I. Wrap up Impacts lecture from previous class
II. Causes (“Drivers”) of Climate Change?
   A. Causes are personal
   B. But also structural
III. 3 drivers of human impacts
   A. IPAT (Ehrlich & Holdren, 1972)
   B. Impact = Population * Affluence * Technology
      1. Impact: environmental harm (CO2 emissions, fish catch)
      2. Population: # of people
      3. Affluence: $ per person (income)
      4. Technology: impact per $ (carbon intensity)
   C. Kaya:
      1. CO2 = Pop’n * (SGDP/Pop’n) * (Energy/$GDP) * (CO2/Energy)
      2. CO2 = Economic Growth * Technology Change
      3. How much CO2 grows depends on:
         b) Technology Change: Energy intensity * Carbon intensity
IV. Doubling CO2 emissions
   A. We will double CO2 emissions by 2033: assuming current population & affluence growth rates (3.1%) continue
   B. To reduce emissions requires technology improvements that are greater than 3.1% per year
   C. So, what about technology?
   D. Halving CO2 emissions will be hard
      1. If we don’t address population & affluence, current CO2 emissions will double by 2033
      2. If we eliminate population AND affluence growth, technology improvements take until 2110 to cut emissions in half
      3. In short: 0.7% ≠ 3.1% per year
V. Personal version of the IPAT equation
   A. I chose to have children and have two (P)
   B. I want them to have a better life than me (A)
   C. I ask for raises (A)
   D. When I receive them, I spend them (A, T)
   E. I drive too far (and too fast) to work (T)
   F. My Footprint
VI. Let’s Create a Model of Climate Drivers
   A. What factors lead to P, A, and T?
      1. Personal factors
      2. Structural factors
   B. Understand processes that lead to emissions to identify points for “policy intervention”
   C. Structural factors
      1. Values related to “what’s a good life”
      2. Kids
      3. Stuff
      4. Freedom
      5. Infrastructure: US: 20 tons/yr; EU 10 tons/yr
   D. What factors influence the rate of population growth?
VII. Changing Population Growth
   A. Some policies do influence population size, fertility
      1. Educating women
      2. Chinese one child policy (China 1.7/woman)
      3. French pro-natalist policy (France 1.98/woman vs. UK 1.66/woman)
4. Catholic position on contraception

B. So do social norms
   1. “When are you going to have kids?”
   2. “I wonder why they don’t have any kids?”
   3. “Congratulations on your new baby!”
   4. “I want to live a nice long life.”

C. Yet population appears “off limits” politically (not mentioned at Copenhagen)