|  |  |
| --- | --- |
| Z:\Communications Dept\BRANDING\logos\Logos_w_TM\GIF files_for web\GFN_horiz_r.gif |  |

***Footprint Futures***

**Full Assignment**

**Draft ready for class on Dec 3, 2014**

**The final version has to be submitted electronically**

**by 8 pm on Dec 4, 2014**

**Note:** You can do this work in groups of 1-3 students. Each group hands in one assignment. You should be able to complete this assignment within 40 minutes. Of course, the material is richer than a mere 40 min assignment. Spending more time will give you more depth and understanding of the underlying dilemmas that will accompany your professional, civic and personal lives for the decades to come.

**Objective:** This *Footprint Future* module assignment challenges you to explore what the optimal physical scale (or size) for a national economy might be. While there is no “one right answer” to the question, this scale question is one of the most significant conundrums of the 21st century: how to live well for generations, on a materially constrained planet.

**Assignment:** *What, according to you, is the optimal biocapacity deficit (or reserve) for “your” country by 2050?* We are not asking for a prediction. We are asking for YOUR argument of what is in the best self-interest of the country. Optimal means, it would hurt the residents more to use less than your optimum, AND it would hurt them also more to use more.

In short: make a numeric choice optimal biocapacity deficit and convince the residents in three paragraphs (or more) of your proposed 2050 target. Provide your numeric choice as a ratio between national Footprint/domestic biocapacity.[[1]](#footnote-1)

**Instructions:**

Form groups of 1-3 students for this assignment. Give your group a fancy name that sounds at least as prestigious as “McKinsey”.

Each group has to pick one “client” country among the five provided possibilities: **Brazil, Ecuador, Egypt, India, Switzerland, and USA.** The world’s data is also provided as a reference. An EXCEL sheet (**1 Class - Footprint Futures Exercise Final.xls**) with historical Footprint and biocapacity information for each country is available the Course site for download. This EXCEL sheet also includes a simple scenario module that allows you to make a graph of your choices. The appendix below has more links to information about the Ecological Footprint method (from simple overviews to deeper explanations).

Complement the basic Footprint and biocapacity information for each country with additional information as needed. For instance, you may want to consult:

* CIA-fact-book <https://www.cia.gov/library/publications/the-world-factbook/>
* IMF data base <http://www.imf.org/external/pubs/ft/weo/2014/02/weodata/weoselgr.aspx>
* World Bank Data base, <http://data.worldbank.org/>
* Wikipedia <http://en.wikipedia.org/wiki/United_States>

These are the questions you may want to consider in order to make an informed choice:

* Start with thinking about the changing context for the country, particularly, what will the world be like in 2050? What is the likely global context in which the country will have to operate? Will there be larger levels of overshoot? If yes, how would such a contexts affect the country you are studying?
* Given global resource availability and demand trends, and given the country’s relative positioning compared to other countries, what would be the optimal biocapacity deficit (or reserve) for the country in 2050?
* What are the advantages and disadvantages of higher and lower ratios? Now and in the future? Why would they be worse off with a larger than optimum biocapacity deficit (or reserve), **and** why would they be worse of with a smaller biocapacity deficit (or more reserve)?
* What kind of (economic) risks would your country face through higher or lower biocapacity deficits? What are the benefits of addressing the biocapacity deficit and why do they outweigh the costs of addressing them. How can you sell these benefits to the country’s residents?
* Why is your choice optimal?
* How does your choice link to your assessment of how likely an economy can fully decouple from its dependence on nature, and how well a country can reduce its demand on ecosystems without feeling a loss in wellbeing?

**Make a graph that represents your choice**

***Basic version:*** You can plug your choice into the EXCEL sheet using the simple version under B), where you enter your expected per capita Footprint and per capita biocapacity for 2050.

**Note** that the per capita Footprint can change both because of the amount of consumption as well as because of the resource efficiency with which resources are turned into final goods and services. In other words, you can half your Footprint consuming the same, but consuming things that are produced with half the resources across the board. Also remember that increasing efficiency across your entire Footprint does not come easy. For instance, how can you extract more food calories out of a given carrot? In this example, potential efficiency gains may not be that large. But we can get more light out of an LED than out of an old-fashioned incandescent light (including resources to produce the LED, the incandescent bulb, the power plant, the transition lines etc.).

**Advanced version:** You can plug your choices into the EXCEL sheet using the advanced version under C), where you need to enter expected per capita Footprint (given by the amount consumed and the efficiency by which products and services are produced), number of people with which you will share the biocapacity of the country, and change in absolute biocapacity. Change in absolute biocapacity is a reflection of how much we can increase ecosystem productivity. Increasing ecosystem productivity might come at a cost, as you may have studied in your environmental science classes (as a reminder: the potential for overfertilization, loss of biodiversity, loss of soils, loss of groundwater in intensive agricultural regimes).

Make these three choices – also over time to show how your goal will be reached. Ask yourself if the changes are realistic, compared with historically observed changes.

**Write-up:**

Once you made your numerical choices (using the simple or advanced graph generator), explain your choice in approximately three paragraphs. If during the write up you end up with new insights and want to change your chosen targets, you can, of course.

Please copy a picture of the graph with your chosen projection into your write-up and submit electronically before 8 pm on Dec 4, 2014. Please have your first estimate for your optimal Footprint to biocapacity ready for the class of Dec 3 so we can compare the various choices among the course participants. Remember again, there is no “*right*” answer.

If you have questions about the assignment, you can email Sam Chamberlain at [sdc84@cornell.edu](mailto:sdc84@cornell.edu) or Mathis Wackernagel at [mathis@footprintnetwork.org](mailto:mathis@footprintnetwork.org). Put *Footprint Future* in subject heading. Sam is also available on Tuesday Dec 2 from 12-1pm in his office.

**Grading criteria:**

* Group demonstrates that its members can read overall curve as well as population, biocapacity and per capita Footprint factor.
* Group provides solid, logically consistent arguments about the economic risks (or lack of risks) of biocapacity deficits now and in the future.
* Group considers both the resource reality of limited biocapacity as well as the socio-economic pressures to increase demand.
* Group can make a persuasive case for their choice to their peers.

**Appendix: Background on Ecological Footprint**

Here are more documents to help you get familiar with Ecological Footprint accounting.

PowerPoint presentation of Course 1 (available on your Course site)

Simple introductions:

* <http://www.footprintnetwork.org/en/index.php/GFN/page/footprint_basics_overview>
* <http://www.footprintnetwork.org/en/index.php/GFN/page/methodology>

Country examples:

* <http://www.footprintnetwork.org/en/index.php/GFN/page/trends/switzerland>

Method Paper on the National Footprint Accounts:

* <http://www.footprintnetwork.org/images/NFA%20Method%20Paper%202011%20Submitted%20for%20Publication.pdf>

Simple introduction to the topic:

Living Planet Report 2008 (a little older, but more concise in its argument):

* <http://www.footprintnetwork.org/images/uploads/LPR_2008_english.pdf>

Newer, less focused Living Planet Reports (including 2014):

* <http://www.footprintnetwork.org/LPR>

A more thorough introduction to the Footprint concept is:

Wackernagel, Mathis, Gemma Cranston, Juan Carlos Morales, Alessandro Galli, 2014. “Chapter 24: Ecological Footprint Accounts: From Research Question to Application,” Giles Atkinson, Simon Dietz, Eric Neumayer and Matthew Agarwala (eds), 2014, *Handbook of Sustainable Development: second revised edition*. Edward Elgar Publishing, Cheltenham, UK ISBN-13: 978-1782544692 (Available on Course site)

A list to some of the academic literature:

* <http://www.footprintnetwork.org/en/index.php/GFN/page/academic_references/>

Ecological Footprint Reviews by National Governments:

* [www.footprintnetwork.org/reviews](http://www.footprintnetwork.org/reviews)

Frequently asked questions:

* [www.footprintnetwork.org/faq](http://www.footprintnetwork.org/faq)

Common criticisms are addressed here:

* [www.footprintnetwork.org/en/index.php/GFN/page/responses\_to\_published\_criticisms](http://www.footprintnetwork.org/en/index.php/GFN/page/responses_to_published_criticisms)

1. Footprint/biocapacity = 2 would mean that country demands twice the amount as compared to what its ecosystems can renew. Footprint/biocapacity = 0.5 would mean that the country has a biocapacity reserve, and uses, in net terms, half of what the country’s ecosystems can provide. [↑](#footnote-ref-1)