

PS#5, Due Monday, February 12

1. **Climate Change and You:** Chris Jones, at Berkeley has created a spreadsheet-based tool for individuals to estimate all direct and indirect emissions of GHGs in CO₂ equivalent units resulting from their primary energy related choices: transportation, food, housing (including energy use), goods and services, and waste. Go to Chris' website: <http://consumerfootprint.org/> and spend some time exploring to understand the basic logic of what the site. Go to the calculators and fill out the widget that pertains to you, most likely the household widget at the bottom of the calculator page. Fill out the carbon calculator with your individual information for each sector. Please be as honest as possible (I won't publish your names). Go to the Summary tab and save your answers.
 - a) List the emissions of your different categories. Which ones are the most problematic and why?
 - b) What is the ratio of your total emissions to the national average of 16 tons CO₂ per person per year? You will find that most sources quote the average USA emissions are 20 tons per person per year, but we have seen that in the last 5 years, this has dropped considerably without any change in the per capita income. What is the ratio of your total emissions to the global average of 4.5 tons CO₂ per person per year?
 - b) What do you find most surprising about your results? Please explain in a short paragraph.
 - c) Now do anything you can to bring down your carbon footprint... anything you'd be *willing* to do. What lifestyle changes would you have to make in order to emit no more than the global per capita average of 4.5 tons of CO₂? To do this, change the values you entered in the spreadsheet until your total emissions are below 4.5 tons CO₂. Try to make realistic choices. What do the results say about how your lifestyle compares to the lifestyles of the majority of people on the planet? Could you live at or below the global average? Please explain in one short paragraph.
 - d) What if, starting June 1, 2012, everyone suddenly started living like the average American (American per capita CO₂ emissions: http://en.wikipedia.org/wiki/List_of_countries_by_carbon_dioxide_emissions_per_capita)? How quickly would we reach what many climate scientists consider to be the dangerous level of 500 ppm (parts per million) of carbon dioxide in the atmosphere? Note that at present emission rates, the atmospheric concentrations increases at a rate of 2.1 ppm each year.
2. Let's estimate your carbon footprint yourself and compare it to what the calculator found. I highly recommend you build an Excel file to do this. You can then print it out and attach it to the problem set. Additionally, you should only accept your share of the CO₂ emissions. For instance if you carpool with your roommate and the two of you use 100 gallons of gas annually commuting to Cal Poly, then you only accept responsibility for 50 gallons:
 - a) Electricity. Take an electricity power meter and measure the power consumption of everything you own. Estimate the total electricity in kWh you consume each month, and compare this to what you get on your electricity bill. Convert this to CO₂ emissions. Assume that you are responsible for the marginal electricity in California: NGCC.
 - b) Get your natural gas bill. Convert this to kg of CO₂.
 - c) Consider how much petroleum you use when you drive each year. Convert this to kg of CO₂.

- d) Consider air travel. Large airlines use about 6 gallons per mile, but hold about 600 people. Thus we can estimate flying as being about 100 miles per gallon. There's a bunch of ways to estimate distance. You could consider that the average speed is about 500 mi/hr, or you could look up the distances that you travel.
 - e) Consider how many kg of beef, cheese, fruit, etc. you consume each year, Convert this to kg of CO₂ using Jones' and Kammen's paper (Available on the class website for Wednesday, Fig. 2).
 - f) Consider your consumer products also using Jones' and Kammen's paper (Available on the class website for Wednesday, Fig. 2).
3. Enter your group project by Friday, February 10 on the website, and establish a linked webpage. There is a video assigned for Friday's class about how to set up a webpage.
 4. If you haven't, please upload your narrative of your "don't throw anything away" day.
 5. Please start thinking about your Empathy Self-Intervention. Recognize when you've "otherized" someone – established them as "the other". Then endeavor to "walk a mile in their shoes", see their behavior as something that you do, see the world through their eyes. Recognize how they are the same as you. Be ready to describe your experience on the webpage (link on the main class website).