Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Topic Human Impact Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Turn in at the end of the period. It is homework and due the following day if you do not finish in class.

**Warm Up:** Watch the video and respond to the question on the board.

**Human Impact as an Environmental Force**

* Modern societies are not different as the (now no-longer-existent) Vikings.
  + Both chose \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and farming methods ill-suited to their climates and natural environments.
  + We too use farming methods that strip \_\_\_\_\_\_\_\_\_\_\_\_ and diminish the land's fertility.
  + Humans have over-\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ our forests, and in so doing have triggered a cascade of environmental consequences:
  + Ex - loss of vital habitat and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, soil erosion, water pollution, over fishing and over hunted wild populations. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_!!
* There is a disconnect between our actions and their environmental consequences.
  + - Ex. Entire mountains leveled to produce \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
  + - Ex. Destroying 1,000's of acres of habitat and miles of rivers to access coal seams.
  + - Ex. The direct connection between burning \_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ contaminated fish.
* The chief problem is human population \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
  + Global population is set to reach 9 billion by \_\_\_\_\_\_\_\_\_\_\_\_\_!
  + The sheer volume of people will \_\_\_\_\_\_\_\_\_\_\_\_\_ the Earth's resources.
* This is a relevant factor because every environment has a \_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
  + Many of our actions as humans are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the Earth's carrying capacity, even as the population swells.
* Environmental scientists can \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the impact any population, or organism, has on its environment. They study the amount of resources we consume and the waste it produces
  + This is our (human) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
  + Some scientists already feel humans have surpassed the carrying capacity of the Earth.

**Human Population Growth**

* Unlike the Vikings, humans now have to deal with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ change, meaning any change caused by humans.
  + Humans are faced with rapidly warming \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ temperatures caused largely by our affinity of burning fossil fuels.
  + Scientists have coined the term "\_\_\_\_\_\_\_\_\_\_\_\_\_" - willful destruction of the natural environment.
* Humans (as a blanket statement) tend to consider themselves masters of their surroundings.
  + They typically turn a blind eye to the largely \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ harm done to the environment.
  + Our own \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ can help our ability to help or hurt our abilities to respond to change.
  + There is still plenty we can \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ now!

**Sustainability of Human Societies**

* In order to have \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ survival, organisms need a constant, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ , source of energy.
  + As energy passes from one part of an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to the next, the usable amount of energy \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
  + New energy inputs are required.
  + A sustainable ecosystem is one that makes the most of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ energy (energy that comes from an infinitely available or easily \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ source).
    - SUN!! PHOTOSYNTHESIS!! PLANTS!!
    - This energy is then passed up the food chain.
* Matter can be used and reused \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. (Physics, conservation of matter!!)
  + Sustainable ecosystems waste nothing, they recycle matter as fast as it is being used.
* Lastly, sustainable ecosystems depend on local \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to perform the jobs above. Different species play different roles in the process.
* In a nutshell, humans use too many \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ resources, those that are finite or not replenished in a timely fashion.
  + Ex. Burning coal, fossil fuels, logging
* We need to rely more on \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ resources.
  + Ex. Wind, solar, reduce waste, keep the population in check somehow

**Is Zero Population Growth Enough?**

* Even if replacement fertility is achieved worldwide (0% population growth), we may have grown too large already.
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ fertility rate - The rate at which children must be born to replace the dying in a population.
  + Look at a carrying capacity graph, we may in the part that is spiking about the sustainable carrying capacity.
* The highest fertility rates tend to be in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ developed countries.
* Overconsumption is a problem in the most \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ countries, like the US.
* Human impact is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ on population size, affluence, and how we use our resources. Especially technology (cell phones!), which tends to increase our overall usage of resources.

**What Can I Do?**