Environment and Society: Towards Sustainability?

MWF 12:30-1:35 pm 200 Life Science Center
X-hour Tu 1:00-1:50pm (occasional)

Instructor:	Anne Kapuscinski
Office location:	124 Fairchild
Office hours:	Tues 1-2pm (if no X-hour meeting); Fri 3-4pm; or by appointment
Office phone:	603-646-2668
Email:	anne.kapuscinski@dartmouth.edu *NOT on email nights, weekends & holidays*
Teaching Assistant:	Carissa Aoki
Office Hours:	Thursday 12:30-1:30 under the globe in Fairchild lobby, or by appointment
Email:	carissa.aoki@dartmouth.edu

*** Type "ENVS 3" at start of email subject line to help us find your messages.***

Description and Goals

What does a sustainable relationship between humans and the environment look like? The co-evolution of society and the environment involves complex and dynamic interactions whose consequences are hard (or impossible) to predict because causes and effects are often far apart in time and space. This course examines interactions between environmental and social processes through the lens of sustainability. We will explore historical roots of unsustainability—today's "great collision" between civilization and the planet—and examine underlying mental models and human activities contributing to this state of affairs. We will examine the idea, originating from ecology, that resilience (not optimization and efficiency) is the key to a sustainable relationship between society and environment. We will consider how social scientists understand institutions and power dynamics to be drivers of unsustainable or sustainable relationships between environment and society. These different ways of framing environment-society interactions will lead us to the case for pluralism: that achieving sustainability requires accommodating a plurality of worldviews and pursuing multiple approaches. The last part of the course will consider what to do, individually and collectively, to facilitate transitions to sustainability while being mindful of paradigms and ethics.

After taking this course, you should be able to:

1. Understand how current environmental problems and unsustainable trajectories have roots in history and mental models; and how examining these roots can improve decision-making.
2. Appreciate different approaches for diagnosing multiple drivers of socio-environmental change. (The course introduces environmental history, resilience theory, system dynamics, scenario analysis, institutional analysis, ecological economics, & political ecology.)
3. Articulate why sustainability is an inclusive goal involving individual, societal and environmental wellbeing (its not just about recycling or green tech…) and requiring pluralism in producing knowledge and developing options for action.
4. Critically examine the merits of real-world strategies in pursuit of sustainability.
5. Identify major opportunities for sustainability transitions and design a credible, unbiased, and substantiated analysis of a given opportunity.

Readings

Course readings, except for required books, will be available online on our course Blackboard site. Hard copies of required books are on reserve at Baker Library Reserve Desk.

Required books (~340 pages of total reading):

Cronon, William. 1983. *Changes in the Land*. New York: Hill and Wang.

Walker, B. and D. Salt. 2006. *Resilience Thinking: Sustaining Ecosystems and People in a Changing World*. Washington, DC: Island Press.

Ehrenfeld, J. R. and A. J. Hoffman. 2013. *Flourishing: A Frank Conversation about Sustainability.* Palo Alto CA: Stanford University Press.

Course Assessment

Course assessment will be based on assignments, in-class activities and participation.

Assignment*	Percentage
Two Integrating Essays	25% (#1 for 10%, #2 for 15%)
Sustainability Opportunity Proposal	40% (Written 30%, Poster 10%)
Quizzes	20%
Class Attendance & Participation	15%

* Penalty for unexcused late assignments is a 5% lower score per day. Please communicate early with instructors regarding justification for a late assignment.

Class Attendance and Participation (15% of final grade)

All students should come to class prepared. This means taking time to do the readings and be ready to discuss them in a thoughtful and respectful manner. Active learning is a guiding principle in this course and I will actively solicit classroom participation by occasionally calling on students, assuming you are prepared to respond to ideas from the readings. There will be small group discussions throughout the term, with students taking an active role in facilitating and reporting on these discussions. Assessment includes one or more homework assignments due in class for your part in a group activity.

I expect all students to be fully *present* at lectures and discussions in class and, thus, disallow use of computers and other digital technologies. Individuals needing to use a computer to take notes should *seek permission of the instructors.* For specific classes, we may invite computer use for an activity. Please see the rubric posted on the Blackboard site for a fuller explanation of assessment of class participation.

Integrating Essays (25% of final grade)

You will submit two "integrating essays"—brief writing assignments—during the term. These essays will assess your ability to apply knowledge of key concepts from course discussion and readings to novel issues or situations. These will be posted on the course Blackboard site.

Proposal on an Opportunity for Sustainability Transitions (40% of final grade)

Dartmouth has launched a new online publication, *Elementa: Science of the Anthropocene* http://www.elementascience.org/, and your instructor is leading its Sustainability Transitions domain. This domain will include forums that invite written articles and written responses about specific opportunities and challenges for sustainability transitions. (For instance, forums being planned are on: new agricultural pathways; regenerative investing; and de-carbonizing cities.) This project invites you—at this start-up phase—to propose a future forum and raise the visibility of an opportunity that truly excites you.

You will develop a proposal for a forum on a major opportunity for transitioning to more sustainable interactions between society and the environment. You will select a topic by conducting and documenting a literature search and drawing on concepts and cases covered in this course; and submit a short concept

note that identifies and briefly describes the topic and documents an initial literature search (5% of final grade). After instructor approval of your topic, you will fully develop the proposal in a final written report (25% of final grade) and make and present a poster (10% of final grade) at the end of the course. A separate handout provides more details about this assignment.

Quizzes on Readings (20% of final grade)
Short quizzes will assess if you are keeping up with the readings. These will be unannounced and administered at the beginning of a class session. Eligible material for each quiz will include readings assigned for up to three class sessions prior to the one in which the quiz is given. There will be nine quizzes of 2-3 points each.

Honor Principle

As do all courses at Dartmouth, this course requires that you familiarize yourself with the guidelines of the Academic Honor Principle concerning independent work, proper citation of other's work and general codes of learning. Please consult the Green Pages of the Dartmouth Student Handbook for additional details about the Honor Principle. The full text is available on-line at www.dartmouth.edu/~upperde/acad-regs.shtml.

Disabilities and Special Circumstances

In general, please feel free to discuss with one of the instructors questions relating to disabilities (including the so-called hidden ones such as chronic illness and learning disabilities) at the earliest possible moment. We will make every effort to ensure an adequate learning environment. In addition, we realize that some students may wish to take part in religious observances that occur during this academic term. Please come speak with one of us before the end of the second week of the term to discuss appropriate accommodations. Also, students requiring disability-related accommodations must register with the Student Accessibility Service office.

Schedule and Readings

24 March Overview of Course

PART 1: HOW DID WE END UP HERE?

26 March Unsustainable Trends in Environment and Society

Rockström, J. et al. 2009. A safe operating space for humanity. *Nature* 461 (7263):472-475.

Anonymous. 2009. Editorial: Earth's boundaries? *Nature* 461 (7263):447-448.

Raworth, K. 2013. Defining a safe and just space for humanity. Pages 28-38 in Is Sustainability Still Possible? State of the World 2013. Worldwatch Institute. Island Press, Washington, DC.

Optional: Adams, William and S. J. Jeanrenaud. 2008. *Transition to Sustainability*. Gland: IUCN. Chapter 3 (Transition, Sections 1-4, pp. 7-29)

28 March Historical Roots of Un-Sustainability

Oelschlaeger, Ch. 1, "The idea of wilderness: from Paleolithic to Neolithic culture." In: *The Idea of Wilderness: From Prehistory to the Age of Ecology*, pp. 1-30. New Haven, CT: Yale University Press.

31 March Historical Roots of Unsustainability and Mental Models

Cronon, Preface, Chapters 1-3

1 April **Required**: Last Call: a film on the history of *The Limits to Growth*
5-6:30pm Post-film Q&A with Dennis Meadows (book co-author) & Enrico Carasulo (film director)
Loew Auditorium
Co-authored by late Dartmouth professor, Donella Meadows, this study galvanized global debate on earth's capacity to withstand economic expansion

2 April Historical Roots of Unsustainability and Mental Models

Cronon, Chapters 4-6

4 April Lessons from Cronon's Environmental History
Cronon, Chapters 7 & 8
Homework due in class: key drivers of socio-environmental change (see separate assignment sheet)

7 April Resilience

Walker and Salt, Forward, Chapter 1 ("Living in a complex world"), Case Study 1 ("Florida Everglades"), Chapter 2 ("The system rules"), Case Study 2 ("Goulburn-Broken Catchment")

8 April (X) Reliable, unbiased literature searches for integrating essays and term paper

9 April Resilience (continued) – Complex adaptive systems

Walker and Salt, Chapter 3 ("Crossing the threshold"), Case Study 3 ("Coral Reefs")

Guest (coral reefs): Tyler Pavlowich, Ecology & Evol. Biol. Ph.D. Program

11 April Dynamics in resilience thinking: modeling socio-ecological systems with STELLA

No readings for today; please review the Everglades and Goulburn-Broken Catchment cases.

Guest: Steve Peterson, Thayer School of Engineering

14 April Resilience (continued) – Complex adaptive systems (con't)
Walker and Salt, Chapter 4 "In the loop" (adaptive cycles)

Guest (forestry case): Carissa Aoki, TA and Ecology & Evol. Biol. PhD Program

16 April Scenario Analysis & Resilience

Raskin, P., T. Banuri, G. Gallopin, P. Gutman, A. Hammon, Ro. Kates and R. Swart. 2002. *Great Transition. The Promise and Lure of the Times Ahead*. Stockholm Environment Institute, Boston, MA. Read Chapter 1 and Chapter 2 (pp. 13-19 most important)

Schmitt-Olabisi, L., A.R. Kapuscinski, K. Johnson, P. Reich, B. Stenquist, and K. Draeger. 2010. Using scenario visioning and participatory system dynamics modeling to investigate the future: Lessons from Minnesota 2050. *Sustainability* 2(8):2686-2706.

18 April Complex adaptive systems (cont.)

Readings: Walker and Salt, Chapter 5 "Making sense of resilience"; and Chapter 6 (focus on "What might a resilient world be like?")

PART 2: Different Approaches to Sustainability

21 April The case for pluralism in sustainability thinking

Readings: Quental, N., Lourenco, J., F. Nunes da Silva. 2011. Sustainability: Characteristics and scientific roots. *Environment, Development and Sustainability* 13:257-276.

22 April (X) no class but **DUE on Blackboard: Integrating Essay #1 by 5 pm**

23 April Flourishing: A Frank Conversation about Sustainability
Ehrenfeld and Hoffman, Chapters 1- 3

25 April Flourishing (continued)

Ehrenfeld and Hoffman, Chapters 4 - 5

28 April Practice conducting a literature search for your term paper

Guest: Barbara DeFelice, ENVS Librarian & Director, Digital Resources & Scholarly Communications

29 April (X) Flourishing – wrap up conversation with book lead author, John Ehrenfeld

Ehrenfeld and Hoffman, Chapters 6-8

Guest: Dr. John Ehrenfeld – http://www.johnehrenfeld.com/bio.html

30 April The Commons and Institutional Analysis

Ostrom, E., Burger, J., Field, C., Richard B. Norgaard, R. and D. Policansky. 1999. Revisiting the commons. *Science*, Vol. 284, pp. 278-282.

"Commons: The origins of environmental problems," Chapter 3 in Lee, K., Freudenburg, W. and R. Howarth (eds) *Humans in the Landscape: An Introduction to Environmental Studies*. New York: W. W. Norton and Company.
Guest: Professor Michael Cox

2 May Political Ecology and Sustainable Livelihoods

Guest: Professor Chris Sneddon

Neumann, Rod. 2009. Political ecology. In R. Kitchin and N. Thrift (Eds) *International Encyclopedia of Human Geography*, pp. 228-233. Elsevier.

Bassett, Thomas. 2005. Card-carrying hunters, rural poverty, and wildlife decline in northern Cote d'Ivoire. *The Geographical Journal* 171(1):71-82.

5 May Ecological Economics (part 1)

Daly, H. 2005. Economics in a full world. *Scientific American*, Sept: 100-107.

AtKisson, A. 2012. Life beyond growth: Alternatives and complements to GDP-measured growth as a framing concept for social progress. Tokyo: Institute for Studies in Happiness, Economy and Society. [FOCUS ON "Introduction", pp. 8-12]

Jeremy Grantham (investment strategist) interview: http://www.bbc.co.uk/programmes/p0148yp8

7 May Ecological Economics (part 2): Climate Change and Intergenerational Equity

Guest: Professor Richard Howarth

Howarth, R. 2011. 'Intergenerational justice.' In: Dryzek, J., Norgaard, R. and Schlosberg, D. (eds) *The Oxford Handbook of Climate Change and Society*. Oxford: Oxford University Press.

DUE in class: Term paper concept note: topic and literature search

PART 3: Solutions: towards Sustainability Transitions

9 May Leveraging Change

Meadows, Dana. 1999. Leverage points: places to intervene in a system. Sustainability Institute (and reprinted in 2010 in the online journal *Solutions*).

Sendzimir, J., C.P. Reij and P. Magnuszewski 2011. Rebuilding resilience in the Sahel: Regreening in the Maradi and Zinder regions of Niger. *Ecology and Society* 16(3):1-29.

Hertsgaard, M. 2012. A quiet desert storm. *Conservation Magazine* (Spring 2012) 13(1):38-44.

12 May Urban Sustainability and Social Justice

Guest (invited): Alicia Mooltrey and Joceline Fidalgo, Dudley Street Neighborhood Initiative, Boston, USA

Review: http://www.dsni.org/ -- especially "About Us" & "Dudley Neighbors Inc.

DUE on Blackboard: Integrating Essay #2 by 5pm

14 May NO CLASS

16 May Toward Healthy Food and Farms for All

Guest: Ricardo Salvador, Director of Food & Environment Program, Union of Concerned Scientists

Union of Concerned Scientists. 2012. "Healthy Food and Farms." Accessed 3/21/14 from http://www.ucsusa.org/assets/documents/food_and_agriculture/healthy-food-and-farms-policy-brief.pdf

Salvador, R. J. 2013. "Food Choices: Modernity and the Responsibility of Eaters." Green Fire Times. Accessed 3/21/14 from http://greenfiretimes.com/2012/12/food-choices/#.Uyykp_ldWSp

19 May Regenerative Investing

Guest: Katherine Collins, Founder & CEO of Honeybee Capital

Collins, K. 2014. *The Nature of Investing: Resilient Investment Strategies through Biomimicry*. Bibliomotion, Brookline, MA. 209 pp. Read Optimist excerpt

Christian, L. 2011. A new foundation for portfolio management. RSF Social Finance and Portfolio 21 Investments. Accessed 3/20/14 from http://lesliechristianfinancial.com/

Optional: three other readings on blackboard

21 May Integrated Food Energy Systems (New England case)

Guest: Don McCormick, IFES Network

Bogdanski, A. 2012. Integrated food–energy systems for climate-smart agriculture. *Agriculture & Food Security* 1:9. http://www.agricultureandfoodsecurity.com/content/1/1/9

DUE on Blackboard: Draft poster about term paper

23 May Wrap up Discussion on Sustainability Transitions

State of the World 2013: Is Sustainability Still Possible? Read Ch. 23 (Leonard, A. "Moving from individual change to societal change"); and Ch. 22 (Leach, M. "Pathways to sustainability: building political strategies").

26 May NO CLASS, MEMORIAL DAY

27 May (X) Poster Session for Term Papers: Opportunities for Sustainability Transitions

28 May Poster Session for Term Papers: Opportunities for Sustainability Transitions

DUE: Written Term Paper by 5 p.m.