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| Z:\Communications Dept\BRANDING\logos\Logos_w_TM\GIF files_for web\GFN_horiz_r.gif | **Global Footprint Network**  International Environment House 2  7-9 Chemin de Balexert  1219 Chatelaine (Geneva), Switzerland  312 Clay Street, Suite 300  Oakland CA 94607, USA  [www.footprintnetwork.org](http://www.footprintnetwork.org) |

**FOR INSTRUCTORS ONLY**

**Structure and Content for *Footprint Futures* at Cornell**

**A Module on Human Dependence on the Biosphere**

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**December 2014**

**Module Theme: Humanity’s Physical Metabolism and Sustainability**

This module explores the sustainability dilemma for human economies – as WWF, IUCN and UNEP defined it: “improving the quality of human life while living within the carrying capacity of supporting eco-systems.”[[1]](#footnote-1)

The module consists of a student-driven exploration into what the optimal material scale is for a national economy. The exploration works with real country examples and asks students to make difficult choices. There is no “one right answer” – the only goal is to generate among students a serious inquiry in, and seed interest about, one of the most significant conundrums of the 21st century: how to secure lasting well-being on a materially constrained planet.

**Goal of the *Footprint Futures* Module**

The goal is simple: *Engage, inspire and empower university students so they can productively embrace the biophysical core tenants of the sustainability conundrum.*

More specifically, by exposing module participants to Ecological Footprint and biocapacity thinking, Footprint Futures attempts to help students discover the implications of ecological overshoot, to make them wrestle with questions of scale, and to empower them as decision-makers to identify their own contributions and solutions.

The educational goal is to keep participants intrigued and curious about all the aspects affecting overshoot: from the biological and physical sciences (Earth science, ecology, resource management, agriculture) to the social sciences (economics, international development, international relations, governance, philosophy and ethics, decision-making).

Success would mean that students provide positive feedback about this module and, more importantly, that they refer to this experience as significantly influencing their professional outlook and possibly their career choices.

**Structure:**

1. **Class before Footprint Future modules (15 min) – announcement and overview**

**Mini Warm-up Assignment (non-graded)** takes students 15 minutes outside the classroom

1. **First class (45 min) – basic concepts and introduction to assignment**

**Assignment (in groups of 1-3) – support provided in weekly Seminar – hotline by email. Each group should get 15 min coaching during the week** takes students 40 minutes

1. **Second and last class (45 min) – comparing results from assignment, integrating the learning, and conclusion**
2. **Class before module week (15 min) – announcing module**

**Class 0 Resources**

* Instructional ppt with pretest, mini in-class assignment, and mini homework assignment instructions (**Footprint Futures – Mod 0.ppt**)
* Instructional document for mini homework assignment instructions (electronic handout with background) (**Footprint Futures – Mini-Assignment.doc**)

Preannouncement: (in class during the week before module **– total time requirement of preannouncement activities 15 minutes**)

***1 minute: announcement.*** Next week, we will dive into sustainability implications for societies and economies. There will be an assignment that will be graded. But this last module called “Footprint Futures” should also be a lot of fun, and will challenge your creativity.

This is a new initiative – we are trying out a new module, and you will also help shape it for the future.

***2 minutes: Pretest.*** Let’s start. What do you think about the following statement:

***Everything we do depends on nature.***

Raise of hands:

1. Not true
2. Sometimes true
3. Nearly always true
4. 100% true

Count hands roughly and record distribution of responses from the class on blackboard.

***7 minutes: Mini In-Class Assignment during prep-class class:*** To what extent have human economies been materially constrained? Identify 1, 2, or more examples (within 3 minutes). Try to identify your most powerful examples of where limits reduced possibilities?

Share your ideas with your neighbor (2 minutes)

2 minutes: Instructor collects examples through “pop-corn” style shout out and records them on blackboard.

If instructor needs to prompt discussion - examples could be: Apollo 13, Switzerland (and many other countries) in WWII - food rationing, famines, Easter Island, oil crisis 1973 – link to economic performance, oil (2008-2014?), Water for a city and even more for agriculture (Saana-capital of Yemen, Dust bowl, California in drought losing agricultural productivity, Ogallala in Texas becoming so drained that agriculture becomes impossible), CO2 accumulation in the atmosphere – longer term impacts, fisheries collapse, pandemics (pop-density, hygiene, high interconnectedness).

***5 minutes: explain (ungraded) Mini-Homework Assignment in preparation for first class.***

**Make two bets and explain or argue for your choice in one or two paragraphs**. This should not take you more than 15 minutes. **Consider to what extent economies can escape their physical constraints**. Here are the two predictions we want you to make (or consider them to be “bets about the future”):

1. According to you, what is the likelihood (percentage) that humanity over the next 50 years will be able to fully decouple from its dependence on nature? In other words, what is the percentage likelihood, in your view, that the human economy (or generating economic value) can be fully decoupled from ecosystem productivity within 50 years? (i.e., is it realistic to assume that healthy ecosystems will not be a precondition for thriving economically and socially?)
2. According to you, what is the likelihood (percentage) that humanity will be able to reduce its demand on the planet to a level **that is well within ecological limits** within the next 50 years **without feeling a loss in wellbeing**?

If you need more input, here some sources that are concerned about ecosystem health and its implication for human wellbeing: Millennium Ecosystem Assessment (2005), Planetary Boundaries (Rockström et al. 2009). Here are some sources of people who think we can sufficiently decouple (Weizsäcker and Lovins–Factor Four, UNEP Resource Panel). Yet other sources assume we can fully decouple, starting with the Breakthrough Institute (for instance their perspective on Rebound Effect, and banking on nuclear power, Matt Ridley the rational optimist – as in his 2014 WSJ articles), Peter Diamandis (Abundance), Ray Kurzweil (The Singularity is Near)

*The handout for the mini assignment offers more background and links to some easy introductions*.

Note: This assignment will not be graded, but it gets you ready for next week’s work.

1. **First class module (50 min)  
   Basic concepts and introduction to assignment**

Assuming a 45 minutes class plus 5 minutes slack

**Class 1 Resources**

* Instructional ppt on Limiting Factor (15 min including discussion on need to operate within planetary limits - or lack thereof) and on Footprint and biocapacity accounting introduction (**1 Class - Footprint Futures.ppt**)
* Background for homework assignment (also in **1 Class - Footprint Futures.ppt**)

**Assignment Support Documents**

* (Electronic) handout for students with assignment instructions, help-email, background and links to data bases with country info (**1 Class - Footprint Futures – Assignment.doc**)
* Excel sheet with country information for chosen countries and projection graph generator (Brazil, Ecuador, Egypt, India, Switzerland, USA, plus World) (**1 Class - Footprint Futures Exercise Final.xls**)
* Background paper on Footprint (**1 Class - Background Chapter 24 - Wackernagel et al 2014 - Footprint Intro.doc**)

**Class Room Preparation:** Draw two scales on the blackboard.

1. Likelihood that humanity over the next 50 years will have fully decoupled from its dependence on nature.

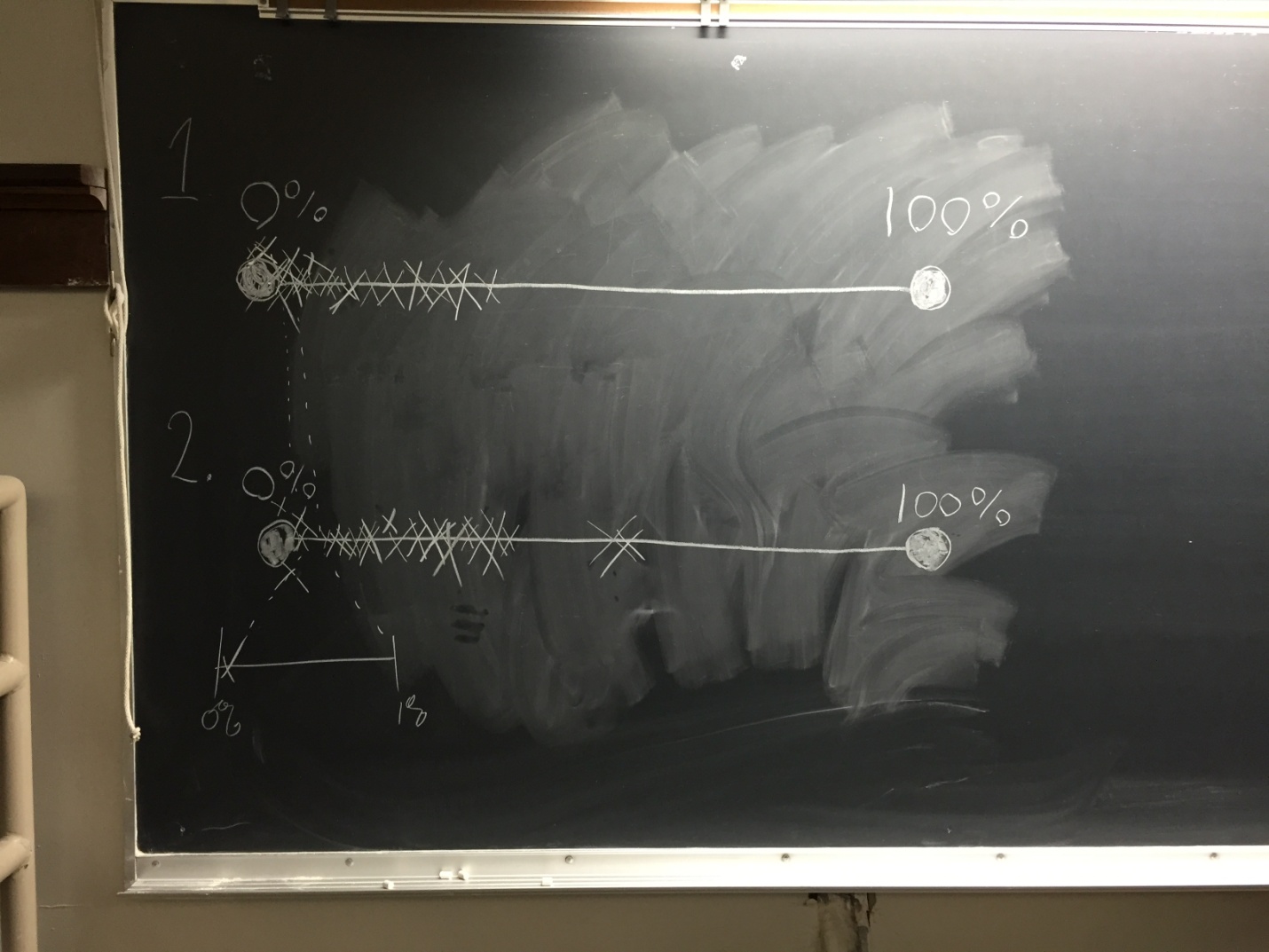
0% 100%

1. Likelihood that humanity within the next 50 years will have reduced its demand on the planet to a level that is well within ecological limits without feeling a loss in wellbeing.

0% 100%

Ask students, before they sit down, to mark a dot (or stick a dot-sticker) on each of the two scales – representing their prediction for question 1) and 2) from their homework assignment.

Reflections?



***Photo 1:*** *shows the results for assignment 1 from Cornell Dec 2014 course. scale 1 answers question:* ***What is, according to you, the likelihood that humanity over the next 50 years will have fully decoupled from its dependence on nature?*** *Scale 2 answers the question:* ***What is, according to you, the likelihood that humanity within the next 50 years will have reduced its demand on the planet to a level that is well within ecological limits without feeling a loss in wellbeing?***

***1 min: Introduction to Module:***

**Welcome to Footprint Futures** – you are in the driver’s seat. What kind of a future do you want?

The focus of the *Footprint Futures* module is the topic of resource availability, We will give you concepts, tools and data so you can make your own choices. The challenge will be for you to identify what kind of a world you want – more specifically how much of nature’s budget you will want nations to spend, to best protect your own interests.

What is nature’s budget and why does it matter?

***5 min on: “Limiting Factors”***

***Is there a material limiting factor for the human economy?*** Liebig’s Law of the minimum – does it apply to human economies? A useful lens for understanding economic condition? Identifying the “limiting factor ” of a system enables accounting (dollar as limiting factor for financial accounting, GHGe as limiting factor for greenhouse gases, weight for an airplane, seats for a theatre, etc.)

What would be such a minimum? Introducing biocapacity lens as overarching limiting factor – how does it relate to the 9 planetary limits, to fossil fuel, etc.?

***8 min: Building on mini-assignment – in class discussion:******Does the human economy have to operate within the planet’s material (renewable) constraints?***

* why yes? (if we believe there is a chance we cannot fully or easily decouple from material reality, then depletion of the material basis is becoming a limitation – ask for domestic and international examples),
* why not necessarily? (for some time we can live off stocks, locally we can import from other places if we have the cash, or externalize some of our costs such as through carbon emissions; maybe there will be miracle solutions – super low-cost/low-effort solar power, super-cheap fusion)

Have students, in groups of two, identify reasons why, and why not.

Collect the two set of reasons and record them on two opposite sides of black board.

If time allows: are there overlaps? (for example: yes, we can exceed limits for a while, but not forever – or we may invent new energy sources (fusion) in time to replace the depleted natural capital – meaning we will get back into (expanded) environmental limits, if our “bet about the future” turns out to be correct, but if the bet is wrong, there will be a forced contraction).

Time delays? How quickly and at what scale would these “miracle solutions” (such as radical decoupling, fusion energy, very cheap and effortless renewable energy) have to come on line?

***15 min: Explain principles behind Footprint and biocapacity accounting.***

* How does biocapacity accounting work – simple addition of competing demands for biologically productive surface areas of the planet (see ppt). Global Footprint Network produced some assessments of demand on biocapacity vs. availability. Here are country trends. (If time allows, explain carbon Footprint – how it interacts with non-carbon part.)
* Show biocapacity deficit map 1961 vs. today
* Three sources of deficit – depletion, net-imports, use of global commons
* Show HDI-Footprint map – human development trend is in conflict with resource budgets
* Show national Footprint trends by continents
* Show Future trend – to three planets

**Questions:** on content

**3 minutes Discuss with your neighbor:**

In a time of global overshoot, how could national biocapacity deficits become risks to the human economy? How significant are they? What could be the mitigating factor (income helps – but it is a zero-sum game, since it just allows some to get more of the pie – it does not increase the pie much (just a little since more money might incentivize more intensive biocapacity management)

***15 min, introduce assignment (including EXCEL sheet)***

Assignment instructions:

Question is simply: ***What would the optimal biocapacity deficit (or reserve) be for your country by 2050?***

**Note:** You should be able to complete this assignment within 40 minutes. Of course, the material is richer than a 40 min “visit” would allow. Spending more time will give you more grounding 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 right answer, 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?* Make a numeric choice and explain in three paragraphs your rationale. Provide your numeric choice as a ratio between national Footprint/domestic biocapacity.[[2]](#footnote-2) Make a strong argument why your choice would be in the highest self-interest of the country.

**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.

**[Additional grading support – particulars to look out for when grading]**

* Write-up demonstrates a good understanding of biocapacity deficit – difference between biocapacity deficit and overshoot, and potential risks of biocapacity deficits in an ecologically constrained world
* Write-up appreciates (as opposed to avoids) tensions between economic and ecological necessities – assignment explicitly mentions potential trade-offs
* Write-up mentions (embraces or discards) “tragedy of the commons” arguments
* Write-up makes (or effectively dismisses) self-interest argument for nation
* Write-up has a clean logic of argumentation in favor of the choice they make – and using appropriate facts to bolster the argument.
* If a presentation is made: ability to successfully sell their position to their peers. Persuasive stile**.**

**Seminar/Office Hour**

Groups are assisted in doing the assignment

Each group should get at least 15 min coaching (with Jed, his assistants, and Global Footprint Network folks via skype) – they should present their draft – or identify where they are stuck.

If they are stuck and cannot get unstuck – then their assignment becomes an explanation of why they cannot provide an answer. What is missing for them to make a choice? What is the information missing for them to be able to make a choice? Where did they look?

1. **Second and last class (45 min):  
   Comparing results from assignment and conclusion**

**Class 2 Resources**

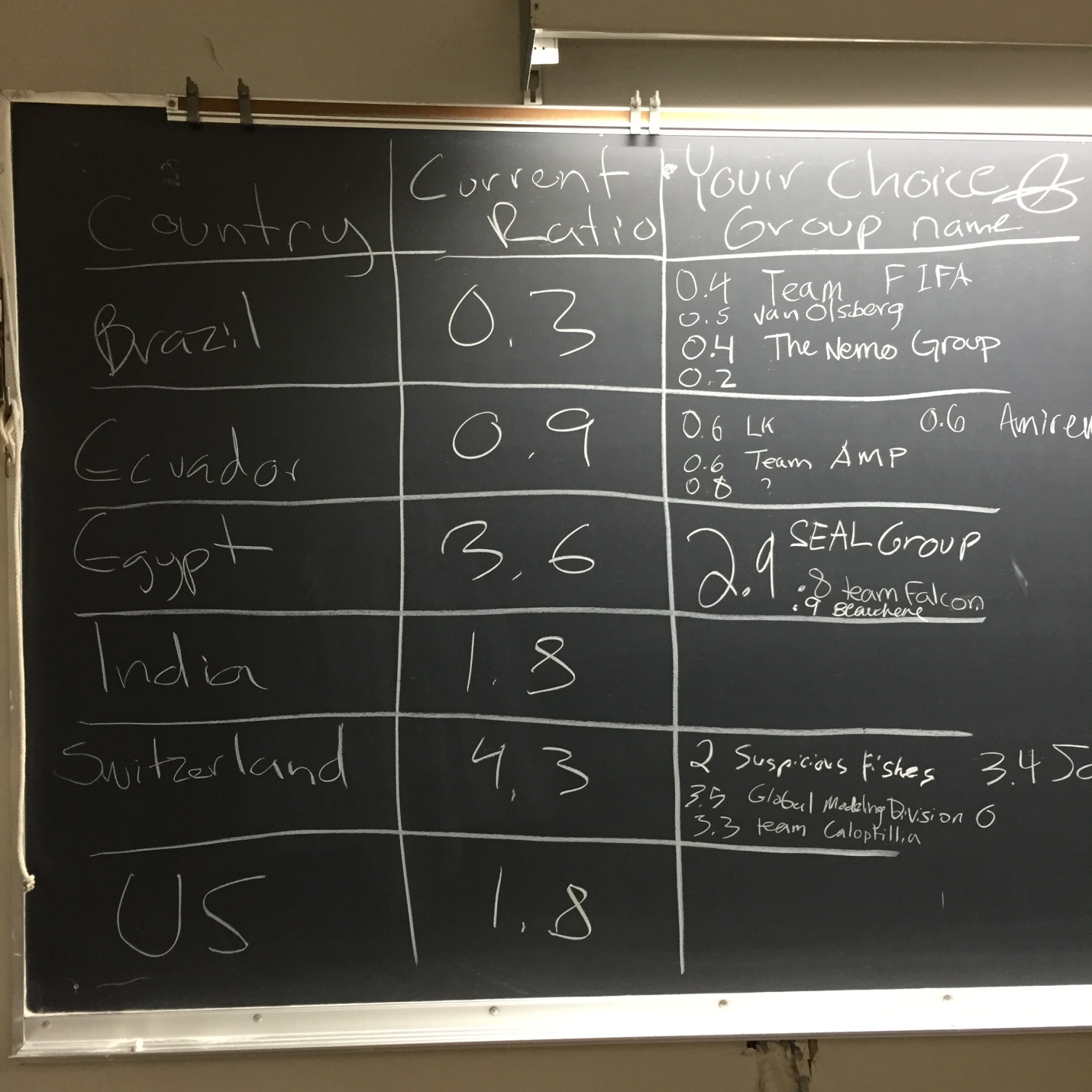
* Instructional ppt with table assignment instructions, including presentation instructions and self-reflection (**2 Class - Footprint Futures.ppt**)
* Word document for capturing students’ results (**2 class - Assignment Results Matrix.doc**)
* Curriculum contains:
  + Additional grading advice
  + Sheet with some simple talking points about the disconnect between economic practice and ecological reality
  + email to be sent out to all participants for evaluating experience

***5 min: Result comparison from assignment***

Comparing Assignment Results: What is your country’s optimal Footprint/biocapacity ratio for 2050? Compare and compile results of all groups for the five countries

Make a Table on blackboard or use the accompanied word file on computer.

|  |  |  |
| --- | --- | --- |
| **Country** | **Current Footprint to Biocapacity Ratio (2010)** | **Your Choices (for 2050)**  **and group name** |
| Brazil | 0.3 | e.g., 0.4 (Cornell Star Consultancy) |
| Ecuador | 0.9 |  |
| Egypt | 3.6 |  |
| India | 1.8 |  |
| Switzerland | 4.3 |  |
| USA | 1.8 |  |
| World | 1.6 |  |



***Photo 2:*** *shows the results from Cornell Dec 2014 course for assignment 2. “Current Ratio” stands for current ratio of country’s Footprint / country’s biocapacity. “Your Choice” stands for the chosen target ratio for country in 2050.*

***5 min. Questions about assignment.***

Any questions came up during the preparation of the assignment?

***15 min: Presentations***

Take 2 minutes on your own to prepare a 1 min presentation about your choice – (individually, build your argument for selling your choice).

You may want to start like this: *Having looked at the global trends and the situation of COUNTRY X, we came to the conclusion that the best target for COUNTRY X to shoot for is* ….

**3-5 groups present results of their assignment – 1 min presentation – 3 min questions**

* What is your result? (provide country ratio for 2050)
* Explain why
* Questions (for 3 min)

***10 min: self reflection:***

Take a piece of paper: *5 min self reflection*

* What did I learn?
* What is still unclear to me?
* What new questions has this evoked?

*(If possible, collect answers for future curriculum design)*

2 min sharing with neighbor

3 min. Have students share in class, and collect responses on the blackboard (please take picture of black board after class as part of the overall feedback).

What are key issues student groups came up?

If all went well, students should have suggest topics related to the paradox between what students see as the ecologically informed national self interest, and the current conventional development paths that are oblivious to this reality. (The current conventional development path is characterized by continued rapid population growth (one billion added every 12-15 years until the end of the 21st century), no real decoupling (although some countries hold steady at a very high and globally non-replicable level of resource demand). Yet there are ever more statements that we should shift the pat as in the case of the Chinese-US climate commitment).

**8 min – discuss key issues that came up**

**Pick on themes students identified**

Lead discussion with students.

***Open with:*** This module focused on the ultimate “sustainability riddle”: *How can growth and limits co-exist on a finite planet?*

*Ask students:* What is your take?

For example, hopefully one student will mention the following topic: Why are we currently not considering this physical reality? Why are our government’s economic advisors focusing on expanding our economies as if there were no ecological constraints? In other worlds, why is this not considered in current economic theory? (answer: explain and acknowledge seduction of short-term benefits of expansion (or “growing the cake”) and the political challenge of a “redistribution” versus expansion policy.)

***Follow-up question*** if students do not react and you need to heat up the discussion: *How come we live in such a contradiction that seems so obvious, and yet nobody knows how to overcome? What are your pet theories?*

Get ideas from group. *What do others have to say? What do you think about this dilemma? How would you explain it to your parents or friends?*

Here are some simple talking points for instructors about the contradictions and economic paradoxes:

* **Water-diamond paradox:** Water is ecologically more necessary than diamonds, but at the margin (the next pound of) water is easier to get than diamonds. (this is among the initial insight into marginal analysis, that led to the emergence of marginal analysis and the use of calculus in economics over 100 years ago).
* **Tragedy of the Commons:** benefits are concentrated and costs are diffused (See Hardin (1968) – who unfortunately used wrong name in the title of his essay– should have been called Tragedy of Free Access. Commons (or mutual coercion, mutually agreed upon, as he defines himself) can be an effective solution to overcome ToC. Question: is sustainability really all about ToC? Or could it also be that if you are not ready for the future, YOU are not ready for the future?
* **Resource liquidation race:** Temptation to liquidate one’s assets to generate cash is big. In fact many countries (mis)consider sales of their resource stocks as income. This makes them addicted to sales of their resource wealth. They sell even faster as prices go down. But this makes them poorer (they lose more wealth than they generate income). This boils down to the following maxim: we should be focusing on maximizing wealth rather than on maximizing income (otherwise we operate liquidation economies, which in return are subsidizing all other economies, and make them excessively resource dependent. This leads to overall wealth loss). Is this a collective collusion or a pyramid scheme?
* **Unstable financial system** that requires expansion in order to be stable – in contradiction to physical system that requires steady-state to be stable
* **Time delays** in physical systems are not reflected in general equilibrium models of economists. Those models assume instantaneous reactions to shift in prices. If prices shift, physical reality cannot adjust very quickly. Physical infrastructure determines demands, but is slow to change. (It takes decades to rebuild houses, cities, transport infrastructure, etc.).
* **Price not necessarily an indicator of physical scarcity.** “Price being a reflection of ecological scarcity” is a large misconception among economists. In reality many resource overuses did not get predicted by price (buffalos, passenger pigeons, fisheries collapses, and many more).
* **Brand versus bread:** in current context, even though all value chains start with natural capital, very little of value added flows back to natural capital. Most of the value gain is captured by consumer brand. This leads to a small incentive to invest into natural capital.

**Close with:** *Is sustainability in our self-interest, or is it too expensive?* (Instructor: don’t answer!) *This is the question to leave you with.*

**2 min: Closing of entire module**

Thank you for joining this journey.

The whole point of the exercise is to leave you with unanswered questions. Nobody has good answers yet for these questions. You are needed to help society answer them. Keep us posted about what you think. Let us know if you want to read or learn more about this, in case you need pointers.

Thanks for being pioneers in this module – and we also need your feedback, because we want to make this better every time.

***Post event email to collect feedback:***

Ask them to help improve the module. Send out the following email.

*Footprint Futures explored the sustainability dilemma for human economies: “improving the quality of human life while living within the carrying capacity of supporting eco-systems” (WWF, IUCN and UNEP).*

*We invited you to explore what the optimal material scale is for a national economy. There is no right answer – but there is real wellbeing at risk, if we get the answer wrong. The goal of this module was to generate a serious inquiry, and seed interest, in this significant conundrum: how to live well for generations, on a materially constrained planet.*

*Now we would like to get your feedback – it is your opportunity to grade us. Please send me back your answers to the following two evaluation questions:*

1. *What did you like?*
2. *What should we do differently?*

Instructors and advisors to fill in as well

**Global Footprint Network supports grading of assignments according to criteria**

**Debrief between Global Footprint Network and Cornell faculty, after having read student feedback.**

**Global Footprint Network produces final report on learnings and suggestions for future teaching of *Footprint Futures* module.**

**Appendix: Instructional Materials Provided:**

* Curriculum (**Footprint Futures curriculum 2014 11 28.doc**) **FOR INSTRUCTORS ONLY**

All other documents can be provided to class participants.

**Class 0 Resources**

* Instructional ppt with pretest, mini in-class assignment, and mini homework assignment instructions (**0 Class - Footprint Futures.ppt**)
* Instructional document for mini homework assignment instructions (electronic handout with background) (**0 Class - Footprint Futures – Mini-Assignment.doc**)

**Class 1 Resources**

* Instructional ppt on (**1 Class - Footprint Futures.ppt**)
  + Limiting Factor
  + in-class discussion on need to operate within planetary limits (or lack thereof)
  + Footprint and biocapacity accounting introduction
* Background paper on Footprint (**1 Class - Background Chapter 24 - Wackernagel et al 2014 - Footprint Intro.doc**)

**Assignment**

* Instructional ppt on assignment instructions (included **1 Class - Footprint Futures.ppt**)
* (Electronic) handout with assignment instructions, help-email, background and links to data bases, where students can find out more about country (**1 Class - Footprint Futures – Assignment.doc**)
* Excel sheet with country information for chosen countries and projection graph generator (Brazil, Ecuador, Egypt, India, Switzerland, USA, plus World) (**1 Class - Footprint Futures Exercise Final.xls**)
* Fine-grade criteria to instructors/reviewers to allow for fair comparisons

**Class 2 Resources**

* Instructional ppt with table assignment instructions, including presentation instructions and self-reflection (**2 Class - Footprint Futures.ppt**)
* Word document for capturing students’ results (**2 class - Assignment Results Matrix.doc**)
* Curriculum contains:
  + Additional grading advice
  + Sheet with some simple talking points about the disconnect between economic practice and ecological reality.
  + email to be sent out to all participants for evaluating experience

1. IUCN/UNEP/WWF. *Caring for the Earth: A Strategy for Sustainable Living*. (Gland, Switzerland: 1991).(IUCN - The World Conservation Union, UNEP - United Nations Environment Programme, WWF - World Wide Fund for Nature) [↑](#footnote-ref-1)
2. 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-2)