IDM 7090 (G05) (3.0 CH)
SUSTAINABILITY ECONOMICS
WINTER 2024

TERRITORY ACKNOWLEDGEMENT

The University of Manitoba campuses are located on original lands of Anishinaabeg, Cree, Oji-Cree, Dakota and Dene peoples, and on the homeland of the Métis Nation. We respect the Treaties that were made on these territories, we acknowledge the harms and mistakes of the past, and we dedicate ourselves to move forward in partnership with Indigenous communities in a spirit of reconciliation and collaboration.

The University of Manitoba requires a generalized territory acknowledgement, but in many courses, such as this one, it may be more important to actually discuss direct links to the course material. Manitoba has the important distinction of having the highest proportion of citizens of indigenous background of all Canada's main provinces, representing close to one in five Manitobans. As such, indigenous citizens are crucially important to the future of Manitoba as a whole, in particular our economic future! In terms of direct linkage to businesses and their impacts, it is also useful to note that over a period of roughly 350 years, First Nations and Métis peoples performed a central role on one of the most important commercial products and supply chains in the world. This supply chain was also important in the formation of what would become Manitoba. It also, however, resulted in a variety of significant adverse social and environmental impacts. The questions for all students to consider in advance are, what was the supply chain and product in question, and what did it involve, and impacts? We will discuss this directly in classes.

INSTRUCTOR

Name:	Robert Parsons	Office Location:	Drake 645
Phone:	Cellphone 204-880-4287	Office Hours:	Virtual: 6 PM - 8 PM CST, Tuesday or Thursday, or can arrange time
Fax:		Class Room:	Drake 103 (but still potential to use Cisco Webex via UM Learn)
Email:	robert.parsons@umanitoba.ca or robertvparsons@gmail.com	Class Time:	Wednesday 6:15 PM to 9:30 PM. Starts January 24th, with last class on April 3rd (no class February 21st) Concepts exam March 13th, 2024.

COURSE DESCRIPTION

This interdepartmental special-topics course specifically examines "sustainability economics," and relates directly to the sustainability theme area within the MBA program. The overall aim is to provide solid practical knowledge about this developing subject area. The intent is to help you understand both implications and potential applications for organizations with whom you will be working in the future. Sustainability inherently includes both environmental and corporate social responsibility (CSR) aspects. Although both will be addressed, the environmental-related side will be covered more extensively, simply because there is more material available. Also, given that economics involves the evaluation and

comparison of costs and benefits, this course will include significant quantitative analysis. There is a mid-course examination covering theoretical concepts. Students, working in teams, will undertake somewhat more in-depth investigations of relevant topics, i.e., major projects. This major project, the five briefing assignments and the two case studies all deal with issues of current interest, both locally and internationally.

COURSE OBJECTIVES

On course completion, you should be able to understand:

- Basic terminology and methodologies employed with sustainability economics;
- How sustainability economics is used and applied in practical situations; and
- Where major uncertainties and potential controversies exist.
- You will also gain practical experience as part of a real-world-oriented major project that potentially may be published (and included as part of your resume).

In relation to the overall Learning Goals and Objectives of the MBA program, this course is primarily oriented to Quantitative Proficiency, i.e., being able to approach organizational issues using quantitative analysis. Although there is no direct focus on Strategic Thinking or an Ethical Mindset, gaining an understanding of sustainability economics provides important methodologies and inputs used in both cases. Frequently, preparing a suitable analysis can greatly assist in strategic decisions or in how best to address ethical considerations. At the same time, local and global issues are both considered, such that the course also supports having a Global Perspective, in particular how to better assess global issues from a local context, i.e., not all locations may be affected by a particular sustainability issue in the same way.

COURSE MATERIALS

The following reference textbook has been employed up until now to guide discussions, however, the publisher recently ceased printing:

> Tietenberg, T.H., E.A. Wilman and P. Tracey. 2009. *Environmental Economics and Policy*, Canadian Edition. Pearson/Addison-Wesley, Toronto, Canada.

This is a very useful document, being relatively short, and adapted for the Canadian context. All relevant materials are provided in lectures, such that this book is NOT required. Copies can be still found on-line or used, and it is also still present in the University of Manitoba Library system.

This book discusses the topics of interest in roughly the same order as we look at them in class, with applicable sections for reading each week noted in the schedule as a guide. All necessary information is fully presented in the lectures and associated lecture notes. The textbook includes materials relevant to Canada, and was also selected, in part, because it could be a useful future reference on the subject, if retained by students.

In terms of corporate social responsibility, a primary, and still highly relevant source, is the 2008 special report by the *Economist* Magazine entitled, "Just good business" which is available at the following site:

The Economist. 2008. Just good business: A special report on corporate social responsibility. (January 19th 2008 issue).
http://www.economist.com/sites/default/files/special-reports-pdfs/10490978.pdf

This article can be accessed electronically through the University of Manitoba Library system if necessary. While it is older, it remains still one of the best practical references for CSR regarding economics. If you have difficulty getting access, academics at a number of educational institutions and some other locations have posted PDF versions of this on-line.

Two cases are included as assigned activities. Case #1 is in the public domain, and this case document will be provided in advance to all students via UM Learn at the time of Lecture 4, with some updates by the instructor. Case #2 will be assigned at the time of Lecture 6. The latter case document will need to be purchased electronically from the Ivey School of Business on-line (but involves a very low cost): https://www.iveycases.com/

Selected academic and media articles will be assigned or noted in lectures throughout the course. Many of these will be publicly available already through the internet, but if general access is restricted due to copyright, they can be still readily viewed through University of Manitoba Library on-line access.

COURSE ASSESSMENT

Student progress will be assessed as summarized in the following table:

Component	Worth
Case analysis written submissions	12 marks (i.e., 2 x 6 marks each)
Shorter briefing analysis written submission	3 marks (only one such briefing)
Longer briefing analysis written submissions	20 marks (i.e., 4 x 5 marks each)
Exam covering theoretical concepts	24 marks (during Lecture 7 time)
Major project report (cost benefit analysis)	20 marks (due at end of course)
Class presentations/participation	21 marks (throughout course)
Total	100 marks

Details on specific components are provided as follows:

Case analysis written submissions (Case #1 and Case #2) involve:

- Series of specific questions to be answered, based on your analysis of the case materials.
- Maximum **6 pages** of text content. Can be single-spaced, but must be at least 12-point font.
- Figures, tables and additional references can be included on separate pages at the end, and, as long as within reason, do not count toward maximum pages.
- As part of lecture, we will hold class discussion, framed around answering key questions, which are outlined for each case. These discussions involve 4 marks for each case toward the class presentation/participation component below (meaning cases in total are worth 20 marks).
- Case assignments will be distributed two weeks before submission due-date (and class discussion), with Case #1 provided at time of Lecture 4, and Case #2 at time of Lecture 6.
- Case written submissions are due on Wednesday, February 28, 2024 at 6:15 PM for Case #1 (Lecture 5), and Wednesday, March 20, 2024 at 6:15 PM for Case #2 (Lecture 8).

- You can work with other students on the analysis of data associated with each case, but your written submission must be your own work.

Short briefing analysis submission (Briefing #1):

- Maximum **2 pages** of text (12-point font).
- Inverted-pyramid communication format: starting with brief **Summary** section, including explicit recommendation(s); **Background** section, summarizing key factors; and **Analysis** section, including the rational for a proposed selection or course of action.
- For short-briefing submission, you are required to include a minimum of **3 cited references**.
- Briefing assignment distributed one week before due date.
- As part of the class, you will be asked to briefly describe a summary of your findings (maximum two minutes), with 1 mark for each briefing presentation separately towards the class presentations/participation component below.
- You can work with other participants on the analysis of data that may be associated with the briefing, but the written submission must be your own work.

Longer briefing analysis submissions (Briefing #2 through Briefing #5) involve:

- Same format as briefings above, but with maximum **3 pages** of text (12-point font). These briefings are still relatively "high-level," involving somewhat more in-depth analyses.
- Inverted-pyramid communication format again: starting with brief **Summary** section, including explicit recommendation(s); **Background** section, summarizing key factors; and **Analysis** section, explaining the rational for a proposed selection or course of action.
- In longer briefing submissions, you are required to include a minimum of **5 cited references**.
- As part of the class, you will be asked to briefly describe a summary of your findings (maximum two minutes), with 1 mark separately towards the class presentations/participation component.
- Just as with other briefings, assignments will be distributed one week before being due.
- You can work with other participants on the analysis of data that may be associated with the briefing, but the written submission must be your own work.

Issues discussed in the various briefing analyses are highly topical within Manitoba (and elsewhere). Based on the results obtained, the instructor may elect in specific cases to prepare short summary article(s) explaining what has been found, and that may be submitted to suitable media. One earlier example is an Eco-Journal article in Fall 2018 on carbon-tax equivalency of elevated Manitoba biofuels:

> Parsons, R., M. Baranowski, K. Borce and T. MacHutchon. 2018. Environmental win-win is possible: Manitoba leads on renewable fuels. Eco-Journal (Manitoba Eco-Network) 29(3): 8. https://mbeconetwork.org/wp-content/uploads/2018/10/Eco_Journal-Fall-18_online.pdf

Concepts examination component will be:

- Undertaken in-class during the first half of Lecture 7, on March 13th, 2024.
- 1.5-hour duration (one-half of class time for that week).
- Closed book, with no external communications permitted (no cell-phone or Google searching).
- Examination structure more like a mid-term but scheduled a bit later than other midterms.
- Intended to cover the major theoretical concepts presented in the course.
- Detailed information will be provided in advance regarding administration of the exam.

Major project (Cost-Benefit Analysis) report:

- The major project involves preparation of a cost-benefit analysis (CBA) report, with students assigned (randomly if needed) to address an analysis relating to a timely issue or opportunity.

- This year students will be working in one of two teams, with the two somewhat diverse topics.
- Overall project subjects will be introduced and team formation will be undertaken during Lecture 3, which is on Wednesday, February 7, 2024.
- Each team will work together to prepare a major project final report, one for each topic.
- Format of the report involves the following sections to be included: **Title** page, including report title, student name(s) and student number(s); **Summary** section, briefly summarizing the work and results; **Introduction** section, identifying the issue being evaluated; **Background** section, describing relevant information, and qualitatively what may be important regarding the subject being evaluated; **Methods** section, describing important assumptions, and methods employed for quantifying results and for analysis; **Results** section, describing what was found, in particular the quantitative results; **Conclusions** section, outlining the conclusions of the work, including identifying aspects that may be of greatest importance; and **Reference** section, documenting literature cited in the report using a consistent format.
- Report should use 12-point font and can be single-spaced, have a minimum of **10 pages** of text, but should not have a length greater than **20 pages**, excluding any figures, tables, or references.
- There should be a minimum of **10 cited reference sources**, not including guidance document on CBA prepared by the Government of Canada (below) or specific references provided by the instructor for the major project assignment.
- Citations and formatting of references should use a consistent approach. You are free to select whatever approach you wish, but noting it should be consistently used. One possible useful approach is APA, which is described later, but you are not required to use it.
- Further guidance on the preparation of the CBA will be discussed in class, based on the following document available from the Government of Canada: Treasury Board of Canada Secretariat. 2007. Canadian Cost-Benefit Analysis Guide. Government of Canada. https://www.tbs-sct.gc.ca/rtrap-parfa/analys/analys-eng.pdf (copy will also be placed in UM Learn).
- As part of the last class session (on Wednesday, April 3rd, 2024), each of the student teams will make a presentation of key findings to the rest of the class, with 4 marks per student separately included towards the class presentations/participation component.
- Final report submissions are due on Wednesday, April 13, 2022 at 6:15 PM CST, which is one week after the last lecture. Late submission is permitted, but there is a penalty for being late.

Bonus Opportunity: After the end of the course, it is intended by the instructor to bundle results of teams into brief overall report(s), or for article(s) such as for the site Conversation Canada (https://theconversation.com/ca). The intent is to be "published" on-line through a suitable and academically valid venue, with the instructor as the lead author and all participating students included in the list of authors.

This was first done in 2017 regarding electric buses, with a compendium report on externalities made public through the auspices of the Canadian Urban Transit Research and Innovation Consortium (CUTRIC). https://cpb-ca-c1.wpmucdn.com/www.rrc.ca/dist/6/47/files/2013/11/UofM-AsperMBA-2017-EBus-Externalities-CBA-sgs15r.pdf

A more recent example is the Conversation Canada article in January 2023, regarding how equitably and economically to provide reduced or zero-emissions transportation to lower-income households: Parsons, R., C.-C. Chen and R. Shanker. 2023. Funding electric public transit can reduce emissions and address economic inequality. Conversation Canada (Published: January 10, 2023 12.34pm EST). https://theconversation.com/funding-electric-public-transit-can-reduce-emissions-and-address-economic-inequality-194434

The instructor will inform everyone involved if a report has been accepted and published. If you have any concerns about being listed as an author in a proposed public report or article, please inform the instructor prior to the end of the course.

Class presentations/participation (total of 21 marks):

- As noted earlier, 17 marks are specifically allocated as follows:
  - 4 marks each for in-class discussions of cases, Case #1 and Case #2 (total of 8 marks);
  - 1 mark each for in-class summary discussions of results (two minutes) for the briefing analyses (total of 5 marks);
  - 4 marks for each student for summary presentation of the most important findings of major project (CBA) report (total of 4 marks).
- Remaining 4 marks are allocated to ongoing class activities, including in-class group analysis, and general class participation.

Citations for Briefing Analysis, Case and Major Project submissions. As described in the section on Academic Integrity, it is important to properly cite documents used in your work. You are required to use a consistent citation and reference format approach within each individual document, but you are permitted to use whatever approach you want (and you can even change from one document to the next), as long as each individual document is consistent throughout. Properly and consistently citing sources, in particular properly formatting your references, can be tricky and time consuming. A suggested approach can be the American Psychological Association (APA) format, which is very common, but you are not required to use it. There are many useful guidance internet-sites to help with APA (sites for others formats are also available). A few for APA are as follows:

- http://www.apastyle.org/
- http://libguides.csuchico.edu/citingbusiness
- https://owl.english.purdue.edu/owl/resource/560/05/

Final grades will be assigned as outlined in the following table:

Cumulative Marks	Grade	GPA	Performance
90-100	A+	4.5	Excellent
80-89.99	A	4.0	Very Good
75-79.99	B+	3.5	Good
70-74.99	B	3.0	Satisfactory
65-69.99	C+	2.5	Marginal
60-64.99	C	2.0	Unsatisfactory
50-59.99	D	1.0	Unsatisfactory
49.99 and below	F	0.0	Unsatisfactory

In this course, the instructor will not record attendance but will indeed record participation in individual classes, given that participating contributes toward the final grade for the course. That said, excessive absences will be noted, in particular if these are impacting performance. The faculty requires a note regarding absences. As described in faculty information below, there are a number of valid circumstances for missing classes, which should be noted to the instructor:

NOTE: Class attendance is required. Missing more than 20% of this course due to absence from lectures may result in a failing grade. It is your responsibility to inform your professor, in advance if possible, of your absence and the reason for it:

1) if **medical**, self-declaration form must be submitted for an illness lasting 5 consecutive days or less https://umanitoba.ca/governance/governing-documents-students#self-declaration-for-brief-or-temporary-student-absences, no later than 48 hours after the end of the brief absence; a medical note from your physician must be submitted for an illness lasting more than 5 days;
2) if a **work commitment**, a signed letter on letterhead from your supervisor is required in advance, noting clearly the date(s) you must be away for your work commitment(s);
3) if for **student competitions**, an email from your Asper team coach must be received in advance indicating the dates you are away at competition.

The professor can then decide how to deal with the impact of the missed classes on your final grade.

COURSE SCHEDULE

Each class typically will be split approximately into two 1.5-hour parts with a 15-minute break:

Part A: 6:15 PM to 7:45 PM
Part B: 8:00 PM to 9:30 PM

All class notes will be posted to the UM Learn system in PDF format. Copyright materials will be removed, but links included in order for students to locate relevant copyrighted materials.

Week 1 (Wednesday January 24th, 2024)

Part A Discussion:
Introductions and course administration overview; review of important aspects of conventional economic analysis; background review and updating of relevant mathematics (key derivatives and integrals); business-environment relationships; and similarities and differences in analysis between environmental and social responsibility aspects of sustainability.
Reference textbook material: Tietenberg et al. (2009) Chapters 1 and 2.

Part B Discussion:
Human-environment relationships; valuing the environment; property rights, externalities; and environmental problems.
Reference textbook material: Tietenberg et al. (2009) Chapters 3 and 4.
Additional reading (optional):

The Economist. 2019. Future lives matter (regarding discount rates). (December 8th, 2018 issue, page 75). https://www.economist.com/finance-and-economics/2018/12/08/the-moral-assumptions-embedded-in-economic-models-of-climate-change

Overview of technical aspects and implications of discount rates (optional):

Polasky, S. and N.K. Dampha. 2021. Discounting and global environmental change. *Annual Review of Environment and Resources* 46: 691-717.
https://www.annualreviews.org/doi/10.1146/annurev-environ-020420-042100

Opinion argument for zero discount rate put forward via World Bank blog (optional):

Brumby, J. and M. Cloutier. 2022. Using a zero-discount rate could help choose better projects and help get to net zero carbon. World Bank (Blog, Posted: January 18, 2022).
https://blogs.worldbank.org/governance/using-zero-discount-rate-could-help-choose-better-projects-and-help-get-net-zero-carbon

Assignments:
Briefing Analysis #1 assignment will be distributed. This involves qualitative analysis leading to recommendations on the suitability of using compact fluorescent light (CFL) bulbs in six randomly selected cities around the world (i.e., whether there is likely net benefit or net cost in terms of sustainability economics). This assignment builds on initial work undertaken by earlier classes, the results of which were summarized in the following article:

Parsons, R.V., 2015. Not-so-good nature of compact fluorescent light bulbs in Manitoba. Eco-Journal (Manitoba Eco-Network) 25(3): 5,9.
http://mbeconetwork.org/wp-content/uploads/2016/02/Eco-Journal-Fall15_Online.pdf

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Week 2 (Wednesday January 31st, 2024)

Part A Discussion:
Briefing Analysis #1 in-class discussion of results, i.e., what was important (few minutes each)?
"Sustainable development" definition and analysis approaches; additional background review and updating of relevant mathematics (using financial principles, i.e., PVIFA, to combine capital and operating components of costs); applying environmental economics principles to specific pollutants, i.e., basis for pollution pricing systems (emission-fee systems, and tradeable permit systems).
Reference textbook material: Tietenberg et al. (2009) Chapters 5 and 6.

Part B Discussion:
Air pollution from stationary and mobile (i.e., vehicle) sources.
Reference textbook material: Tietenberg et al. (2009) Chapters 7 and 8.

Assignments:
Briefing Analysis #1 written submission is due by the time of the beginning of the class. The assignment needs to have been sent electronically to instructor via email or UM Learn with postmark of no later than 6:15 PM, January 31st, 2024.
Briefing Analysis #2 assignment will be distributed. This assignment involves evaluating the "cost per tonne" for emission reductions from the federal carbon pricing backstop (carbon tax) in applicable provinces, and resulting implications regarding the ongoing effectiveness of this policy. This briefing assignment follows from similar work done by student over the past several years.

Additional optional background reading on carbon pricing approaches (optional):

How carbon tax should work: McKitrick, R. 2016. Practical guide to the economics of carbon pricing. SPP Research Papers 9(28), School of Public Policy, University of Calgary.

https://www.policyschool.ca/wp-content/uploads/2016/02/Carbon-Pricing-McKitrickFINAL.pdf
Case for broadening carbon taxes: The Economist. 2020. The contentious and correct option, Briefing on Taxing Carbon. (May 23, 2020 issue, pages 56-59). https://www.economist.com/briefing/2020/05/23/the-world-urgently-needs-to-expand-its-use-of-carbon-prices
How tax not working: Parsons, R. 2019. Carbon-tax ambitions reduced to pure misdirection. *Winnipeg Free Press*, Analysis Section (Friday October 18, 2019 print edition, page A7). https://www.winnipegfreepress.com/opinion/analysis/carbon-tax-ambitions-reduced-to-pure-misdirection-563353012.html
Additional dissent: Jaccard, M. 2016. Want an effective climate policy? Heed the evidence: Carbon taxes and caps may be most effective in economic theory, but smart regulation will produce better climate policy for our political reality. *Policy Options* (February 2, 2016). https://policyoptions.irpp.org/magazines/february-2016/want-an-effective-climatepolicy-heed-the-evidence/
Recent peer reviewed article by Parsons: Parsons, R.V. 2021. Canada as a case study for balanced presentation to address controversy on emission reduction policies. *Sustainability* 13(14): 7909. https://www.mdpi.com/2071-1050/13/14/7909/pdf

Additional recent articles on climate change, carbon pricing and mitigation (optional):

The Economist. 2019. The climate issue, Leader. (September 21, 2019 issue, page 13): https://www.economist.com/leaders/2019/09/19/the-climate-issue
The Economist. 2019. What goes up, Briefing on Climate Change (September 21, 2019 issue, pages 26-32): https://www.economist.com/briefing/2019/09/21/the-past-present-and-future-of-climate-change
EcoFiscal Commission. 2019. *Bridging the Gap: Real Options for Meeting Canada's 2030 GHG Target*. c/o McGill University, Montreal, Canada. Report Portal: https://ecofiscal.ca/reports/bridging-gap-real-options-meeting-canadas-2030-ghg-target/
The Economist. 2018. Technology Quarterly, Toward Zero Carbon: Conquering CO_2. (December 1, 2018 issue, 12 pages). https://www.economist.com/technology-quarterly/2018-12-01

Additional recent alternative views regarding carbon taxation even via Economist Magazine (optional):

The Economist. 2023. What does the perfect carbon price look like? Making the best method of tackling climate change even better. (June 1, 2023 issue): https://www.economist.com/finance-and-economics/2023/06/01/what-does-the-perfect-carbon-price-look-like
Ho, B. 2022. Prioritising innovation: the case against the carbon tax: A guest op-ed from Ben Ho, professor of economics at Vassar College and former lead energy economist for the White House Council of Economic Advisers. Economist Impact (Blog posted November 16th, 2022). https://impact.economist.com/sustainability/net-zero-and-energy/prioritising-innovation-the-case-against-the-carbon-tax-ben-ho

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Week 3 (Wednesday February 7th, 2024)

Part A Discussion:
Briefing Analysis #2 in-class discussion of results, i.e., what was important (few minutes each)?
Water pollution; and wastes.

Reference textbook material: Tietenberg et al. (2009) Chapters 9 and 10.
Additional readings (optional):

The Economist. 2019. Water: Climate change and population growth are making the world's water woes more urgent. (March 2, 2019, Special Report, pages 5 to 7). https://www.economist.com/special-report/2019/02/28/climate-change-and-population-growth-are-making-the-worlds-water-woes-more-urgent (Accessible via Library system)
The Economist. 2018. Troubled Water: Can conservation save our ocean? (Video, March 7, 2018). https://www.youtube.com/watch?v=BFtrZoaqqtM
The Economist. 2019. Thirsty planet: Special report on water. (March 2, 2019, print edition, remainder of special report). https://www.economist.com/printedition/specialreports?page=2
The Economist. 2018. Cash for trash: How the world should cope with its growing piles of rubbish, Leader. (September 29, 2018, print edition, page 16). https://www.economist.com/leaders/2018/09/27/how-the-world-should-cope-with-its-growing-piles-of-rubbish
The Economist. 2018. A load of rubbish: Special report on waste. (September 29, 2018, print edition, 12 pages). https://www.economist.com/special-report/2018/09/27/emerging-economies-are-rapidly-adding-to-the-global-pile-of-garbage

Part B Discussion:
Global environmental issues.
Reference textbook material: Tietenberg et al. (2009) Chapters 13 and 14.

The overall topic for the major project (cost benefit analysis) reports will be introduced, as well as the specific subjects for the two student teams, and selection/assignment of students to individual teams (random draw can be used as required).

Assignments:
Briefing Analysis #2 written submission is due at the beginning of the class. The assignment needs to have been sent electronically to instructor via email or UM Learn with postmark of no later than 6:15 PM, February 7th, 2024.
Briefing Analysis #3 assignment will be distributed. This assignment will look at the relative dangers and comparative costs imposed by different sorts of water pollution incidents. The assignment will include discussion of the Energy East pipeline that was a topical subject and controversy across Canada. (This assignment was deemed by students in earlier classes to be both interesting and informative).

Week 4 (Wednesday February 14th, 2024)

Part A Discussion:
Briefing Analysis #3 in-class discussion of results, i.e., what was important (few minutes each)?
More detailed discussion of cost-benefit analysis, including typical CBA components.

Optional reading:

Treasury Board of Canada Secretariat. 2007. Canadian Cost-Benefit Analysis Guide. Government of Canada: https://www.tbs-sct.gc.ca/rtrap-parfa/analys/analys-eng.pdf (Copy of this document will also be provided via UM Learn).

Part B Discussion:
Biodiversity and implications; management and allocation of resources that are limited or can be depleted (leads to important model explaining over-exploitation of limited resource species).
Reference textbook material: Tietenberg et al. (2009) Chapters 11 and 12.

Additional material (optional):

The Economist. 2021. How should economists think about biodiversity? A new report for the British government lays out a framework. (February 6th, 2021 issue). https://www.economist.com/finance-and-economics/2021/02/06/how-should-economists-think-about-biodiversity

Dasgupta, P. 2021. The Economics of Biodiversity: The Dasgupta Review. Her Majesty's Treasury, Government of the United Kingdom, London, UK. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/962785/The_Economics_of_Biodiversity_The_Dasgupta_Review_Full_Report.pdf

The Economist. 2023. Saving the rainforests would be a bargain: Far more money is needed to make conservation more profitable than slash and burn. (March 2nd, 2023 issue). https://www.economist.com/leaders/2023/03/02/saving-the-rainforests-would-be-a-bargain

Assignments:
Briefing Analysis #3 written submission is due at the beginning of the class. The assignment needs to have been sent electronically to instructor via email or UM Learn with postmark of no later than 6:15 PM, February 14th, 2024.

Case #1 assignment will be distributed, and case document provided via UM Learn. You will have two weeks to work on the written submission, and the case will be discussed during the first half of the class on February 28th, 2024.

Week 5 (Wednesday March 1st, 2023)

Part A Discussion:
Class discussion of Case #1 will be undertaken using assigned questions for guidance.
Further background on the methods involved with Case #1 and associated rationale will be presented, along with potential applications of the method, as employed, and implications.
Law and regulation in terms of environment, and their relevance and implications; alternative methods of addressing environmental issues.

Part B Discussion:
Corporate social responsibility (CSR).

Reading on CSR (you should read this article):

The Economist. 2008. Just good business: A special report on corporate social responsibility. (January 19th 2008 issue). http://www.economist.com/sites/default/files/special-reports-pdfs/10490978.pdf

Additional background material (optional):

The Economist. 2019. What companies are for? Competition, not corporatism, is the answer to capitalism's problems (Leader). (August 24th, 2019, print edition, pages 7-8). https://www.economist.com/leaders/2019/08/22/what-companies-are-for

The Economist. 2019. I'm from a company, and I'm here to help: Briefing on corporate purpose. (August 24th, 2019 issue, print edition, pages 14-16). https://www.economist.com/briefing/2019/08/22/big-business-is-beginning-to-accept-broader-social-responsibilities
These latter articles are more recent, and reflect changing corporate attitudes on social issues.

Additional useful guidance document from Industry Canada (optional):

Industry Canada. 2014. Corporate Social Responsibility (CSR): An Implementation Guide for Canadian Business. Government of Canada, Ottawa, Canada. https://www.ic.gc.ca/eic/site/csr-rse.nsf/vwapj/CSRImplementationGuide.pdf/$file/CSRImplementationGuide.pdf

Additional recent academic-oriented materials (optional):

Kitzmueller, M., and J. Shimshack, 2012. Economic perspectives on Corporate Social Responsibility. Journal of Economic Literature 50(1): 51-84. http://econ.tulane.edu/shimshack/post_CSR.pdf
Albuquerque, R., A. Durnev and Y. Koskinen. 2014. Corporate social responsibility and firm risk: Theory and empirical evidence. Centre for Economic Policy Research (CEPR). Discussion Paper No. 9533. http://capitalism.wfu.edu/wp-content/uploads/2016/03/Koskinen-Paper.pdf

Assignments:
Case #1 written submission is due at the beginning of the class. The assignment needs to have been sent electronically to instructor via email or UM Learn with postmark of no later than 6:15 PM, February 28th, 2024.

Briefing Analysis #4 assignment will be distributed. This involves a significant social responsibility issue, with unexpected adverse cost implications, and will specifically deal with the 2016 documentary film entitled, "Angry Inuk" by film-maker Aletha Arnaquq-Baril, who is based in Nunavut.

Week 6 (Wednesday March 6th, 2024)

Part A Discussion:
Briefing Analysis #4 in-class discussion of results, i.e., what was important (few minutes each)?
Hazardous wastes, and hazardous goods and materials.
Some additional discussions on plastics and concerns regarding attempts to classify these as "toxic" under the Canadian Environmental Protection Act (CEPA).

Additional reading on hazardous materials and industry (optional):

The Economist. 2018. Hazard signs: Chemicals firms are facing a regulatory and consumer backlash against some of their best-selling products (November 12th 2018, print edition, pages 65-67). https://www.economist.com/business/2018/11/17/upheaval-in-the-chemicals-industry

Additional materials specifically regarding plastics and toxicity/hazard classification (optional):

In favour of toxic classification: Rochman, C.M., M.A. Browne, B.S. Halpern, B.T. Hentschel, E. Hoh, H.K. Karapanagioti, L.M. Rios-Mendoza, H. Takada, S. Teh and R.C. Thompson. 2013. Classify plastic waste as hazardous. *Nature* 494: 169–171. https://www.nature.com/articles/494169a
Walker, T.R. 2021. Canada is right to classify single-use plastics as toxic. *Nature* (Correspondence). https://www.nature.com/articles/d41586-021-01701-9
Not in favour of toxic classification: Fraser Institute. 2023. Court ruling on plastics ban welcome news for Canadians. Blog Posting (November 17, 2023). https://www.fraserinstitute.org/blogs/court-ruling-on-plastics-ban-welcome-news-for-canadians

Part B Discussion:
Lifecycle assessment (LCA).

Background readings on LCA (optional):

Rajagopal, D., C. Vanderghem and H.L. MacLean. 2017. Life cycle assessment for economists. *Annual Review of Resource Economics* 9: 361-381. https://www.annualreviews.org/doi/10.1146/annurev-resource-100815-095513#:~:text=Life%20cycle%20assessment%20(LCA)%20is,product%27s%20end%2Dof%2Dlife

Rebitzer. G. T. Ekvall, R. Frischknecht, D. Hunkeler, G. Norris, T. Rydberg, W.-P. Schmidt, S. Suh, B.P. Weidema, D.W. Pennington. 2004. Life cycle assessment, Part 1: Framework, goal and scope definition, inventory analysis, and applications. *Environment International* 30(5): 701-720. http://doc.rero.ch/record/13102/files/Rebitzer_G._-_Life_cycle_assessment_part_1_framework_20091130.pdf

Guinee, J.B., R. Heijungs, G. Huppes, A. Zamagni, P. Masoni, R. Buonamici, T. Ekvall and T. Rydberg. 2011. Life cycle assessment: Past, present, and future. *Environment Science and Technology* 45(1): 90-96. http://pubs.acs.org/doi/abs/10.1021/es101316v (Accessible via Library system)

Assignments:
Briefing Analysis #4 written submission is due at the beginning of the class. The assignment needs to have been sent electronically to instructor via email or UM Learn with postmark of no later than 6:15 PM, March 6th, 2024.

Case #2 for analysis will be identified, and assignment question document provided via UM Learn. Note, that you will need to purchase this case on-line from the Ivey School of Business, but at very modest cost (https://www.iveycases.com/). If you encounter any issues in this regard, please contact instructor. You will have two weeks to work on the written submission, and the case will be discussed during the first half of the class on March 20th, 2024.

Week 7 (March 15th, 2023)

Part A: Course basic-concepts examination.

Part B Discussion:

Implications for conventional energy and petroleum supplies, regarding social license and changing price situation; and application of balanced presentation technique (refer to Case #1) focusing on carbon taxation.

Background readings (optional, but useful for references):

The Economist. 2016. Breaking the habit: A special report on the oil industry. (November 26th 2016 issue). https://www.economist.com/news/special-report/21710628-worlds-use-oil-approaching-tipping-point-writes-henry-tricks-dont-expect

The Economist. 2019. To the last drop: Saudi Arabia's strategy to survive the end of oil (Leader). (November 2nd, 2019 issue, print edition, page 11). https://www.economist.com/leaders/2019/10/31/the-message-from-the-worlds-biggest-and-wildest-ipo (These articles can be accessed electronically through the Library system)

Cleland, M., L. Nourallah and S. Fast. 2016. Fair Enough: Assessing Community Confidence in Energy Authorities. CanadaWest Foundation and University of Ottawa. http://cwf.ca/wp-content/uploads/2016/04/NRP_FairEnough_Report_11APR2016-1_WEB.pdf

Colton, J., K. Corscadden, S. Fast, M. Gattinger, J. Gehman, M.H. Findlay, D. Morgan, J. Sayers, J. Winter and A. Yatchew. 2016. Energy Projects, Social Licence, Public Acceptance and Regulatory Systems in Canada: a White Paper. SPP Research Paper 9(20), School of Public Policy, University of Calgary. http://www.energy.ca/energycouncil/sites/default/files/files/Of-Note-Publications/cnepra_-_energy-white-paper.pdf

Energy and Mines Ministers Conference. 2016. Facilitating Responsible Mineral and Energy Development – Compendium of Case Studies on Building Public Confidence in the Mineral and Energy Resource Sectors. Natural Resources Canada, Ottawa, Canada. https://www.nrcan.gc.ca/sites/www.nrcan.gc.ca/files/emmc/pdf/Compendium_access_16-0059%20eng.pdf

On the flipside, more recent and growing lack of confident in government environmental policies:

Ballingall, A. 2023. Trudeau government's climate plan for 2030 can't be trusted, environment commissioner says: In a new audit tabled released Tuesday, the environment watchdog determined the plan relies on "overly optimistic assumptions" about the success of Liberal climate policies, lacks deadlines, and clear predictions about how almost all of its measures will slash emissions that cause climate change. Toronto Star (Posted: Tuesday, November 7, 2023). https://www.thestar.com/politics/federal/trudeau-government-s-climate-plan-for-2030-can-t-be-trusted-environment-commissioner-says/article_5545c47b-c934-5904-beaa-76ee26fee226.html

Williams, N. and S. Scherer. 2023. Canada's Justin Trudeau climate strategy questioned after carbon tax dilution. Reuters (Posted: November 14, 202311:07 AM CST). https://www.reuters.com/world/americas/canada-pm-justin-trudeaus-climate-strategy-questioned-after-carbon-tax-dilution-2023-11-14/

Implications of "loss of public trust" in other sectors (optional):

The Economist. 2018. The next capitalist revolution: To rebuild public faith in markets, restore competition (Leader). (November 17th 2018 issue, print edition, pages 13-14). https://www.economist.com/leaders/2018/11/15/the-next-capitalist-revolution

The Economist. 2018. Trust-busting in the 21st century: Special report on competition. (November 17th 2018 issue, print edition, 12 pages). https://www.economist.com/special-report/2018/11/15/regulators-across-the-west-are-in-need-of-a-shake-up

Recent articles on problems with emerging modern trend toward ESG (environmental, social, governance) approaches, particularly relating to investments:

The Economist. 2022. Three letters that won't save the planet (Leader). (July 23rd 2022 issue, print edition, page 9). https://www.economist.com/weeklyedition/2022-07-23

The Economist. 2022. A broken idea: Special report on ESG investing. (July 23rd 2022 issue, print edition, 12 pages). https://www.economist.com/special-report/2022-07-23

Assignments:
There are no assignments due or distributed this week.

Week 8 (March 22nd, 2023)

Part A Discussion:
Class discussion of Case #2 will be undertaken. In terms of guidance, based on your analysis, the discussion is framed around two questions: (1) What are the top three recommended actions for the company in the short-term? and (2) What are the top three recommended actions for the company in the long-term?

Part B Discussion:
Environment and social responsibility implications of clothing manufacturing (setting up the last briefing analysis assignment).

Assignments:
Case #2 written submission is due at the beginning of the class. The assignment needs to have been sent electronically to instructor via email or UM Learn with postmark of no later than 6:15 PM, March 20th, 2024.

Briefing Analysis #5 assignment will be distributed (noting this is the final briefing). This assignment focuses on comparing and monetizing environmental and social responsibility impacts of two different clothing items.

Week 9 (March 29th, 2023)

Part A Discussion:
Briefing Analysis #5 in-class discussion of results, i.e., what was important (few minutes each)?
Reduction of wastes and residuals, and economics of pollution prevention.

Part B Discussion:
Future of energy and associated issues.

Background readings (optional):

The Economist. 2015. Let there be light: A special report on energy and technology. (January 15th 2015 issue). http://media.economist.com/sites/default/files/sponsorships/MCR75_20150117_Accenture/20150117_Energy.pdf (This article can be accessed electronically through the Library system).

Gimon, E., M. O'Boyle, C.T.M. Clark and S. McKee. 2019. Coal Cross-Over: Economic Viability of Existing Coal compared to New Local Wind and Solar Resources. Energy Innovation. https://energyinnovation.org/wp-content/uploads/2019/03/Coal-Cost-Crossover_Energy-Innovation_VCE_FINAL.pdf
The Economist. 2017. Electrifying everything (Briefing regarding electric vehicles). (August 12th, 2017 issue, print edition, pages 16-18). https://www.economist.com/news/briefing/21726069-no-need-subsidies-higher-volumes-and-better-chemistry-are-causing-costs-plummet-after
Arbib, J. and T. Seba. 2017. Rethinking Transportation 2020-2030: The Disruption of Transportation and the Collapse of the Internal-Combustion Vehicle and Oil Industries. The ReThinkX Project. https://www.rethinkx.com/transportation
The Economist. 2017. The price of jam: Road-pricing has long been a good idea. Today it is an urgent one. International section. (August 5th, 2017 issue, print edition, pages 45-46). https://www.economist.com/news/international/21725765-ride-sharing-and-electric-cars-take-governments-are-seeking-new-ways-make
Gill, V., B. Flemming, P. Godsmark and B. Kirk. 2015. Automated Vehicles: The Coming of the Next Disruptive Technology. Conference Board of Canada http://www.conferenceboard.ca/e-library/abstract.aspx?did=6744
The Economist. 2018. Who is behind the wheel? (Leader). (March 3rd, 2018 issue, print edition, page 14). https://www.economist.com/leaders/2018/03/01/self-driving-cars-offer-huge-benefits-but-have-a-dark-side
The Economist. 2018. Reinventing wheels: Special report on autonomous vehicles. (March 3rd, 2018 issue, print edition, 12 pages). https://www.economist.com/special-report/2018/03/01/autonomous-vehicles-are-just-around-the-corner
The Economist. 2017. Sacred spaces (Briefing on parking). (April 8th, 2017 issue, print edition, pages 19-20, 22) https://www.economist.com/news/briefing/21720269-dont-let-people-park-free-how-not-create-traffic-jams-pollution-and-urban-sprawl

Assignments:
Briefing Analysis #5 written submission is due at the beginning of the class. The assignment needs to have been sent electronically to instructor via email or UM Learn with postmark of no later than 6:15 PM, March 27th, 2024. (This is the last briefing analysis assignment due).

Week 10 (April 5th, 2023)

Part A and Part B Discussions:
Presentations of key findings of major project work by student teams (random order).
Final general discussions, and concluding remarks.

Deadline for submissions of Major Project reports
The major project report is to be forwarded electronically to instructor via email or UM Learn, but must have email or UM Learn postmark of no later than 6:15 PM CST, April 10, 2024. You can send earlier if desired. If the report is sent via email, the instructor will acknowledge receipt so that you have documentation as such.

Late submission penalty

Late submission of any written case analysis (Case #1 and Case #2) or briefing analysis (Briefing Analysis #1 through #5) is not permitted, given their time-sensitive nature. (At the same time note that individual values for these assessment items are not large, such that if you miss one, it is not critical to success in the course).

The major project report assignment can be submitted late, but a late penalty will be imposed, with deductions outlined in the following table:

Major Project Late Submission	Mark Deductions
Late within 1 day (24 hours) of final deadline	3 marks
Late within 2 days (48 hours) of final deadline	6 marks
Late within 3 days (72 hours) of final deadline	9 marks
Late within 4 days of final deadline	12 marks
Late within 5 days of final deadline	15 marks
Late within 6 days of final deadline	18 marks
Late within 7 days of final deadline	20 marks

SUMMARY OF IMPORTANT DEADLINES

Important written assignment submission and project deadlines, and exam date are summarized in the following table):

Assignment or Project Item	Deadline
Briefing Analysis #1 written submission	Wednesday January 31st 2024 at 6:15 PM
Briefing Analysis #2 written submission	Wednesday February 7th 2024 at 6:15 PM
Assignment of Group Project teams	Wednesday February 7th 2024 during lecture time
Briefing Analysis #3 written submission	Wednesday February 14th 2024 at 6:15 PM
Case Assignment #1 written submission	Wednesday February 28th 2024 at 6:15 PM
Briefing Analysis #4 written submission	Wednesday March 6th 2024 at 6:15 PM
Concepts Examination (in-class)	Wednesday March 13th 2024 from 6:15 PM to 7:45 PM
Case Assignment #2 written submission	Wednesday March 20th 2024 at 6:15 PM
Briefing Analysis #5 written submission	Wednesday March 27th 2024 at 6:15 PM
Group Project presentations	Wednesday April 3rd 2024 over most of lecture time
Group Project written submission	Wednesday April 10th 2024 at 6:15 PM CST (Permitted late but with penalty applied)

ACADEMIC REGULATIONS AND STUDENT SERVICES

HUMAN ETHICS APPROVAL FOR DATA COLLECTION

As part of coursework, if you will be collecting data from people who are not students in this class, you must obtain Human Ethics approval from the UofM's Research Ethics Board (REB) prior to data collection. This applies to data collection such as surveys, interviews, focus groups, experiments, video recording, etc., where a respondent is solicited for participation.

If the entire class will be working on the same project, your instructor will apply for human ethics approval from the REB. If individuals or small groups of students will be working on different projects, it is the responsibility of the students to obtain approval (only one group member needs to apply). Your instructor will tell you whether s/he will be or you need to. **When in doubt, please talk to your instructor.**

Instructions and forms to apply for human ethics approval can be found at:
http://umanitoba.ca/research/orec/ethics/guidelines.html

In most cases, you will be using the "Protocol Submission Form" which is under the "REB Forms - Fort Garry Campus" heading.

It can take up to six weeks to process human ethics applications and obtain approval. Therefore, plan early. Note that approval must be obtained prior to data collection and cannot be obtained during the data collection phase or retroactively. Violation can get you, your instructor, and the Asper School in serious trouble with the REB.

The following do not require REB approval:

a) Projects where students are conducting the research on themselves during class time;
b) Projects involving the use of records or information that is in the public domain, including the use of anonymous secondary data and surveys or questionnaires that have already been published;
c) Projects involving the use of naturalistic observation where there is no reasonable expectation of privacy (i.e., public park).
d) Practicum or job training projects where students are fully integrated into the organization's operational practices and are not conducting research;
e) Projects where the intent is to use the information to provide advice, diagnosis, identification of appropriate interventions or general advice for a client;
f) Projects where the intent is to develop skills which are standard practice within a profession (e.g. observation, assessment, intervention, evaluation, auditing); or
g) Projects where the information gathering processes are part of the normal professional relationship between the student and the participants.

If you have any questions, please contact humanethics@umanitoba.ca or your instructor.

UNCLAIMED ASSIGNMENT POLICY

Pursuant to the FIPPA Review Committee's approved recommendations of August 15, 2007, all unclaimed student assignments will become the property of the faculty and will be subject to destruction six months after the completion of any given academic term.

STUDENT SERVICES AND SUPPORTS

The University of Manitoba provides many different services that can enhance learning and provide support for a variety of academic and personal concerns. You are encouraged to visit the below websites to learn more about these services and supports. If you have any questions or concerns, please do not hesitate to contact your instructor or the Graduate Program Office.

For Information on…	**…follow this link**
Course Outlines, Year-at-a-Glance, Concentrations, Textbooks, VW Dates and Final Exams	Asper Graduate Student Resources
Exam Rescheduling Policy - *Please refer to Missing a Test/Exam on page 18 of the MBA Student Handbook*	MBA Student Handbook
Help with research needs such as books, journals, sources of data, how to cite, and writing	Library Resources
Tutors, workshops, and resources to help you improve your learning, writing, time management, and test-taking skills	Writing and Learning Support
Support and advocacy for students with disabilities to help them in their academic work and progress	Student Accessibility Services
Copyright-related questions and resources to help you avoid plagiarism or intellectual property violations	Copyright Office
Student discipline bylaws, policies and procedures on academic integrity and misconduct, appeal procedures	Academic Integrity
Policies & procedures with respect to student discipline or misconduct, including academic integrity violations	Student Discipline
Students' rights & responsibilities, policies & procedures, and support services for academic or discipline concerns	Student Advocacy
Your rights and responsibilities as a student, in both academic and non-academic contexts	Your rights and responsibilities
Full range of medical services for any physical or mental health issues	University Health Service
Information on health topics, including physical/mental health, alcohol/substance use harms, and sexual assault	Health and Wellness
Any aspect of mental health, including anxiety, stress, depression, help with relationships or other life concerns, crisis services, and counselling.	Student Counselling Centre
Support services available for help regarding any aspect of student and campus life, especially safety issues	Student Support Case Management
Resources available on campus, for environmental, mental, physical, socio-cultural, and spiritual well-being	Live Well @ UofM
Help with any concerns of harassment, discrimination, or sexual assault	Respectful Work and Learning Environment
Concerns involving violence or threats, protocols for reporting, and how the university addresses them	Violent or Threatening Behavior

It is critical to the reputation of the I. H. Asper School of Business and of our degrees that everyone associated with our faculty behaves with the highest academic integrity. As the faculty that helps create business and government leaders, we have a special obligation to ensure that our ethical standards are beyond reproach. Any misconduct in our academic transactions violates this trust. The University of Manitoba Graduate Calendar addresses the issue of academic misconduct under the heading "Plagiarism and Cheating." Specifically, acts of academic misconduct include, but are not limited to:

- using the exact words of a published or unpublished author without quotation marks and without referencing the source of these words
- duplicating a table, graph or diagram, in whole or in part, without referencing the source
- paraphrasing the conceptual framework, research design, interpretation, or any other ideas of another person, whether written or verbal (e.g., personal communications, ideas from a verbal presentation) without referencing the source
- copying the answers of another student in any test, examination, or take-home assignment
- providing answers to another student in any test, examination, or take-home assignment
- taking any unauthorized materials into an examination or term test (crib notes)
- impersonating another student or allowing another person to impersonate oneself for the purpose of submitting academic work or writing any test or examination
- stealing or mutilating library materials
- accessing tests prior to the time and date of the sitting
- changing name or answer(s) on a test after that test has been graded and returned
- submitting the same paper or portions thereof for more than one assignment, without discussions with the instructors involved.

Many courses in the I. H. Asper School of Business require group projects. Students should be aware that group projects are subject to the same rules regarding academic misconduct. Because of the unique nature of group projects, all group members must exercise extraordinary care to insure that the group project does not violate the policy on Academic Integrity. Should a violation occur on a group project, all group members will be held jointly accountable, no matter what their individual level of involvement in the specific violation.

Some courses, while not requiring group projects, encourage students to work together in groups (or at least do not prohibit it) before submitting individual assignments. Students are encouraged to discuss this issue as it relates to academic integrity with their instructor to avoid violating this policy.

In the I. H. Asper School of Business, all suspected cases of academic misconduct involving a graduate student (i.e., MBA, MFin, MSCM, MSc or PhD student) will be reported directly by the instructor to the Dean of the Faculty of Graduate Studies.

Specific information regarding use of AI Tools:

AI TOOLS	AI tools can be used to enhance learning and problem-solving skills, but they should not replace independent thinking and learning. Students must exercise critical thinking when using AI tools and acknowledge their use in academic work. Prohibited uses include generating or completing academic work with AI tools without appropriate acknowledgement. Academic honesty is paramount, and students should accurately represent their individual effort and knowledge. Faculty will provide guidance on AI tool usage and incorporate discussions on AI ethics and academic integrity. Violations may lead to disciplinary actions, including academic penalties or suspension.

Robert V. Parsons, PhD, MBA, MSc, BSc
Sessional Instructor, I.H. Asper School of Business, Department of Supply Chain Management

Dr. Robert Parsons has an eclectic background, both academically and in terms of work experience.

Academic Background:

Dr. Parsons holds technical degrees in Chemical Engineering (B.Sc. and M.Sc.) from the University of Calgary, and a doctorate in Bio-Systems Engineering from the University of Manitoba. The latter also involved a significant business-related orientation, i.e., looking at the development of a novel process to recover multiple high-value constituents from flax shive as feedstock; the latter a low-cost, high-volume agricultural processing waste unique to Manitoba. He also holds a M.B.A., with distinction, from the Schulich School of Business at York University, Toronto, with a specialization in Business and the Environment. His background also has been strongly oriented to quantitative analysis using a variety of different techniques.

Dr. Parsons holds a Certification in Higher Education Teaching (C.H.E.T.) from University Teaching Services at the U of M (now the Centre for Advancement of Teaching and Learning or CATL) since 2008, and has taught Sustainability Economics (IMD 7090 G05) as part of Asper Graduate Programs since the inception of the course. More recently he has been teaching M.B.A., M.Fin., and M.S.C.M. students for the "boot-camp" mathematics course (MSCI 5110 Basic Quantitative Methods for Management), as well as Introduction to Supply Chain Management (SCM 2230) for undergraduate students. Recently at the graduate level, he taught Logistics Management (SCM 7040), and also co-led the highly-successful 2023 International Study Tour to Iceland for M.B.A. students (IDM 7050). He earlier taught as part of the Certificate in Public Sector Management (C.P.S.M.) program under Extended Education.

Professional Work Experience:

For more than fifteen years, Dr. Parsons worked as an advanced energy and technology consultant with the Manitoba Government. He has been directly involved in a variety of novel technology areas, including electric and fuel cell cars and transit buses. For example, he was directly involved with the on-route demonstration of four second-generation electric buses begun in 2014 by Winnipeg Transit. Since 2017 he has authored more than twenty op-ed style articles primarily relating to sustainability that have been published locally in the Winnipeg Free Press, and was a co-author of an op-ed article in the national journal *Policy Options*. Most recently in 2021, he had a paper accepted in the peer-reviewed journal *Sustainability*. Dr. Parsons has been extensively involved with heavy-duty vehicle applications, regarding reduction of carbon footprints.

Interesting Fact:

In March 2011, directly as part of electric transit bus development and demonstration activities, Dr. Parsons was one of four Manitobans visiting in the Tokyo area of Japan, and was present when the Tohoku earthquake (and associated tsunami) struck. This is the most powerful earthquake ever recorded in Japan, and the fourth most powerful ever recorded in the world.