

UP 486 Planning with Climate Change

Department of Urban and Regional Planning | University of Illinois at Urbana-Champaign

Fall 2021

Instructor:	Professor Sean Kennedy	seankenn@illinois.edu
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Office hours:	By appointment	
Course sessions:	MW 3:30PM - 4:50PM	

Course Description

COVID-19 represents one of the greatest socio-economic disruptions in living memory. According to some observers, the disruptions wrought by COVID-19 provide a glimpse into a possible future if the mounting challenges of climate change remain unaddressed. Much like COVID-19, the climate crisis is global in scope and unprecedented in scale, yet with highly localized and geographically uneven causes and impacts. Like COVID-19, climate impacts often fall on the most vulnerable of communities – across the global North and global South – exacerbating existing patterns of socio-economic and racial inequality. Just as solutions to the COVID-19 pandemic entail more than merely reducing infections, addressing the climate crisis requires attention to processes of political and socio-economic transformation that go well beyond the technical challenge of reducing greenhouse gas emissions.

This junior/senior/graduate-level course provides an introduction to the role of planning in addressing the climate crisis through the lens of social and environmental justice. The course is divided into three major sections:

1. **From Climate Crisis to Climate Justice.** We begin by assessing the breadth and extent of the climate crisis. We then examine the ways climate change impacts – and climate actions – may fall disproportionately on communities of people of color, low-income populations, and Indigenous populations. Finally, we examine the processes and structures of urban climate governance.
2. **Climate Action Planning.** Section Two begins by examining the relationship between cities and climate change. We then introduce and evaluate practices for greenhouse gas emissions accounting. Topics include developing inventories and forecasts, establishing emissions reduction targets, and the justice implications of alternative accounting approaches. We then critically examine emissions reduction strategies in the areas of energy, transportation, the built environment, waste, and ecosystem services, focusing on their environmental effectiveness and implications for social and environmental justice.
3. **Vulnerability, Resilience, and Beyond.** The terms vulnerability and resilience have become increasingly common in recent years, yet there remains a lack of clarity regarding their definitions. Section Three begins by examining how vulnerability is produced, paying attention to historical political and economic as well current environmental processes. We then turn to the process for conducting a climate change vulnerability assessment, laying the foundation for developing adaptation strategies and actions. We end by exploring possible futures for cities and planning as we come to terms with the ‘new normal’.

Course objectives

Upon successful completion of UP 486 students will:

- Understand and communicate the basic science of climate change with a deeper understanding of points of leverage for planning intervention
- Apply theories on climate action to current events from national and international contexts
- Conduct and understand the limitations of basic greenhouse gas emissions accounting
- Compare and develop formal and informal strategies to mitigate and adapt to climate change across contexts

Course Format

This course will combine lectures, in-class and online discussions, and small group exercises. All readings and links to video and audio files are posted on the course Compass site. The readings will form the basis for in-class discussion, so you should complete all assigned readings *before* class. All assignments should be submitted through Canvas unless otherwise noted.

Course Assessment

The final grade has the following components:

	<u>Due date / Quantity</u>	<u>Undergraduate</u>	<u>Graduate</u>
Course Q&A	10 total	10%	10%
Reading Responses and Replies	10 total	20%	20%
Climate in the News	2 total	10%	--
Climate in the News: Comments	10 total	10%	10%
Leading Discussion	2 total	--	10%
Climate Action Plan Review	10/1	20%	10%
Project Outline	10/15	5%	5%
Project Draft	11/12	5%	5%
Project presentation	12/6	10%	10%
Final Project	12/17	10%	20%

Please see the Course Requirements section below to understand how each element will be graded and grade reductions for late assignments.

Course Requirements

Course Q & A

Over the semester, you will post at least 10 questions or answers on the discussion board. Your questions should focus on the course content (e.g., readings, lectures, key concepts) rather than administrative issues (e.g., deadlines, Canvas issues, etc.). You may post a question or respond to an existing question.

Reading responses and replies (10 total)

Over the semester, you will post ten reading responses *and* ten replies on the course discussion board. Graduate student responses should be based on at least one of the graduate readings for the week, indicated by * in the reading list at the end of this syllabus. Your responses should be about 300-400 words and must be posted before class on **Monday**.

Engage one or more of the readings with some variant of one of these prompts: write about something that was important to you, whether you agreed with the author or not, and explain why; list the main argument of the reading and react to them with one of your own; and/or explain how one or more the readings relate to each other, to you, and to the world. You may include quotations that are useful for your argument. End your memo with one open-ended discussion question for the class that emerges from the issues you raised in your response. Feel free to write informally or in the first person, but please spellcheck your work and make sure it makes sense. As always, be respectful of other peoples' views and keep your minds open.

Your reply to a class member's reading response should be about 100 words and must be posted before class on **Wednesday**. Pick someone's response that interests, provokes thoughts, even disagreement, and/or enlightens a subject for you. It is fine if a few people reply to the same response.

Climate in the news

Over the semester, undergraduate students will present two news article summaries to the class. The summaries should cover where and when the article was published, the main topics and arguments presented in the article (who, what, where, when, and why), and an analysis of the accuracy and any potential bias in the reporting. The summary should conclude with a discussion question which we will discuss in groups. Where possible, discussion questions should encourage students to make connections between the article and material covered in class, as well as their personal experiences.

When searching for news articles, I encourage you to search for positive examples of just and sustainable forms of climate action. A sign-up sheet will be available in Week 1.

Resources for media coverage of climate-related issues include:

- Planetizen – Climate Change <https://www.planetizen.com/tag/climate-change>
- Climate Desk - <https://www.climatedesk.org>
- The Guardian's Environment page - <http://www.guardian.co.uk/environment>
- NYTimes Climate and Environment page - <https://www.nytimes.com/section/climate>
- Climate Home News - <https://www.climatechangenews.com/>

Leading Discussion (Graduate students only)

Graduate students will work in small groups (2-3 students) to lead two class discussions over the semester. Students will present an overview of ONE of the week's graduate reading/s (~ 10 mins) and then lead the class in a discussion (~20 mins). Graduate student-led discussions will typically take place on **Wednesdays**. Discussion prompts should draw on the discussion board posts and build on the material contained in the other readings for the week. A sign-up sheet will be posted in Week 1.

Review of City Climate Action Plan

Students will conduct and present a review of an existing climate action plan from a city of their choice. The review should be approximately 2,000 words (5-8 pages) and should describe and evaluate the following elements:

- a. Inventory methodology
- b. Targets and policies for reducing emissions

- c. Governance, including public participation and engagement
- d. Attention to issues of social and environmental justice

Students will share a brief overview of their review in class.

Final Project

For the final project, students will work in small teams (4-5 students) to compare existing and potential climate change interventions in two cities of their choice. These interventions should involve GHG emissions reductions, although it is expected that they may be motivated by broader objectives. For this assignment, you are encouraged to look beyond formal climate action plans to consider interventions led by social movements, the private sector, as well as local governments. The cities should be located in different countries, one in the global North and one in the global South. This assignment will be completed in segments throughout the semester, with each segment relating to specific topics covered in class. Students will present an overview of their projects during the final week of classes. The final project report is due Friday of finals week at 11:59 PM.

Conversions from Numeric to Letter Grades

Numeric grades will be converted into letter grades using the scale outlined below. The course will not be graded on a curve, and there will be no rounding applied to numeric grades.

Numerical Grade	Letter Grade		Numerical Grade	Letter Grade
≥ 97.5	A+		> 72.5	C
> 92.5	A		> 70.0	C-
> 90.0	A-		> 67.5	D+
> 87.5	B+		> 62.5	D
> 82.5	B		> 60.0	D-
> 80.0	B-		< 60.0	F
> 77.5	C+			

College and Campus Policies and Resources

COVID-19 expectations and safety behavior: Following University policy, all students are required to engage in appropriate behavior to protect the health and safety of the community. Students are also required to follow the campus COVID-19 protocols.

Students who feel ill must not come to class. Students who test positive for COVID-19 or have had an exposure that requires testing and/or quarantine must not attend class. The University will provide information to the instructor, in a manner that complies with privacy laws, about students in these latter categories. These students are judged to have excused absences for the class period and should contact the instructor via email about making up the work.

Students who fail to abide by these rules will first be asked to comply; if they refuse, they will be required to leave the classroom immediately. If a student is asked to leave the classroom, the non-compliant student will be judged to have an unexcused absence and reported to the Office for Student Conflict Resolution for disciplinary action. Accumulation of non-compliance complaints against a student may result in dismissal from the University.

Face coverings

All students, faculty, staff, and visitors are required to wear face coverings in classrooms and university spaces. This is in accordance with CDC guidance and University policy and expected in this class. Please refer to the University of Illinois Urbana-Champaign's COVID-19 website for [further information on face coverings](#).

Building access

In order to implement COVID-19-related guidelines and policies affecting university operations, instructional faculty members may ask students in the classroom to show their Building Access Status in the Safer Illinois app or the Boarding Pass. Staff members may ask students in university offices to show their Building Access Status in the Safer Illinois app or the Boarding Pass. If the Building Access Status says "Granted," that means the individual is compliant with the university's COVID-19 policies—either with a university-approved COVID-19 vaccine or with the on-campus COVID-19 testing program for unvaccinated students.

Students are required to show only the Building Access Screen, which shows compliance without specifying whether it was through COVID-19 vaccination or regular on-campus testing. To protect personal health information, this screen does not say if a person is vaccinated or not. Students are not required to show anyone the screen that displays their vaccination status. No university official, including faculty members, may ask students why they are not vaccinated or any other questions seeking personal health information.

Diversity: UIUC is committed to equal opportunity for all persons, regardless of race, ethnicity, religion, sex, gender identity or expression, creed, age, ancestry, national origin, handicap, sexual orientation, political affiliation, marital status, developmental disability, or arrest or conviction record. We value diversity in all of its definitions, including who we are, how we think, and what we do. We cultivate an accessible, inclusive, and equitable culture where everyone can pursue their passions and reach their potential in an intellectually stimulating and respectful environment. We will continue to create an inclusive campus culture where different perspectives are respected and individuals feel valued.

Support resources and supporting fellow students in distress: As members of the Illinois community, we each have a responsibility to express care and concern for one another. We know that students sometimes face challenges that can impact academic performance (examples include mental health concerns, food insecurity, homelessness, personal emergencies). Should you find that you or a fellow student are managing such a challenge and that it is interfering with your coursework, you are encouraged to contact the professor or the [Student Assistance Center \(SAC\)](#) in the Office of the Dean of Students for support and referrals to campus and/or community resources. The SAC has a Dean on Duty available to see students who walk in, call, or email the office during business hours. For mental health emergencies, you can call 911 or walk-in to the Counseling Center; no appointment is needed.

The University [Mental Health Resources](#) website can help you decide what kind of assistance you might need and how to get connected to services for **mental health, wellness, access, and accommodation**. The resources on this website reflect many different approaches, ranging from personal counseling to forming groups to address issues in your school or work environment.

Technology access: The [Technology Loan Program](#) is a partnership established across the campus IT community to loan technology hardware to eligible students who have unmet needs. This includes loaning computers and internet hotspot technologies to support online learning and work-from-home activities for the duration of the Covid-19 crisis. Students in need are encouraged to contact the [Student Assistance Center \(SAC\)](#) at 217-333-0050 or helpdean@illinois.edu. The SAC helps students understand university policies and procedures, connects them to campus resources, and supports students in crisis.

Attendance: It is the instructor's decision as to when a student's absences become excessive and should be reported. If in the opinion of an instructor, the attendance of a student becomes so irregular that his or her scholarship is likely to be impaired, the instructor may submit an [irregular attendance form](#) to the Associate Dean of the student's college. A copy is forwarded to the student, who should contact the instructor immediately to work out a solution. If irregular attendance continues without excuse, the instructor may request the student be withdrawn from the course. This request for withdrawal would result in a grade of F for the course. Extenuating circumstances will always be considered when supporting evidence is presented. See [Rule 1-501](#) and [Rule 1-502](#) in the Student Code for more information.

Special Circumstances: Please communicate any expected or unexpected absences with the instructor as early as possible. If you will be absent for a class period, you must alert the instructor before noon that day to potentially receive an excused absence. Every effort will be made to work with students with unusual or unexpected obligations outside the course (family emergencies, health issues, participation in University sanctioned activities, etc.).

Safety and Security in the Classroom: Emergencies can happen anywhere and at any time. It is important that we take a minute to prepare for a situation in which our safety or even our lives could depend on our ability to react quickly. When we're faced with any kind of emergency – like fire, severe weather, or if someone is trying to hurt you – we have three options: Run, hide or fight. For more information, please refer to the General Emergency Response Recommendations at <http://www.senate.illinois.edu/emergencyresponse.pdf>.

Sexual Misconduct Reporting Obligation: The University of Illinois is committed to combating sexual misconduct. Faculty and staff members are required to report any instances of sexual misconduct to the University's Title IX and Disability Office. In turn, an individual with the Title

IX and Disability Office will provide information about rights and options, including accommodations, support services, the campus disciplinary process, and law enforcement options.

A list of the designated University employees who, as counselors, confidential advisors, and medical professionals, do not have this reporting responsibility and can maintain confidentiality can be found here: <https://wecare.illinois.edu/resources/students/#confidential>. Other information about resources and reporting is available here: <http://wecare.illinois.edu>.

Writers Workshop: The Writers Workshop contributes to the intellectual and creative activities of the University of Illinois by providing support for all writers in the campus community--undergraduate and graduate students, faculty, and staff. The Writers Workshop provides individual and small-group consultations, hosts workshops on academic and professional writing concerns, sponsors writing groups and writing retreats, and visits classrooms upon request to introduce our resources or to provide a tailored, interactive presentation. See <http://www.cws.illinois.edu/workshop/> for more info.

FERPA: Any student who has suppressed their directory information pursuant to Family Educational Rights and Privacy Act (FERPA) should self-identify to the instructor to ensure the protection of the privacy of their attendance in this course. See <http://registrar.illinois.edu/ferpa> for more information.

Students with Disabilities: To obtain disability-related academic adjustments and/or auxiliary aids, students with disabilities must contact the course professor and the Disability Resources and Educational Services (DRES) as soon as possible. To contact DRES, you may visit 1207 S. Oak St., Champaign, call 333-4603, email disability@illinois.edu or go to the [DRES website](#).

Student Planning Organization (SPO): SPO's mission is to provide a vehicle for communication between staff, faculty, and students in the planning program, provide forums for workshops and discussions and organize social events for the department. SPO is a student-run organization that focuses on student needs. For more information regarding social events, professional development opportunities, and general meeting dates, please visit their website at spouiuc.weebly.com.

FAA Writing Services: The FAA Writing Advisor, Amanda Liepert, offers one-on-one writing assistance to undergraduate and graduate students in Fine and Applied Arts (FAA), including students from other colleges enrolled in this class. The Writing Advisor is available to assist students with classroom assignments; theses and dissertations; artist statements, short bios and program notes; grant applications; scholarly publications; resumés, portfolios, and cover letters; and many other kinds of documents. Email the Advisor at liepert@illinois.edu to request an appointment.

Tentative Schedule– Fall 2021

Note: Adjustments may be made to the schedule and content if advantageous for learning

WEEK	DATE	TOPIC	ASSESSMENT / EVENTS
SECTION 1 - Cities, Climate Change, and Climate Justice			
1	23-Aug	Introduction / Course overview	
2	30-Aug	The Climate Challenge	
3	6-Sep	Climate governance	NO CLASS 9/6 Labor Day
4	13-Sep	Climate Justice and Just Transitions	
SECTION 2: Climate Action Planning			
5	20-Sep	Cities and Climate Change	
6	27-Sep	Climate Action Planning: Overview and Process	
7	4-Oct	Greenhouse gas emissions accounting	
8	11-Oct	Energy	
9	18-Oct	Transportation and land use	
10	25-Oct	Consumption and waste	
11	1-Nov	Beyond technical fixes, and beyond the city	Assignment: Climate action plan review due 11/1
SECTION 3: Vulnerability, Resilience, and Beyond			
12	8-Nov	Adaptation and resilience I	Assignment: Project draft due 11/19
13	15-Nov	Adaptation and resilience II	
	22-Nov		FALL BREAK
14	29-Nov	The future	
15	6-Dec	Presentations	Assignment: Presentations 12/6 & 12/8
16	13-Dec	Finals	Assignment: Final project due 12/17

UP 486: Planning with Climate Change

Department of Urban and Regional Planning | Spring 2021

Schedule of Readings

* Required for graduate students only, optional for undergraduate students

Week 1. Introduction / Course overview

O'Neill, Claire, and Nadja Popovich. 2020. "The Year in Climate." *The New York Times*, December 17, 2020, sec. Climate. <https://www.nytimes.com/interactive/2020/climate/2020-climate-change.html>.

Heglar, Annaise Heglar. 2019. "I Work in the Environmental Movement. I Don't Care if You Recycle." *Vox*, June 4. (<https://www.vox.com/the-highlight/2019/5/28/18629833/climate-change-2019-green-new-deal>).

Week 2. The climate crisis

Klein, Naomi. Chapter 1 in *This changes everything: Capitalism vs. the climate*. Simon and Schuster, 2015.

Boswell et al (2019), Climate Action Planning (CAP) Appendix A: Climate Science

CAP Ch 10: Time to Act

SKIM - IPCC, 2021: Summary for Policymakers. In: *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge University Press.

Week 3. Climate governance

Bulkeley, Harriet, and Peter Newell (2015) Introduction and Chapter 1 - Governing climate change: A brief history in Bulkeley, Harriet, and Peter Newell. *Governing climate change*. Routledge, 2015.

Anguelovski, Isabelle, and JoAnn Carmin. 2011. "Something Borrowed, Everything New: Innovation and Institutionalization in Urban Climate Governance." *Current Opinion in Environmental Sustainability* 3 (3): 169–75. <https://doi.org/10.1016/j.cosust.2010.12.017>.

*Cousins, Joshua J., and Dustin T. Hill. 2021. "Green Infrastructure, Stormwater, and the Financialization of Municipal Environmental Governance." *Journal of Environmental Policy & Planning*, March, 1–18. <https://doi.org/10.1080/1523908X.2021.1893164>.

Week 4. Climate justice and just transitions

Rodriguez, Majandra. 2015. "Notes for Civil Society Organizing Against the Climate Crisis." *350.org*, September 3. (<https://350.org/facing-climate-change-through-justice-and-intersectionality/>).

Newell, Peter, and Dustin Mulvaney. 2013. "The Political Economy of the 'Just Transition.'" *The Geographical Journal* 179 (2): 132–40. <https://doi.org/10.1111/geoj.12008>.

*Ranganathan, Malini, and Eve Bratman. n.d. "From Urban Resilience to Abolitionist Climate Justice in Washington, DC." *Antipode* n/a (n/a). Accessed January 14, 2021. <https://doi.org/10.1111/anti.12555>.

*Kaijser, Anna, and Annica Kronsell. 2014. "Climate Change through the Lens of Intersectionality." *Environmental Politics* 23 (3): 417–33. <https://doi.org/10.1080/09644016.2013.835203>.

* Rice, J.L., Cohen, D.A., Long, J., Jurjevich, J.R. 2019. Contradictions of the Climate Friendly City: New Perspectives on Eco- Gentrification and Housing Justice. *International Journal of Urban and Regional Research*.

Week 5. Cities and Climate Change

[Why Cities? Ending Climate Change Begins in the City](#) (C40 Initiative)

Prugh, Tom, and Michael Renner. "Cities and Greenhouse Gas Emissions: The Scope of the Challenge." In *State of the World*, pp. 77-89. Island Press, Washington, DC, 2016.

CAP Ch 5: Strategies for Creating Low-Carbon Communities

*Whitehead, Mark. 2013. "Neoliberal Urban Environmentalism and the Adaptive City: Towards a Critical Urban Theory and Climate Change." *Urban Studies* 50 (7): 1348–67.

<https://doi.org/10.1177/0042098013480965>.

Week 6. Climate Action Planning: Overview and Process

CAP Ch 1: Climate Action Planning

CAP Ch 2: Creating a Framework for Community Action

CAP Ch 3: Community Engagement and Collaboration

UN HABITAT. (2015). Guiding Principles for City Climate Action Planning. Available at <https://e-lib.iclei.org/wp-content/uploads/2016/02/Guiding-Principles-for-City-Climate-Action-Planning.pdf>

*Bassett, Ellen, and Vivek Shandas. 2010. "Innovation and Climate Action Planning." *Journal of the American Planning Association* 76 (4): 435–50. <https://doi.org/10.1080/01944363.2010.509703>.

Week 7. Greenhouse gas emissions accounting

Nadine Ibrahim - Greenhouse Gas Emissions in Global Cities

https://www.youtube.com/watch?v=P9ADYaFXiPE&feature=emb_logo

CAP Ch 4: Greenhouse Gas Emissions Accounting

C40. 2018. "Consumption-Based GHG Emissions of C40 Cities." New York: C40.

<https://www.c40.org/researches/consumption-based-emissions>.

*Dodman, David. 2009. "Blaming Cities for Climate Change? An Analysis of Urban Greenhouse Gas Emissions Inventories." *Environment and Urbanization* 21 (1): 185–201.

<https://doi.org/10.1177/0956247809103016>.

Week 8. Renewable energy and energy efficiency

Stokoes, Leah. 2020. How quickly do we need to ramp up renewables? Look to the narwhal

<https://www.youtube.com/watch?v=DIRdg7NmsOg>

Ch 9 "Past transitions" and Ch 10 "Future Transitions" in Bridge, Gavin, Stewart Barr, Stefan Bouzarovski, Michael Bradshaw, Ed Brown, Harriet Bulkeley, and Gordon Walker. 2018. *Energy and Society: A Critical Perspective*. Routledge.

*Yenneti, Komali, Rosie Day, and Oleg Golubchikov. “Spatial Justice and the Land Politics of Renewables: Dispossessing Vulnerable Communities through Solar Energy Mega-Projects.” *Geoforum* 76 (November 1, 2016): 90–99. <https://doi.org/10.1016/j.geoforum.2016.09.004>.

*Lutzenhiser, Loren. “Through the Energy Efficiency Looking Glass.” *Energy Research & Social Science* 1 (March 1, 2014): 141–51. <https://doi.org/10.1016/j.erss.2014.03.011>.

*Burke, Matthew J., and Jennie C. Stephens. 2017. “Energy Democracy: Goals and Policy Instruments for Sociotechnical Transitions.” *Energy Research & Social Science*, Policy mixes for energy transitions, 33 (November): 35–48. <https://doi.org/10.1016/j.erss.2017.09.024>.

Week 9. Transportation and land use

Renner, Michael. 2016. “Supporting Sustainable Transportation.” In *State of the World: Can a City Be Sustainable?*, 177–94. State of the World. Washington, DC: Island Press/Center for Resource Economics. https://doi.org/10.5822/978-1-61091-756-8_15.

Huizenga, Cornie, Karl Peet, and Sudhir Gota. 2016. “Urban Transport and Climate Change.” In *State of the World: Can a City Be Sustainable?*, 195–210. State of the World. Washington, DC: Island Press/Center for Resource Economics. https://doi.org/10.5822/978-1-61091-756-8_16.

*Henderson, Jason. 2020. “EVs Are Not the Answer: A Mobility Justice Critique of Electric Vehicle Transitions.” *Annals of the American Association of Geographers* 110 (6): 1993–2010. <https://doi.org/10.1080/24694452.2020.1744422>.

*Simpson, Michael. 2020. “Fossil Urbanism: Fossil Fuel Flows, Settler Colonial Circulations, and the Production of Carbon Cities.” *Urban Geography* 0 (0): 1–22. <https://doi.org/10.1080/02723638.2020.1840206>.

Week 10. Consumption and waste

ChettiparambIn, Angélique, 2020 In My Backyard: Waste and Energy in a Circular Economy <https://unhabitat.org/in-my-backyard-angelique-chettiparamb>

Selected chapters TBD from Smith, Alexa (2021) An Economic Eclipse: Shifting Toward a Sustainable Future by Eliminating Waste

*Graduate reading TBD

Week 11. Beyond technical fixes, and beyond the city

Pincetl, Stephanie, Thomas Gillespie, Diane E. Pataki, Sassan Saatchi, and Jean-Daniel Saphores. 2013. “Urban Tree Planting Programs, Function or Fashion? Los Angeles and Urban Tree Planting Campaigns.” *GeoJournal* 78 (3): 475–93.

Irfan, Umair. 2020. “Can You Really Negate Your Carbon Emissions? Carbon Offsets, Explained.” Vox. February 27, 2020. <https://www.vox.com/2020/2/27/20994118/carbon-offset-climate-change-net-zero-neutral-emissions>.

*Kabisch, Nadja, Niki Frantzeskaki, Stephan Pauleit, Sandra Naumann, McKenna Davis, Martina Artmann, Dagmar Haase, et al. 2016. “Ecology and Society: Nature-Based Solutions to Climate Change Mitigation and Adaptation in Urban Areas: Perspectives on Indicators, Knowledge Gaps, Barriers, and Opportunities for Action.” *Ecology and Society* 21 (2). <https://doi.org/10.5751/ES-08373-210239>.

Week 12. Adaptation and resilience I

CAP Ch 6: Climate Change Vulnerability Assessment

CAP Ch 7: Strategies for Creating Resilient Communities

*Carmin, JoAnn, Isabelle Anguelovski, and Debra Roberts. 2012. "Urban Climate Adaptation in the Global South: Planning in an Emerging Policy Domain." *Journal of Planning Education and Research* 32 (1): 18–32. <https://doi.org/10.1177/0739456X11430951>.

Week 13. Adaptation and resilience II

O'Brien, Karen. 2012. "Global Environmental Change II: From Adaptation to Deliberate Transformation." *Progress in Human Geography* 36 (5): 667–76. <https://doi.org/10.1177/0309132511425767>.

Thomas, K. A., & Warner, B. P. (2019). Weaponizing vulnerability to climate change. *Global Environmental Change*, 57, 101928.

*Bigger, Patrick, and Nate Millington. 2019. "Getting Soaked? Climate Crisis, Adaptation Finance, and Racialized Austerity." *Environment and Planning E: Nature and Space*, September. <https://doi.org/10.1177/2514848619876539>.

Week 14. The Future

Stone, Madeleine. 2021 "5 possible climate futures—from the optimistic to the strange", *National Geographic*

Excerpt from Robinson, Kim Stanley. 2020. *The Ministry for the Future: A Novel*. Orbit. <https://www.orbitbooks.net/orbit-excerpts/the-ministry-for-the-future/>

*Tozer, Laura, and Nicole Klenk. 2018. "Discourses of Carbon Neutrality and Imaginaries of Urban Futures." *Energy Research & Social Science, Energy and the Future*, 35 (January): 174–81. <https://doi.org/10.1016/j.erss.2017.10.017>.