
# Challenges and Solutions in Business Sustainability

MHR/ENVIR ST 310

Spring 2016
Tuesdays & Thursdays 1:00 PM – 2:15 PM
2190 Grainger Hall
http://courses.bus.wisc.edu

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## Learning Outcomes

In this class students will acquire fundamental **knowledge** of (i) the causes of environmental and social challenges as relating to business, and respective policy and business responses, and (ii) frameworks and measurement systems for incorporating sustainability concerns into business analysis and decision-making.

Students will further acquire the **skills** to (i) analyze the causes of and responses to environmental and social problems, as well as develop and implement solutions to these problems as managers and policymakers, and (ii) identify and apply frameworks for effectively incorporating sustainability considerations into the analysis and decision-making of managers and policymakers.

## Course Content & Structure

The course is structured around these learning outcomes. It contains three interrelating modules. The **first module** provides insights into the backdrop against which decision makers operate in the area of sustainability. We will analyze how limits to systems, markets ("market failures"), and managerial decision making (biases and cognitive limitations) result in environmental and social problems. We also will develop the knowledge and skills to analyze a variety of solutions to these failures, including novel financing mechanisms to overcome market failures in energy efficiency and privatization systems to manage common pool resources (e.g., quota systems in carbon markets and fisheries management, or outright privatization of endangered wildlife).

The **second module** dives into measurement issues. The notion of managing or improving the environmental performance of organizations assumes that we actually know what, exactly, constitutes environmental (or sustainable) performance, and how it can be measured. We thus will study approaches to account for, report, and assure firm environmental performance. A particular focus in this module will be carbon accounting.

The **third module** is concerned with different sustainability frameworks and tools and their application to decision challenges in organizations. How a challenge is framed determines the path that is pursued to respond to the challenge. Accordingly, this module provides knowledge and skills in identifying and applying different frameworks and tools, including (but not limited to) system dynamics, industrial symbiosis, cradle-to-cradle, sustainable value networks, and different notions of "conscious capitalism". The decision making challenges with which we will wrestle are situated at different organizational levels and domains; examples include supply chain management, operations management, product design, and SRI (Sustainable, Responsible, and Impact) Investing.

## Course Material

All course materials *other than cases* are posted online on the course webpage or distributed in class. The course webpage is accessible via http://courses.bus.wisc.edu. It is each student's responsibility to download all class materials from the class webpage.

Cases are held electronically at Harvard Business School. A link to access the cases is posted below and will also be provided via email and on the class webpage. You will be asked to create an account and purchase the case package. It is the responsibility of each student to purchase and download the case package. There also is an option to purchase (for an additional charge) a hardcopy version of the case package. This is optional; if you wish to have hardcopies you may also print out the materials yourself.

https://cb.hbsp.harvard.edu/cbmp/access/43381494

## Performance Measures & Assignments

### Performance Components

| | |
|---|---|
| Class Participation (*Individual)* | 25% |
| Analysis Brief (*Small Team)* | 20% |
| Case Briefs (x7) *(Individual)* | 10% |
| Firm Environmental Performance Assessment *(Small Team)* | 20% |
| Position Statement *(Individual or Small Team)* | 20% |
| Competency Analysis (*Individual)* | 5% |

### Class Participation (25%)

The overall success of this class heavily relies on class discussions. In fact, you can think of this class as a "seminar disguised as lecture": you will need to perform your own research for a variety of assignments, and you are expected to participate regularly in class discussions.

Quality class participation is rewarded — it accounts for 25% of the final grade. Quality class participation consists of comments that show evidence of class preparation, add to our understanding of the situation, clarify or develop further earlier comments, and test new ideas rather than present a simple repetition of facts without analysis or conclusions.

Class *preparation* is as much a prerequisite for participation in class discussions as class *attendance*. Regular class attendance is expected. I am happy to discuss your participation at any point during the semester.

**Analysis Brief (20%)**

Each student will prepare and submit an analysis brief (worth 20%) on a given topic. Each brief is prepared in groups of three to four students (exact group sizes will depend on the ultimate class size). Each topic is analyzed by two groups. For a session in which an analysis brief is scheduled, both groups will present their analysis.

The structure of these analysis briefs will follow one of two formats. The first format asks students to identify the **key success factors** (KSF) for the solution to a given challenge. For a specific challenge (see list below), each group researches, analyzes, and contrasts two to three case studies (as chosen by the students) with the goal to identify the key success factors for the challenge under study. For example, for the "Regulating the Commons" brief, each group will select two to three case studies on how decision makers have sought to address overfishing. Through the study of these examples (and relevant background readings), you are expected to identify the attributes on which the cases differ, evaluate the cases' overall success, and, from that, derive the key success factors for, in this case, successful fisheries management. To do so, it often is helpful to contrast a successful case with an unsuccessful one. Both the class presentation and the write-up should also include a (very) brief introduction to each of the case studies.

The second format follows a '**debate style**' in that it asks students to make the case *for*, and the case *against* a given topic (see list below). More often than not, the solutions that are being developed to address sustainability challenges are hotly debated. For example, some practitioners and scholars see carbon markets as the best available means for industry to combat global warming. Others see carbon markets as ineffective, failing means that merely distract us from pursuing other, better suited avenues to combat global warming. For analysis briefs that follow the debate style format, one group will be assigned to argue the case for the given solution, and the other group will be assigned to make the case against this solution. Each group is expected to do relevant background research and support their arguments with relevant examples. What is more, each group should, as much as possible, anticipate and "preemptively" respond to the arguments that the other side may make.

At the beginning of the semester, students will sign up for one of the topics listed further below. Sign-up will be on a first come, first serve basis. Your topic choice might be guided by both your interest in a given topic as well as attempts to smooth out the timing of assignments across your class portfolio (so check due dates!).

As the due date for each analysis brief approaches, we will discuss further details in class. You are expected to hand in a written analysis. This write-up does not need to follow a specific format but you should keep it brief and concise (~ 3-5 pages). For the in-class presentation, you may prepare a PowerPoint presentation, but this is not required. You can also use the blackboard, handouts, etc. for presenting your analysis and leading the discussion. Each group's discussion/presentation should take about 15 minutes.

Please bring a hard copy of your written analysis to class, and also upload an electronic version of the analysis (as well as the presentation, if in power point) to the class webpage.

- Analysis Brief 1 (due 2/2): Regulating the Commons (here: Fisheries) — *KSF*
- Analysis Brief 2 (due 2/18): Carbon Markets — *debate style*
- Analysis Brief 3 (due 3/10): Sustainability Accounting & Reporting — *KSF*
- Analysis Brief 4 (due 3/17): Eco Labels and Certification Schemes — *debate style*
- Analysis Brief 5 (due 3/31): Environmental Justice — *KSF*
- Analysis Brief 6 (due 4/28): Firm-NGO Alliances — *debate style*

**Case Briefs (total of 10%)**

Case Briefs are *short*, written answers (approx. one page) to a set of preparation questions posed for each case that we analyze in class. We will study a total of seven cases. Your answers do not need to be very extensive or even well written. The case briefs simply serve as evidence that you have prepared the case — i.e., that you have read the case and thought about it in some detail.

Grading of the case briefs is coarse: a "0" if you do not hand in the brief; a "+" if you hand it in and your answers suggest that you have read the case but didn't get a chance to think about it too deeply; and "++" if your answers reveal that you have thought about the case in more depth.

You can bring a hard copy of your case brief to the class session in which we discuss the case and/or upload an electronic version to the class webpage prior to the class session.

**Firm Environmental Performance Assessment (20%)**

For this assignment you are asked to *evaluate* and *rank order* the environmental performance of several firms (a list of firms will be provided in class). You will need to choose at least four different data sources upon which you base your evaluation, and, accordingly, at least four different criteria that you then combine for your overall assessment. (If you derive more than one criterion from a given data source, you may also use just three different data sources). Describe the data sources that you choose, explain which criteria you derive from each, and how you apply and combine them to arrive at your evaluations and ranking. Discuss and justify your choices! (Why did you choose the data sources and criteria you did, what are the advantages and disadvantages of using them, which procedure did you use for combining the criteria, why, what are (dis)advantages, etc.).

Possible databases and criteria include (*but most certainly are not limited to*!) the Trucost database (accessible through the school's library) which shows (among other things) a firm's environmental impact costs, EPA's TRI database which provides (among other things) information on toxic release emissions, EPA's echo database (environmental enforcement and compliance history), Newsweek's environmental performance rankings, the Carbon Disclosure Project database at https://www.cdproject.net/en-US/Pages/HomePage.aspx) (carbon emissions), firms' CSR reports, a firm's in/exclusion in various SRI indices etc. You are *strongly encouraged* to research data sources and apply criteria that are not listed here – these are just

some initial ideas to get you going. You may also want to check out EPA's Envirofact at http://www.epa.gov/enviro/ .

This assignment is to be completed in small groups of three to four students (depending on class size). Use a PowerPoint presentation to describe your analysis and findings. This presentation will serve as the basis for evaluation (i.e., you do not have to hand in anything else). The evaluation focuses on the appropriateness, thoroughness, coherence, and creativity of your analysis. I will select three to four groups to present their findings in class on March 1st.

You need to upload this presentation (as well as supporting data such as an excel spreadsheet containing your data, if any) to the class webpage by Monday, February 29th at 8:00 PM.

**Position Statement (20%)**

Should UW divest from fossil fuels? The non-profit organization 350.org has been leading a prominent campaign asking universities (and other institutions) to divest from fossil fuel. In particular, they are asking the following (see http://gofossilfree.org/faq/ ):

*"We want institutional leaders to immediately freeze any new investment in fossil fuel companies, and divest from direct ownership and any commingled funds that include fossil fuel public equities and corporate bonds within 5 years.*

*200 publicly-traded companies hold the vast majority of the world's proven coal, oil and gas reserves. Those are the companies we're asking our institutions to divest from. Our demands to these companies are simple, because they reflect the stark truth of climate science:*

- *They need immediately to stop exploring for new hydrocarbons.*
- *They need to stop lobbying in Washington and state capitols across the country to preserve their special breaks.*
- *Most importantly, they need to pledge to keep 80% of their current reserves underground forever."*

For this assignment, you will play the role of a consultant to UW. You are asked to prepare a position paper that details whether or not UW should meet 350.org's demand and divest from fossil fuel. What speaks for this proposition, and what speaks against it? As you will note, this is a highly complex question that deserves a nuanced response. You are expected to provide such a nuanced response; further, regardless of your ultimate recommendation, you are expected to explain why, after a careful discussion of all the arguments that speak for, and against the matter, you have come down on your side.

You can complete this assignment individually or as a team of two or three (depending on class size). Your position paper will be evaluated based upon its completeness (did you touch upon all relevant arguments?), nuance (did you shed detailed light on the various pros and cons?), correctness (are you arguments conceptually and factually correct?), persuasiveness, and coherence.

Bring a hard copy of the assignment to class on Thursday, April 21st (it might help you articulate your thoughts for our class debate) and also upload an electronic version of your position statement to the class webpage before class that day.

**Competency Assessment (5%)**

This assignment serves for you to review and reflect upon what you have learned in class, and for the instructor to see whether learning outcomes have been met. For each topic (not necessarily each class because we sometimes use multiple classes to cover one topic), you are expected to write one paragraph detailing the most important knowledge and/or competencies (skills) that you have taken away. The insights and/or skills can be derived from any part of the class — the readings, case, homework assignment, presentations, class room discussion, etc.

This assignment is to be completed individually. Similar to the case briefs, it will be graded in a coarse manner: a "0" if you do not hand in the competency analysis; a "+" if you hand it in but your answers are incomplete in that they address only a fraction of the topics that we have discussed, or in that they merely describe each topic; and "++" if your analysis is complete and reveals that you have actually reflected on the content that we have covered. Note: you will *not* be graded on the "level" or "quality" of the insights and skills that you developed.

Please upload your analysis to the class webpage before class on Thursday, May 5th.

**Method for Determining Final Grades**

The procedure for establishing final grades in this class uses elements of both absolute and relative grading methods. In a first step, for each student and each performance component, the student's raw score is converted into a normalized score. Second, this normalized score is weighted with the assignment's weight, and, third, these weighted scores are summed across performance components to create a final, normalized score for each student. These final scores are then rank-ordered across students. There will be no pre-determined or rigid designation of percentile intervals to final letter grades. Instead, grade cutoffs are assigned to naturally occurring gaps in this rank-order, with the top cohort of closely ranked students receiving an A, the next cohort of tightly ranked students receiving an AB, and so on. Possible grades range from A to F. Actual grades from previous classes have typically ranged from A to B (and, more uncommonly, A to C) with a mean around an AB. However, it is important to stress that these previous distributions do not constitute targets. Ultimately, final grades are assigned with the goal to best reflect the students' performances.

We will discuss further details about this grading procedure at the beginning of the semester, as well as throughout the term as actual assignment scores allow for a demonstration of this procedure. Furthermore, I am happy to provide additional feedback on both your absolute and relative class performance at any point during the semester.

## Other Administrative Matters

### Feedback

I am happy to discuss the course, your progress, or any other issues related to this course on an individual basis. See me after/before class or email to set up an appointment to meet in my office. Please do not wait until the end of the semester to see me regarding problems with the course material or your performance. Your success in this class is important to me. Please come by to discuss potential problems early in the semester.

### No Laptop, and No Cell Phone Policy

Laptop, and especially cell phone use during class time is distracting and can be disrespectful to the instructor and your fellow students. It therefore is prohibited. Please discuss with me a possible exemption from this policy if you require a laptop for note taking purposes.

### Adjustments in Syllabus

This syllabus provides a guideline for what to expect in this class. As we go through the semester, *minor* adjustments to the syllabus may be undertaken to accommodate unforeseen events (such as unexpectedly lengthy class discussions, current events that are worthy a discussion, etc.). These adjustments might affect homework assignments (mostly in terms of timing). I will announce any adjustments in class and on the course webpage. It is your responsibility to stay informed about these changes.

### Academic Integrity

All University policies regarding scholastic dishonesty and absence as outlined in the current University regulations will be enforced. Please visit the following link for details on the rules and regulations related to academic misconduct: http://students.wisc.edu/saja/misconduct/UWS14.html Your work and conduct will be held accountable under this policy and academic dishonesty will be prosecuted pursuant this policy. Academic misconduct includes acts in which a student:

- seeks to claim credit for the work or efforts of another without authorization or citation
- uses unauthorized materials or fabricated data in any academic exercise
- forges or falsifies academic documents or records
- intentionally impedes or damages the academic work of others
- engages in conduct aimed at making false representation of a student's academic performance
- assists other students in any of these acts.

Examples include but are not limited to: cutting and pasting text from the Web without quotation marks or proper citation; paraphrasing from the Web without crediting the source; using notes or a programmable calculator in an exam when such use is not allowed; using another person's ideas, words, or research and presenting it as one's own by not properly crediting the originator; stealing examinations or course materials; altering a transcript; signing another person's name to an attendance sheet; collaboration that is contrary to the stated rules of the course or assignment.

## Calendar Overview

| # | Date | Due | Topic |
|---|---|---|---|
| 1 | Jan 19 (T) | | Introductions & Administrative Details |
| **Backdrop: System Failures, Sustainability Related Outcomes, and Responses** | | | |
| 2 | Jan 21 (R) | | Fishbanks Simulation Game -- **meet in room 2294** |
| 3 | Jan 26 (T) | | Fishbanks Simulation Game – Debrief |
| 4 | Jan 28 (R) | | Market Failures & Policy Responses |
| 5 | Feb 2 (T) | Analysis Brief 1 (select) | Regulating the Commons (Fisheries) |
| 6 | Feb 4 (R) | Case Brief 1 (all) | Privatization as a Conservation Tool – *Black Rhino case* |
| 7 | Feb 9 (T) | | Market Failures in the Market for Energy Efficiency |
| 8 | Feb 11 (R) | | **Speaker**: Financing Energy Efficiency |
| 9 | Feb 16 (T) | | Markets for Carbon Trading |
| 10 | Feb 18 (R) | Analysis Brief 2 (select) | Markets for Carbon Trading – cont' |
| 11 | Feb 23 (T) | Case Brief 2 (all) | Market Effects of Regulating CFCs – *Du Pont Freon case* |
| 12 | Feb 25 (R) | | Decision Making Failures |
| **Measurement and Reporting Frameworks for Sustainability** | | | |
| 13 | Mar 1 (T) | Env. Perf. Assign. (all)* | Assessing Firm Environmental Performance |
| 14 | Mar 3 (R) | | Assessing Firm Environmental Performance – cont' |
| 15 | Mar 8 (T) | | No class meeting - prepare Analysis Briefs 3&4 |
| 16 | Mar 10 (R) | Analysis Brief 3 (select) | Sustainability Accounting, Reporting and Assurance |
| 17 | Mar 15 (T) | Case Brief 3 (all) | Carbon Accounting – *Frito Lay case* |
| 18 | Mar 17 (R) | Analysis Brief 4 (select) | Eco Labels and Certification Schemes |
| | | *Spring break* *Spring break* *Spring break* *Spring break* | |
| **Sustainability Frameworks & Tools — Application to Business Decisions** | | | |
| 19 | Mar 29 (T) | | Sustainability Frameworks and Tools — overview |
| 20 | Mar 31 (R) | Analysis Brief 5 (select) | Environmental Justice |

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|---|---|---|---|
| 21 | Apr 5 (T) | | System Dynamics & Systems Thinking |
| 22 | Apr 7 (R) | | System Dynamics & Systems Thinking - cont' |
| 23 | Apr 12 (T) | Case Brief 4 (all) | Cradle-to-Cradle Design in Action – *Herman Miller case* |
| 24 | Apr 14 (R) | Case Brief 5 (all) | Industrial Symbiosis in Action – *Cook Composites case* |
| 25 | Apr 19 (T) | | Capitalism and its Variants |
| 26 | Apr 21 (R) | Position Statement | Socially Responsible Investing – Divestment debate |
| 27 | April 26 (T) | Case Brief 6 (all) | Sustainable Value Networks in Action– *Walmart case* |
| 28 | April 28 (R) | Analysis Brief 6 (select) | Cross-Sector Partnerships in Action |
| 29 | May 3 (T) | Case Brief 7 (all) | Env. Differentiation Strategy – *Star-Kist & Patagonia cases* |
| 30 | May 5 (R) | Comp. Assess. (all) | Wrap-up |

*The due date for this assignment is February 29th at 8 PM.

**Class 1 (Tuesday, January 19)**

**Topic:** Class Overview, Administrative Details, Introductions

**Content:** We will discuss the course outline, assignments, expectations, class organization etc. We will also form groups to play a simulation in Class 2.

**Reading[1]:**

- Course Syllabus

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**Class 2 (Thursday, January 21) – meet in 2294 (computer classroom)**

**Topic:** The Tragedy of the Commons: Fishbanks Simulation Game

**Content:** Note the room change for this class – we will meet in 2290. We will play a simulation game that will teach us about to the Tragedy of the Commons, the dynamics of using renewable resources, and the challenges of designing and enforcing policies for sustainable resource management. The game is an interactive, web-based simulation that is made available by the MIT Sloan School of Management.

**Readings:**

- The Tragedy of the Commons. Harding, G. 1968. *Science* 162: 1243-1248)
- Introduction to Fishbanks (handed out in previous class)

**Simulation Preparation:**

- Watch simulation instruction at:
  https://mitsloan.mit.edu/MSTIR/system-dynamics/fishbanks/Pages/Video.aspx

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**Class 3 (Tuesday, January 26)**

**Topic:** Debrief Fishbanks Simulation

**Content:** We will debrief last class' simulation, identify the underlying dynamics that cause the simulation outcomes, and discuss leverage points for influencing these dynamics.

**Readings:**

- Polycentric Systems: Multilevel Governance Involving Diversity of Organizations. Ostrom, E. in: *Global Environmental Commons* (eds. Brousseau, E. et al). Oxford University Press, 2012: 105-125

[1] Unless noted otherwise, all readings (with the exception of cases and technical background notes as indicated) are available for viewing and downloading on the course webpage.

**Class 4 (Thursday, January 28)**

**Topic:** Market Failures & Policy Responses

**Content:** We will study different market "failures" — or, put differently, different limits to markets —, their effects on sustainability related market outcomes, and respective policy responses such as pollution taxes and cap and trade systems.

**Readings:**

- Building a Green Economy. Krugman, P. April 7, 2010. *The New York Times*.
- Green and Competitive: Ending the Stalement. Porter, M. and Van der Linde, C. 1995. *Harvard Business Review* 73: 120-134

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**Class 5 (Tuesday, February 2)**

**Topic:** Regulating the Commons (Fisheries)

**Content:** As we have learned in the previous sessions, fisheries are one example of a common resource. In today's session, we will use the students' analysis briefs to explore different approaches to regulating this common resource, and to learn about the approaches' various benefits & limitations. Time permitting, we will also discuss the potential and risks of aquaculture to help alleviate overfishing.

**Readings:**

- Fishery Management (introductory overview of fishery management tools) http://web.mit.edu/12.000/www/m2011/finalwebsite/solutions/fmanagement.shtml
- Charting a course for sustainable fisheries (2012). Chapter 2 (pages 39 – 68)

**Optional** (there are many articles on managing fisheries in *The Economist*; listed below are some other pieces from a variety of sources that give you a flavor of the discussion

- Where Have All the Cod Gone? Bolster, J. *The New York Times* (1 January 2015) http://www.nytimes.com/2015/01/02/opinion/where-have-all-the-cod-gone.html?emc=eta1
- Catch shares leave fishermen reeling Rust, S. *The Bay Citizen* (12 March 2013) https://www.baycitizen.org/news/environment/system-turns-us-fishing-rights-into-commodity-sque/
- Painting the floor with a hammer: Technical fixes in fisheries management. Degnbol, P. et al. 2006. *Marine Policy* (3): 534-543

**Due for select students:** Analysis Brief - Regulating the Commons

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**Class 6 (Thursday, February 4)**

**Topic:** Privatization as a conservation tool

**Content:** We will discuss the Black Rhino case. This case describes the attempt to prevent extinction of the African black rhino through creating privately owned, for-profit game farms for breeding and hunting rhinos.

**Readings:**

- The Black Rhino (in case package)

**Due for all:** Case Brief - The Black Rhino. Submit a one page summary of your answers to the following case questions:

- What speaks for and what against privatizing wildlife such as the black rhino for trophy hunting? What consequences that might be unintended or unwanted from an environmental and/or ethical perspective can you foresee as a result of privatizing black rhinos for trophy hunting?
- Would legalizing the international sale and trade of rhino horns help conserve the black rhino? Why/why not?

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**Class 7 (Tuesday, February 9)**

**Topic:** Market Failures in the Market for Energy Efficiency

**Content:** Increasing energy efficiency is, by many accounts, the cheapest and cleanest form of energy "production". Yet the energy efficiency paradox —the notion that there are many opportunities for cost effective energy efficiency that aren't exploited – is an important hurdle to increasing energy efficiency. We will discuss why, and how, the market for energy efficiency can fail, and learn about cutting edge solutions with which different players are experimenting to address these failures.

**Readings:**

- Unlocking Energy Efficiency in the U.S. Economy (Executive Summary). McKinsey Global Energy and Materials (2009)

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**Class 8 (Thursday, February 11)**

**Topic:** Speaker – Financing Energy Efficiency

**Content:** Innovative ways to finance energy efficiency in the built environment are one way to address market failures in energy efficiency. Beau Engman, founder of Pace Equity, will share his experiences as a leader in creating new financing solutions, with a particular focus on the PACE mechanism.

**Readings:**

- Familiarize yourself with the PACE concept at http://energy.gov/eere/slsc/property-assessed-clean-energy-programs
- Familiarize yourself with PACE Equity at http://pace-equity.com/

**Optional:** (this reading provides further, more specialized information targeted towards real estate finance professionals)

- PACE financing. Johnson Jr., R. *The Letter – Americas* (July/August 2015)

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**Class 9 (Tuesday, February 16)**

**Topic:** Markets for Carbon Trading

**Content:** A number of scholars and practitioners view carbon markets as a cost-effective, incentive-compatible mechanism to limit CO2 emissions. Others disagree. We will spend this week studying these markets – their history, their various institutional structures, and their respective benefits and limitations.

**Readings:**

- Carbon Markets: A historical overview. Calel, R. 2013. *WIREs Climate Change*, 4:107–119

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**Class 10 (Thursday, February 18)**

**Topic:** Markets for Carbon Trading – cont'

**Content:** Using the students' Analysis Briefs, we will have a class debate to develop the case both for and against carbon trading.

**Readings:**

- The Brave New World of Carbon Trading. Spash, C. 2010. *New Political Economy* 15(2): 169-195 (Some of this article reviews what we have discussed in the previous session. It is not an easy read…. but an insightful one!)

**Optional:** (As you do your own research, you will come across many opinion pieces that discuss the case for carbon markets and against carbon markets. For students seeking information on actual carbon markets and their setups, below is a link to comparative case studies on different carbon markets)

- The World's Carbon Markets (A case study guide to emissions trading). *Environmental Defense Fund*. https://www.edf.org/climate/worlds-carbon-markets

**Due for select students:** Analysis Brief - Carbon Markets

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**Class 11 (Tuesday, February 23)**

**Topic:** Market Effects of Regulating CFCs

**Content:** We will use the Du Pont Freon Case to look back in history and analyze the effects that phasing out CFSs (per the 1999 Montreal Protocol) had on market structures and firm opportunities. This case will wrap up our discussions on regulation.

**Readings:**

- Du Pont Freon Products Division (*in case package*)

**Due for all:** Case Brief - Du Pont Freon Products Division. Submit a one page summary of your answers to the following case questions:

- What are the likely effects of the Montreal Protocol and the report of the Ozone Trend Panel on the market structure of chlorofluorocarbons?
- What are the implications for Du Pont, and what are Du Pont's options?
- What would you recommend that Joe Glas do, and why?

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**Class 12 (Thursday, February 25)**

**Topic:** Decision Making Failures

**Content**: So far, we have paid much attention to market failures and sustainability related market outcomes. In this session we will change focus and study the limits to human decision making - "decision making failures". There are a number of biases and cognitive limitations that make it difficult for us to find appropriate solutions to issues that are complex or underpinned by (non-linear) dynamics (as is the case with almost all sustainability related issues!). The implication is that even if there were no market failures, there still would be a number of other challenges born out of the "human side" that would complicate solving sustainability issues.

**Readings:**

- The hidden traps in decision making. Hammond, J.S. et al. 1998. *Harvard Business Review*; September/October; Reprinted in 2006, "Best of HBR 1998".

**Homework** (does not need to be submitted): Prepare a list/summary of what you see as the most important biases and cognitive limitations that limit our understanding of sustainability challenges. Link each bias/limitation to a particular sustainability related example (some examples are provided in the texts but you can and should also think of your own examples).

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**Class 13 (Tuesday, March 1)**

**Topic:** Assessing Firm Environmental Performance

**Content**: ***Heads up - the next two weeks are busy weeks for this class so plan accordingly!*** This session marks the beginning of the module concerned with measuring and reporting sustainability. The assignment that is due today will have you experience some of the fundamental issues surrounding the measurement (and comparison) of firm environmental performance. It's a tricky undertaking, yet an essential one. Unless we develop a sense of what exactly good (or bad) environmental firm performance may mean, and how it can be measured, talk of improving firm environmental performance seems empty, and inquiries into links between environmental performance and financial performance (or competitiveness) are futile. In today's session, we will have a subset of teams present their environmental performance assessments.

**Readings**

- Breaking down the Wall of Codes: Evaluating Non-Financial Performance Measurement. Chatterji, A. and D. Levine. 2006. *California Management Review* 48(2): 29-43.
- The Factors Environmental Ratings Miss. Schendler, A. and M. Toffel. 2011. *Sloan Management Review* 53(1): 17-18

- When Pigs Fly: Haliburton Makes the Dow Jones Sustainability Index. Siegel, R.P. September 24 2010. *Triple Pundit*. http://www.triplepundit.com/2010/09/when-pigs-fly-halliburton-makes-the-dow-jones-sustainability-index/

**Due for all (on Monday, February 29th at 8:00 PM ):** Firm Environmental Performance Assessment. For detailed instructions refer to the Assignment section of this syllabus.

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**Class 14 (Thursday, March 3)**

**Topic:** Assessing Firm Environmental Performance - cont'

**Content**: We will continue debriefing the firm environmental performance assessments and speculate about the future of the market for rating and ranking companies.

**Readings**
- none

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**Class 15 (Tuesday, March 8)**

**Topic**: no class meeting today — use the time to prepare the class sessions and assignments that remain until spring break.

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**Class 16 (Thursday, March 10)**

**Topic:** Sustainability Accounting, Reporting and Assurance

**Content**: The readings for today provide an introduction to issues surrounding the systematic accounting and reporting of firms' economic, social, and environmental impacts. We will use the students' analysis briefs to highlight best (and poor) approaches to accounting and reporting firm environmental and social performance.

**Readings:**
- Sustainability Accounting and Reporting – FAQ (American Institute of CPAs): http://www.aicpa.org/InterestAreas/BusinessIndustryAndGovernment/Resources/Sustainability/Pages/SustainabilityFAQs.aspx
- The Need for Sector Specific Materiality and Sustainability Reporting Standards. Eccles, R.G. et al. 2012. Journal of Applied Corporate Finance 24(2): 8-14

- Why SASB is a game change for sustainable business (Makower, J. GreenBiz (1 October 2012) http://www.greenbiz.com/blog/2012/10/01/why-sasb-game-changer-sustainable-business
- Environmental Profit and Loss: The new corporate balancing act, Meyers, D. & Waage, S. GreenBiz.com (February 18, 2014) (http://www.greenbiz.com/blog/2014/02/18/environmental-profit-and-loss-new-corporate-balancing-act_)
- Browse the following webpages to familiarize yourself with different sustainability accounting and reporting initiatives
    - Global Reporting Initiative and its latest guidelines, G4, at https://www.globalreporting.org/Pages/default.aspx,
    - Integrated Reporting at http://integratedreporting.org/
    - SASB at http://www.sasb.org/

**Optional:** (this reading is of particular relevance to students interested in the accounting and assurance industry)

- The state of sustainability assurance and related advisory Services ibn the U.S. (June 2015) American Institute of CPAs.

**Due for select students:** Analysis Brief – Sustainability Reporting

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**Class 17 (Tuesday, March 15)**

**Topic:** Carbon Accounting

**Content**: We will use the Frito-Lay case to familiarize ourselves with carbon accounting, a 'subfield' in environmental accounting focused on accounting for and reporting a firm's greenhouse gas emissions.

**Readings:**
- Frito-Lay North America: The Making of a Net Zero Snack Chip. (in case package)
- Corporate Greenhouse Gas Accounting: Carbon Footprint Analysis (in case package

**Optional:**
- As frames collide: making sense of carbon accounting. Ascui, E. and Lovell, H. 2011. *Accounting, Auditing and Accountability Journal*. 24(8): 978-999

**Due for all:** Case Brief - Frito-Lay North America. Submit a one page summary (max.) of your answers to the following case questions, as well as a spreadsheet to answer questions 2 and 3:

- If you are Al Halvorsen, what are the arguments that speak for the net zero facility idea, and what speaks against the idea?

- Use information from the reading "Corporate Greenhouse Gas Accounting: Carbon Footprint Analysis" as well as information from the case to calculate, for the Case Grande facility, the metric tons of emissions of greenhouse gases from electricity and natural gases usages for each year from 2002 to 2007. Pay close attention to units when applying emissions factors. The uploaded spread sheet contains Exhibit 5 from the case.
- Project the estimated reduction in greenhouse gas emissions and operating costs savings that will result from the proposed net zero project in years 2008 – 2010 (for your analysis, assume that all equipment upgrades are made immediately at the start of 2008, rather than phased in over the years such that reductions are effective immediately).

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**Class 18 (Thursday, March 17)**

**Topic:** Eco-labels and Certification Schemes

**Content**: We will study eco labels and certifications as one means for firms to communicate to stakeholders about their environmental performance. What is the theory underlying these label and certification schemes, what other purposes may they have, how are they designed, and what designs appear to be the most effective under what circumstances? Or, more generally, do they work?

**Readings:**

- Lost in a sea of green: Navigating the eco-label labyrinth. Demas, M. et al., 2012 http://www.environment.ucla.edu/media_IOE/files/Ecolabels-11-01-2012-WEB-bj-e3u.pdf
- Strategic tradeoffs for wildlife-friendly eco-labels. Treves, A. & Jones, S. 2009. Frontiers in Ecology and the Environment

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**SPRING BREAK**

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**Class 19 (Tuesday, March 29)**

**Topic:** Sustainability Frameworks & Tools

**Content**: This class marks the start of our third module. In this module, we will study various sustainability frameworks and tools and how they can guide business decisions. Clearly, how one frames a problem greatly determines the solution path and outcome. There are many different sustainability frameworks: systems thinking, industrial ecology, biomimicry, ecological economics, industrial symbiosis to name just a few. We will spend this class to create a conceptual map of these various frameworks, with a particular focus on highlighting their differences in assumptions, scope, and areas of applicability.

**Readings:**

- Scientists Propose a New Architecture for Sustainable Development. Revkin, A.C. 2013. *The New York Times*, March 21 2013.
- Sustainability and Innovation: Frameworks, Concepts, and Tools for Product and Strategy Redesign. (*in case package*)
- Handout: list of sustainability framework, concepts, tools

**Homework** (does not need to be submitted): Prepare a conceptual map of the various frameworks and tools that are mentioned in the reading and listed in the posted handout. The goal is to create some clarity around each framework's focus, and how they relate to one another/are different from one another. Organize your map according to criteria or dimensions that make sense to you (e.g., it could be according to the concept's level of analysis; the time at which it emerged; whether it's a concept versus tool, etc). Be prepared to have your map shared with the class via the document projector.

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**Class 20 (Thursday, March 31)**

**Topic**: Environmental Justice

**Content**: Environmental justice is a meta-level sustainability concept concerned with rectifying the unequal distribution of exposure to pollution and other environmental risks across race and class. We will study the evolution of this concept from its inception in the early 1980s to its interpretation and application today.

**Readings**:

- Environmental Justice in the Twenty-first Century. Bullard. R. 2005. In R. Bullard (Ed.), *The Quest for Environmental Justice*. Sierra Club Books, San Francisco. 19 - 42

**Due for select students**: Analysis Brief – Environmental Justice

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**Class 21 (Tuesday, April 5)**

**Topic:** System Dynamics & Systems Thinking

**Content**: This week we will study system dynamics and systems thinking - another "higher level" or "general" sustainability frameworks that we have mentioned in class # 19. We will look at how to represent and interpret systems (e.g., stocks, flows, feedback loops), apply systems representations to specific examples, and identify leverage points for influencing systems.

**Readings:**

- Sustaining Sustainability: Creating a Systems Science in a Fragmented Academy and Polarized World. Sterman, J. (2012). In M. Weinstein and R. E. Turner (Eds.,) *Sustainability Science: The Emerging Paradigm and the Urban Environment.* Springer. 21-58

**Optional**

- Learning from Evidence in a Complex World. Sterman, J.D. 2006 *American Journal of Public Health* (96): 505-514. (Sterman uses the public health context for this article. Like sustainability, public health is a complex, global issue. The points he develops in the context of public health apply equally to sustainability).

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**Class 22 (Thursday, April 7)**

**Topic:** System Dynamics & Systems Thinking - cont'

**Content**: We will continue our study on system dynamics and systems thinking.

**Readings:**

- Same as for class #21: Sustaining Sustainability: Creating a Systems Science in a Fragmented Academy and Polarized World. Sterman, J. (2012). In M. Weinstein and R. E. Turner (Eds.,) *Sustainability Science: The Emerging Paradigm and the Urban Environment.* Springer. 21-58

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**Class 23 (Tuesday, April 12)**

**Topic:** Cradle-to-Cradle Design in Action - Herman Miller case

**Content**: We will use the case "Cradle-to-Cradle Design at Herman Miller" to study how Herman Miller, an office furniture maker, has implemented a C2C protocol and how this framework was used to operationalize a firm strategic vision.

**Readings:**

- Cradle-to-Cradle Design at Herman Miller: Moving Toward Environmental Sustainability (in case package)

**Due for all:** Case Brief - Cradle-to-Cradle Design at Herman Miller. Submit a one page summary of your answers to the following case questions:

- What arguments speak for, and what arguments against, Herman Miller using TPU instead of PVC in the Mirra Chair arm pad? As CEO of Herman Miller, what would be your final decision, and why?
- What did it take to implement the DfE/C2C protocol at Herman Miller? Further, what are some of the key aspects that facilitated implementation?
- Will Herman Miller capture value from the DfE/C2C initiative? If so, how?

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**Class 24 (Tuesday, April 14)**

**Topic:** Industrial Symbiosis in Action - Cook Composites Case

**Content:** We will explore how one company used the notion of industrial symbiosis — or, more particularly, the concept of by-product synergy - to guide its waste management practices. The Cook Composites case will allow us to assess different waste management alternatives, including recycling, waste exchange options, and engaging in by-product synergies (industrial symbiosis).

**Readings:**

- Cook Composites and Polymers Co. (*in case package*)

**Due for all:** Case Brief – Cook Composites and Polymers Co (CCP). Submit a one page summary of your answers to the following case questions:

CCP faces three options for addressing its rinse styrene waste stream:

a) Continue with business-as-usual, sending its rinse styrene to cement kilns
b) Sell its rinse styrene on a waste exchange
c) Proceed with developing the concrete coating that uses its rinse styrene (BPS).

- What criteria should Mike Gromacki be considering when deciding whether to pursue the waste exchange, the concrete coating by-product, or business as usual? And which option should he ultimately recommend to management?
- Compared to business-as-usual, what are the financial implications for CCP of selling its rinse styrene to a waste exchange, and what the implications of producing the concrete coating by-product (BPS)? In addition, also identify the optimal amount (from a financial perspective) of styrene use for the three different scenarios. You may create your own spreadsheet or use the posted spreadsheet to calculate expected profits for each of the options. (For now, ignore the $3 Mio needed for R&D for bringing BPS online).
- What is the environmental impact (relative to business as usual) if CCP implements BPS? Consider just the impact on $CO_2$ emissions. From case exhibit 9, you can calculate that diverting 1 pound of styrene from cement kiln disposal to reuse in concrete coating increases the kiln's emissions by 1.2 pounds CO2. Producing concrete coating with 1 pound of rinse styrene emits 1.9 fewer pounds of CO2 than conventional production of the same amount of concrete coating. Producing one pound of styrene results in 2.5 pounds CO2 emissions. You can use the posted spreadsheet for your calculations.

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**Class 25 (Tuesday, April 19)**

**Topic:** Capitalism and its Variants

**Content**: We will explore different notions of capitalism. "Conscious Capitalism" is one of the more general sustainability concepts that we included in the conceptual map in session #19. We will analyze the conceptual foundations of this notion, and further explore yet more fundamental differences in different forms of capitalism (also known as "Varieties of Capitalism"). We will also spend some time on the virtues and limitations of "Benefit Corporations" (a new legal class of corporation in the U.S. that is distinct from the more common C-Corporation).

**Readings:**

- Conscious Capitalism: A better way to win. Sisodia, R. 2011. California Management Review, 53(3): 98-109
- **Skim:** Conscious Capitalism Firms: Do they behave as their Proponents say? Wong, C. 2013. California Management Review, 55(3): 60-86
    - **Optional** Understanding the Performance Drivers of Conscious Firms. Sisodia, R. 2013. California Management Review, 55(3): 87-96
    - **Optional**: On the Scientific Status of the Conscious Capitalism Theory. Wong, C. 2013. California Management Review, 55(3): 97-106
- Familiarize yourself with the Benefit Corporation legal structure at http://benefitcorp.net/.

**Homework** (does not need to be submitted): As you research benefit corporations, develop a list of potential drawbacks of this new legal structure. Be prepared to share your points in class.

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**Class 26 (Thursday, April 21)**

**Topic:** Socially Responsible Investing - Divestment Debate

**Content:** We will kick off the class by briefly reviewing some conceptual background material on socially responsible investing. Then we will launch the fossil fuel divestment debate: how UW should respond to 350.org's demand to divest from fossil fuel? Should UW divest? If yes, why? If no, why not? We will draw on your position papers to explore the case for and against this divestment decision in class.

**Readings:**

- Determined by each student's research

**Due for all:** Position paper — Divesting from Fossil Fuels

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**Class 27 (Thursday, April 26)**

**Topic:** (Sustainable) Value Networks in Action - Walmart case

**Content:** Walmart uses the "sustainable value networks" concept to green its supply chain. We will use today's case to explore how different attributes of some of Walmart's supply networks influence the potential and ease with which these networks can be "greened".

**Readings:** (As you read the case, focus on pages 4 - 6 (intro to Walmart's value networks) and pages 8 - 20 (description of the three value networks you are asked to analyze). Skim the rest.

- Walmart's Sustainability Strategy (*in case package*)

**Due for all:** Case Brief – Walmart's Sustainability Strategy. Submit a one page summary of your answers to the following case questions:

- Through which ways might Walmart's environmental efforts have positive effects on its financial outcome?
- Imagine that you are Andy Ruben or Tyler Elm, evaluating the progress of the electronics, seafood, and textiles networks. Which of these three networks have been most successful in becoming more sustainable, and what factors might explain the success (or lack of success) of these networks?
- Walmart is staking its reputation to become more sustainable on the behaviors of its suppliers. This makes supplier cooperation a critical aspect. To be sure, Walmart can "throw around its weight" to induce cooperation, but what are other measures and actions it has undertaken to secure supplier cooperation?

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**Class 28 (Tuesday, April 28)**

**Topic:** Cross-Sector Partnerships in Action

**Content:** Network analyses and systems thinking often reveals a broad set of stakeholders with whom a firm directly or indirectly interacts. Sometimes these stakeholders are NGOs (or are represented through NGOs), leading firms to form firm-NGO alliances. Because of the differences between firms and NGOs, these alliances tend to differ in structure from typical firm-firm alliances. Some people view firm-NGO alliances as critical to solving sustainability issues. Others view them as mere publicity stunts. We will use today's analysis briefs to explore both the case for and against these firm-NGO alliances.

**Readings:**

- Strategic Collaboration between Nonprofits and Business. Austin, J. (2000) *Nonprofit and Voluntary Sector Quarterly*, 29: 69-97.

**Due for select students:** Analysis Brief – Alliances with NGO

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**Class 29 (Tuesday, May 3)**

**Topic:** Environmental Differentiation Strategy

**Content**: We will study the feasibility of environmental differentiation strategies. Imagine a LCA has revealed that your firm's products have environmentally superior attributes. Under what conditions might the firm be able to pursue a differentiation strategy and demand a price premium for its products? We will use the Patagonia case and the StarKist case to explore this question.

**Readings:**

- Patagonia (*in case package*)
- StarKist (*in case package*)
- Strategic Positioning: Cost advantage and Benefit Advantage (Besanko et al., Chapter 11) (This reading is intended for students without prior knowledge in strategy (cost leadership versus differentiating strategy).

**Due for all:** Case Brief – Patagonia & Starkist. Submit a one page summary of your answers to the following case questions:

- Do you anticipate StarKist to derive financial (economic) benefits from its decision to implement a no-encirclement decision? Why/why not?

- Compare Patagonia's effort to drive its environmental differentiation strategy with its organic cotton T-shirts versus Starkist's efforts at environmental differentiation with its dolphin safe tuna. Using this comparison, derive some general conditions under which companies may be able to pursue an environmental differentiation strategy for its products.

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**Class 30 (Thursday, May 7)**

**Topic:** Wrap-Up

**Content:** We will use this last class to recap what you have learned and to tie up loose ends and unfinished discussions. The competency assessments that is due this class will require you to reflect on the knowledge and skills that you have taken away from this class, and also provide an opportunity to recognize how the various class sessions fit together and see the class in its whole.

**Readings:**
- None

**Due for all:** Competency Assessment. For detailed instructions refer to the Assignment section.