Sustainable Development (Environmental Science and Public Policy 11)

Harvard College/GSAS: 109934

Meeting Times and Location: Spring 2021
Class: Monday and Wednesday, 10:30 AM - 11:45 AM
Mandatory section meeting: Fridays at 10am, 2pm and 5pm ET

Instructors

William C. Clark (william_clark@harvard.edu; 617-495-3981)
Harvey Brooks Professor of International Science, Public Policy and Human Development (Harvard Kennedy School)

Alicia Harley (alicia_harley@hks.harvard.edu; 720-215-6008)
Lecturer in Environmental Science and Public Policy, Harvard College & Postdoctoral Research Fellow in Sustainability Science, Harvard Kennedy School

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Course Overview

"Sustainable development" explores how we, the peoples of an increasingly stressed planet earth, can achieve better lives for ourselves and our posterity. Two pernicious attributes of current development pathways motivate the course: 1) current development pathways are degrading the resources (natural and social) on which future prosperity depends; 2) current development pathways are fundamentally inequitable, allowing a privileged minority to achieve better lives for themselves but only by limiting the capacity of everyone else – both poor and vulnerable communities alive today and all future generations – to better their own lives. We seek to understand how these ills can be remedied through actions that support the transition to more just and sustainable pathways of development.

To do this, we will focus not just on immediate crises but on long-term development pathways of different people, sectors and places around the world. Exploring long-term, large-scale patterns in development in the midst of today's multiple interacting crises may seem insensitive or irrelevant. It's not. History shows us that transforming unsustainable development pathways onto more sustainable ones is the work of decades and must reach across countries and continents. Over such spans, surprise, shocks and crises are inevitable. These often cause horrific suffering and death. But they also disrupt the technologies, institutions and power alignments that stabilize the status quo. Crises thus provide rare opportunities for committed change-makers to actually make a difference. Our explorations in this course seek to discover what specific actions, undertaken now by individuals, communities, firms, or governments, can best seize the opportunities of our present crises to bend the curve of development toward sustainability.

To achieve this goal, the course explores:

- contemporary understandings and practical implications of the idea of sustainable development;
- historical trends in human well-being, the resources on which people draw to support that well-being, and the distribution of well-being and access to resources among different social groups;
- alternative metrics for tracking the pursuit of sustainability;
- scientific understanding of social-environmental systems as complex adaptive systems, characterized by innovation, tipping points, and path dependence;
- practices for linking knowledge with action that address both lack of trust in experts and active disinformation campaigns by those who benefit from shunning "veritas;"
- governance arrangements that societies have adopted to avoid the "tragedy of the commons" that results when people pursue better lives for themselves alone and, more generally, to promote cooperation in shaping more just and sustainable development.

The course will equip you to serve as a "general practitioner" supporting the pursuit of sustainability. In particular, you will learn concepts and skills that have proven useful for helping citizens, corporations, governments, and other social actors to:

1. Articulate shared goals for sustainable development of their social-environmental system;
2. Assess progress (or lack thereof) toward achieving sustainability goals;
3. Diagnose obstacles to further progress and design opportunities for overcoming those obstacles;
4. Transform knowledge into action for pursuing sustainability.

Strategic challenges

Learning about sustainability requires overcoming three strategic challenges:

- Avoiding siloed thinking by pursuing multi-disciplinary perspectives;
- Avoiding short-termism by embracing long time horizons;
- Avoiding overgeneralization by treating context seriously.

Here is our approach to each of them.

Multidisciplinary perspectives

Today's understanding of sustainable development draws on knowledge from a broad range of sources and disciplines including ethics, the arts, humanities, the natural and social sciences, history, public policy and from science and technology studies, in addition to a wide range of practical experience. No one, including your instructors, can be expert in all of these fields. One central intellectual challenge of the course will therefore be integration across individual perspectives, thus countering the retreat into the narrow disciplinary silos and professional specializations that increasingly cripple efforts to grapple with the big problems of our age. This is risky stuff: most of the time there will be someone in the classroom (as there will be in the organizations with which you later work on sustainability issues or the communities you seek to help) who knows more about part of the topic being discussed than you do. It follows that our strategy for coming to terms with sustainable development—in the classroom as in front-line efforts—involves learning how to collaborate: to develop the habits of listening to what others have to say, asking one another for help, sharing what we each know best, and acknowledging our individual and collective limitations. To give us opportunities to hone these skills, the course syllabus is focused on a series of questions about "informed agitation" for sustainable development that we will explore collaboratively in class. The course will therefore involve teamwork and peer commentary in addition to more conventional individual assignments.

Long term thinking

A second big challenge for pursuing sustainability is the tendency of almost everyone to focus on short term problems, events, and policies. This is problematical for at least three reasons. First, fairness to *future generations* is a central component of sustainable development goals. We therefore need to take care that legitimate concern about the well-being of people today not displace thinking about the implications of trends and decisions many decades or even centuries hence. This, in turn, means that we need to pay attention to long term background trends that are reshaping the stage on which efforts to promote sustainability will play out. Urbanization, climate warming, globalization of trade, biodiversity decline, and the erosion of trust in social institutions are just samples of the sorts of long term trends that we need to keep at the forefront of our thinking. Finally, a related factor is that many of the transitions that will need to be part of a shift toward sustainable development are inherently multi-decadal affairs. Policies seeking to promote such transitions need to themselves be sustainable beyond the terms of particular politicians or parties. The course will provide opportunities to explore long term change in the interactions of nature and society through a set of teaching cases specially designed for this course: Alaska's salmon fishery as it evolves from a source of local livelihoods to a globally embedded market; London's development from a hamlet to a world mega-city; and the transformation of Appalachia through the discovery of coal and the impacts of its mineral wealth on both people and nature.

Treating context seriously

The third big strategic challenge for grappling with sustainable development is that context matters. For example, meeting energy needs in rural Africa requires different goals, knowledge, and action than does meeting housing needs in urban America. This is not to say that no generalizable knowledge about sustainable development exists—much of the course will be about such knowledge. But it does mean that we need to wean ourselves from the academic bias toward overvaluing generalizable knowledge, panaceas, and ostensibly "best" practices. The challenge is rather to learn how to shape understandings that are appropriate for particular places, times, and peoples by drawing on generalized knowledge and relevant experience from elsewhere, and then combining it with local knowledge and circumstances to produce useful guidance. To give us opportunities to hone such skills, during most of the course we will be organized into teams, each focused on one of the particular "application regions." For the 2021 offering of the course, these "application regions" are: one of the world's largest mega-cities (China's Pearl River Delta and its anchor city Hong Kong); one of the world's most dynamic remaining frontiers (Brazil's Acre province on the western edge of the Amazon); and one of the world's youngest and fastest growing populations (the East African nation of Uganda). You will be assigned to one of these regions by the teaching staff. In each case, the responsible team will focus on current efforts to advance sustainable development in its assigned region. Each team will draw on general perspectives from the course to evaluate the region's specific challenges and opportunities for the pursuit of sustainability. This is not an artificial classroom exercise. Rather, it reflects an increasing practice of many organizations (businesses, governments, civil society, foundations, etc.) to counter their own "inside the box" thinking by seeking outside perspectives on how they are doing, and how they could do better, in their pursuit of sustainability.

Course details

Prerequisites

There are no prerequisites for the course. It is designed to be accessible to students whether they are focused on the humanities, social sciences, or natural sciences. The course is open to all undergraduates enrolled at Harvard College who are willing to meet the expectations outlined in Section 4 below. That said, the course is capped at 40 students to allow ample opportunity for discussion in class and section. Admission is via a brief application accessible through the Canvas site. Should more than 40 students apply, preference will be given to those enrolled in, or seriously contemplating enrollment in, the concentration sponsoring the course: Environmental Science and Public Policy (ESPP).

Class format

In keeping with the need for collaborative deliberation discussed above, class time will consist of a mix of lectures by instructors covering the topic of the day and integrating insights from the assigned readings, class-wide discussions, and break-out groups in which you will delve deeper by employing concepts introduced in lecture to the teaching cases and application regions we will explore throughout the semester. Students will be expected to have grappled with assigned readings, brief pre-recorded lecture material and other videos, and study questions (posted to Canvas) before class, and to contribute to class discussions through response postings to the Canvas site, oral responses in class (volunteered and cold-called) and occasional oral briefings based on discussions in sections. A weekly (mandatory) section meeting will provide an opportunity for students to collaborate in developing in-depth knowledge of sustainability challenges in their assigned "application region," together with the skills necessary for analyzing and reporting on those challenges.

Meeting times and place

The class will meet MW from 10:30 – 11:45 eastern time over zoom (accessed through the course Canvas). Students are expected to participate actively and synchronously in class. If your current time zone makes synchronous participation unduly difficult (e.g. if the course begins before 7:15am or ends after 10:30pm in your local time zone) please reach out to the instructors and we will make alternative arrangements. Attendance at weekly section meetings is also required of all students in the class. To enroll in the course, you must be able to make one of the three posted section times. Sections begin in the first week of the semester (the week of 1/25).

Readings

The required text book for this course is: Matson, Clark and Andersson. 2016. *Pursuing sustainability: A guide to the science and practice*. It is available through the Coop or multiple online sellers where it can also be rented or bought as an e-textbook. It is also held on Library Reserve. We will use this book extensively in the course, so please obtain access to a copy. The first chapter, assigned for the first two classes, is available on the Canvas site.

Teaching Case Studies: We will draw extensively on three teaching case studies discussed above. These case studies -- referred to in class as "London," "Alaskan Salmon," and "Appalachia" -- will be provided to you on the Canvas site in the week they are assigned with other readings. Because we will refer back to these cases over the course of the semester, you may find it worthwhile to either print them out or save them in an accessible electronic place where you can keep track of your highlights and notes.

Additional Readings: Understanding of sustainable development is rapidly evolving. As a result, much of the most relevant reading material is available only in research papers or policy briefs published by specialty journals and organizations. We will therefore assign a number of such readings. Many of them will be hard going for some of you (as we assure you they were for us) unless you happen to have upper level training in the particular field in question. We can only recommend that you stick with it: developing an ability to read intelligently across disciplines is not only necessary for grappling with sustainable development, it is part of what makes the grappling so exciting. Well in advance of each class we will post to the Canvas course site a 1-2 page summary of the main issues to be addressed plus a list of the required readings and how they relate to those main issues. Note, however, that the price of working directly with a rapidly evolving field is that new and useful background materials will become available after the course begins. As these come to our attention (through our own reading, work of the teaching staff, or suggestions from you), we will post them in the Supplementary Readings listed at the end of our summary posting. We will also include the most up to date academic review papers on relevant topics in the Supplementary Readings section for each class. You don't need to digest this "breaking" material or the "academic review" papers, but may do so if you have the time and inclination. Copies of all the assigned and supplemental readings that are not taken from the course text book will be posted on the Canvas site. To honor the copyright on these materials, copies should NOT be distributed to others not enrolled in the course unless those materials are publicly available on the web (i.e. access not restricted to Harvard account holders).

Digging Deeper: In a field as vast and rapidly changing as sustainable development, no one can pretend to know all the relevant literature. Keeping up, like so much in the field, is thus a collaborative endeavor. We provide on Canvas some places where you can find an evolving set of news items and research writings that are broader and deeper than those assigned for this course.

Evaluation

Students will be evaluated on the basis of class and section participation, 10 short response papers (250 words max), one take-home exam on key sustainability terms and concepts, two brief (10 minute) in-class group presentations on particular aspects of sustainability in your application region, a final pre-recorded group presentation on the most important obstacles to and opportunities for the pursuit of sustainability in the students' "application region," and a final individual policy memo (approx. 5 - 7 pages) evaluating the opportunities and barriers to sustainable development in their "application region" and proposing a specific intervention within this context (e.g., in energy or housing or food or governance) that could facilitate a transformation towards sustainable development.

Grade Weights

We urge you to use the course as an opportunity to explore, challenge and learn. That said, grades must be given. Here is the distribution of weights that we will apply to reach the final grade:

Engaged Participation in Class and Section 20%
Response Papers (250 word, 10 total) 20%
Midterm Exam..... 20%
Final Group Symposium Presentation 20%
Final Paper / Policy Memo..... 20%

For the Final Group Presentation, all members of the Group will receive the same grade. For all Assignments, the teaching staff is committed to helping you improve your performance through comments on your work and, if requested, office hour meetings with you. We urge you to make use of this feedback.

Penalties:

Participation and attendance: Because this class is based on participation and sharing of ideas, missing a class or section penalizes all of us. Because life is complicated, however, absences will sometimes be necessary (e.g. job interviews). If you have to miss a session or be late, write to your TF before the class, explaining why, and take the initiative with your group members to assure that you take on your share of any group work emerging from the session. Unexcused absence from class or section without a prior written excuse from your TF means that you will receive a participation grade of 0 (scale 1-100) for that session. Multiple unexcused absences or late arrivals will result in a participation grade of 0 for the course as a whole.

Written assignments: Because the written assignments contribute directly to class and section discussion, a late assignment incurs a penalty of 20% per day or partial day unless an exemption has been granted in advance, in writing, by your TF. Any fraction of a day counts as a day. The same penalties apply to the final paper unless an exemption has been granted in advance, in writing, by the instructors.

Communication with the instructors and teaching fellows

Announcements regarding the class will be available on the Announcements page of the Canvas site. For questions or concerns about the class, start with the teaching fellows via the email addresses given on the course site. The teaching fellows (TFs) will also be available for regular office hours at times to be announced early in the course. These will be listed on the Canvas course site.

The course instructors are also excited to meet with you to discuss the academic content of the course as well as more general discussions on sustainable development and navigating life and work at Harvard and beyond. We will hold regular office hours.

Bill Clark's Office Hours: Times will be posted for sign up HERE.

Alicia Harley's Office Hours: Alicia will hold drop-in office hours most Mondays directly after class from 12:00- 1:00pm and Wednesdays from 3:30-4:30pm. Office hours will be held over zoom unless student requests another form of communication (e.g. Alicia can call you on a cell or land-land in preferred). You can sign up for office hours in advance HERE.

The (important) fine print about how you can use this course to mess up your life

Of the many ways to mess up the many opportunities that being at Harvard offers you, only a couple have much to do with the classroom. Getting a bad grade is way down the list. Plagiarism is right at the top. The only part of Professor Clark's job that he has hated through the years is chairing the disciplinary committee at the Kennedy School, where he periodically has to pass a sentence on a case of plagiarism that seriously messes up a student's life. It makes all of us very sensitive to the issue. Too many people – from political leaders to professors to students – do plagiarize, mostly by accident. But "by accident" can still seriously tarnish your record. There is good reason for this. Plagiarism has serious consequences for our collective pursuit and sharing of knowledge (if we steal ideas that others share with us, soon no one will be willing to share ideas). What the Harvard College Handbook for Students has to say on the topic is worth reading. We reproduce some of the key text here:

It is expected that all homework assignments, projects, lab reports, papers, theses, and examinations and any other work submitted for academic credit will be the student's own. Students should always take great care to distinguish their own ideas and knowledge from information derived from sources. The term "sources" includes not only primary and secondary material published in print or online, but also information and opinions gained directly from other people. Quotations must be placed properly within quotation marks and must be cited fully. In addition, all paraphrased material must be acknowledged completely. Whenever ideas or facts are derived from a student's reading and research or from a student's own writings, the sources must be indicated (see also Submission of the Same Work to More Than One Course …) The responsibility for learning the proper forms of citation lies with the individual student. Students are expected to be familiar with the Harvard Guide to Using Sources. Students who are in any doubt about the preparation of academic work should consult their instructor and Allston Burr Assistant Dean or Resident Dean of Freshmen before the work is prepared or submitted.
Students who, for whatever reason, submit work either not their own or without clear attribution to its sources will be subject to disciplinary action, up to and including requirement to withdraw from the College. **In short, don't plagiarize. If in doubt, talk to us!**

Course Schedule

Part I: SUSTAINABLE DEVELOPMENT AS A CONCEPTUAL CHALLENGE		
Monday	Jan 25	**1. Pursuing Sustainability**: What is this course all about?
Wednesday	Jan 27	**2: Goals for Sustainable Development:** What do we want for people and nature?
Monday	Feb 1	**3. So Why is This So Hard?** How can we collectively manage shared resources (aka the Fishbanks Game)?
Part II: THE DETERMINANTS OF SUSTAINABLE DEVELOPMENT		
Wednesday	Feb 3	**4. Natural Assets I:** What is the role of ecosystems in sustainable development?
Monday	Feb 8	**5. Natural Assets II:** What are the roles of environment and minerals in sustainable development?
Wednesday	Feb 10	**6. Anthropogenic Assets I:** What are the roles of human capital and manufactured capital in sustainable development?
Wednesday	Feb 17	**7. Anthropogenic Assets II:** What are the roles of social capital and knowledge capital in sustainable development?
Monday	Feb 22	**8. Integrated assessment of trends in assets:** Are we consuming too much?
Wednesday	Feb 22	**9. Group presentations on goals and assets needed to pursue them in application regions:** Acre, Pearl River Delta and Uganda
Part III: SYSTEM DYNAMICS IN THE ANTHROPOCENE		
Wednesday	March 3	**10. Stocks, flows and feedbacks:** How do basic system properties of feedback, stocks, flows, and non-linearity affect the pursuit of sustainability?
Monday	March 8	11. **Complex Adaptive Systems:** How does non-linearity together with the associated regime shifts and tipping points affect the pursuit of sustainability?
Wednesday	March 10	**12. Power:** How does the unequal distribution of power among actors affect the pursuit of sustainability?
Monday	March 15	**13. Horizontal Connections:** How do horizontal connections including pollution externalities, trade and migration affect the pursuit of sustainable development?
Wednesday	March 17	**14. Modeling complexity**: How can you simple models capture the essential dynamics of complex adaptive systems? (Guest Lecture)
Monday	March 22	**15. Vertical Connections:** How do vertical connections including innovation and cross-level governance interactions affect the pursuit of sustainable development?
Wednesday	March 24	**16. Overview of the Course Thus Far:** How can we tie goals, determinants and system dynamics together?

Monday	March 29	**17. Group presentations on system dynamics in application regions:** Acre, Pearl River Delta and Uganda
PART IV: CAPACITIES NECESSARY FOR SUSTAINABILE DEVELOPMENT		
Monday	April 5	**18. Managing Under deep Uncertainty:** What capacities are needed to pursue sustainability?
Wednesday	April 7	**19. Capacity to Measure:** How can we evaluate which interventions or policies are likely to promote sustainable development?
Monday	April 12	**20. Capacity to Promote Equity:** How can we promote equitable distribution of the fruits of the earth's resources within and between generations?
Wednesday	April 14	**21. Capacity to Promote Adaptation:** How can our incomplete understanding of the dynamics of the Anthropocene System be harnessed to cope with disturbances and reconfigure our use of resources to function under changing conditions?
Monday	April 19	**22. Capacity to Promote Transformations:** How can we move beyond isolated actions to move whole sectors or regions to more sustainable development pathways?
Wednesday	April 21	**23. Capacity to Link Knowledge with Action:** How can we ensure knowledge to support informed agitation for sustainability is utilized in practice?
Monday	April 26	**24. Capacity for Governance:** How can we empower diverse groups of actors to foster transitions toward sustainability?
Wednesday	April 28	**25. Course Wrap-up:** Pursuing Sustainability: what has this course been all about?
Reading period	TBD	*Final Symposium Presentation*

Syllabus Version History

- Ver_1 posted 1/11
- Ver_2 posted 1/13
- Ver_3 posted 1/16