# Climate Change and the Law Teacher's Manual

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# Climate Change and the Law: Teacher's Manual Chris Wold, David Hunter, & Melissa Powers

# **General Introduction**

In this textbook, we take a comprehensive approach to climate change and the law, with the hopes of facilitating teachers and students to explore the legal dimensions of one of the most complex and fascinating law and policy challenges ever facing humanity. Climate change allows the teacher and students to explore how economics, science, policy, and law combine and interact to develop responses at multiple levels to a problem that affects all of us. The text encompasses international, national, state, and local approaches to climate change, as well as initiatives in regulatory agencies, the courts and the private sector. In this way, students are invited to see not only how law and policy responses emerge with respect to climate change, but also more generally to gain insight on how different types of public and private law can be brought to bear on the same complex problem.

Climate change is an urgent problem and one that we hope will spark increasing interest in both professors and students. This textbook breaks down the barriers to teaching climate change law by demystifying it and providing a framework for a comprehensive treatment of the subject. We recognize that climate change and the law might seem both too narrow (it is after all only one inter-related problem that has not yet spawned its own field of law) and too broad (involving, for example, international, national, and subnational law), but we think that addressing such a complex problem from many different sides allows for pedagogical innovation and exploration.

Students will be attracted to this course for many reasons. Many students will have heard about "global warming," the Waxman-Markey bill, "carbon trading" or "the Copenhagen, post-Kyoto negotiations." They may also have heard that every large law firm has created a "carbon management" or "climate risk" law group in the past few years, or that "green jobs" are the future growth area in the economy. Some students may know a lot about the subject, and others may know very little, particularly if the course is offered (as we intend) without course prerequisites. The challenge for the teacher is to engage these different perspectives and expectations in a coherent approach to the subject.

To be sure, the multi-dimensional nature of the subject makes teaching climate change law particularly challenging, and this is exacerbated by the dynamic nature of climate change and our response to it. The law itself is in a constant state of flux, negotiation, and renegotiation. Indeed, since we submitted our final manuscript to the publisher in March 2009 and finished work on this teacher's manual in August 2009, several parts of our book have already required updates or changes. We expect many more: the governments of the world will meet in Copenhagen, Denmark in December 2009 to negotiate the next international treaty to follow the Kyoto Protocol; the U.S. House of Representatives passed the nation's first climate change bill in June, and the Senate will take it up in the fall; and state and federal agencies have made a number of administrative decisions that will significantly affect greenhouse gas emissions. These developments make it possible to integrate current events and ongoing policy dialogues directly into the classroom, allowing students to see the law as a dynamic, creative process. On the other hand, the breadth and dynamism of climate change law make it challenging to develop a course syllabus and to teach a class that is current and coherent. This teacher's manual tries to address these challenges, in addition to providing you with more traditional guidance in teaching climate change law.

The first part of this manual includes a handful of suggested syllabi for short and long climate change courses. We know that many of you will teach climate change in a seminar class, so we have included suggestions for seminar-style teaching. We have also included suggestions for increasing the students' role in exploring climate change law. These include in-class treaty negotiations, congressional hearings, and broader policy presentations students may take on. We briefly introduce these as part of the suggested syllabi, and we expand these ideas further in the relevant chapters. By using a diversity of teaching methods and exercises, students may gain a stronger impression of the excitement and challenge of climate change law, policy, and advocacy.

The second part of this manual contains the traditional materials you likely expect to see in a teacher's manual. These include suggestions for how you might present the materials to students, answers to questions in the notes, and other relevant information you may want to review in preparing for class. In addition, at times we have included updates to the casebook that have arisen since the book went to press. You may also access these materials digitally through our website and distribute them to your students. We will try to keep the materials as up-to-date as possible throughout the school year, so be sure to check the website regularly if you would like to learn of new developments or access to updated materials. The website for this book is:

http://www.lclark.edu/law/departments/law\_faculty\_resources/updates/climate\_change\_and\_the\_law/index.php

# **Introduction to the Book**

As an initial matter, we note that the pages xxxiii–xxxiv include both a glossary of key abbreviations and a table of conversions. Because the excerpted materials frequently use different units of measurement, the conversion table may be particularly useful. In addition, the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol are reproduced at pages 927 and 947, respectively. Nonetheless, students may wish to download these texts from our website or http://unfccc.int/2860.php.

The book is roughly organized in three parts. **Part one** of the book reviews the background scientific and policy issues surrounding climate change. Chapter 1 specifically summarizes the scientific basis of climate change, relying principally on the Fourth Assessment of the Intergovernmental Panel on Climate Change (IPCC), but supplementing the IPCC's reports with the fast-growing scientific literature that is making parts of the IPCC's 2007 Fourth Assessment already out of date. The science of climate change is changing as fast if not faster than the law. In general, most recent evidence suggests climate change is far worse than what was presented in the IPCC's Fourth Assessment. Because the science provides the foundation for law and because of the vocal yet tiny minority of people who continue to trumpet climate change

as a naturally occurring event or as a hoax, we recommend that students be given a solid grounding in Chapter 1.

Chapter 2 describes the policies and measures that are or could be used to mitigate greenhouse gas emissions, including the economic costs of some of those strategies. For students who have had Environmental Law, much of this chapter may be review. However, discussions of taxes, emissions trading, and other mechanisms are placed in the context of climate change. Further, the chapter ends with a discussion of the benefits and costs of climate change that places the challenge of climate change in a political forum's most common currency—money—even as small island nations are becoming submerged.

Recognizing that climate change impacts will occur regardless of how quickly we act to mitigate greenhouse gas emissions, Chapter 3 explores adaptation strategies. The role of law in adaptation is under-researched and has gained relatively little attention from policy-makers until recently. Unlike in the UNFCCC or the Kyoto Protocol, for example, adaptation approaches are a core component of the current Copenhagen climate negotiations.

**Part two** delves deeply into the international framework of the climate change regime. Chapters 4 and 5 introduce the 1992 UNFCCC and the subsequent 1997 Kyoto Protocol, which requires developed countries to reduce or limit their emissions of six greenhouse gases: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, sulphur hexafluoride, and perfluorocarbons. These chapters provide the negotiating history as well as the key features of each treaty. For those who may be teaching a two-credit or seminar course, the chapter on the Kyoto Protocol is designed to cover the most relevant issues so that resort in full to the more specific Chapters 6 through 9 may not be necessary.

Subsequent chapters provide a detailed investigation of specific aspects of the international climate change regime. Chapter 6 explores the different types of emissions trading, collectively known as the flexibility mechanisms, under the Kyoto Protocol. While market-oriented flexibility mechanisms provide just one means for mitigating climate change, they remain the heart of the Kyoto Protocol, with energy efficiency and other policy approaches taking a back seat. Moreover, because of the multi-billion dollar global carbon trading industry that has arisen to take advantage of the flexibility mechanisms, the Kyoto Protocol's flexibility mechanisms will remain a mainstay of any future climate treaty. It is for this reason that an entire chapter is devoted to explaining the details of these mechanisms.

Chapter 7 reviews the complicated and controversial regime for reducing greenhouse gas emissions through land use and forest management practices. Parts of this material are particularly challenging, even for those with deep knowledge of the Kyoto Protocol. They are challenging largely because of the complicated rules to prevent the issuance of carbon credits for forest projects that may not actually reduce emissions if forests succumb to infestations, storms, or deforestation. At the same time, forests remain a largely untapped opportunity for mitigating climate change. As the lungs of the world, forests have great capacity to sequester carbon. Indeed, forests retain about 80 percent of the world's above-ground terrestrial carbon. However, fueled largely by agriculture, deforestation and forest degradation account for about 17 percent of global greenhouse gas emissions. The chapter concludes with the response of climate change negotiators to this challenge: proposals to develop a mechanism to reduce emissions from deforestation and degradation, more commonly referred to as the REDD. This is a very fast-paced area of the climate change negotiations, highly likely to extend well past the December 2009 negotiation. Thus, it would be worthwhile engaging students in this discussion, even if other aspects of land use and forests are skipped due to their complexity.

Chapter 8 describes the Kyoto Protocol's compliance regime. Because of the slow pace of the climate change negotiations and the threat of international litigation from some small island nations, the end of the chapter is designed as a mock international dispute at the International Court of Justice. This mock dispute is a useful way to show students the challenges of international law and why, despite the urgent need for action on climate change, small island nations have been reluctant to address their concerns through formal legal channels.

Chapter 9 then explores development of the post-Kyoto Protocol regime, as an issue of particular importance as countries struggle to meet their existing obligations under the Kyoto Protocol while scientists make clear that the Kyoto Protocol's commitments fall far short of the greenhouse gas emissions reductions necessary to avoid catastrophic climate change. The chapter takes an admittedly narrow focus on mitigation; the actual climate change negotiations are far more complex and broad. However, we felt that the narrow focus was appropriate, because the full range of negotiations would be difficult to present for teaching purposes.

Finally, Chapter 10 introduces other international laws affecting climate change. The Kyoto Protocol's climate change regime is not the only international law relevant for mitigating emissions and adapting to climate change. In fact, much work is being done, particularly on adaptation, within other international agreements. Thus, Chapter 10 describes policies affecting climate change within other international conventions or fields, including the Montreal Protocol on Substances that Deplete the Ozone Lawyer, the World Heritage Convention, the field of human rights, and the World Trade Organization, among others. This chapter is unlikely to be taught in full in most courses, but the material is intended as well to provide students a framework for conducting further research for their seminar papers or otherwise.

**Part three** then explores U.S. domestic law. Chapter 11 begins this part by reviewing general U.S. policy concerning climate change. Much of the action, however, has taken place in the courts, so Chapter 12 starts with a discussion of threshold issues, such as Constitutional standing, that determine whether a climate change litigant can even use the judicial system. Chapter 13 then discusses the role existing federal environmental statutes—the Clean Air Act, in particular—may play in mitigating climate change. Chapters 14 and 15 then look at how U.S. energy and transportation policies affect and intersect with climate change policies. Chapter 16 turns back to the courts to discuss the role of common law in addressing climate change. As Chapters 11 through 16 reveal, the U.S. does not have a uniform or comprehensive climate change policy. Indeed, in many situations, the U.S. government has refused to act and thus prompted state and local governments to adopt their own climate change laws and regulations. Chapter 17 reviews the most common and/or aggressive sub-national actions and explores the roles that all levels of government should and legally can play in mitigating climate change. Chapter 18 looks at the challenges and opportunities facing private actors in responding to climate change and reducing greenhouse gas emissions, even in the absence of specific

regulations. Finally, Chapter 19 attempts to peer into the future to discuss whether and how governments may move toward a low-carbon future.

# Some General Teaching Comments

Whether to Require Prerequisites. If you are teaching climate change and the law for the first time, you will need to determine whether to require prerequisites. The primary potential prerequisite is likely U.S. Environmental Law, but one could also consider requiring International Law, International Environmental Law, or Administrative Law. Whether you require one of these courses as a prerequisite depends mostly on how you want to structure the climate change course. If you teach Climate Change and the Law primarily as a domestic course, highlighting the challenges of climate change to domestic law, then a strong argument can be made for requiring U.S. Environmental Law as a prerequisite. This approach would likely allow deeper discussions and inquiries into the role existing environmental laws will play in addressing climate change (and how climate change may address the future of US environmental law). Similarly, Climate Change and the Law could be treated as an advanced international law seminar, with an assumption that students would have been exposed to the basic institutions, principles, and approaches of international environmental law.

We have developed the book, however, with an eye toward offering the course with no prerequisite. In this view, the course would touch relatively equally on the multiple dimensions of climate change law and emphasize the way in which international law, administrative law, torts, or other private law concepts all have a role to play in addressing an issue as pervasive and urgent as climate change. This allows for a more integrated approach to the law in its social, economic, and political context.

*Teaching Current Events.* Issues concerning climate change arise daily in the news. We strongly recommend that our students read a major daily newspaper, and we start every class with five or ten minutes discussing breaking stories. (The New York Times is particularly good; and the Science section on Tuesdays always has relevant stories, as does the daily business section.) Moreover, there are several email listserves that both students and professors can join to gain updates of climate change law, science and policy, including: The Daily Climate [dailyclimate@newsletters.dailyclimate.org]; and Climate Change News at http://www.eesi.org/ccn.

Spending time each class on emerging approaches to climate change provides significant advantages for the teaching of climate change and the law:

1) it ensures that the students and professors are up-to-date on an area that may see significant changes in science, law and policy during the course of a semester;

2) it ensures that students recognize the critical relevance of what they are studying to one of the most "hotly" contested issues of our time;

3) it increases and maintains students' attention and enthusiasm for the class and the subject matter; and

4) major developments in the news may allow for significant teaching opportunities, class exercises, or topics for student papers.

**Questions and Discussion.** Almost every section in the book is followed by a Questions and Discussion section. These notes are intended to increase the students' understanding and stimulate further exploration of a specific issue or to introduce them to additional, related issues or perspectives. Most of the questions and discussion are addressed further in the Teacher's Manual.

**Problem Exercises.** For more extended exploration of a specific issue, most chapters of the book include one or more problem exercises. These may require students to negotiate an agreement, write a brief, draft a memo, or conduct additional research or analysis of a specific legal or policy issue. We recommend you include some, but by no means all, of the problem exercises in your syllabus to provide the students with a more diverse learning environment. The Teacher's Manual will provide further guidance for organizing and conducting the exercises.

**Research Seminars, Independent Studies, and Student Papers.** Because of the dynamic and cutting-edge quality of Climate Change and the Law, it is an ideal subject for a research seminar, independent studies, or upper level writing requirements. The textbook is intended in part to provide a framework to launch students into research and writing certain aspects of climate change. Some of the chapters, for example Chapters 10, 13, and 16, explore links between climate change and other areas of the law that students may be interested in and may consider writing or researching about. Many of the Questions and Discussion notes, too, are meant to offer potential windows into possible research topics. Finally, class discussions around current developments in climate change law and policy can also provide students with opportunities for further research and writing.

The Website and Additional Materials. To provide supplemental materials and reflect significant current developments, we have placed a number of additional sections on the web site. Easily accessed and printed off the Web, you can use these sections to supplement the casebook in creating your syllabus. The website can be accessed at http://www.lclark.edu/law/departments/law\_faculty\_resources/updates/climate\_change\_and\_the\_ law/index.php.

# Suggested Syllabi

Professors may approach climate change law in a variety of ways. From our communications with several professors who have already taught climate change law, we think the two biggest considerations are 1) whether the course will be taught as 2- or 3-credits, and 2) whether the course will cover both the international and domestic aspects of climate change law, or just one of them. The recommended syllabi provide suggested reading assignments and inclass participation opportunities based on these considerations. The first recommendation assumes a 13-week semester, while the other three recommendations assume a 14-week semester.

**I.** Comprehensive 3-credit, 13-week syllabus (following the order and organization of the textbook). This syllabus generally follows the order of the book, assigning in most cases one full chapter for each week. Obviously, some of the 19 chapters of the book are not included. Note that some of the amounts of readings may be ambitious for students, particularly if you supplement with current events or additional readings.

Class #	Reading	Subject	Notes
1	1-47	Science of Climate Change and its Effects	Pages 1-30 provide an overview of the science and effects of climate change. Pages 44-47 discuss long-term targets policymakers are attempting to achieve to avoid the worst impacts of climate change.
2	49-93	General Approach to Climate Change Mitigation	These pages introduce the general strategies to pollution control, including command-and-control regulation, cap- and-trade, and carbon taxes. We have found that it's useful to discuss these approaches at the outset, before exploring the strategies governments have actually employed, so that students have a big picture understanding of how to approach climate change mitigation.
3	95-125	General Approach to Climate Change: Adaptation	We included a section on adaptation so that students could get a better sense of the challenges countries face as they attempt to adjust to the unavoidable consequences of climate change. Some professors may prefer to assign this chapter, but not discuss it in class (it tends to be relatively self-explanatory).
4	127-88 ; Reference: UNFCC, 927-46	UNFCCC and International Law	Most of the reading in this material discusses the global politics behind climate change, so while the assignment is somewhat longer, it will enable you to focus on international lawmaking processes and principles.
5	189-224; Reference: Kyoto Protocol, 947-66	Kyoto Protocol Overview	The purpose of this chapter is to provide students with a good understanding of the politics of climate change and the main elements of the Kyoto Protocol. As with the UNFCCC, we think students can develop a good

			understanding of the politics of climate change without too much instruction from their professors. In terms of Kyoto, our proposed reading assignment focuses on the most important "action items" of Kyoto: Article 3 commitments and the flexibility mechanisms. Once students get a good idea of how these work, we recommend that you return to this chapter for an introduction to policies and measures, forests and land use, and implementation and compliance.
6	225-270; Reference: Kyoto Protocol, 947-66	Implementing Kyoto: The Flexibility Mechanisms	This relatively short reading assignment assumes you will spend some time explaining how the obligations in Article 3 work with the flexibility mechanisms. We often end up creating a mock registry that we use to demonstrate the nuts and bolts of how the mechanisms change the Parties' assigned amounts.
7	335-80	Post-Kyoto:Politics, Goals,WhoisCovered,DeforestationIntensityTargets,ActionTargets,Policies and Measures	This introduces students to issues the Parties will attempt to address in the post-Kyoto framework.
8	465-496	Introduction to U.S. Policies;	More than anything, this chapter introduces students to U.S. climate change politics and the difficulty associated with enacting comprehensive climate change legislation. If you want to analyze proposed U.S. legislation in greater detail, you may want to assign only pages 486-495, materials related to the House's climate change bill ( <i>see</i> Chapter 11 in the Teacher's Manual) and the section regarding the EU ETS (pp. 261-269)

9	538-587	Clean Air Act: Overview and EPA Authority (Mass v. EPA) Clean Air Act: Vehicle Emissions Standards and Preemption, Coal-Fired Power Plants and Future Regulation Under the CAA	If you haven't discussed whether comprehensive U.S. climate legislation should preempt the CAA, you may want to do that after students have gained a better understanding of how the CAA may regulate GHG emissions.
10	588-630	Endangered Species Act; National Environmental Policy Act	The first two options here reflect the fact that students and/or professors may have a particular interest in exploring laws (like NEPA and the ESA) that do not directly relate to climate change, but which have nonetheless played an important role in U.S. climate change policy. Alternatively, you may want to focus on a specific issue, like alternative fuel policy, to explore how the United States should respond to the unintended consequences of mitigation measures that initially appear beneficial.
11	651-713	Energy Policy: The Traditional Model Energy Policy: Reform	This reading assignment provides students with an overview of energy and electricity regulation to explain why fossil fuels dominate the U.S. energy sector. Once students understand this background information, they will likely have a better understanding of why reform has proven to be so difficult. Pages 673-694 discuss types of energy sources and the pros and cons of each energy source. Students should read these materials, but we think they are self-explanatory and do not require further instruction. Pages 694-713 discuss the various ways in which regulators may restructure the electricity sector to reduce fossil fuel use.
12	783-825	Torts Cases and Causes of Action; Political Question; Future Implications	Although climate change litigants have brought a number of tort cases, the courts have thus far dismissed them as raising non-justiciable political

			questions. The recommended reading provides the students the opportunity to explore how a litigant would frame a tort cause of action for climate change, why courts have been so reluctant to adjudicate the cases, and whether tort law should play a role in climate change mitigation. You may want to devote 2 days to torts, depending upon your interest in the subject matter.
13	827-858	State and Local Measures	This reading assignment assumes you would briefly touch on state and local actions, without going into great detail regarding any of them. However, you may prefer to expand the discussion by dedicating 2 days to the role of states and local governments. With two days, you could take an in-depth look at particular state or local laws in the region or state of your specific lawschool. An expanded discussion may also explore whether states and local governments should continue to play an active role in climate change mitigation if Congress passes a national climate change law.

## II. 3-Credit Course, 28 Classes – International and Domestic

This syllabus is similar to the basic syllabus above, but assumes that the class will meet twice weekly and that reading assignments are reduced in general and for specific class sessions. The syllabus assumes you will spend 3-4 classes introducing climate change science and general approaches to mitigation and adaptation, 9-10 classes discussing the UNFCCC and Kyoto Protocol, 2 days negotiating the post-Kyoto framework, and 12-14 days discussing U.S. climate change policy. We have marked some days as optional, where we think you could skip over materials and still give students a complete picture of climate change law.

Class #	Reading	Subject	Notes
1	1-30, 44-47	Science of Climate Change and its Effects	Pages 1-30 provide an overview of the science and effects of climate change. Pages 44-47 discuss long-term targets policymakers are attempting to achieve to avoid the worst impacts of climate change. If you want to explore the socio-economic and national security aspects of climate change, we recommend that you cover pages 1-30 on day 1 and pages 31-47 on day 2.
2	49-69	General Approach to Climate Change Mitigation	These pages introduce the general strategies to pollution control, including command-and-control regulation, cap- and-trade, and carbon taxes. We have found that it's useful to discuss these approaches at the outset, before exploring the strategies governments have actually employed, so that students have a big picture understanding of how to approach climate change mitigation. However, you may prefer to integrate parts of these materials into classes specifically focused on each regulatory approach (e.g., if you are going to discuss domestic cap-and-trade, you would assign pages 55-63 in addition to parts of Chapter 11).
3	69-87 (87-93 optional)	Sectoral Mitigation and Costs and Benefits	Discussing the sectoral approach to climate change mitigation provides students the opportunity to explore the specific measures particular industries may need to employ to reduce GHG emissions. We have found that students

			enjoy discussing the sectoral approach, in part because it makes climate change seem more doable than larger programs like cap-and-trade may indicate. In addition, it presents tangible targets that students can explore. The cost/benefit section beginning on page 81 introduces students to a major factor in the climate change debate and, in our view, is worth exploring.
			Possible assignment or class exercise: Divide the students in your class into groups representing sectors responsible for most GHG emissions in your state/region/country. Have each group explain specific strategies it would use to reduce its sector's emissions, the level of reduction it could achieve, the amount of time it would take to achieve the reductions, and the costs/benefits associated with the reductions. If you prefer to avoid group exercises, you can always assign different sectors to individual students.
4	95-125	Adaptation (Optional)	We included a section on adaptation so that students could get a better sense of the challenges countries face as they attempt to adjust to the unavoidable consequences of climate change. Some professors may prefer to assign this chapter, but not discuss it in class (it tends to be relatively self-explanatory).
5	127-154, 161-164; Reference: UNFCCC, 927-46	UNFCCC and International Law	If most of your students are new to international law, we think it is helpful to discuss a few key international concepts before discussing the terms of the UNFCCC itself. At a minimum, students should learn about treaty formation, state sovereignty, and common but differentiated responsibility. The proposed reading assignment includes those elements.

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			Most of the reading in this material discusses the global politics behind climate change, so while the assignment is somewhat longer, it will enable you to focus on international lawmaking processes and principles.
6	169-187; Reference: UNFCCC, 927-46	UNFCCC	Some professors may choose to cover the UNFCCC in less than one class, since it creates relatively few substantive obligations. However, we recommend devoting a day to covering the UNFCCC, because it will help the students understand the structural framework of the climate change regime, the various responsibilities of the parties, the role of the CoP, etc.
7	189-205, 205-210, 215-219, 221-224; Reference: Kyoto Protocol, 947-66	Kyoto Protocol Overview	The purpose of this chapter is to provide students with a good understanding of the politics of climate change and the main elements of the Kyoto Protocol. As with the UNFCCC, we think students can develop a good understanding of the politics of climate change without too much instruction from their professors. In terms of Kyoto, our proposed reading assignment focuses on the most important "action items" of Kyoto: Article 3 commitments and the flexibility mechanisms. Once students get a good idea of how these work, we recommend that you return to this chapter for an introduction to policies and measures, forests and land use, and implementation and compliance.
8	225-239; Reference: Kyoto Protocol, 947-66	Implementing Kyoto: The Flexibility Mechanisms	This relatively short reading assignment assumes you will spend some time explaining how the obligations in Article 3 work with the flexibility mechanisms. We recommend creating a mock registry that to demonstrate the nuts and bolts of how the mechanisms change the Parties'
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9	239-261;	The Flexibility Mechanisms	assigned amounts. These pages discuss supplementarity,

	Kyoto		and equity as they play out with the
	Protocol,		flexibility mechanisms. They also
	947-66		provide students with an opportunity to
			explore the policy concerns associated
			with the flexibility mechanisms.
10	261-269	The EU ETS (Optional or	Ť.
-		Later)	trading has worked – and not worked –
			in the EU. If you are going to discuss
			U.S. cap-and-trade proposals, you may
			want to integrate this reading into that
			discussion instead.
11	271-294;	Land Use and Forestry	The first part of this chapter explains
	Reference:		the contribution of land use and
	Kyoto		forestry to GHG emissions and
	Protocol,		sequestration. Students should be able
	947-66		to understand much of this information
	111 00		without too much guidance from
			professors. The Kyoto Protocol's
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			treatment of land use and forestry (pp.
			284-294) is complicated and quite
			confusing. We anticipate it will take
			most of the class to explain to students.
			Deforestation will be a big issue as the
			Parties negotiation the post-Kyoto
			regime. We recommend you include
			pp. 295-303 in your discussion of that.
12	305-324	Compliance (Optional)	Students often want to know about the
	(324-333		consequences of non-compliance under
	optional)		international treaties. The
	optional)		
			recommended reading looks at this
			issue and the specific compliance
			requirements of the UNFCCC and
			Kyoto. The optional reading discusses
			the role customary international law
			could play in climate disputes. Students
			often like exploring these issues, but if
			you are short on time, we think you can
			skip them.
13	335-358,	Post-Kyoto: Politics, Goals,	This and the next day introduce
	(optional	Who is Covered,	students to issues the Parties will
	358-364)	Deforestation	attempt to address in the post-Kyoto
	295-303		
	293-303		
			materials to set the stage for an in-class
14	364-382	De et Veret	negotiation of the post-Kyoto treaty.
	1 36/1 387	Post-Kyoto Strategies:	

		Intensity Targets, Action Targets, Policies and Measures	
15	n/a	In-class negotiation	Page 380, note 6, provides an overview of an in-class negotiation you may want to use. In addition, Chapter 9 of this Teacher's Manual contains some more thoughts for structuring and facilitating the negotiation. In our experience, the negotiation can be more satisfying and successful if students have 2 classes, plus time outside of class, to negotiate.
16	n/a	In-class negotiation	
17	465-478 (optional or skim); 478- 495; 261-269 (optional)	Introduction to U.S. Policies; EU ETS (optional)	More than anything, this chapter introduces students to U.S. climate change politics and the difficulty associated with enacting comprehensive climate change legislation. If you want to analyze proposed U.S. legislation in greater detail, you may want to assign only pages 486-495, materials related to the House's climate change bill ( <i>see</i> Chapter 11 in the Teacher's Manual) and the section regarding the EU ETS (pp. 261-269)
18	497-526 (526-536 optional)	Article III standing (and political question optional)	If your students have taken several environmental law classes that discuss standing, you may want to cover both standing and political question in one day, with an emphasis on exploring whether the nature of climate change justifies the courts' wariness to accept jurisdiction. However, if you want to devote the full class period to standing, we recommend that you cover the political question materials when you discuss torts.
19	538-553	Clean Air Act: Overview and EPA Authority (Mass v. EPA)	
20	553-574	Clean Air Act: Vehicle Emissions Standards and Preemption	
21	574-587	Clean Air Act: Coal-Fired Power Plants and Future	If you haven't discussed whether comprehensive U.S. climate legislation

		Regulation Under the CAA	should preempt the CAA, you may
		Regulation Onder the CAA	want to do that after students have
			gained a better understanding of how
			the CAA may regulate GHG emissions.
22	715-737	CAEE Stondords	
22	/15-/5/	CAFE Standards	We think the CAFE program deserves
			exploration after the CAA, since the
			respective roles of CAA vehicle
			emissions standards and CAFE
			standards come up frequently in the
			CAA cases.
23	783-805;	Torts Cases and Causes of	Although climate change litigants have
	526-536;	Action; Political Question;	brought a number of tort cases, the
	820-825	Future Implications	courts have thus far dismissed them as
		I	raising non-justiciable political
			questions. This recommended reading
			provides the students the opportunity to
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			explore how a litigant would frame a
			tort cause of action for climate change,
			why courts have been so reluctant to
			adjudicate the cases, and whether tort
			law should play a role in climate
			change mitigation. The reading
			assignment may be overly ambitious,
			and you may want to devote 2 days to
			torts, depending upon your interest in
			the subject matter.
24	651-673	Energy Policy: The	This reading assignment provides
		Traditional Model	students with an overview of energy
			and electricity regulation to explain
			why fossil fuels dominate the U.S.
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			25
			understand this background
			information, they will likely have a
			better understanding of why reform has
			proven to be so difficult.
25	673-694	Energy Policy: Reform	Pages 673-694 discuss types of energy
	(optional, or		sources and the pros and cons of each
	assign but do		energy source. Students should read
	not teach);		these materials, but we think they are
	694-713		self-explanatory and do not require
			further instruction. Pages 694-713
			discuss the various ways in which
			regulators may restructure the
			electricity sector to reduce fossil fuel
			use.
26	827-858;	State and Local Measures	This reading assignment assumes you
20	027-030,	State and Local Measures	This reading assignment assumes you

27	737-753 (optional, if 2-day discussion)		would briefly touch on state and local actions, without going into great detail regarding any of them. However, you may prefer to expand the discussion by dedicating 2 days to the role of states and local governments. Pages 737-753 discuss transportation policy reform, which falls largely in the hands of state and local governments. An expanded discussion may also explore whether states and local governments should continue to play an active role in climate change mitigation if Congress passes a national climate change law.
27	Remaining part of 827- 858, 737- 753; or 909-926	State and Local Measures Day 2 or In-class negotiation/debate	You may want to continue a discussion of state/local measures or use a final in- class negotiation or debate to wrap up the class. The in-class negotiation could serve as a chance for students to negotiate U.S. climate legislation and explore whether Congress should preempt certain statutes, tort law, and actions by states and local governments. The negotiation could serve as a good way for students to tie everything from the domestic side together.
28	909-926	Wrap-up or In-class negotiation/debate day 2	The wrap-up class would use Chapter 19 to have students think about what steps governments, companies, and individuals need to take to effectively mitigate climate change. It could also serve as a good way for students to explore whether our existing legal systems are up to the challenge of climate change.

## III. 2-Credit Course – 14 Classes – International and Domestic

This syllabus focuses on the nuts and bolts of the international and domestic responses to climate change. It assumes you will spend 1 class introducing the science and effects of climate change, 1 class exploring mitigation strategies generally, 4 days discussing the international regime, 7 days discussing domestic policy, and 1 day synthesizing the materials and discussing the best overall strategy. This syllabus provides a more cursory overview of some materials and we recommend that professors dive deeper into one or two subjects to expose students to the complexity of climate change law. This format may also be appropriate for research seminars where students will be asked to conduct further research into an area of their choice.

Class #	Reading	Subject	Notes
1	1-30, 44-47	Science of Climate Change and its Effects	Pages 1-30 provide an overview of the science and effects of climate change. Pages 44-47 discuss long-term targets policymakers are attempting to achieve to avoid the worst impacts of climate change.
2	49-69	General Approach to Climate Change Mitigation	These pages introduce the general strategies to pollution control, including command-and-control regulation, cap- and-trade, and carbon taxes. We have found that it's useful to discuss these approaches at the outset, before exploring the strategies governments have actually employed, so that students have a big picture understanding of how to approach climate change mitigation. However, you may prefer to integrate parts of these materials into classes specifically focused on each regulatory approach (e.g., if you are going to discuss domestic cap-and-trade, you would assign pages 55-63 in addition to parts of Chapter 11).
3	127-150, 169-187 Reference: UNFCCC, 927-46	UNFCCC and International Law	If most of your students are new to international law, we think it is helpful to discuss a few key international concepts before discussing the terms of the UNFCCC itself. At a minimum, students should learn about treaty formation, but the principles of state sovereignty and

			commonbutdifferentiatedresponsibility could also be included.Most of the reading in this materialdiscusses the global politics behindclimate change, so while theassignment is somewhat longer, it willenable you to focus on internationallawmaking processes and principles.
4	189-210, 215-219, 221-224 Reference: Kyoto Protocol, 947-66	Kyoto Protocol Overview	The purpose of this chapter is to provide students with a good understanding of the politics of climate change and the main elements of the Kyoto Protocol. As with the UNFCCC, we think students can develop a good understanding of the politics of climate change without too much instruction from their professors. In terms of Kyoto, our proposed reading assignment focuses on the most important "action items" of Kyoto: Article 3 commitments and the flexibility mechanisms. Once students get a good idea of how these work, we recommend that you return to this chapter for an introduction to policies and measures, forests and land use, and implementation and compliance.
5	225-253	Implementing Kyoto: The Flexibility Mechanisms	This reading assignment assumes you will spend some time explaining how the obligations in Article 3 work with the flexibility mechanisms. We recommend creating a mock registry that we use to demonstrate the nuts and bolts of how the mechanisms change the Parties' assigned amounts. The pages also discuss supplementarity, additionality, and verifiability. However, we have not included reading related to equity in implementing the flexibility mechanisms.
6	335-358, 364-382	Post-Kyoto: Politics, Goals, Who is Covered, Intensity Targets, Action Targets,	

		Policies and Measures	
7	465-478 (optional or skim); 478- 495; 261-269 (optional)	Introduction to U.S. Policies; EU ETS (optional)	More than anything, this chapter introduces students to U.S. climate change politics and the difficulty associated with enacting comprehensive climate change legislation. If you want to analyze proposed U.S. legislation in greater detail, you may want to assign only pages 486-495, materials related to the House's climate change bill ( <i>see</i> Chapter 11 in the Teacher's Manual) and the section regarding the EU ETS (pp. 261-269)
8	538-553	Clean Air Act: Overview and EPA Authority (Mass v. EPA)	
9	553-587	Clean Air Act: Vehicle Emissions Standards and Preemption, Coal-Fired Power Plants and Future Regulation Under the CAA	If you haven't discussed whether comprehensive U.S. climate legislation should preempt the CAA, you may want to do that after students have gained a better understanding of how the CAA may regulate GHG emissions.
10	715-737, 737-753	CAFE Standards and Transportation Policy	We think the CAFE program deserves exploration after the CAA, since the respective roles of CAA vehicle emissions standards and CAFE standards come up frequently in the CAA cases. The second half of the reading introduces students to broader issues related to transportation policy.
11	783-805; 526-536; 820-825	Torts Cases and Causes of Action; Political Question; Future Implications	6 6 6

			the subject matter
12	651-673; 694-713	Energy Policy: The Traditional Model and Reform	the subject matter. This reading assignment provides students with an overview of energy and electricity regulation to explain why fossil fuels dominate the U.S. energy sector. Once students understand this background information, they will likely have a better understanding of why reform has proven to be so difficult. Pages 694-713 discuss the various ways in which regulators may restructure the electricity sector to reduce fossil fuel use.
13	827-858	State and Local Measures	
14	909-926	Wrap-up	The wrap-up class would use Chapter 19 to have students think about what steps governments, companies, and individuals need to take to effectively mitigate climate change. It could also serve as a good way for students to explore whether our existing legal systems are up to the challenge of climate change.

Class #	Reading	Subject	Notes
1	1-30, 44-47	Science of Climate Change and its Effects	Pages 1-30 provide an overview of the science and effects of climate change. Pages 44-47 discuss long-term targets policymakers are attempting to achieve to avoid the worst impacts of climate change. If you want to explore the socio-economic and national security aspects of climate change, we recommend that you cover pages 1-30 on day 1 and pages 31-47 on day 2.
2	49-69	General Approach to Climate Change Mitigation	These pages introduce the general strategies to pollution control, including command-and-control regulation, cap- and-trade, and carbon taxes. We have found that it's useful to discuss these approaches at the outset, before exploring the strategies governments have actually employed, so that students have a big picture understanding of how to approach climate change mitigation.
3	69-87 (87-93 optional)	Sectoral Mitigation and Costs and Benefits	

#### IV. 2-Credit Course – 14 Classes – International

			state/region/country. Have each group explain specific strategies it would use to reduce its sector's emissions, the level of reduction it could achieve, the amount of time it would take to achieve the reductions, and the costs/benefits associated with the reductions. Students should then try to expand their proposals to the international level. If you prefer to avoid group exercises, you can always assign different sectors to individual students.
4	127-154, 161-164 Reference: UNFCCC, 927-46	UNFCCC and International Law	If most of your students are new to international law, we think it is helpful to discuss a few key international concepts before discussing the terms of the UNFCCC itself. At a minimum, students should learn
			about treaty formation, state sovereignty, and common but differentiated responsibility. The proposed reading assignment includes those elements.
			Most of the reading in this material discusses the global politics behind climate change, so while the assignment is somewhat longer, it will enable you to focus on international lawmaking processes and principles.
5	169-187 Reference: UNFCCC, 927-46	UNFCCC	Some professors may choose to cover the UNFCCC in less than one class, since it creates relatively few substantive obligations. However, we recommend devoting a day to covering the UNFCCC, because it will help the students understanding the structural framework of the climate change regime, the various responsibilities of the parties, the role of CoP, etc.
6	189-205, 205-210, 215-219, 221-224; Reference:	Kyoto Protocol Overview	The purpose of this chapter is to provide students with a good understanding of the politics of climate change and the main elements of the Kyoto Protocol. As with the UNFCCC,

	Kyoto Protocol, 947-66		we think students can develop a good understanding of the politics of climate change without too much instruction from their professors. In terms of Kyoto, our proposed reading assignment focuses on the most important "action items" of Kyoto: Article 3 commitments and the flexibility mechanisms. Once students get a good idea of how these work, we recommend that you return to this chapter for an introduction to policies and measures, forests and land use, and implementation and compliance.
7	225-239; Reference: Kyoto Protocol, 947-66	Implementing Kyoto: The Flexibility Mechanisms	This relatively short reading assignment assumes you will spend some time explaining how the obligations in Article 3 work with the flexibility mechanisms. We often end up creating a mock registry that we use to demonstrate the nuts and bolts of how the mechanisms change the Parties' assigned amounts.
8	239-269	The Flexibility Mechanisms and Implementation Issues (including the EU ETS)	These pages discuss supplementarity, additionality, verifiability, permanence, and equity as they play out with the flexibility mechanisms. They also provide students with an opportunity to explore the policy concerns associated with the flexibility mechanisms.
9	271-294; Reference: Kyoto Protocol, 947-66	Land Use and Forestry	The first part of this chapter explains the contribution of land use and forestry to GHG emissions and sequestration. Students should be able to understand much of this information without too much guidance from professors. The Kyoto Protocol's treatment of land use and forestry (pp. 284-294) is complicated and quite confusing. We anticipate it will take most of the class to explain to students. Deforestation will be a big issue as the Parties negotiation the post-Kyoto regime. We recommend you include pp. 295-303 in your discussion of that.

10	305-324, 324-333; Reference: Kyoto Protocol, 947-66	Compliance	Students often want to know about the consequences of non-compliance under international treaties. The recommended reading looks at this issue and the specific compliance requirements of the UNFCCC and Kyoto. The reading discusses the role customary international law could play in climate disputes. Students often like exploring these issues, but if you are short on time, we think you can skip them.
11	335-358, 364-382, 295-303	Post-Kyoto:Politics, Goals,WhoisCovered,DeforestationIntensityTargets,ActionTargets,Policies and Measures	This introduces students to issues the Parties will attempt to address in the post-Kyoto framework. We have used these materials to set the stage for an in-class negotiation of the post-Kyoto treaty.
12	384-392, 392-402, 427-442	Other International Law Regimes: The Ozone Regime; Biodiversity Regimes; Human Rights	In addition to any specific treaties addressing climate change, these materials provide students with alternative models or concerns they may want to explore as they consider and/or debate what the post-Kyoto regime could include.
13	442-463	Climate Change and the International Trade Regime	
14	909-926	The Future; In-Class Negotiation	

# V. Seminar Course – 14 Classes – Domestic

Class #	Reading	Subject	Notes
1	1-30, 44-47	Science of Climate Change	Pages 1-30 provide an overview of the
-	1 00, 11 17	and its Effects	science and effects of climate change.
			Pages 44-47 discuss long-term targets
			policymakers are attempting to achieve
			to avoid the worst impacts of climate
			change.
2	49-69	General Approach to Climate	These pages introduce the general
_	., .,	Change Mitigation	strategies to pollution control, including
			command-and-control regulation, cap-
			and-trade, and carbon taxes. We have
			found that it's useful to discuss these
			approaches at the outset, before
			exploring the strategies governments
			have actually employed, so that
			students have a big picture
			understanding of how to approach
			climate change mitigation.
3	69-87 (87-93	Sectoral Mitigation and	Discussing the sectoral approach to
	optional)	Costs and Benefits	climate change mitigation provides
	<b>L</b> '		students the opportunity to explore the
			specific measures particular industries
			may need to employ to reduce GHG
			emissions. We have found that students
			enjoy discussing the sectoral approach,
			in part because it makes climate change
			seem more doable than larger programs
			like cap-and-trade may indicate. In
			addition, it presents tangible targets that
			students can explore. The cost/benefit
			section beginning on page 81
			introduces students to a major factor in
			the climate change debate and, in our
			view, is worth exploring.
			Possible assignment or class exercise:
			Divide the students in your class into
			groups representing sectors responsible
			for most GHG emissions in your
			state/region/country. Have each group
			explain specific strategies it would use
			to reduce its sector's emissions, the

			level of reduction it could achieve, the amount of time it would take to achieve the reductions, and the costs/benefits associated with the reductions. If you prefer to avoid group exercises, you can always assign different sectors to individual students.
4	465-478 (optional or skim); 478- 495; 261-269 (optional)	Introduction to U.S. Policies; EU ETS (optional)	More than anything, this chapter introduces students to U.S. climate change politics and the difficulty associated with enacting comprehensive climate change legislation. If you want to analyze proposed U.S. legislation in greater detail, you may want to assign only pages 486-495, materials related to the House's climate change bill ( <i>see</i> Chapter 11 in the Teacher's Manual) and the section regarding the EU ETS (pp. 261-269)
5	497-526 (526-536 optional)	Article III standing (and political question optional)	If your students have taken several environmental law classes that discuss standing, you may want to cover both standing and political question in one day, with an emphasis on exploring whether the nature of climate change justifies the courts' wariness to accept jurisdiction. However, if you want to devote the full class period to standing, we recommend that you cover the political question materials when you discuss torts.
6	538-553	Clean Air Act: Overview and EPA Authority (Mass v. EPA)	
7	553-587	Clean Air Act: Vehicle Emissions Standards and Preemption, Coal-Fired Power Plants and Future Regulation Under the CAA	If you haven't discussed whether comperhensive U.S. climate legislation should preempt the CAA, you may want to do that after students have gained a better understanding of how the CAA may regulate GHG emissions.
8	715-737, 737-753	CAFE Standards and Transportation Policy Reform	We think the CAFE program deserves exploration after the CAA, since the respective roles of CAA vehicle emissions standards and CAFE standards come up frequently in the

			CAA cases. Pages 737-753 discuss
			transportation policy reform, which
			falls largely in the hands of state and
			local governments.
9	609-630	Endangered Species Act	The first two options here reflect the
			fact that students and/or professors may
	or	or	have a particular interest in exploring
			laws (like NEPA and the ESA) that do
	588-608	National Environmental	not directly relate to climate change,
	500 000	Policy Act	but which have nonetheless played an
	or	or	important role in U.S. climate change
	01	01	-
	752 701		policy.
	753-781	Alternative Fuels	
			Alternatively, you may want to focus
			on a specific issue, like alternative fuel
			policy, to explore how the United
			States should respond to the unintended
			consequences of mitigation measures
			that initially appear beneficial.
10	783-805;	Torts Cases and Causes of	Although climate change litigants have
	526-536;	Action; Political Question;	brought a number of tort cases, the
	820-825	Future Implications	courts have thus far dismissed them as
		I	raising non-justiciable political
			questions. The recommended reading
			provides the students the opportunity to
			explore how a litigant would frame a
			tort cause of action for climate change,
			why courts have been so reluctant to
			-
			adjudicate the cases, and whether tort
			law should play a role in climate
			change mitigation. You may want to
			devote 2 days to torts, depending upon
			your interest in the subject matter.
11	651-673	Energy Policy: The	This reading assignment provides
		Traditional Model	students with an overview of energy
			and electricity regulation to explain
			why fossil fuels dominate the U.S.
			energy sector. Once students
			understand this background
			information, they will likely have a
			better understanding of why reform has
			proven to be so difficult.
12	673-694	Energy Policy: Reform	Pages 673-694 discuss types of energy
1 4	(optional, or	Lifergy I oney. Reform	sources and the pros and cons of each
	· •		-
	assign but do		energy source. Students should read
	not teach);		these materials, but we think they are

	694-713		self-explanatory and do not require further instruction. Pages 694-713 discuss the various ways in which regulators may restructure the electricity sector to reduce fossil fuel use.
13	827-858	State and Local Measures	This reading assignment assumes you would briefly touch on state and local actions, without going into great detail regarding any of them. However, you may prefer to expand the discussion by dedicating 2 days to the role of states and local governments. With two days, you could take an in-depth look at particular state or local laws in the region or state of your specific lawschool. An expanded discussion may also explore whether states and local governments should continue to play an active role in climate change mitigation if Congress passes a national climate change law.
14	909-926	In-class negotiation/debate	The in-class negotiation could serve as a chance for students to negotiate U.S. climate legislation and explore whether Congress should preempt certain statutes, tort law, and actions by states and local governments. The negotiation could serve as a good way for students to tie different aspects of the class together.