McIntire School of Commerce
University of Virginia

COMM 4822
Investing in a Sustainable Future

Spring 2020

Problems cannot be solved by the same level of consciousness that created them.

- Albert Einstein (1879-1955)

Come, let us reason together. - Isaiah 1:18

PROFESSOR: Mark A. White 924-7365
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CLASS HOURS: 2:00 – 4:45 PM, Monday

LOCATION: 221 Robertson Hall

OFFICE HOURS: By appointment at a time convenient for you

TEXTS: Margaret Robertson, SUSTAINABILITY: PRINCIPLES AND PRACTICE, 2nd Ed. (New York: Routledge, 2017)

The paperback version is $35.31 from amazon.com; Kindle version is $38.84

Course packet available from Harvard Business School Publishing, $17.00
https://hbsp.harvard.edu/import/689352

Various assigned readings on the ITC Collab site (collab.itc.virginia.edu)

COURSE DESCRIPTION

The mismatch between the demands of an increasingly-consumptive population and a decreasing resource base has troubled economists and ecologists for more than two centuries. These concerns have gained currency as climate change, water scarcity, soil erosion, species extinction, overfishing, and air and water pollution have made headlines across the world. *Investing in a Sustainable Future* focuses on efforts being made by businesses, governments and NGOs to incorporate "sustainability criteria" into their investment appraisal processes.

Value creation is the objective of all business activity, be it for customers, employees, or investors. Maximization of shareholder wealth is the goal of all financial practice in the United States and in many other parts of the world as well. The ability to create and manage value depends upon one's capacity to **identify** and forecast future events, to **evaluate** the strategic and financial implications of particular alternatives, and to **apply** oneself to the implementation of a particular choice. This course concentrates upon the acquisition and development of these critical business skills while maintaining a vision of sustainability at its forefront.

COMM 4822 is designed to be a "capstone" course for undergraduate students from many different disciplines. As such, it is intended to provide you with the opportunity to integrate and apply knowledge acquired in all of your other courses and work experiences towards the solution of an important real-world problem, i.e., value creation within the dynamic of growing resource demand and decreasing resource availability. Your grasp of concepts from ecology, economics, history, engineering, planning, psychology and management will be well-exercised in developing the intuition and arguments necessary to achieve this result.

Environmental business professionals are often called upon to interpret various aspects of mankind's impact on the natural environment as they might relate to a particular firm within a particular competitive framework. To this end, you will be expected to develop a familiarity with the various global environmental and social trends affecting business organizations (e.g., global climate change, environmental legislation, changing consumer preferences) and to demonstrate this knowledge in classroom discussion.

The course emphasizes performance, not effort. It provides you with the opportunity to test your ideas and understandings against some of the best and brightest students in the nation (yourselves!) and to learn from each other. Good listening and contribution skills are critically important to your success in this course and beyond the serpentine walls of Mr. Jefferson's University. Various writing assignments will highlight your written communication skills, while your engagement and participation in classroom discussion showcases your oral communication skills.

Students taking this course should hope to achieve:

- Increased knowledge of course facts and concepts, e.g., the role of ecological capital, weak vs. strong sustainability constraints, applied cost-benefit analysis, decision-making under uncertainty, etc.

- Improved thinking, reasoning and problem-solving skills, esp. with regard to the identification and framing of real-world problems and alternative solutions

- Greater appreciation for the contributions of others and an enhanced ability to work in cross-functional teams.

The course is focused on the identification and analysis of investments leading to a more sustainable future, as its name implies. It is intended for fourth-year students in the McIntire School of Commerce, the School of Engineering, the School of Architecture, and the College of Arts and Sciences. Drawing upon academic and practitioner literature from a variety of fields, it attempts to develop theoretical and practical guidelines for incorporating sustainability concerns into standard investment analysis. Enrollment is by permission of the instructor and is based upon students' interest in and familiarity with the subject material. It makes significant use of the case method of learning. The case method is a pedagogical approach that places students in the role of a decisionmaker seeking to resolve a problem. It teaches students not only to know, but to act. The default question for any case, in general, is: "In the role of X, what would you do and why?" but often you will find more specific questions in the syllabus to guide your preparation and understanding.

COURSE EXPECTATIONS AND CRITERIA FOR EVALUATION

Participants are expected to actively manage their own learning processes. In most instances, students should read or view the assigned background materials **before** coming to class in order to participate fully in discussion and other activities. Attendance at every scheduled lecture and group presentation day is expected. However, I recognize that you have other demands on your time, especially during recruiting season. Try to schedule interview trips so they don't conflict with case days, as you will receive a "zero" for your class contribution grade during these times.[1]

The rationale behind this attendance policy is twofold. First, by attending class, you may learn something which could prove useful to your future career and/or well-being. Second, others learn from your presence and contributions to class discussion. The small class sizes commonly found in U.S. colleges and universities afford wonderful opportunities for cooperative learning, and students at the University of Virginia are particularly blessed with an abundance of insightful and thoughtful peers. The classic Christmas film, "It's a Wonderful Life," provides an excellent example of the impact each of us has upon the lives and education of others – we need you!

GRADING

Final grades will be assigned on a 'plus/minus' basis. The relative importance of assignments is as follows:

- Contribution to Classroom Learning ..... 30 %
- Short Assignments
  - Standing on the Shoulders of Giants ..... 7.5 %
  - Guest Speaker / TED Talk Reaction Brief ..... 7.5 %
- Resilience Project ..... 30 %
  - Presentation (8 slide deck) ..... 15 %
  - Project Report (5 pages) ..... 15 %
- Peerwise Weekly Exam Questions ..... 10 %
- Final Exam ..... 15 %

[1] AKA the "you must be present to win" clause.

CONTRIBUTION TO CLASSROOM LEARNING

The nature of a seminar class is such that regular attendance is an absolute minimum requirement for the effective acquisition of knowledge. Class contribution, however, involves much more than just showing up.

Your performance in class will be graded on a scale ranging from 0 (lowest) to 4 (highest) using the criteria noted below. These criteria are based on what you demonstrate, and do not presume to guess at what you know but do not demonstrate. This is because what you offer to the class is what you and others learn from.

The criteria elucidated below assess your learning along several dimensions: cognitive skills (insight, knowledge, creativity and logic); expressive elements (clarity, fluency and conciseness); affective ingredients (enthusiasm and interest) as well as your contribution to the process of learning itself (constructive criticism and relevance). Quality contributions *change the direction of class discussion* to benefit the group, rather than for selfish reasons. Quality contributions can be measured by the frequency with which others cite your ideas and/or respond directly to you.

Sometimes individuals find it difficult to contribute to classroom discussion. Remember, one can *always* initiate discussion by asking, "What did others think of this issue? I was confused, but this is what I thought ..." At some point in the term, you may be asked to (anonymously) evaluate your classmate's contribution to *your* learning.

Context matters. When discussing cases, note that they are not just long "story problems;" they are real situations faced by real managers. If you are unfamiliar with an industry, take time before class to investigate its structure and key factors for success. *At a minimum*, you are expected to know and/or have looked up the meaning of ALL terms used in the case, e.g., "machine tool," "chloroflourocarbon," "nonferrous metal," and "marketable permit."

Score	Criteria
0	Absent
1	Present, not disruptive Tries to respond when called upon, but does not offer much Demonstrates very infrequent involvement in discussion
2	Demonstrates adequate preparation; knows basic reading or case facts, but does not show evidence of trying to interpret or analyze them Offers straightforward information (eg, directly from a case or reading) very infrequently (perhaps once a class) or without elaboration Does not offer to contribute to discussion, but contributes to a moderate degree when called upon Demonstrates sporadic involvement
3	Demonstrates good preparation; knows the case or reading facts well, and has thought through their implications Offers interpretations and analysis of case or reading material (more than just facts) to the class Contributes well to discussion in an outgoing way; responds to other students' positions, thinks through own position, questions others in a constructive way, offers and supports suggestions that may be counter to the majority opinion Demonstrates consistent ongoing involvement
4	Demonstrates exceptional preparation; has analyzed case or reading exceptionally well, relating it to other materials (eg, other readings, cases, course material, discussions, experiences, etc) Offers outstanding analysis, synthesis and evaluation of case and reading material, ie, puts together pieces of the discussion and develops new approaches that take the class further Contributes in a very significant way to ongoing discussion: keeps analysis focused, responds very thoughtfully to other students' comments, contributes to the cooperative argument-building, suggests alternative ways of approaching material and helps the class analyze which approaches are appropriate, etc Demonstrates ongoing and very active involvement

Criteria drawn from Martha Maznevski, "Grading Class Participation," *Teaching Concerns* (January 1996)

PROJECT ASSIGNMENT

It seems the world as we've known it has pretty much turned upside-down, and I imagine you're all (like me!) dealing with all sorts of uncertainties, anxieties, etc. An awful lot of my mental surmising is of the form, "I wonder how this crisis will affect X?" where X is any one of a number of personal issues, financial issues, future issues and yes, sustainability issues.

In the interest of preserving some semblance of normalcy in the course during your last semester at University, and perhaps to provide a useful outlet for connecting a) Present times with future times and b) Each other, the final assignment for this class will be a **sustainable investment project**, ideally one that relates a need for sustainability/resilience thinking to future economic benefits.

In a nutshell, your assignment is to work in groups of three students to identify an initiative which creates value for a particular organization of your choice.[2] The general idea is that after listening, learning, and engaging with the course content, you should be able to a) Develop a value-creating proposal with economic, environmental and social benefits and b) Identify and pitch this idea to your classmates at the end of the semester.

Final Presentations

Each group is expected to present their analysis in a **20-minute oral slide presentation**, with approximately 10 minutes for content and 10 minutes for questions. We'll all watch these together on the last day of class, Tuesday, April 28th.

1 - McGreevy, Walmsley, Dunn

2 - Pinto, Smith, Gupta

3 - Weissman, Reddy

4 - Ravikanti, Guo

5 - Lingenfelter, Kelly, Johal

6 - Simard, Hanrahan, Richter

7 - Bates, Jayachandran, Sonnenblick

8 - De Frutos, Willey, Zhang

8 x 20 minutes = 160 minutes = 2 hours, 40 minutes … 2:00 to 5:00 pm (conflicts?)

[2] Honestly, it wouldn't even have to be an existing organization. If y'all can dream up an entrepreneurial venture that makes sense and present it in a compelling manner to the class, it's a win, as well. The "particular organization" clause is to help provide a frame of reference for y'all to get started.

Pitch Deck

A pitch deck is a brief presentation, often created with PowerPoint or Keynote, used to provide your audience with a quick overview of the firm's business plan (or in our case, value proposition). When creating your pitch deck, keep in mind your **audience** and the **final ask**. For the purposes of this class, assume your audience to be the investment committee of a philanthropic foundation or impact investing fund interested in better aligning its portfolio with a general set of sustainability/resilience values.[3]

The **eight-slide pitch deck** is a bit of an industry standard and consists of the following elements:[4]

a) **One-line summary** of your recommendation and analysis. Think BLUF (aka "bottom line up front) and consider using an assertive statement with "because …"

b) **Problem** -- a brief description of the sustainability/resilience challenge(s) you're addressing

c) **Solution** -- what/how is your idea doing to solve the problem?

d) **Market** -- how large an opportunity are we talking about? How likely are we to capture it?

e) **Traction** … an analysis of your idea's business quality

f) **Team** … an analysis of the human resources needed to carry out your idea[5]

g) **Competition** -- who else is working on a solution that might be better than the one you're proposing

h) **The Ask** … how much is needed to address the problem you've described

[3] Feel free to change/increase the specificity of this assumption if it will help us to better understand your final recommendation. This is still somewhat of an academic exercise, after all!

[4] There are all sorts of "industry standard" decks, like this 12-slide version: https://pitchdeck.improvepresentation.com/what-is-a-pitch-deck

[5] For the purposes of the COMM 4822 project, you can substitute this element for an extended discussion of one of the other elements, if appropriate. We don't need to get down into the weeds on this one.

Project Report

I'm a real fan of brevity, so I'm asking that your **written report** take the form of a *Five-Page Business Plan*, which is pretty much what it sounds like! Several years ago, Rolfe Larson put forth the notion of an abbreviated plan that involved "just enough" research and analysis into "just the right areas" that were critical to achieving business success.[6] He said those results should be summarized in three pages of text, to which should be added a page of financial projections and a final page concerning the expertise of the management team[7] and key risks affecting execution of the plan.

That's not a lot of space, so clarity and conciseness is at a premium. (And to be very clear on my end, I'm talking exactly five pages with margins no less than .75" on all sides, at least 1.5 spacing between lines, and a font size no smaller than 11 point Times Roman). Any exhibits or tables you wish to include need to fall within this limit. (Hint: Some folks format their work in two columns for this reason; that's totally cool).

I imagine it will be most convenient for everyone to simply email me their slide decks and five-page business plans.

[6] https://managementhelp.org/blogs/business-planning/2010/09/01/5-page-business-plan-wave-of-the-future/

[7] See Footnote 5 -- it may not be appropriate to worry about the expertise of the management team

THE HONOR SYSTEM

"The McIntire School of Commerce relies upon and cherishes its community of trust. We firmly, endorse, uphold, and embrace the University's Honor principle that students will not lie, cheat, or steal, nor shall they tolerate those who do. We recognize that even one honor infraction can destroy an exemplary reputation that has taken years to build. Acting in a manner consistent with the principles of honor will benefit every member of the community both while enrolled in the McIntire School and in the future."

McIntire School of Commerce Honor Statement
Written by McIntire Students ('02 and '03) and Agreed to by the McIntire Faculty

Students enrolled in Commerce 4822 are subject to the University of Virginia's Honor Code. To avoid any ambiguity, two issues merit special discussion. First, please avoid the temptations of plagiarism. Claiming credit for the work of another is not honorable. (Moreover, citation lends creditability to your work!) The ready availability of information over the Internet has led to an epidemic of "surfing and pasting" across college campuses. For example, copying lengthy sections from a firm's environmental report and pasting them into your work (with or without attribution) will be interpreted as an Honor Violation in this class. Second, all members of the group are held equally accountable for work turned in on their behalf, and will be dealt with accordingly. Thus, it might behoove one to read what your group has written before signing the pledge.

If you have questions about your Honor System or would like to report suspicions of an Honor Offense, please contact an Honor Representative.

LEARNING NEEDS

All students with special needs requiring accommodation should present the appropriate paperwork from the Learning Needs Evaluation Center (LNEC). It is the student's responsibility to present this paperwork in a timely fashion and to follow up with the instructor about the accommodations to be offered. Accommodations for test-taking (e.g., extended time) should be arranged at least 7 days before an exam.

CONCLUSION

There is no "answer book" for this class. The problems we face with regard to ensuring a sustainable future will not be solved by a single discipline, and it's quite clear that a multiplicity of approaches and strategies will be required, and that the business community has a very important role to play. As you identify a particular challenge, propose a solution and evaluate that solution against sustainability, strategic, financial and practical hurdles, you will no doubt examine and discard many different answers before arriving at a final proposal that you can defend with confidence before the eyes of your peers. This is a key element of deep learning, and I am honored and humbled by the opportunity to work with you on problems of such planetary importance. Best wishes for a satisfying and successful course!

SCHEDULE

	Day	Date	Topic
1	Mon	13 Jan	**Introduction and History of Sustainability**
	Mon	20 Jan	NO CLASS - MLK Day
2	Mon	27 Jan	**Sustainable Business Strategies**
3	Mon	3 Feb	**Making Investment Decisions**
			CASE Erie Thames Powerlines
4	Mon	10 Feb	**Sustainable and Responsible Investing**
			SPEAKER Richard Ware, TIAA
5	Mon	17 Feb	**Climate Challenges**
			SIMULATION EN-ROADS
6	Mon	24 Feb	**Water Challenges**
			CASE Random Row Brewing Company
7	Mon	2 Mar	**Ecosystems and Habitat**
			CASE Flying Beavers
			NO CLASS - Spring Break
8	Mon	16 Mar	**NO CLASS - Coronavirus Challenges**
9	Mon	23 Mar	**Coronavirus Catchup**
			CASE Flying Beavers
10	Mon	30 Mar	**Energy Challenges and Opportunities**
			SPEAKER Trey Jarrard, Renewvia Energy
11	Mon	6 Apr	**Addressing Waste Challenges**
			CASE DC Water: Turning Sewers from Grey to Green
12	Mon	13 Apr	**Sustainable Food Systems**
			SPEAKERS David Atwell and Andy Promisel
13	Mon	20 Apr	**Sustainable Products**
			CASE Patagonia: Closing the Loop on Packaging Pollution
14	Mon	27 Apr	**Becoming an Agent for Change**
	Thu	7 May	**FINAL EXAM** -- 2:00 to 5:00 PM

Schedule and Assignments

1. Introduction and History of Sustainability Monday, 13 January 2020

Readings and Videos

Robertson, M. 2017. "Chapter 1: What is Sustainability?" *Sustainability Principles and Practice, 2nd ed.*, pp. 3-8.

Robertson, M. 2017. "Chapter 2: A Brief History of Sustainability," *Sustainability Principles and Practice, 2nd ed.*, pp. 9-25.

Sustainability Illustrated, 2015. "Sustainability Explained with Simple Natural Science," 7:43 min, Available: https://www.youtube.com/watch?v=eec0UYGIeo4

A brief introduction to some of the (scientific) concepts underlying our modern understanding of 'sustainability'

"The Limits to Growth," Excerpted from *Earth Days* (2009), 7:29 min, Available https://www.youtube.com/watch?v=kIQvBYOtgMg

Dennis Meadows et al. had a profound impact on our thinking with the publication of The Limits to Growth in 1972. (Incidentally, the entire film provides terrific historical background for the environmental movement, which is intertwined with the development of a widespread concern about sustainability. An online (not terribly great quality) version is available here: https://www.youtube.com/watch?v=yFwC6K5h9C4&t=7s)

"The Answer to Life, the Universe and Everything," Excerpted from *The Hitchhiker's Guide to the Galaxy* (2005), Available: https://www.youtube.com/watch?v=aboZctrHfK8

This video doesn't really have much to do with the history or substance of sustainability, except for perhaps a tongue-in-cheek poke at human arrogance

Assignment

Before class, research a prominent sustainability thinker from a list posted on Google sheets and create a Google slide containing pertinent information. Be prepared to share your findings during class.

Google Sheet signup list: https://bit.ly/38XaXLz

Google Slides presentation deck: https://bit.ly/2ZezR4D

NO CLASS - Martin Luther King Day Monday, 20 January 2010

2. Sustainable Business Strategies Monday, 27 January 2020

Readings and Videos

Kim, D. H. 1999. "Introduction to Systems Thinking," Available: https://thesystemsthinker.com/wp-content/uploads/2016/03/Introduction-to-Systems-Thinking-IMS013Epk.pdf

Long, T. B. 2019. "Sustainable Business Strategy," In Leal Filho, W. et al., Encyclopedia of the UN Sustainable Development Goals, Springer, UK. Available: https://www.researchgate.net/publication/332414437_Sustainable_Business_Strategies

World Wetlands Day Sunday, 2 February 2020

World Wetlands Day occurs annually on February 2, marking the date of the adoption of the Convention on Wetlands on February 2, 1971 when a small group of environmentalists signed an international agreement at the Ramsar Convention in Iran.

3. Making Investment Decisions Monday, 3 February 2020

Financial investment decisions depend on the magnitude, timing and risk of future cash flows. Integrating social and sustainability concerns into the analysis can improve results

Readings and Videos

"Capital Budgeting," Undated. Available: http://www2.fiu.edu/~keysj/CFIN_09.pdf [Collab]

A brief summary of investment analysis techniques. This will be review for Commerce students, but perhaps a helpful "on ramp" for non-Commerce students

CASE Mallany, R. and S. Vachon. 2016. "Erie Thames Powerlines: The Hybrid Truck Decision," Ivey Publishing, W16811. 2 pp.

We'll use this brief case to illustrate various investment analysis techniques. Please read the case before class so you're familiar with the problem, but we'll actually solve it together in class.

Assignment Questions

- What are the advantages and disadvantages associated with the hybrid truck when compared to a conventional diesel truck? Can you quantify them?
- Does the selection of a hybrid truck instead of a conventional diesel truck make financial sense? Why?
- What kind of market conditions (oil prices, exchange rate, etc.) would favor the adoption of hybrid trucks?
- Would you opt for the hybrid truck? Why?

"A Guide to Social Return on Investment," 2012, *SROI Network*, Available: http://socialvalueint.org/wp-content/uploads/2016/12/The-SROI-Guide-2012.pdf [Collab]

This guide is a bit long for our purposes, but I do recommend you skim at least the first chapter and pp. 54-71 in preparation for our discussion.

Zeidan, R. and H. Spitzeck, "The Sustainability Delta: Considering Sustainability Opportunities in Firm Valuation," 2015, *Sustainable Development*. Published online in Wiley Online Library (wileyonlinelibrary.com) DOI: 10.1002/sd.1594 [Collab]

This paper introduces the concept of a "sustainability delta," essentially, a value premium associated with a firm's sustainability practices. I don't expect y'all to internalize all of the details of this paper, but I presume the finance concentrators will recognize the standard DCF model for firm valuation, and all of us will be able to relate to the changes in value arising from different assumptions. Please at least skim this paper so the concept and example are familiar to you.

Willard, B. 2019. Sustainability ROI Workbook (SRW): Building Compelling Business Cases for Sustainability Initiatives. Available: https://sustainabilityadvantage.com/businesscases/project-level-business-case/

Bob Willard is a noted sustainability thought leader, perhaps best known for his attempts to quantify the benefits of sustainable business strategies using Excel spreadsheets. This "book" (cleverly disguised as an Excel spreadsheet) invites managers and analysts to input their own data into a capital budgeting template to demonstrate the returns from various sustainability initiatives. The template is a bit crude, but the process is pretty spot-on, with lots of comments and encouragement for folks to think beyond "business as usual" in identifying possible benefits and costs. The workbook is free, and the five videos identified below provide a great introduction to its various components. Well worth looking at for folks already working in this field, or for those hoping to get into a position where they might be making sustainability investment decisions.

Willard, B. 2019. "Introduction Worksheet," 11:26 min, Available: https://www.youtube.com/watch?v=1z2FK3qczf8

Willard, B. 2019. "Revenue Worksheet," 7:15 min, Available: https://www.youtube.com/watch?v=4SKFTBDdYmE

Willard, B. 2019. "Expenses Worksheet," 5:40 min, Available: https://www.youtube.com/watch?v=b0PfwFr2owc

Willard, B. 2019. "Asset and Market Values Worksheet," 4:46 min, Available: https://www.youtube.com/watch?v=sN-IiJ-KNNs&t=3s

Willard, B. 2019. "Risk Analysis Worksheet," 5:07 min, Available: https://www.youtube.com/watch?v=8bmYlwftajs

Willard, B. 2019. "Funding and ROI Worksheet," 6:04 min, Available: https://www.youtube.com/watch?v=_qquxym-PB4

Willard, B. 2019. "Appraisal Tool Worksheet," 7:20 min, Available: https://www.youtube.com/watch?v=_fF6EeY7g70

4. Sustainable and Responsible Investing Monday, 10 February 2020

Investing one's principal in accord with one's principles has a long history and many facets

Readings and Videos

Aberdeen Standard Investments, 2018, "The Elements of ESG Investing," Available: http://thinkingaloud.aberdeen-asset.com/en/thinkingaloud/the-bigger-picture/elements-esg

This web-based primer in ESG investing adopts a chemistry metaphor to explain the fundamentals of sustainability investing.

"Looking Ahead to a Bright Future," 2019, Morgan Stanley, 2:24 min. Available: https://www.youtube.com/watch?v=kDHSn7T3MCo

An up-to-date review of current opportunities in impact investing.

"How Does ESG Analysis Work in Practice?" Nordea, 2015,4:22 min, Available: https://www.youtube.com/watch?v=5DiQpgPi_8g

"MSCI ESG Ratings," MSCI, 2018, 3:51 min, Available: https://www.youtube.com/watch?v=NWiXkpV52IA

A couple of short videos illustrating the application and fundamentals of ESG metrics

Guest Speaker

Richard Ware, TIAA

5. Climate Challenges Monday, 17 February 2020

Climate change poses risks, but also opportunities for enlightened businesses

Readings and Videos

Robertson, M. 2017. "Chapter 5: Climate, *Sustainability Principles and Practice, 2nd ed.*, pp. 67-89

McKinsey Global Institute. 2020. Climate Risk and Response. Available: https://www.mckinsey.com/business-functions/sustainability/our-insights/climate-risk-and-response-physical-hazards-and-socioeconomic-impacts

World Economic Forum. 2020. Nature Risk Rising: Why the Crisis Engulfing Nature Matters for Business and the Economy. Available: https://www.weforum.org/reports/nature-risk-rising-why-the-crisis-engulfing-nature-matters-for-business-and-the-economy

SIMULATION EN-ROADS

Darden Climate Cap Summit Friday-Saturday, 20-21 February 2020

Need description!

6. Water Monday, 24 February 2020

There are many facets to water challenges -- too little, too much, poor quality, etc. Whatever the issue, there's no denying that water is a valuable resource, and this class presents a survey of the issues with an especial focus on a particular measurement tool -- Material Cost Flow Accounting (MFCA) that can be used to highlight opportunities for improvement

Readings and Videos

Robertson, M. 2017. "Chapter 6: Water, *Sustainability Principles and Practice, 2nd ed.*, pp. 90-109

Deutsches Institut für Normung eV, 2011. *Environmental Management: Material Cost Flow Accounting, General Framework (ISO 14051),* [Excerpted; available on Collab]

Before working on this case, one needs to have mastered the fundamentals of material cost flow accounting. Skim pp. 17-27 of the ISO 14051 MFCA General Framework document to gain an understanding of the MFCA method and then carefully work through the example on pp. 43-59 to see which elements go where. (I've posted an Excel file on Collab that may be helpful to you as you work through these calculations). After you feel comfortable with this analytical framework, try your hand at the Random Row case. Most of the information is already there, and it should provide a good opportunity for you to demonstrate your mastery and understanding of this valuable technique.

CASE White, M. A. and S. Yen, 2018. "Crafting a Sustainable Future: Material Flow Cost Accounting at Random Row Brewing Company," (Draft)

Assignment Questions

- How should energy, system and waste management costs be allocated among the various quantity centers? (Exhibit 8)
- How should one allocate **all** costs across the various quantity centers? (Exhibit 9)
- Which brewing stages contribute the most to material wastes on a physical basis? On a financial basis?
- Based on this analysis, which area -- material costs, energy costs, system costs or waste management costs -- do you believe deserves the most attention? Which stage would you recommend Kevin focus on **first**? Why?

SPEAKER Jeff Hale Thursday, 27 February 2020
5:00 – 6:30 PM, location TBD

Jeff Hale, Chair of the Sustainability Accounting Standards Board, will speak about sustainability reporting and its impact on investor decision-making.

7. Biodiversity and Habitat Monday, 2 March 2020

Reading and Video Assignments

Robertson, M. 2017. "Chapter 7: Ecosystems and Habitat, *Sustainability Principles and Practice, 2nd ed.*, pp. xx-xx

CASE White, M. A. 2015. "Flying Beavers: An Innovative Approach to Wildlife Conservation," 13 pp.

- Beaver dams change the landscape by blocking the flow of water and creating large pools behind them. How do these activities harm humankind? In what ways do they benefit humanity?
- What **criteria** should Scotty Heter and the Idaho Fish and Game Department use in making the decision to move the McCall beavers via parachute to the Chamberlain Basin?
- Using information from the case, compute the **economic costs and economic benefits** of beaver populations along a 10-mile stretch of riverine habitat near McCall, Idaho.
- What do you think of the "flying beavers" conservation program? Should it be replicated in other hard-to-reach areas?

VIDEO "Why Biodiversity is Important," 2014, *California Academy of Sciences*, 9:02 minutes. Available: https://www.youtube.com/watch?v=BCH1Gre3Mg0&t=12s

A video that fulfills the promise of its title -- telling one why biodiversity is important!

VIDEO "Beavers Are the Smartest Thing in Fur Pants," 2017, *It's OK to Be Smart*, 5:15 minutes. Available: https://www.youtube.com/watch?v=Zm6X77ShHa8

A nice short video providing some background information on beaver biology and the benefits of beaver activity.

Pienaar, E. 2013. "Measuring the Economic Value of the Environment and Natural Resources," University of Florida IFAS Extension Report #WEC340. Available: https://www.researchgate.net/publication/301497523_Measuring_the_Economic_Value_of_the_Environment_and_Natural_Resources

A brief article (4 pp) summarizing types of environmental value with an application to the Florida manatee. Could be useful in estimating the economic value of beavers

Velasquez, M., Andre, C., Shanks, T. and M. J. Meyer. Undated. "Thinking Ethically: A Framework for Moral Decision Making," http://www.scu.edu/ethics/publications/iie/v7n1/thinking.html

A short summary of ethical principles used in decision-making

VIDEO "Should We Let Pandas Go Extinct?," 2015. MinuteEarth, 3:07 minutes. Available: https://www.youtube.com/watch?v=VEMtc1w4z6c

Sometimes it's hard to make choices

*** SPRING BREAK ***

8. NO CLASS - Coronavirus Issues Monday, 16 March 2020

9. Coronavirus Catchup Monday, 23 March 2020

Readings and Videos

We're going to spend today exploring the viability of the various Zoom technologies with application to the "Flying Beavers" case -- see readings for March 2nd for assignment questions

10. Energy Challenges and Opportunities Monday, 30 March 2020

Readings and Videos

Robertson, M. 2017. "Chapter 9: Energy, *Sustainability Principles and Practice, 2nd ed.*, pp. 156-183

VIDEO "EROI - Energy Return on Investment Explained," 2020, Canadians for a Sustainable Society, 4:22 min, Available: https://www.youtube.com/watch?v=2AwIgeyPtJY

"Levelized Cost of Energy," Undated. Energy Education, Available: https://energyeducation.ca/encyclopedia/Levelized_cost_of_energy

Guest Speaker

~~Trey Jarrard, Renewvia~~

11. Addressing Waste Challenges Monday, 6 April 2020

Readings and Videos

Robertson, M. 2017. "Chapter 8: Pollution, *Sustainability Principles and Practice, 2nd ed.*, pp. 133-155

CASE DC Water: Turning Sewers from Grey to Green

Assignment Questions

- How does green infrastructure mitigate stormwater runoff?
- What are fundamental properties of a societal challenge that lend themselves to a social impact bond (SIB)? Is this setting applicable?
- Why would this financial innovation be attractive to DC Water, the issuer, relative to other financing options?

12. Sustainable Food Systems Monday, 13 April 2020

Readings and Videos

Robertson, M. 2017. "Chapter 12: Food, *Sustainability Principles and Practice, 2nd ed.*, pp. 224-254

Guest Speaker

David Atwell and Andy Promisel

13. Products Monday, 20 April 2020

Readings and Videos

Robertson, M. 2017. "Chapter 13: Products, *Sustainability Principles and Practice, 2nd ed.*, pp. 255-274

CASE Patagonia: Closing the Loop on Packaging Pollution.

Assignment Questions

- How can companies such as Patagonia offer all of their apparel and food products in packaging that is reusable, biodegradable, renewable, or easily recyclable by 2025?
- How would you re-design the packaging supply chain to be more research-driven, more capable of scaling solutions quickly and more focused on lessening the environmental impact of single-use packaging? (Solutions may include new materials, technologies, and supply chain-related innovations.)
- What is the role of consumers in driving real change in the packaging supply chain? If citizens are labeled as "consumers" rather than "participants," does that change perception of usage and marketing approaches?

14. Student Presentations Monday, 27 April 2020

Readings and Videos (maybe)

Robertson, M. 2017. "Chapter 15: Working in an Organization, *Sustainability Principles and Practice, 2nd ed.*, pp. 293-316

Robertson, M. 2017. "Chapter 17: Working as Agents for Change, *Sustainability Principles and Practice, 2nd ed.*, pp. 330-346

Presentation Schedule

2:05 - 2:25	1 - McGreevy, Walmsley, Dunn
2:25 - 2:45	2 - Pinto, Smith, Gupta
2:45 - 3:05	3 - Weissman, Reddy
3:05 - 3:25	4 - Ravikanti, Guo
3:25 - 3:40	BREAK
3:40 - 4:00	5 - Lingenfelter, Kelly, Johal
4:00 - 4:20	6 - Simard, Hanrahan, Richter
4:20 - 4:40	7 - Bates, Jayachandran, Sonnenblick
4:40 - 5:00	8 - De Frutos, Willey, Zhang

Final Exam Thursday, 7 May 2020

The final exam will be closed-book, closed-note, and "closed-friend." It will be delivered to you in PDF form, along with an Excel spreadsheet for you to mark your answers and send back to me. I'll still plan to distribute it 2:00 PM EDT on Thursday, May 7th.