

Advance in Life Cycle Assessment HW 1

1. Power plants are frequently mentioned sources of environmental problems. List three specific types of outputs to the environment resulting from these fossil plants. Which other parts of the life cycle of producing electricity from fossil plants also contribute to these problems?

- Greenhouse gas (GHG) lead to global warming.
- Various chemicals or compounds, causing acid rain. (e.g. SO_x NO_x)
- Byproduct generated by process takes up soil and water system.

Fossil raw fuel transportation stage. To be more specific, trucks or ships carrying fossil fuel will release GHG into atmosphere and emit hazardous chemicals into ocean, respectively.

2. Across the life cycle of a laptop computer, discuss which life cycle stages might contribute to the environmental impact categories discussed in the chapter. Are there other classes of environmental impact you can envision for this product?

- Disposal stage: some compounds of laptop are hard for removal, which are harmful to land and human body.
- Transportation stage: some big company, such as Apple, Dell, has intercontinental business, which vastly use transportation to deliver their good around the world. Thus, more GHG and hazardous particles will be released.
- Manufacturing stage: more electricity is needed, increasing of the burden of power plant.

Human health needs to be considered. For example, it could cause myopia or cervical spondylosis due to overusing laptop.

3. Suppose that a particular truck requires diesel fuel to transport freight. In the process, carbon dioxide is emitted from the truck.
 - a. In the terminology of life cycle thinking presented in this chapter, what does the diesel fuel represent?
 - Diesel fuel represent input.
 - b. What do the freight movement and carbon dioxide represent?
 - Freight movement represent output and Carbon dioxide represent environment impact.
 - c. What stage of the truck life cycle is being presented in this problem so far? What other truck life cycle stages might be important to consider?
 - Transportation stage and usage stage might be important since its efficiency of engine decrease as an increase in time, emitting more GHG.
 - d. In considering the environmental impacts of trucks, would it be advisable to expand our system of thinking to include providing roadways? Why or why not?
 - It would be advisable (1) whether it provide a shorter path, decreasing GHG emission. (2) depends on the location, whether the locations has better transportation network (3) consider the goods capacity difference.
4. Read the history of environmental degradation on Easter Island available on CourseWeb under Homework 1 and answer the following questions. (maximum of half a page for each of the following questions)
 - a. What is the lesson from this story about sustainability? What kind of limits did the Easter Islanders encounter?
 - b. What should the Easter Islanders have done for sustainable development of their society?

a. who lived at Easter Island overcut trees for status movement (for ceremonial purpose), causing an irreversible result in ecology system.

- There are no mammal animals which can replacement human labors.
- Climate is too severe for ecology system, causing a lower complexity in plants
- Drainage is very bad and there were no permanent streams on this inland, making against agriculture development.

b. the Easter Islander should do:

- Reclamation
- Import vegetation, which can grow under this climate condition
- Build canals for irrigation
- Civilization and limitation in ceremonial rituals