventional alternatives? Why? \_\_\_\_\_
- (lecture) \_\_\_\_\_

**Energy, Resources and Sustainability Issues:** In the past there has been some confusion regarding how much of the following section should be covered in AP Human Geography as opposed to AP Environmental Science. Better safe than sorry.

**Rubenstein p 400 – 413**

12. In what ways is energy important for the functioning of society?

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_
- d. \_\_\_\_\_
- e. \_\_\_\_\_

13. How is the supply and demand of energy distributed between developed (MDC) and developing (LDC) countries?

- a. Demand: \_\_\_\_\_
- b. Supply: \_\_\_\_\_

14. What is the source of 5/6ths of the world's energy supply (define)? \_\_\_\_\_

- a. What are three main types of fossil fuels? \_\_\_\_\_
- b. What type of resources are these (define)? \_\_\_\_\_
- c. Where is the CURRENT consumption of fossil fuels increasing most rapidly? \_\_\_\_\_
  - i. What country is now the biggest overall consumer of energy? \_\_\_\_\_
  - ii. What global region has the highest per capita usage of energy? \_\_\_\_\_
  - iii. In what way is coal mostly consumed? \_\_\_\_\_
- d. Where is the current production of fossils the greatest (these answers skip around between pages 402 – 407)?
  - i. Coal \_\_\_\_\_
  - ii. Petroleum \_\_\_\_\_
    - What organization was formed in 1960 to give oil-producing countries more control over their resources as opposed to transnational energy companies? \_\_\_\_\_
      - In what global regions are these countries located? \_\_\_\_\_
      - How does this organization regulate oil production (lecture)? \_\_\_\_\_
    - What other significant oil producers have also joined (lecture)? \_\_\_\_\_
    - What West European area is also a large producer of petroleum (lecture)? \_\_\_\_\_
  - What infrastructure has allowed the US to increasingly use Canada as a supplier of petroleum over OPEC? \_\_\_\_\_
    - Why is this controversial? \_\_\_\_\_
    - What "unconventional" source of petroleum has increased Canadian proven reserves (p 407) \_\_\_\_\_
  - How have factories reduced their demand for petroleum (p 406)? \_\_\_\_\_



- iii. Natural Gas \_\_\_\_\_
- What “unconventional” method has increased US supplies of natural gas (p 407)? Describe. \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
  - This method is considered to be a wasteful use of what other resource? \_\_\_\_\_
  - What have some environmentalists claimed has also resulted from fracking (lecture)? \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
  - Why is European reliance on natural gas a “geopolitical” problem (lecture)? \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**15. Alternatives of Fossil fuels. (Rubenstein p 408 – 413)**

- a. What other non-renewable source produces 14% of the world’s electricity? \_\_\_\_\_
- i. What process does this require? \_\_\_\_\_  
 \_\_\_\_\_
  - ii. What European countries are most dependent on this source (incl. %)? \_\_\_\_\_  
 \_\_\_\_\_
  - iii. What US states are the most dependent on this source (incl. %)? \_\_\_\_\_  
 \_\_\_\_\_
  - iv. What are five challenges that result from the use of this energy source?
    - \_\_\_\_\_  
 ○ What are two examples of this challenge?  
 ➤ \_\_\_\_\_  
 ➤ \_\_\_\_\_
    - \_\_\_\_\_  
 ○ Where did public opposition, reverse a plan to deal with this challenge? \_\_\_\_\_
    - \_\_\_\_\_
    - \_\_\_\_\_  
 ○ Where are these reserves concentrated? \_\_\_\_\_  
 \_\_\_\_\_
    - \_\_\_\_\_  
 ○ Why is this? \_\_\_\_\_
    - What “future” process could be an answer to these challenges? \_\_\_\_\_
- b. Define renewable energy. \_\_\_\_\_
- i. Complete the following chart summarizing renewable energy sources.

Source	Definition	Use/Distribution	Trends/Limitations
Biomass (example)	Burning wood, plant mat'l & animal waste	Still imp. in LDCs (1/3 <sup>rd</sup> of prod. in N. Amer, Eur., LDCs) Brazil uses to fuel vehicles	Inefficient = uses more energy to grow than is supplied Crops are used for other things (higher food prices) deforestation
Hydro-electric	Movement of water generates elect.	2 <sup>nd</sup> most pop. source of electricity Brazil gets 80% of electricity Canada gets 60%	Disrupts ecology by damming rivers Few acceptable sites remain in US
Wind	Turbines spin to generate electricity	China, N. Amer, Europe ≈ 90%	High cost of construction, not all areas are windy Some see as noisy, lethal for birds/bats or a visual blight in visually appealing areas (coasts, mountains)
Geo-thermal	Hot water or steam created by heat from Earth's interior	Volcanic areas, along tectonic plate boundaries Iceland heats all homes/biz	Only available in limited areas also subject to volcanoes and earthquakes.
Solar	generated from Sun Passive – collects heat w/out devices (south-	Only 1% in US, potential is limitless.	Portable units can be used by remote people in LDCs for small usage without large infrastructure investment

	facing windows, greenhouses, etc.) Active – collects solar radiation through devices to heat or generate electricity through photovoltaic cells	Sun’s energy is free and ubiquitous  Does not cause pollution	Need improved efficiency and lower photovoltaic costs to reach “grid parity” (the price it takes to bring this type of electricity onto the power lines) with cheaper sources (largely coal)  Some experts say “grid parity” is here or right around the corner due to cheap Chinese manufacturing of photovoltaic cells.
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16. **Pollution (Rubenstein p 414 – 419).** Define “pollution”. \_\_\_\_\_

- i. What physiological density and population term can also be used here to describe the environmental limit that waste must exceed in order to cause “pollution” (lecture)? \_\_\_\_\_
- a. What are the three major human activity sources of **air pollution**? \_\_\_\_\_
  - i. In what two countries is **local-scale air pollution** the worst? \_\_\_\_\_
    - What environmental conditions makes local scale air pollution worse? \_\_\_\_\_
    - \_\_\_\_\_
    - \_\_\_\_\_
    - What Latin American city exemplifies this problem (lecture)? \_\_\_\_\_
  - ii. What is an example of **regional-scale air pollution**? Define. \_\_\_\_\_
    - What damage does this phenomenon cause? \_\_\_\_\_
    - \_\_\_\_\_
    - \_\_\_\_\_
    - Why are geographers particularly interested in this type of pollution? \_\_\_\_\_
    - \_\_\_\_\_
  - iii. According to UN scientists (well almost all legitimate scientists really) what **global-scale air pollution** problem has been linked to human activities? \_\_\_\_\_
    - What has happened to the Earth’s climate since the late 1800s? \_\_\_\_\_
      - What has this been caused by? \_\_\_\_\_
      - What is the greenhouse effect? \_\_\_\_\_
      - \_\_\_\_\_
      - \_\_\_\_\_
      - Describe the general relationship between wealth and carbon dioxide emissions? \_\_\_\_\_
      - \_\_\_\_\_
      - \_\_\_\_\_
    - What other global-scale pollution problem has been addressed by global agreements? \_\_\_\_\_
      - What role does ozone play? \_\_\_\_\_
      - What damage can radiation cause? \_\_\_\_\_
      - What threatened the ozone layer? \_\_\_\_\_
      - \_\_\_\_\_
      - What international agreement was designed to address this problem (lecture)? \_\_\_\_\_
      - What has been the result (lecture)? \_\_\_\_\_
      - \_\_\_\_\_
- b. What other vital resource is threatened by overuse and pollution? \_\_\_\_\_
  - i. What are the three major areas of demand for water? \_\_\_\_\_
    - What agricultural activity in the US is an especially high consumer of water? \_\_\_\_\_
  - ii. What do humans dump into water that causes Biochemical oxygen demand (BOD)? \_\_\_\_\_
    - Describe how BOD happens? \_\_\_\_\_
    - \_\_\_\_\_
  - iii. What have scientists recently discovered as a pollutant affecting aquatic life and the food chain? \_\_\_\_\_
  - iv. In what two ways can water pollution be categorized? \_\_\_\_\_
    - Define point-source water pollution. \_\_\_\_\_
      - Two main sources of point-source water pollution? \_\_\_\_\_
      - What legislation has led to much higher water-quality standards? \_\_\_\_\_

- What are three water-borne diseases are major cause of death in developing countries due to untreated drinking water? \_\_\_\_\_
- Explain the principal non-point source of water pollution. \_\_\_\_\_
- What is an example from the U.S. of this problem (lecture)? \_\_\_\_\_

**c. Solid Waste Pollution (Rubenstein p 418 – 421)**

- i. How does the creation of solid waste differ between MDCs and LDCs? \_\_\_\_\_
- ii. In the US, what are the major sources of sold waste (inc. %)? \_\_\_\_\_
  - List some examples of the most common forms of solid waste. \_\_\_\_\_
- iii. What is the most common method of disposing sold waste in the US? \_\_\_\_\_
  - How does this differ significantly from the what we dispose of air or water waste? \_\_\_\_\_
  - What pollution problem can happen from the concentration of solid waste? \_\_\_\_\_
  - How has the number and scale of landfills changed since the 1990s? \_\_\_\_\_
  - Besides increased size, what has led to increased landfill capacity? \_\_\_\_\_
  - What are some communities (usually wealthier) doing in order to address their sold waste problem? \_\_\_\_\_
- iv. (skip to p 420) What two strategies could help reduce sold waste? \_\_\_\_\_
  - Define recycling. \_\_\_\_\_
    - Detail the extent of recycling in the developed countries of Germany, Japan and the US. \_\_\_\_\_
  - Define remanufacturing. \_\_\_\_\_
- v. (back to p 419) Disposal of what type of solid waste is especially difficult? \_\_\_\_\_
  - Include examples. \_\_\_\_\_
  - What economic activity is the largest hazardous waste polluter? \_\_\_\_\_
  - What effects can the release of these materials into the land have? \_\_\_\_\_

**d. Impacts of Near-future Changes in Vehicles (Rubenstein p 496 – 497)**

- i. In what three ways will vehicles be “electrified” in the near future? Describe briefly.
  - \_\_\_\_\_
  - \_\_\_\_\_
  - What are two challenges faced by this method? \_\_\_\_\_
  - \_\_\_\_\_
- ii. Why is the electrification of vehicles sometimes NOT considered sustainable? \_\_\_\_\_
  - What % of US electricity is generated from the burning of coal? \_\_\_\_\_. From natural gas? \_\_\_\_\_
  - Why does the switch to electric vehicles have a different effect on air quality depending on the region of the US? \_\_\_\_\_
  - \_\_\_\_\_
  - \_\_\_\_\_
  - \_\_\_\_\_
  - \_\_\_\_\_

## 17. UN Sustainable Development Goals

#	Goal	Comment
<b>Economic</b>		
1	End poverty in all its forms everywhere	Poverty reduced by 50% (1990 – 2010) but in 2018, 766 million still lived in EXTREME poverty, defined by the World Bank as earning < \$1.90/day.
7	Ensure access to affordable, reliable, sustainable and modern energy for all.	1/5 <sup>th</sup> lack access to electricity and fossil fuels are the principal contributor to climate change.
8	Promote inclusive and sustainable economic growth, employment and decent work for all.	UN wants to increase GDP/capita at least 7%/year in LDCs
9	Build resilient infrastructure, promote sustainable industrialization and foster innovation.	UN estimates 1.5 billion people lack access to reliable phones.
10	Reduce inequality within and among countries.	Income inequality has increased since 1990 within and between countries.
11	Make cities inclusive, safe, resilient and sustainable	Rapid urbanization has put pressure on water, sewage systems and health; 828 million people live in what the UN defines as slums. (rural → urban migration/squatter settlements)
12	Ensure sustainable consumption and production patterns.	1/3 of food rots or spoils (UN) because of poor transportation and harvesting methods.
<b>Social</b>		
2	End hunger, achieve food security and improved nutrition and promote sustainable agriculture.	803 million undernourished (2018) per UN. Double agricultural productivity by 2030.
3	Ensure healthy lives and promote well-being for all at all ages.	Progress has been made in reducing infant and maternal mortality, UN hopes for further reductions by 2030.
4	Ensure inclusive and quality education for all and promote lifelong learning.	UN wants all children to attend school. 61 million do not attend primary school. More than ½ of those is sub-Saharan Africa.
5	Achieve gender equality and empower all women and girls.	Gender inequalities have been reduced but persist in all regions.
16	Promote just, peaceful and inclusive societies.	The UN estimates that corruption, bribery, theft and tax evasion costs LDCs \$1.26 trillion annually.
<b>Environmental</b>		
6	Ensure access to water and sanitation for all.	884 million people lack access to drinking water, and 2.3 billion lack access to toilets or latrines
13	Take urgent action to combat climate change and its impacts.	It is not too late to reverse the recent sharp increase in carbon dioxide emissions that are producing climate change. Sharp decrease in fossil fuel use, incr. use of renewable energy, carbon capture and storage.
14	Conserve and sustainably use the oceans, seas and marine resources.	Progress has been made in water quality (Clean Water Act), but overfishing is a problem.
15	Sustainably manage forests, combat desertification, halt and reverse land degradation and halt biodiversity loss.	Drought, desertification and deforestation are negatively impacting agriculture and biodiversity.
17	Revitalize the global partnership for sustainable development.	Overall aid has increased from MDCs to LDCs