

Environmental justice: Sustaining natural capital

Purpose: The purpose of this exercise is to develop an appreciation for the impacts of your individual consumption on the stocks of natural resources and to explore at a personal level the conflicts over consumption.

Guidelines: Please answer the following based on what you have learned about ecological footprints. We are not looking for “right answers,” but rather for thoughtful, well-expressed ideas about the challenges facing sustainability.

Part I

Ecological footprint is one way of measuring human impact on the earth. Your **ecological footprint** is the amount of land you would need to provide all of your food, water, energy, and goods.

1. The Earth has 12 billion (12×10^9) hectares of productive land and 7 billion people to support. How many hectares is that per person? _____
2. Using the footprint calculator¹, each member of the group should calculate his/her ecological footprint.
 Your ecological footprint is expressed in “global hectares” (gha) or “global acres” (ga), which are standardized units that take into account the differences in biological productivity of various ecosystems impacted by your consumption activities. Be sure everyone is using the same units (1 acre = 0.4 ha). Skyline’s campus is about 111 acres or 44.4 hectares.

Student <i>Print your names clearly</i>	Ecological Footprint		
	Global hectares needed	Largest use	Tons of CO ₂ produced
Group average			

¹ Footprint Calculator. Global Footprint Network. <http://www.footprintcalculator.org/>

3. What factors affect the size of the footprint?
4. If everyone lived like your group. How many planets would be needed? (The calculation is in gha.)
- $$\frac{\text{Group average} \times (7 \times 10^9)}{12 \times 10^9} = \underline{\hspace{8cm}}$$
5. The Earth also needs to accommodate the wild species that compete for the same biological material and spaces as humans. Read Mogelgaard's article².
- What percentage of the 12 billion hectares will you set aside for other species?
- Now how many planets do we need?

Part II

1. Look up *biocapacity* and write the definition in your own words.
2. Calculate the ecological balance of these countries by subtracting *footprint from biocapacity*. Use these data to answer questions 3–4:

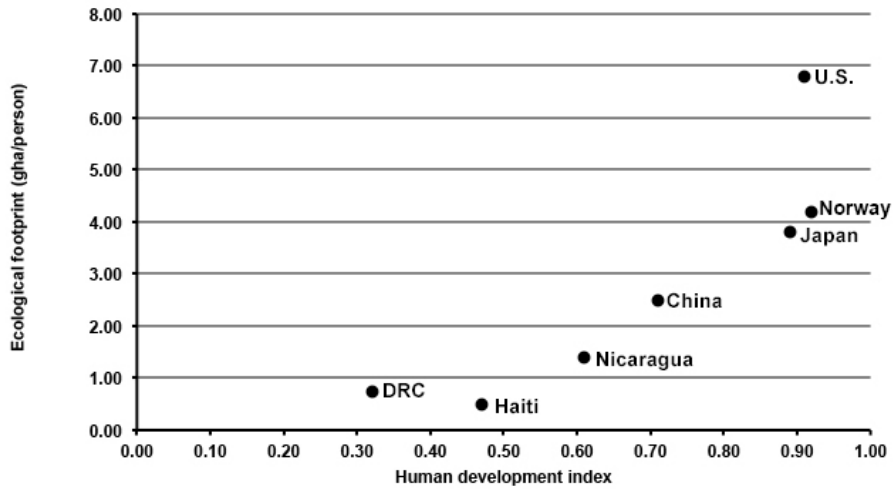
	Norway	United States	Japan	China	Nicaragua	Haiti	Democratic Republic of Congo
Biocapacity (gha/person)	6.10	4.40	0.60	0.90	3.30	0.20	2.66
Footprint (gha/person)	4.20	6.80	3.80	2.50	1.40	0.48	0.74
Ecological Balance							
Data source: <i>Ecological Wealth of Nations</i> . Global Footprint Network, 2010.							

3. Which countries have the most natural capital?
4. An **ecological deficit** occurs when the footprint of a population exceeds the biocapacity of the area available to that population. Which countries are in ecological deficit?

² K. Mogelgaard. "How Much Land Should Be Protected for Biodiversity?" Population Reference Bureau, June 2006.
www.prb.org/Publications/Articles/2006/HowMuchLandShouldBeProtectedforBiodiversity.aspx

5. How can the populations in countries with a deficit be maintained?

This graph compares human development index (HDI) and ecological footprints of selected countries. HDI is based on the life expectancy, education, and income of a nation’s residents. On a scale of zero to one, the United Nations defines 0.7 as the threshold for a high level of development (0.8 for very high development). Use these data to answer questions 6–7.



Data source: Global Footprint Network

6. Which country has the highest HDI? _____

7. Which countries are the most affluent?

Part III. Please write at least 3-5 sentences for *each* of the following questions.

1. As developing and underdeveloped nations get richer, and as they have electricity, drive more automobiles, and provide clean water, the estimates for those nations will rise quickly. While a rising standard of living is the central aim of developmental economics, should we worry that the rise in mean levels of resource consumption globally will accelerate the pace of ecological overshoot - reaching a point at which actual resource consumption outpaces available planetary resources

2. There is an inherent conflict between our desire for comfort and stuff (our consumption) and the ideas of ecological sustainability and fairness to people around the world. What would you not be willing to give up in your own lifestyle (if anything) to make progress toward these goals (sustainability and equity)? Explain your reasons for wanting or not wanting to make such changes.

3. What lessons can you gather from the comparisons you made in Part II of this assignment? (Remember that the footprint calculation only takes into account consumption, but the “ecological balance” calculation also takes into account biological capacity.) Should countries that have fewer biological resources be required to have commensurately smaller footprints?