

World History

Build a Town: 18th century versus 21st century

Subject Area: **World History**

Grade Level: **10th**

Date: **August 2, 2012**

Lesson Overview

Students will experience the rapid development of England's first industrial towns. Then students will create a sustainable 21st century town.

Materials Included in this Lesson

- Computer with Power Point
- Computer paper
- Rulers and Erasers (optional for first part)
- Poster Paper
- Markers
- Pencils
- Ranking Sheet

Skills the Student will Learn

- How natural resources impacted the development of industrial cities
- The social, political, economic and environmental impacts of industrialization
- How to create a sustainable community (addressing the Triple Bottom Line)

Student Deliverables

- Pencil drawing of 18th century town
- Computer or marker drawing of 21st century town
- 5 paragraph paper advertising their 21st century town
- Student ranking form

CTE Standards:

A2.0 Students understand the theoretical, practical, and contextual issues that influence design:

A2.2 Understand the theoretical and practical effects of human and physical factors and cost analysis on the development of architectural designs.

C1.0 Students understand the advantages and disadvantages of energy resources in use or under research that influence or will influence the public utilities industry:

C1.3 Understand the effects of energy resource and conservation systems on the environment.

Social Science Standards:

10.3.2 Examine how scientific and technological changes and new forms of energy brought about massive social, economic, and cultural change (e.g., the inventions and discoveries of James Watt, Eli Whitney, Henry Bessemer, Louis Pasteur, and Thomas Edison).

10.3.3 Describe the growth of population, rural to urban migration, and growth of cities associated with the Industrial Revolution

Day One Activity

Build a Town: 18th Century

- Handout each student a clean sheet of computer paper.
- Load the Power Point-Build a Town
- Follow the directions on the slides; this activity should be completed in about 30 minutes. You want to create a little anxiety and hysteria so the students experience how rapid industrialization occurred. Allow students to vocalize their frustrations and have fun with the activity.
- **DO NOT ALLOW STUDENTS TO START OVER. AUTOMATIC FAIL IF THEY DO!**
- At the end of the activity, have students write a one paragraph reflection on the back of their papers about how they felt about the process of building a town.

Day Two Activity

Case Study: Manchester

- Have students read and take notes on Chapter 9 Section 2: Manchester
 - You can access the chapter reading online from the following link
http://www.wasco.k12.ca.us/wuhs/staff/directory/crwilliams/cp_text/Chapter_9_Section_2.pdf
- Have a discussion about the concepts the students learned from the section- pros and cons of industrialization from various perspectives (laborer, entrepreneur, etc)
- Show the film “The Sewer King” and have students complete the video guide.
 - Episode 4 of a BBC series entitled Seven Wonders of the Industrial Age is all about Joseph Bazalgette and the construction of London's sewer system. *Set in London during the 1850s, this episode focuses on the construction of the London sewerage system, built to replace the antiquated medieval system that was overworked and inadequate for the needs of the-then largest metropolis in the world, causing epidemics of disease and a permanent foul stench to fill the air. The episode follows the efforts and work of Joseph Bazalgette, the brilliant engineer who designed the influential and modern sewer system that would purify the city, transform the streets above and would result in the end of the epidemics of cholera and typhoid that had ravaged the population - although, ironically not for the reasons that he initially thought.*

Day Three Activity

Build a Town: 21st Century

- Have a discussion about what the students saw and learned from the Sewer King.
- Discuss the need for a public works agency in an industrial town and the concept of sustainability (show the Power Point Sustainability if needed).
- Discuss the different types of energy resources available for residential and business use (use the Power Point and handout Energy Sources if needed)
- Explain to students that they will be creating a new 21st century town. However, they must address the issues of 18th century industrialization (lack of sanitation, roads, pollution, etc) and create a sustainable town.
- Handout the 21st century town ranking sheet to all the students. Go over in detail the six categories that their town will be judged on:

Recreation & Leisure: Are there things for the people to do?

Efficiency: Does the town use renewable energy resources?

Environmentally Friendly: Does the town preserve and conserve its natural environment?

Economical: Does the town have a way to make money (variety of businesses, venues, etc.)?

Sustainability: Overall, will the town survive?

Desirability: Would you want to live in the town?

- Students can digitally draw their town using but not limited to CADD, Sketchup or use an 11x17 sheet of paper with markers.
- Students will be placed into groups of 3. Each student will have a different role in their town's development process.
 - Designer- responsible for drawing the town (roads, buildings, water ways, etc)
 - Writer- responsible for writing a five paragraph essay explaining to the public what the town has to offer
 - Supervisor- responsible for taking the drawing and writing aspects of the town and presenting the town to the class using Power Point

Students will be given the remainder of the day to brainstorm their town's design.

Day Four

Workshop Day

- The class will go to the library in order to use the computers to finish their town, paper and presentation.

Day Five

21st Century Town Presentations

- Supervisors will present to the whole class their town using Power Point.

- Students will rank each town using the ranking sheet given to them earlier.
- **STUDENTS ARE NOT ALLOWED TO RANK THEIR OWN TOWN!**
- Designers and writers will not be presenting their ideas-just the supervisor will talk to the class.
- Collect the ranking forms from each student.
- Have a discussion at the end of class about which town people liked, what features they liked about various towns, what was missing from some towns, etc
- Tally up the points and announce the town winner.

Name _____ Date _____ Period _____

21st Century Town Ranking Sheet

Instructions: Evaluate each group's town according to the following characteristics. You will use a 1, 2,3 ranking scale and will write the number in the box under each characteristic. The ranking scale is as follows:

1 fails to meet expectations,

2 meets expectations and

3 exceeds expectations.

Use the questions below as a guide to help you in the ranking process.

Recreation & Leisure: Are there things for the people to do?

Efficiency: Does the town use renewable energy resources?

Environmentally Friendly: Does the town preserve and conserve its natural environment?

Economical: Does the town have a way to make money (variety of businesses, venues, etc.)?

Sustainability: Overall, will the town survive?

Desirability: Would you want to live in the town?

Ranking Sheet on the BACK OF THIS PAPER.



DUE AT THE END OF CLASS.

21st Century Build A Town

One reason to study history is to learn from the past. Your class has just finished looking at the rise of industrialization at the turn of the 19th century and its effects on people's lives. Your group is going to take on the role as current day land developers. Your task is to create a town, similar to the one we created earlier this term. However, your group must address and solve the problems that many quickly built towns faced two centuries ago. Therefore, your town must address the following criteria: **Is your town...**

1. **Economical:** Does the town have a way to make money (variety of businesses, venues, etc.)?
2. **Environmentally Friendly:** Does the town preserve and conserve its natural environment?
3. **Efficient:** Does the town use renewable energy resources?
4. **Entertaining:** Are there things for the people to do?
5. **Sustainable:** Overall, will the town survive?

Each person in your group will have a specific role. The responsibilities of each role are as follows:

1. **Designer:** This person will draw a 2 dimensional blue print of your town. S/he can use pen and an 11x17 sheet of paper, CADD, Sketchup or any other computer drawing software. The town buildings must be to scale; therefore, a scale must be written on the blue print. In addition, the town name must be on the plan. The designer will listen to the ideas of the group and ensure that the triple bottom line is met.
2. **Writer:** This person will be responsible for writing a five (5) paragraph essay explaining to the audience why they should move to his/her town. The paper must include an introductory paragraph that includes a three claim thesis statement, three body paragraphs providing support for the claims in your thesis and a concluding paragraph that restates your thesis and claims. The paper must be typed in size 12 font. However, the writer can be creative and present the essay in a variety of formats.
 - a. The writer might want to create a town newsletter, a pamphlet, a newspaper article or special feature, or maybe even an online website or blog site.
3. **Supervisor:** This person will be responsible for selling his/her group's town to perspective homebuyers. This person will create a 3-5 minute PowerPoint Presentation to explain to the class why his/her group's town is the best place to live. The supervisor must show the designer's blue print in his/her presentation. The supervisor may use the original blue print or take a digital picture of the blue print and place it in the PP slideshow. Only the supervisor will present his/her town- not the other two group members.

The class will go to the library on Wednesday Oct. 3 and Monday Oct. 8 to work on this project.

Presentations will be on Tuesday October 9.

This assignment is **50** project points. All members will receive the same grade.

KEY CONCEPTS FOR ENERGY RESOURCES

1. Energy comes from two different types of sources, non-renewable and renewable. The most common types of **non-renewable energy sources** used worldwide are fossil fuels like coal, oil, natural gas and nuclear energy.
2. **Fossil fuels** were created over millions of years, as heat and pressure transformed the remains of decayed plants and animals buried underground by layers of sediment. Fossil fuels are mostly carbon, and when burned emit carbon dioxide. Other pollutants like particulate matter, nitrogen dioxide, and sulfur dioxide are also emitted as a result of combustion.
3. Coal is generally used for electricity and manufacturing in the United States, and supplies over half the country's electricity. Coal has a higher **energy density** than most energy sources, at a low cost per unit.
4. Oil, used for transportation and manufacturing, is the raw material for diesel, gasoline and plastic products.
5. Natural gas is used for heating, electricity, transportation, and manufacturing. Natural gas burns much cleaner than oil and coal.
6. Nuclear energy is also a non-renewable energy source that is used to produce electricity. Using uranium as a fuel, nuclear power plants break apart atoms to release the energy in their bonds. The uranium used is a non-renewable resource. Nuclear energy does not emit green house gases since it does not require fossil fuel combustion.
7. **Renewable energy** harnesses power from natural resources, like sunlight and wind, that are plentifully supplied nature. The most common forms of renewable energy are solar, wind, water, geothermal, and biofuels. The combustion of biofuels for electricity or transportation fuel emits greenhouse gases. Solar energy harnesses energy from the sun to create heat and electricity. For example, solar water heaters use energy from the sun to heat water; and solar cells convert the sun's energy into electricity.
8. Wind energy uses the force of wind to rotate turbines to produce electricity. Wind farms are large collections of wind turbines that generate electricity.
9. Geothermal energy comes from hot water or steam naturally created underground. Pipes are drilled into these sources to collect steam and turn turbines. Geothermal power plants emit some carbon dioxide and air pollutants, but significantly less than burning fossil fuels.
10. Hydropower is created when the force of flowing water from rivers is used to turn turbines built inside a dam. Large hydropower dams, like the Hoover Dam in Nevada, do not emit greenhouse gas emissions. However, they can harm the surrounding ecology by blocking the movement of fish and sediments in the river. Hydropower is the single largest source of renewable electrical energy in the US.
11. Biomass energy is the burning of organic matter, or biofuels, such as cow manure, agriculture waste, or methane from landfills to create energy. Biomass energy can be used for electricity or converted into fuel for transportation. Since biomass requires combustion, it does emit greenhouse gas emissions and other pollutants. However, Biofuels are said to be **carbon-neutral** because the next crop of biofuel feedstock (corn, sugar, etc.) grown captures the same amount of CO₂ from the prior crop of biofuel feedstock that was produced and burned as fuel. Other renewable energy sources do not generally emit greenhouse gases.

Produced by



Energy Sources

Which one do I use?

Vocabulary

- **Carbon Neutral:** Net Zero carbon emissions because the total amount that is released is captured.
- **Energy Density:** The amount of energy available in a specific quantity of energy source.
- **Fossil Fuels:** Coal, natural gas and petroleum produced by the decomposition of ancient, fossilized plants and animals.
- **Non-Renewable Energy Source:** Supplies of this energy source are not replenished in a short period of time.
- **Renewable Energy Source:** Supplies of this energy source are replenished in a short period of time.

You Decide

Non-Renewable

- **2. Fossil fuels were created over millions of years, as heat and pressure transformed the remains of**
- decayed plants and animals buried underground by layers of sediment. Fossil fuels are mostly carbon,
- and when burned emit carbon dioxide. Other pollutants like particulate matter, nitrogen dioxide, and
- sulfur dioxide are also emitted as a result of combustion.
- **3. Coal is generally used for electricity and manufacturing in the United States, and supplies over half**
- **the country's electricity. Coal has a higher energy density than most energy sources, at a low cost per**
- **unit.**
- **4. Oil, used for transportation and manufacturing, is the raw material for diesel, gasoline and plastic**
- **products.**
- **5. Natural gas is used for heating, electricity, transportation, and manufacturing. Natural gas burns much**
- **cleaner than oil and coal.**
- **6. Nuclear energy is also a non-renewable energy source that is used to produce electricity. Using**
- **uranium as a fuel, nuclear power plants break apart atoms to release the energy in their bonds. The**
- **uranium used is a non-renewable resource. Nuclear energy does not emit green house gases since it**
- **does not require fossil fuel combustion.**

Renewable

- **7. Renewable energy harnesses power from natural resources, like sunlight and wind, that are plentifully**
- supplied nature. The most common forms of renewable energy are solar, wind, water, geothermal,
- and biofuels. The combustion of biofuels for electricity or transportation fuel emits greenhouse gases.
- Solar energy harnesses energy from the sun to create heat and electricity. For example, solar water
- heaters use energy from the sun to heat water; and solar cells convert the sun's energy into electricity.
- **8. Wind energy uses the force of wind to rotate turbines to produce electricity. Wind farms are large**
- **collections of wind turbines that generate electricity.**
- **9. Geothermal energy comes from hot water or steam naturally created underground. Pipes are drilled**
- **into these sources to collect steam and turn turbines. Geothermal power plants emit some carbon**
- **dioxide and air pollutants, but significantly less than burning fossil fuels.**
- **10. Hydropower is created when the force of flowing water from rivers is used to turn turbines built inside**
- **a dam. Large hydropower dams, like the Hoover Dam in Nevada, do not emit greenhouse gas**
- **emissions. However, they can harm the surrounding ecology by blocking the movement of fish and**
- **sediments in the river. Hydropower is the single largest source of renewable electrical energy in the**
- **US.**
- **11. Biomass energy is the burning of organic matter, or biofuels, such as cow manure, agriculture waste, or**
- **methane from landfills to create energy. Biomass energy can be used for electricity or converted into**
- **fuel for transportation. Since biomass requires combustion, it does emit greenhouse gas emissions and**
- **other pollutants. However, Biofuels are said to be carbon-neutral because the next crop of biofuel**
- **feedstock (corn, sugar, etc.) grown captures the same amount of CO2 from the prior crop of biofuel**
- **feedstock that was produced and burned as fuel. Other renewable energy sources do not generally**
- **emit greenhouse gases.**

Building an Industrial Town

- o Give your town a name and write it on the top of your answer sheet
- o Draw your town limits

[Name]

[save space here to draw your city]

Building an Industrial Town

- Draw a River. **This can be any size**
- **Since religion was a major factor during this time period,** draw a church
- Draw 3 houses **(your city's early inhabitants)**
- Draw one factory along the river
- **To accommodate the factory workers,** draw 5 houses

...the building continues

- **The workers need to eat and buy supplies, so draw a market**
- **Industrialization is taking hold!**
Draw 2 more factories
- **Along with the factories, draw 10 more houses (5 for each factory)**
- **Is one market enough? How about some competition...draw another market!**

...and people keep coming!

- o **WOW!** One more factory!
- o **They too need a place to live,**
draw 5 more houses
- o **Is your town getting crowded?**
You may want to tear down
some houses (erase them) and
draw an apartment building,
otherwise call “tenements” (3
apartments for every 5 houses)

...what? More?!

- **Getting stressed?** Draw a building for some sort of entertainment (pub? Dancehall? Theatre?)
- **With all of these people getting together, there are going to be problems.** Draw a police station AND a hospital
- **Hey, your town is popular!** Draw another factory!

...still have space???

- **More people want to get in and out of the city.** Draw in a train station.
- **The factory owners in your city are getting rich.** Place a bank in your city
- **Whoa! They must really like your city.** Add another factory and 3 more apartments
- **Just in case...**build a fire station.

Your City should have...

- A River
- A Church
- 33 houses or 12 tenements or a combo
 - 6 factories
 - 2 Markets
- A place for entertainment
 - A police station
 - A hospital
 - A train station
 - A bank
 - A fire station

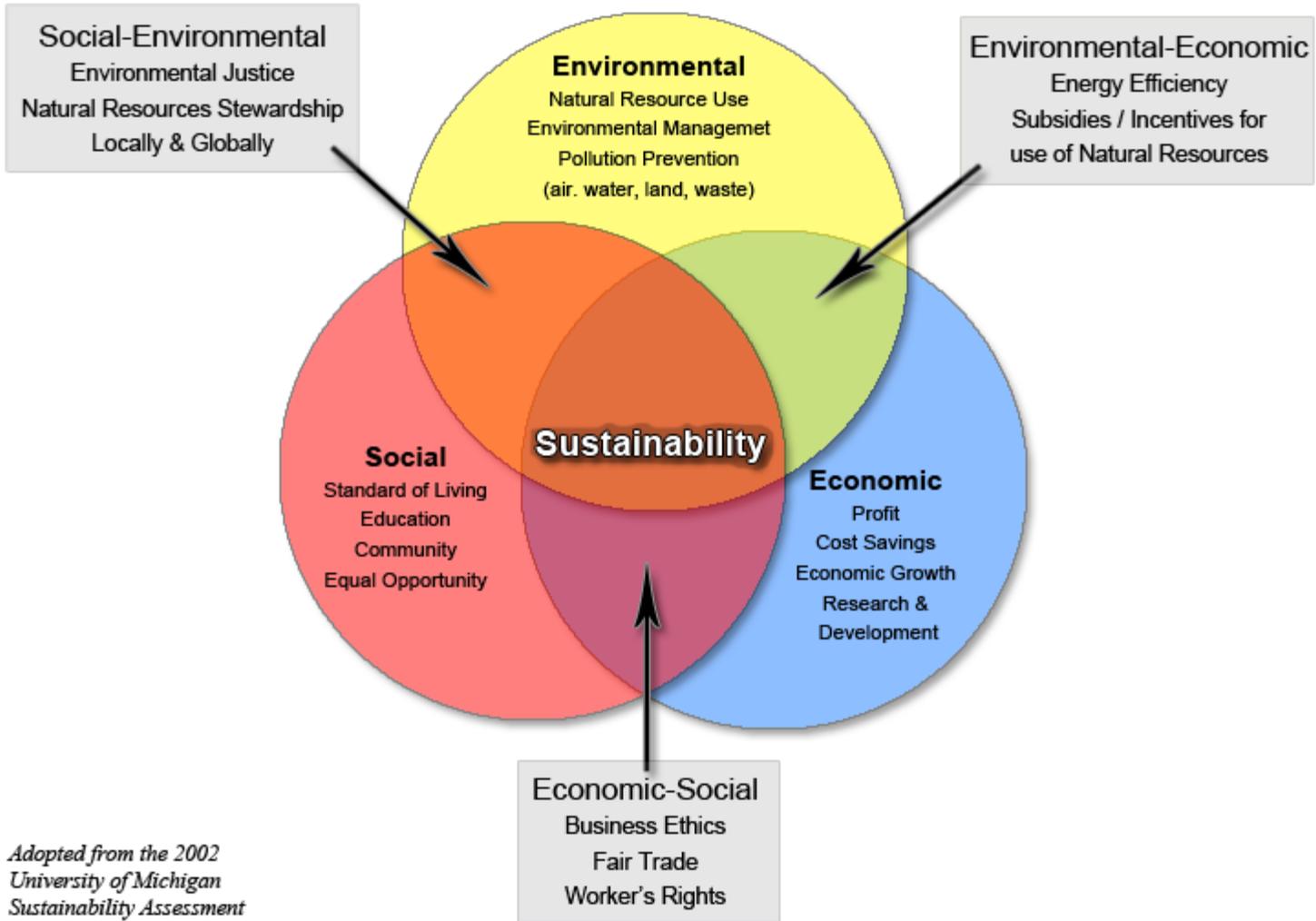
Sustainability

Where are we now?

Vocabulary

- **Sustainability:** the social and environmental practices that protect and enhance the human and natural resources needed by future generations to enjoy a quality of life equal to or greater than our own.
- **Carbon Footprint:** A measure of greenhouse gas emissions associated with our day-to-day demand on natural resources and our use of fossil fuels for electricity, heating and transportation.
- **Triple Bottom Line:** A measurement of performance and progress that gives environmental quality and social equity an equal footing with economic prosperity (People, Planet, Profit).

The Three Spheres of Sustainability



*Adopted from the 2002
University of Michigan
Sustainability Assessment*

Vocabulary in Action

Water conservation in California is presented as an example of Triple Bottom Line. Water is in very high demand in California as it supports residential, commercial, and agricultural uses. Water conservation efforts have additional benefits aside from water savings (environmental benefit). It saves energy since less water use equates to less water that is needed to be pumped, distributed, and treated (environmental benefit). Additionally, reducing water usage will reduce water costs for the average user (economic benefit). In terms of social benefits, water conservation will mean more water that is available for the public domain (social benefits) and for farmers to grow additional crops, which may lead to creation of new jobs.

Energy Sources

Which one do I use?

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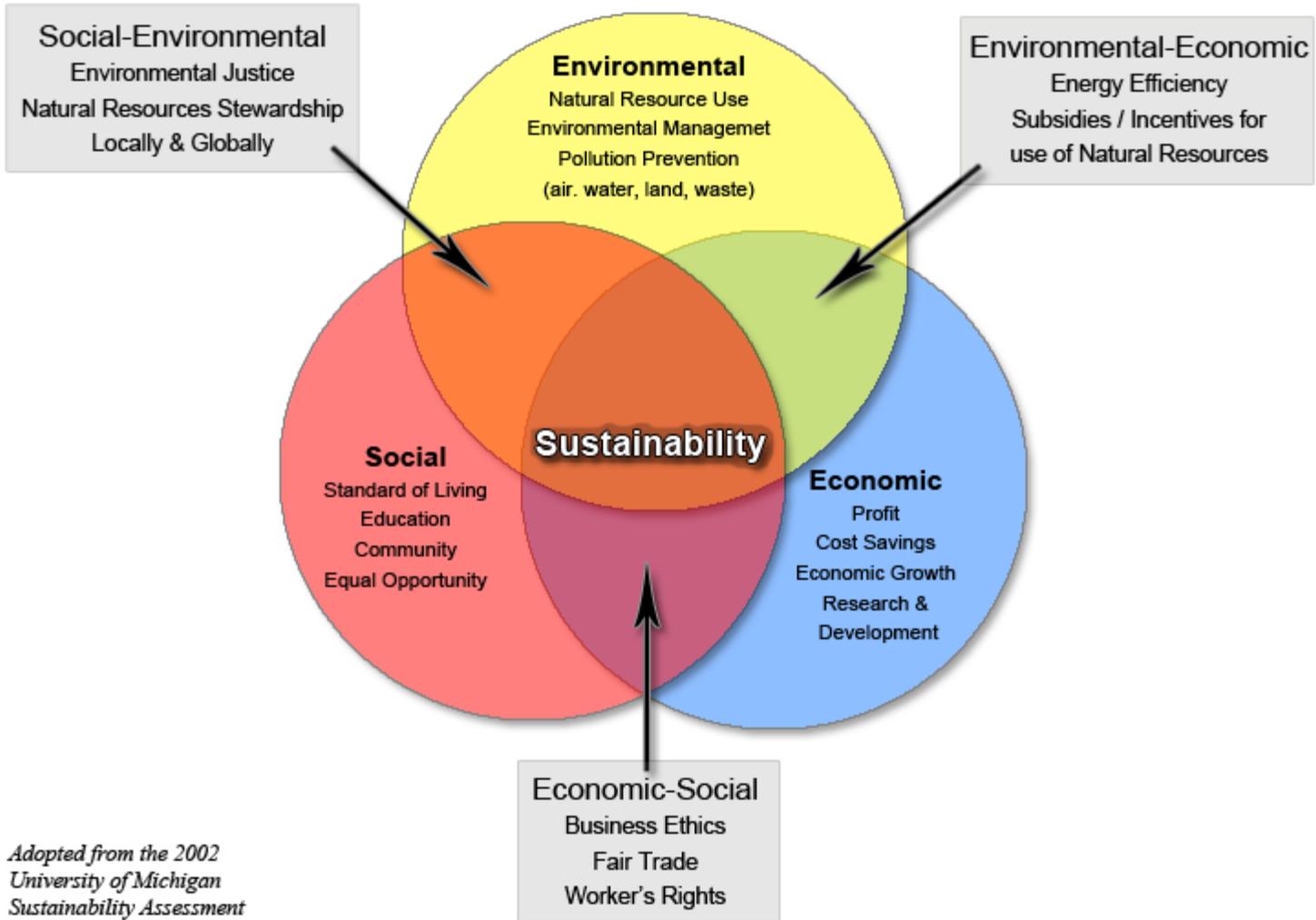
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Energy Sources

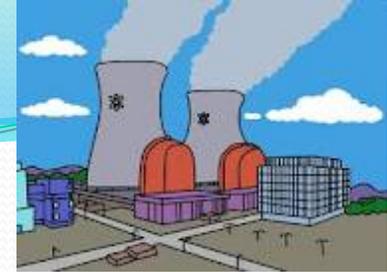
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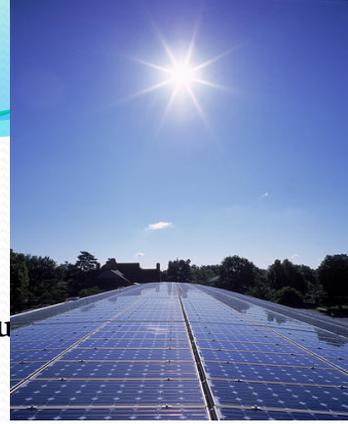


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The Sewer King – Video Questions

1. What was the disease that threatened London?
2. Who suffered the most from the old, clogged sewer systems?
3. What did Londoners believe was spreading the cholera?
4. How were the people on Broad Street infected by cholera?
5. What was Bazalgette's grand sewer plan?
6. What did the politicians do with Bazalgette's grand plan?
7. What caused the politicians in Parliament to change their minds?
8. What were some of the problems with the building of the sewer?
9. What was used to pump the sewage into the river?
10. How had cholera spread into the East End of London?