Final Exam

*Monday, June 7, 8:00 am-11:00 am, one page of notes allowed.*

Please write your name, student ID number, TA, and section day/time, on your blue book.

For all parts of the exam, please indicate clearly which questions you have chosen to answer. In general, no more than 4-5 sentences should be necessary to answer the short answer questions in parts 1 and 2.

1. [10 points] Answer one of the following two short-answer questions.
   
   a. What are three ways in which “new urbanism” contributes to sustainable communities?
   
   b. What are two advantages to building owners/developers in choosing to construct LEED-certified buildings?

2. [30 points] Answer three of the following five short-answer questions.

   a. In what ways has the oil spill in the Gulf of Mexico hurt each component of BP’s triple bottom line?

   b. What would be the environmental impact of trading in your gas-burning car (with a classic internal combustion engine) for an all-new electric car? Please identify at least two advantages and at least two disadvantages.

   c. Briefly define the “tragedy of the commons”. In what ways is it a tragedy of the commons to use water from a confined aquifer, such as the Ogallala Aquifer?

   d. What does the term “cradle-to-cradle” mean? Identify at least three criteria that need to be considered in designing a consumer product with this concept in mind.

   e. What are the Millenium Development Goals? Identify at least three reasons why they are relevant to the global environment.

3. [30 points] Answer one of the following two questions:

   a. The Chinese government recently announced plans to build a hydroelectric dam on the Yarlung Tsangpo River in Tibet. (This river becomes the Brahmaputra when it flows downstream into India and Bangladesh.) The dam would generate 38 gigawatts of power, making it the largest hydroelectric project in the world, and would be located in a remote part of Tibet that is not currently on China’s electrical grid. Zhang Boting, the deputy general secretary of the China Society for Hydropower Engineering was quoted in the UK *Guardian* saying, “We should not waste the opportunity of the biggest carbon emission reduction project. For the sake of the entire world, all the water resources that can be developed should be developed.” In a well-crafted essay, evaluate the advantages and disadvantages of this project.

   b. In class we noted that transportation represents over a quarter of US energy use. In a carefully crafted essay, identify at least three strategies that could be adopted in the US to reduce transportation energy use, and evaluate which of these
strategies is likely to have the most dramatic effect on air-quality and greenhouse gas emissions.

4. [30 points] Answer one of the following two questions:

a. Our guest lecturer, Richard Somerville, showed a figure (reproduced below) from the Copenhagen Diagnosis, indicating “emissions pathways to give a 67% chance of limiting warming to 2°C”. The Kerry-Lieberman American Power act proposes to reduce emissions by 17% by 2020, 42% by 2030, and 80% by 2050. In a well-crafted essay, explain the potential strengths and weaknesses in the Kerry-Lieberman proposal with respect to meeting the global emissions reduction requirements outlined in the Copenhagen Diagnosis. Are the Kerry-Lieberman proposed reductions sufficient to meet the requirements of the Copenhagen Diagnosis?

b. In class we considered a number of options for meeting the world’s future energy needs. If you had to decide today, in what two energy sources would you invest in order to most sustainably meet the energy needs of the planet in 2050? What are the advantages and disadvantages of each method, and why have you chosen these particular options?