

UNIVERSITY OF COLORADO AT DENVER
The Business School

BUSN 6870, Section E01
Business and Global Climate Change
Summer 2018 – June 4 to July 27

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COURSE OVERVIEW

This class was offered for the first time Fall 2010. At that time it was one of just four MBA classes, that I am aware of, that addressed climate change from the perspective of business. That is one of four in the world. The subject is huge and its potential importance to businesses might be very important, so I think the topic deserves an entire class. Climate change and its ramifications are also incredibly interesting

For this version of the class I have added a couple of topics and tried to update some others. I am sure I missed some relevant material. Hopefully, class participants will identify some of those as the term progresses.

I hope the class provides information that you can use to assure that your organization is prepared for some of the climate-related changes that could occur in the next 20 or 30 years. If climate change occurs as scientists predict, managers will increasingly have to consider climate-related costs and risks, regulatory requirements, disclosure and develop competitive products and services for a low carbon world. No matter what your personal views are about climate change, most corporations will have to develop a climate strategy or plan. More progressive companies will find ways to turn this potentially serious constraint into some sort of opportunity and thereby shape their own destiny rather than having it determined for them. I hope this class helps you be in that group of ‘destiny-shapers’ as you progress through your career.

COURSE OBJECTIVES

- Discuss the business case for preparing for climate change
- Introduce the predicted impacts of climate change as currently understood.
- Consider how carbon emissions are measured and assigned to countries.
- Consider policy responses (implemented and being discussed) to climate change.
- Learn how companies are implementing an internal carbon price.
- Learn the basics of computing and reporting their carbon footprint.
- Consider how to set a science-based carbon emissions reduction target.
- Develop a carbon/climate strategy for a company.

PREREQUISITES

There are no formal prerequisites for this course.

VIRTUAL OFFICE HOURS, E-MAIL AND CONTACT INFORMATION

I check e-mail and the class website often, though weekends can be filled with family activities. When you send an e-mail be sure to put your name in the note and have BUSN/INTB 6870 in the subject line. I am teaching two classes this semester and this will help me better understand and respond to your question. In case you need it, my home phone is 970-247-9182. We turn in early, so please limit calls to the hours of 8:00 a.m. and 9:30 p.m. My e-mail address is: john.byrd@ucdenver.edu

COURSE MATERIALS

Textbook: The Climate Casino by William Nordhaus, Yale University Press, 2013.

Other readings: Other materials will be downloaded from the class website at no cost.

Class Schedule

Week	Date	Topic
1	4-Jun	Introductions; Business Case for addressing climate change; Basics of Climate Change; Impacts of climate change
2	11-Jun	Measurement and Numbers; Carbon footprinting
3	18-Jun	Mitigating climate change; Adapting to Climate Change;
4	25-Jun	Context and Science-based Targets; Carbon Reporting
5	2-Jul	Climate policies (Trading, Tax, Club); Kyoto; Paris, INDCs
6	9-Jul	Examples of corporate carbon strategies; H&M Response
7	16-Jul	Internal carbon pricing; Shareholder activism over climate
8	23-Jul	Snowflake Ski Area; Project

Assignments

Country emissions data (Week 1: due Tuesday, June 12)	Pass/Fail
Carbon Footprint Case (Week 2: due Tuesday, June 19)	Pass/Fail
Mitigation or Adaptation example (Week 3: due Tuesday, June 26)	Pass/Fail
Carbon Reporting SASB Metrics (Week 4: due Sunday, July 8)	50
H&M case response (Week 6: due Tuesday, July 18)	50
Snowflake Ski Area case (due Friday, July 27)	100
<u>Final Project (Week 8: due Tuesday July, 24)</u>	<u>100</u>
Total	300

Assignment descriptions

Country emissions data: Choose a country and find its most recent (probably 2014) emissions without and without LULUC and its methane emissions. Pass/No pass.

Carbon Footprint Case: Compute the carbon footprint for Simon Pearce. You may work with one other person on this assignment. Pass/No pass.

Mitigation or Adaptation example: Post an image and commentary of a way to reduce carbon emissions or adapt to climate change. You do only one (mitigation or adaptation). Pass/No pass.

Carbon Reporting & SASB Metrics (50 points): SASB (Sustainable Accounting Standards Board) has identified key sustainability indicators for about 80 industries. For this assignment you will choose an industry, find the appropriate SASB metrics (I will

post the entire SASB metric document, so you will have to scroll through it to the industry you are interested in) then find 3 companies in the industry (SASB lists some of the larger ones). Once you have identified an industries and companies you will look for their sustainability reports. At least two companies need to have sustainability or CSR reports. You may have to expand you company group beyond three to find two with CSR reports. Note the companies you could not find reports for. For the two (maybe three) companies with reports look for the following:

- Does the report contain the SASB recommended metrics?
- Is the carbon emissions disclosure complete, e.g., Scope 1 and 2, maybe some Scope 3? Emissions reported in absolute MtCO₂e and with some sort of intensity metric.
- Does the company set a carbon emissions target? If so, is it science-based or does it recognize the 2° target?
- Does the company mention carbon or climate risk?
- Other interesting things that are in or aren't in the report.

H&M Case Response (Week 6) Submit a one-page response to posted questions the sustainability of fast or luxury fashion. This assignment goes beyond climate change to look at sustainable business more broadly. It also is a chance to introduce the circular economy movement.

Ski Area Carbon Strategy Case (Week 7) Develop a carbon (or more broadly a sustainability) strategy for a small ski area.

Final Project (Week 8 – Due date Tuesday, July 25) This is a presentation of an approved topic related to climate, carbon or energy. The presentations will be posted on the class website so everyone can review them. Your topic must be related to business and climate change to be accepted.

Grading

The Business School suggests that the average GPA for most MBA classes should be between 3.1 and 3.6. This class has several small assignments that I will grade as Pass/Fail. These are fairly straight-forward and don't lend themselves to distinguishing between students. If you submit a pass/fail assignment that needs improvement, I'll send it back with instructions about what needs to be revised. I expect everyone to earn a Pass on all of these assignments. The final four assignments do allow for more thought, so there may be some variability in the quality of the submissions. These I'll assign points to these submissions. The final grades for this class have traditionally been very high.

Reading List

Readings will be posted in the module for the week they are assigned. The reading list is long. Read the Nordhaus chapters then pick a few things in each week to read. The Optional items are really optional. If you see something that interests you, look at, otherwise don't worry about those items.

Week 1 Climate Change and its Impacts

The objective of this week's lecture and readings is to give you a sense of the risks that climate change may pose to businesses and other organizations.

Nordhaus Part 1 (Chapters 1 through 5)

Skim the first chapters, read Page 44 discusses albedo and how it introduces uncertainty into climate models. Page 47 gives a good list of current findings. Chapter 5 introduces the notion of tipping points. This is an important concept.

Risky Business, The Economic Risks of Climate Change the United States, June 2014. Read the Executive Summary then skim through and look at some of the maps and graphs.

Leslie Baehr, 22 Devastating Effects of Climate Change, Business Insider, June 11, 2014.

IPCC, 2014: *Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. IPCC, Geneva, Switzerland,

Pages 6-16 and 64-74 discuss potential impacts. Look at this as a key reference manual for questions you have about the current state of climate change science. We will also use it when discussing adaptation and mitigation.

Optional (Truly optional. Only read items that interest you.)

McKinsey Global Institute, Resource Revolution: Meeting the world's energy, materials, food, and water needs, November 2011 (Chapter 5 is about climate and energy).

WRI, Adapting for a Green Economy: Companies, Communities and Climate Change, 2011, UN Global Compact, New York **Skim** pages 1-39

IFC, Climate Risk and Business: Ports, Executive Summary, April 2011, Skim to see how transportation managers are beginning to think about climate risk.

IFC, Climate Risk and Business: Financial Institutions, October 2010, Skim the Executive Summary to see how bankers are beginning to think about climate risk.

Pew Center on Global Climate Change, Climate Change 101: Understanding and Responding to Global Climate Change, January 2009

A good overview of climate change, but probably a bit redundant with my web lecture material.

Week 2 Measurement and Numbers; Carbon footprinting

Nordhaus Part 2 (Chapters 6 through 12)

In these chapters he introduces the notion of managed and unmanaged systems to distinguish between areas where we may be able to adapt and avoid or reduce climate change impacts. He also discusses key impacts and gives estimates of the cost of these impacts.

Simon Pearce, GHG case.

Mary Sotos, GHG Protocol, Scope 2 Guidance: An Amendment to the GHG Protocol Corporate Standard, January 15, 2015 (also:
<https://www.youtube.com/watch?v=gDCBsfd0-dQ>)

HP Carbon Accounting Manual

Carbon Trust UK, Carbon Footprinting.

Week 3 Mitigating Carbon Emissions and Adapting to Climate Change

Nordhaus Part 3 (Chapters 13 through 16)

Optional (Truly optional. Only read items that interest you.)

Seth Wynes and Kimberly A Nicholas, The climate mitigation gap: education and government recommendations miss the most effective individual actions, Environmental Research Letters, July 2017. Read brief summary here:
<https://www.theguardian.com/environment/2017/jul/12/want-to-fight-climate-change-have-fewer-children>

Paul C Stern and Kimberly S Wolske, Limiting climate change: what's most worth doing? Comment on Wynes and Nicholas, Environmental Research Letters, September 2017.

Eric Roston, Carbon Capture, the Vacuum Cleaner the Climate Needs, Business Week, May 17, 2018. (URL: https://www.bloomberg.com/news/articles/2018-05-18/carbon-capture-the-vacuum-cleaner-the-climate-needs-quicktake?utm_medium=email&utm_source=newsletter&utm_term=180524&utm_campaign=climatechanged)

Carbon Brief, Explainer: 10 ways 'negative emissions' could slow climate change, November 16, 2016. At: <https://www.carbonbrief.org/explainer-10-ways-negative-emissions-could-slow-climate-change>

P. Christensen, K. Gillingham and W. Nordhaus, Uncertainty in forecasts of long-run economic growth, PNAS March 2018

World Resources Institute, *Adapting for a Green Economy: Companies, Communities and Climate Change*, 2011, UN Global Compact, New York.

McKinsey & Company, *Pathway to a low-carbon economy: Version 2 of the Greenhouse Gas Abatement Cost Curve*, 2009.

Robert Socolow & Stephen Pacala, *A Plan to Keep Carbon in Check*, *Scientific American*, September 2006.

Economist, *Adapting to climate change: Facing the consequences*, November 25, 2010.

Economist, *Negawatt Hour*, March 1, 2014

National Academy of Science, *Report in Brief: Adapting to the Impacts of Climate Change*, May 19, 2010.

Socolow & Pacala, *Stabilization Wedges: Solving the Climate Problem for the Next 50 Years with Current Technologies*, *Science*, August 13, 2004, 968-972.

Heather McGray, Anne Hammill and Rob Bradley, *Weathering the Storm: Options for Framing Adaptation and Development*, World Resources Institute, 2007.

Behavior Frontiers: Can Social Science Combat Climate Change? Lisa Palmer, *Scientific American*, Dec 28, 2010

Week 4 Context and Science-based Targets; Carbon reporting

Nordhaus Part 4 (Chapters 17 through 23)

Emma Stewart and Aniruddha Deodhar, *Autodesk White Paper: A Corporate Finance Approach to Climate- stabilizing Targets (“C-FACT”)*, November 2009.

UN Global Compact, *Are You Aligning Your Emission Reduction Targets with Climate Science?*

The KPMG Survey of Corporate Responsibility Reporting 2015
Includes recommendations for better carbon reporting on page 21.

PriceWaterhouseCoopers, *Greenhouse Gas Emissions Report*, May 2009. UK-oriented, but the last few pages gives examples of how GHG emissions could be reported.

SBTi Criteria and Recommendations, *Version 2.0 24 February 2017*

SBTi, *Quick Guide to the Sectoral Stabilization Approach*. May 2015.

Chris Tuppen, *Climate Stabilisation Intensity Targets: A new approach to setting corporate climate change targets (2009?)* BT

Week 5 Climate policies (Trading, taxes and Clubs); Climate Justice

Nordhaus Part 5 (Chapters 24 through 26)

Jeremy Hodges, Lauren Leatherby and Kartikay Mehrotra, Climate Change Warriors' Latest Weapon of Choice Is Litigation, Bloomberg Business Week, May 24, 2018.
At: https://www.bloomberg.com/graphics/2018-climate-change-lawsuits/?utm_medium=email&utm_source=newsletter&utm_term=180524&utm_campaign=climatechanged

Economist, Doffing the cap: Tradable emissions permits are a popular, but inferior, way to tackle global warming June 14, 2007 (**EconomistEmissionsCapTrade.pdf**)

The Economist, ETS, RIP? April 20, 2013.

Carbon Tax versus Cap-and-Trade at: <http://www.carbontax.org/issues/carbon-taxes-vs-cap-and-trade/>

William Nordhaus, A New Solution: The Climate Club, The New York Book Review, June 4, 2015.

Barbara Adams and Gretchen Luchsinger, Climate Justice for a Changing Planet: A Primer for Policy Makers and NGOs - Chapter 2, United Nations, New York/Geneva, 2009.

Daniel Morris and Clayton Munnings, Designing a Fair Carbon Tax, Resources Magazine: 184 Resources for the Future, Washington, DC), Sep 10, 2013

Optional (Truly optional. Only read items that interest you.)

Mark Shapiro, Conning the Climate, Harper's Magazine, February 2010

Pew Center on Global Climate Change, Climate Policy Memo #1: Cap and Trade v. Taxes, Download at: <http://www.pewclimate.org/DDCF-policy-memo/cap-and-trade-v-tax>

Jenna Goodward and Alexia Kelly, Bottom Line on Offsets, World Resources Institute, August 2010

Easterbrook, Greg, *Global Warming: Who loses and who wins?* The Atlantic Monthly, April 2007.
A bit dated but very readable.

Week 6 10-July Carbon strategies

PUMA's Environmental Profit and Loss Account for the year ended 31 December 2010

H&M, *Conscious Actions* Sustainability Report 2015.

Kering EPL and Methodology (This explains the methodology used in the PUMA report)

The True Cost, a video about fast fashion available on Netflix, iTunes, etc.

Mark Bain, The Neurological Pleasures of Fast Fashion, *The Atlantic Monthly*, March 25, 2015.

Joy et al, Fast Fashion, Sustainability, and the Ethical Appeal of Luxury Brands, *Fashion Theory*, Volume 16, Issue 3, pp. 273 – 296, 2012.

Ellen MacArthur Foundation, Industry leaders join forces to Make Fashion Circular
May 16, 2018 (at: <https://www.ellenmacarthurfoundation.org/news/industry-leaders-join-forces-to-make-fashion-circular>)

Carbon Trust, International Carbon Flows – Clothing

Week 7 Internal Carbon Pricing; Investor Activism; Ski Area Carbon Strategy

IIGCC, Global Investor Survey on Climate Change Report 2010, June 13, 2011.

Ceres, U.S. Mutual Funds Backtrack in Supporting Climate Resolutions in 2010, April 8, 2011.

Ceres, Physical Risks from Climate Change: A guide for companies and investors on disclosure and management of climate impacts, May 2012

Ceres, Reducing Systemic Risks: The Securities & Exchange Commission and Climate Change, February 2014.

Nicolette Bartlett, Internal Carbon Pricing: Trends and Benefits (Slides)

Long Lam, Best practice approaches to internal carbon pricing (Slides)

Sustainable Slopes: Annual Report 2016 (an annual report by the National Ski Areas Association)

The 2016 report is at: <http://www.nsa.org/media/276021/SSAR2016.pdf>

John Branch, As Snow Fades, California Ski Resorts Are Left High and Very Dry, *New York Times*, November 23, 2014

Optional (Truly optional. Only read items that interest you.)

Ansar, Caldecott and Tilbury, Stranded assets and the fossil fuel divestment campaign: what does divestment mean for the valuation of fossil fuel assets? Smith School, Oxford University, 2013.

Mercer, Investing in a time of Climate Change, 2015

Novethic, Responsible Investors Acting on Climate Change, 2015

John Byrd and Elizabeth Cooperman, Do Shareholder Proposals Affect Corporate Climate Change Reporting and Policies? *International Review of Accounting, Banking and Finance*, Summer 2012.

Week 8 Project

Pennell, Lavery and Fowler, The Low-Carbon World Is Already Here: Five Imperatives for Succeeding in an Era of Carbon Constraints. Booz & Co., 2010.

The Economist, Climate change: Clear thinking needed, Nov 28th 2015