Example Reading Notes
Chapter 1, Field Notes from a Catastrophe, Elizabeth Kolbert

Summary:
This first chapter draws us in to the issue of climate change (global warming) by giving us real examples of the current consequences of global warming, both personal and scientific. On the personal side, the author starts with the story of the Inupiat village of Shishmaref, Alaska and how thinning and less frequent sea ice is altering cultural hunting practices and threatening and destroying their homes. The relocation plan for this village also introduces us to the huge potential personal, cultural, and economic costs of trying to adapt to a warming climate. On the scientific side she introduces us to trends such as:

- increased carbon dioxide release by human activity (5 billon tons to 7 billion tons annually, from 1979-2006)
- global air and ocean temperature increases; more acidic oceans
- thinning arctic sea ice (down 40% 1960s to 1990s)
- melting permafrost

The consequences of global warming are currently less evident in more temperate (and populated) zones, so Kolbert focuses on the Arctic where the effects are more obvious. Here there are less people (and animals and plants) affected, but these examples should serve as an early warning to us all.

Relevance:
This chapter is clearly relevant to many aspects of Sustainability, including environmental, cultural, and economic. It points to why it is important for all of us to better understand our global climate system and how human activities affect it.

Main/Important Points:

- Global warming due to human activity is not just hypothetical, but the effects can be detected right now!
- Non-linear, discontinuous changes are likely due to positive feedbacks in the system. Examples include:
    - Permafrost: when it melts it releases greenhouse gases which raise average temperatures and therefore melt even more permafrost, etc.
    - Albedo: sea ice is one of earth's best reflectors of the sun's heat (reflects 80-90%; albedo is 0.8-0.9), but when melted sea water absorbs almost all the heat (only 7% reflected, albedo is 0.07). This increased absorption of heat warms the ocean which melts even more sea ice leading to even more absorption, etc.
- If we reach these "tipping points" where positive feedbacks such as permafrost or sea ice melting accelerate, we will not be able to go back simply by reversing our actions (e.g. lowering our carbon footprints). Instead we may set something in motion that has devastating effects and which we are not capable of controlling.

Questions:

- What happened to the people of Shishmaref, AK? Did they relocate?
- What are our leaders, institutions, and/or citizens doing to address this problem?
- Have these trends continued since the publication of the book? Has there been any improvement?