

PPDE 634 Methodology, Methods and Tools for Urban Sustainability 4units Spring 2021
Professor Hilda Blanco Meeting: Tuesdays 8:30-11:50 via Zoom
e-mail: hblanco@usc.edu

There are no specific pre-requisites for the course, but students should have taken an introductory course on sustainable cities or sustainability policy.

Introduction and Purposes

This course focuses on methods and tools to assess and plan for urban sustainability, from a critical, comparative perspective. Its focus is not on specific strategies to achieve urban sustainability. The first part of the course will examine general approaches, some foundational to urban sustainability, such as systems analysis, others directly related to land use, such as environmental impact assessment and land use analysis; as well as more general methods related to specific aspects of analyzing or planning for urban sustainability, such as vulnerability analysis or multi-criteria analysis. The second part of the course will focus on more specific approaches to urban sustainability, with a special emphasis on climate change, including green house gas inventory methods and climate change mitigation and adaptation planning, and sustainable indicator systems.

Learning Outcomes

Knowledge and Understanding

On completion of the course, the students shall demonstrate

- An understanding of and capacity to reflect upon methodology and a range of assessment and planning methods for urban sustainability
- An understanding of how the choice and use of theory, methodological approach and methods have implications for the full planning process
- A particular understanding of systems analysis and spatial analysis, including assumptions and principles, especially as related to climate change planning

Skills and Abilities

On completion of the course, the student shall demonstrate the ability to

- Discuss and justify various methodological approaches, concrete methods, and various types of data
- Create and present both in written and oral forms a coherent approach for applying several methods for urban sustainability, and to assess the implications of various methodological choices
- Select and implement appropriate methods for various aspects of urban sustainability, discuss data and evaluate results
- Analyze complex sustainability issues using various methods and tools (e.g., vulnerability or life-cycle analysis)
- Work constructively in a team and communicate effectively with people from other disciplines.

Grading/Assignments

Students are expected to attend classes, and complete assigned readings for the week before class meetings. Written assignments must be turned in at the beginning of class. No late assignments will be accepted unless prior arrangements have been made with the instructor.

The assignments for the class will consist of group assignments and an individual report as follows:

Group Presentations of Methods and Tools. Students will be organized into small groups. Each week a student group will be responsible for:

- a) Providing a written summary of the readings assigned—about 1 page per reading;
- b) An oral Powerpoint presentation on the method(s) assigned:
 - Providing examples of how the method has been used;
 - Leading the class on a discussion of the method;
 - Providing exercises to give students practice in applying the methods.

Each group will lead the class twice during the semester. 40% of the grade will be based on the group assignments—20% for each class session.

Group Project: Instructions forthcoming. 20% of the grade will be based on this group assignment.

Individual Assignment: Applying an Urban Sustainability Method. In this assignment, you will choose an urban sustainability method, apply it to a system or city of your choice, and produce a written report. More specific instructions will be provided. 40% of the course grade will be based on the written report, which will be due at the end of the semester. A one-page outline of the individual report will be due on Feb 16. The outline should identify the system or city, the method, and the data sources.

Statement for Students with Disabilities

Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me as early in the semester as possible. DSP is located in STU 301 and is open 8:30 a.m.–5:00 p.m., Monday through Friday. The phone number for DSP is (213) 740-0776.

Statement on Academic Integrity

USC seeks to maintain an optimal learning environment. General principles of academic honesty include the concept of respect for the intellectual property of others, the expectation that individual work will be submitted unless otherwise allowed by an instructor, and the obligations both to protect one's own academic work from misuse by others as well as to avoid using another's work as one's own. All students are expected to understand and abide by these principles. *Scampus*, the Student Guidebook, contains the Student Conduct Code, SCampus Part B, in Section 11.00, while the recommended sanctions are located in Appendix A:

<https://policy.usc.edu/scampus-part-b/>. Students will be referred to the Office of Student Judicial

Affairs and Community Standards for further review, should there be any suspicion of academic dishonesty. The Review process can be found in Section 13 of Part B above.

Course Readings/Class Sessions

Readings:

Many of the readings are included in *The Routledge Companion to Environmental Planning* (2020) edited by S. Davoudi, R. Cowell, I. White, and H. Blanco. Routledge. Available online from USC Libraries.

Other readings are available from USC library as noted below. I will also place a number of the readings on the Blackboard site.

Part I: General Approaches

Week 1, January 19, 2021: Introductions, Overview of Course, Urbanization, Sustainability and Urban Sustainability. The Systems Approach: Stock and Flow Diagrams, Feed-back Loops

Readings:

Arnold, Ross D., and Jon P. Wade. 2015. "A Definition of Systems Thinking: A Systems Approach." *Procedia Computer Science* 44: 669–678.

Bai, Xuemei, Alyson Surveyer, Thomas Elmqvist, Franz W. Gatzweiler, Burak Güneralp, Susan Parnell, Anne-Helene Prieur-Richard, Paul Shrivastava, Jose Gabriel Siri, and Mark Stafford-Smith. 2016. "Defining and Advancing a Systems Approach for Sustainable Cities." *Current Opinion in Environmental Sustainability* 23: 69–78.

United Nations, Department of Economic and Social Affairs, Population Division. 2019. World Urbanization Prospects 2018: Highlights (ST/ESA/SER.A/421). Available from: <https://population.un.org/wup/Publications/>

Hurlimann, M. 2009. *Dealing with Real-World Complexity*. Wiesbaden, Germany: Gabler/Springer. Chapter 5. Systems Thinking, pp. 59-78. USC E-book, find through Homer Catalogue.

Week 2, Jan. 26: Environmental Impact Assessment, Health Impact Assessment, Ecological Footprints, Natural Capital Valuation, COVID-19 Implications for Urban Planning.

Readings:

Badura, T., K. Turner, and S. Ferrini. 2020. Natural capital and ecosystem services valuation: assisting policy making. In *Routledge Companion to Environmental Planning*, pp. 394-405.

Blanco, Hilda. 2020. "Implications of COVID-19 for Urban Planning." In *Cities and COVID-19: New Directions for Urban Research and Public Policies*, 12–24. Webinar: UNAM. <https://doi.org/10.5281/zenodo.3894075> (available from Blackboard site).

Bregman, J.I. 1999. *Environmental Impact Statements*. Chapters 1-4. USC E-book, find through HOMER catalogue.

Costanza, R., R. d'Arge, R. de Groot, et al. 1997. The value of the world's ecosystem services and natural capital. May 15, 1997. *Nature* **387**: 253-260.

Giles-Corti, Billie, Anne Vernez-Moudon, Rodrigo Reis, Gavin Turrell, Andrew L. Dannenberg, Hannah Badland, Sarah Foster, Melanie Lowe, James F. Sallis, and Mark Stevenson. 2016. "City Planning and Population Health: A Global Challenge." *The Lancet* 388 (10062): 2912–2924.

- Gómez-Baggethun, Erik, and David N. Barton. 2013. "Classifying and Valuing Ecosystem Services for Urban Planning." *Ecological Economics* 86: 235–245.
- Sharifi, Ayyoob, and Amir Reza Khavarian-Garmsir. 2020. "The COVID-19 Pandemic: Impacts on Cities and Major Lessons for Urban Planning, Design, and Management." *Science of the Total Environment*, 142391.
- Miller, A. and R. Jackson. Gauging the health of a city: maximizing health and sustainability, pp. 166-187. In *Elgar Companion to Sustainable Cities*.
- Moore, D. et al. 2011. Ecological Footprint Analysis. San Francisco-Oakland-Fremont, CA. Global Footprint Network and SPUR, San Francisco.
- Morgan, Richard K. 2012. "Environmental Impact Assessment: The State of the Art." *Impact Assessment and Project Appraisal* 30 (1): 5–14.
- National Research Council. 2011. Chapter 3. Elements of a Health Impact Assessment. pp. 43-82/ In *Improving Health in the United States: the Role of Health Impact Assessment*. Committee on Health Impact Assessment. Washington, D.C.: National Research Council. Url: http://www.nap.edu/catalog.php?record_id=13229
- Rees, W.E. 1992. Ecological footprints and appropriated carrying capacity: what urban economics leaves out. *Environment and Urbanization* 4: 121-130.

Week 3, Feb. 2: Land Use Surveys, Zoning Build-Out Analyses, Analysis of Neighborhood Form, Built Environment Audits.

Readings:

- ANJEC. 2003. Planning: Build-Out and Capacity Analysis. In *Smart Growth Survival Kit*. Mendham, NJ: Association of New Jersey Environmental Commissions (ANJEC). Url: http://www.anjec.org/pdfs/SG_Planning.pdf
- Cal-Adapt. <http://cal-adapt.org/tools/>
- Land Use Resource Guide Team. 2005. Chapter 3. Conducting a Land Use Inventory in "Land Use Resource Guide". Stevens Point, WI: University of Wisconsin. Available on course web site.
- Owens, P.E. 2005. Beyond Density: Measuring Urban Form in the Northeast's Upper Connecticut River Valley. Chapter 4. Analysis of Neighborhood Form. Ph.D. Dissertation. Berkeley: UC. Berkeley.
- Gurran, N. 2020. Addressing sustainability issues through land use regulation and zoning. Chapter 28, pp. 317-328. *Routledge Companion to Environmental Planning*.
- Scott, A. 2020. Mainstreaming the environment in planning policy. Chapter 36, pp. 420-433. *Routledge Companion to Environmental Planning*.

Week 4, Feb. 9: Land Suitability Analysis and Urban Growth Management.

Readings:

- Blanco, H. 2020. Chapter 7. Current Conditions and Future Drivers of Mega-City Regions in the U.S.: Focus on the Los Angeles Metropolitan Area. Pgs. 183-223, in Shan, W. and L. Yang (eds.) *Metropolitan Circles Development and the Future of Urbanization: The World and China*. Singapore: World Scientific. ISBN:9789811207075. (Available from Blackboard site)
- Fertner, Christian, Gertrud Jørgensen, Thomas Alexander Sick Nielsen, and Kjell Svenne Bernhard Nilsson. 2016. "Urban Sprawl and Growth Management—Drivers, Impacts and Responses in Selected European and US Cities." *Future Cities and Environment* 2 (1): 9.
- Paterson, R. and F. Steiner. 2020. Suitability Analysis: a fundamental environmental planning tool. Chapter 35, pp. 406-419. *Routledge Companion to Environmental Planning*.

- Steiner, Frederick, Laurel McSherry, and Jill Cohen. 2000. "Land Suitability Analysis for the Upper Gila River Watershed." *Landscape and Urban Planning* 50 (4): 199–214.
- Steiner, Frederick. 2013. "Representing Complexity." *Landscape Architecture Frontiers* 1 (6): 44–62. Available on Blackboard site.
- Landis, John D. 2019. "Fifty Years of Local Growth Management in America." *Progress in Planning*, 100435.

Week 5, Feb. 16: Urban Metabolism, Life Cycle Analysis, and the Circular Economy

Readings:

- Blomsma, F. and G. Brennan. 2017. The Emergence of the Circular Economy. *Journal of Industrial Ecology*, **21**:3, 603-614.
- Circle Economy. 2015. *Circular Amsterdam*. <https://www.circle-economy.com/insights/developing-a-roadmap-for-the-first-circular-city-amsterdam>
- Ellen MacArthur Foundation. The mission of this foundation is to accelerate the transition to a circular economy. <https://www.ellenmacarthurfoundation.org/>
- Giezen, M., and G. Roemers. 2015. "The Metabolic Planner: Reflection on Urban Planning from the Perspective of Urban Metabolism."
- Guinee, J.B., et al. 2011. Life Cycle Assessment: Past, Present and Future. *Environ. Sci. Technol.* 45: 90-96.
- Ingrao, C. et al. 2020. Application of Life Cycle Assessment in buildings: an overview. Pp. 372-381. In *Routledge Companion to Environmental Planning*.
- Kennedy, C., L. Baker, and H. Brattebø. 2014. Analyzing a city's metabolism, pp. 255- 282, In *Elgar Companion to Sustainable Cities*.
- Lotteau, Marc, Philippe Loubet, Maxime Pousse, Emmanuel Dufrasnes, and Guido Sonnemann. 2015. "Critical Review of Life Cycle Assessment (LCA) for the Built Environment at the Neighborhood Scale." *Building and Environment* 93: 165–178.
- Stahel, Walter R. et al. 2016. Circular Economy. *Nature*, Vol. 531, 431-438, 443-446. <http://www.nature.com.libproxy2.usc.edu/collections/hpcvbjppgy/>
- Curry, R. and G. Ellis. 2020. Metabolic impact assessment: a review of approaches and methods. Pp. 346-357, in *Routledge Companion to Environmental Planning*.
- Pinho, P. and R. Fernandes. 2020. Urban metabolic impact assessment: from concept to practice. Pp. 358-371, in *Routledge Companion to Environmental Planning*.

Week 6, Feb. 23: Scenario Development

Readings:

- Amer, Muhammad, Tugrul U. Daim, and Antonie Jetter. 2013. "A Review of Scenario Planning." *Futures* 46: 23–40.
- Blanco, H., J. Newell; L. Stott; M. Alberti; E. Maggioni. 2012. *Water Supply Scarcity in Southern California: Assessing Water District Level Strategies*. Chapter 11. Scenario Planning; Chapter 12. Water Futures Scenario Workshops. Los Angeles, CA: Center for Sustainable Cities, Price School of Public Policy, University of Southern California. Pdfs available on course website.
- Chermack, T.J., S.A. Lynham, W.E.A. Ruona. 2001. A Review of Scenario Planning Literature. *Futures Research Quarterly*. Summer 7-29. <http://www.cse.buffalo.edu/~peter/refs/DataAssimilation/Multihypothesis/ReviewofSP.PDF>

- Kwakkel, Jan H., Warren E. Walker, and Marjolijn Haasnoot. 2016. Coping with the Wickedness of Public Policy Problems: Approaches for Decision Making under Deep Uncertainty. *Journal of Water Resources Planning*. 142(3): 01816001. American Society of Civil Engineers.
- Rittel, H.W.J., and M.M. Webber. 1973. Dilemmas in a General Theory of Planning. *Policy Sciences* 4: 155-169. On class website.
- van't Klooster, S.A., M.B.A. van Asselt. 2006. Practicing the scenario-axes technique. *Futures*. 38:15-30.

Week 7, March 2: Vulnerability Assessment, Environmental Justice Screening, Resilience Analysis

Readings:

- Blanco, H. 2008 Pre-event disaster planning: Towards More Sustainable Communities. *Journal of Architecture and Building Science. Special Edition on New Frontiers in Urban and Regional Design for Addressing Global Environmental Issues and Disaster Mitigation*. Architectural Institute of Japan. 6:49-53, Feb. 2008. Pdf available on course website.
- California Office of Environmental Health Hazard Assessment. Updated June 2018. *California Communities Environmental Health Screening Tool, Draft Version 3.0 (CalEnviroScreen 3.0) Guidance and Screening Tool*.
<https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-30>
- Campbell, J.R. 2020. Planning and disaster risk reduction. In *Routledge Companion to Environmental Planning*, pp. 238-247.
- Cushing, Lara, John Faust, Laura Meehan August, Rose Cendak, Walker Wieland, and George Alexeeff. 2015. "Racial/Ethnic Disparities in Cumulative Environmental Health Impacts in California: Evidence from a Statewide Environmental Justice Screening Tool (Calenviroscreen 1.1)." *American Journal of Public Health (Ajph)*.
- Cutter, Susan. 2018. Chapter 12. Linkages between Vulnerability and Resilience. In *Vulnerability and Resilience to Natural Hazards*, ed. by Sven Fuchs and T. Thaler. Book available on line: <https://www-cambridge-org.libproxy1.usc.edu/core/books/vulnerability-and-resilience-to-natural-hazards/>
- Maantay, J. 2020. Environmental justice and fairness. In *Routledge Companion to Environmental Planning*, pp. 109-119.
- McDaniels, Timothy, Stephanie Chang, Darren Cole, Joseph Mikawoz, and Holly Longstaff. 2008. "Fostering Resilience to Extreme Events Within Infrastructure Systems: Characterizing Decision Contexts for Mitigation and Adaptation." *Global Environmental Change* 18 (2) (May): 310–318. doi:10.1016/j.gloenvcha.2008.03.001.
- Pastor, M. 2014. A measure of justice: environmental equity and the sustainable city, pp. 228-252. In *Elgar Companion to Sustainable Cities*.

Week 8, March 9: Multi-criteria analysis; cost-benefit and cost-efficiency

Readings:

- Chou, W.J. and T. Taylor. 2010. Golf Course Development in the Peri-Urban Fringe: A cost-benefit analysis of the case of Koper, Slovenia. In T. Taylor (ed.) *Cost Benefit Analysis of Peri-Urban Land Use Policy*. Chapter 1. Pp.9-24. EU PLUREL Project. Url: <http://www.plurel.net/images/D443.pdf>
- Cortina, C., and A. Boggia. 2010. "Measuring Sustainable Development Using a Multicriteria Model: A Case Study." *Journal of Environmental Management* 91 (11) (November 1): 2301.

- Department for Communities and Local Government, London. 2009. *Multi-criteria analysis: a Manual*. Chapters 4, 5. Author, London. Available at: <http://www.communities.gov.uk/documents/corporate/pdf/1132618.pdf>
- Saarikoski, Heli, Jyri Mustajoki, David N. Barton, Davide Geneletti, Johannes Langemeyer, Erik Gomez-Baggethun, Mika Marttunen, Paula Antunes, Hans Keune, and Rui Santos. 2016. “Multi-Criteria Decision Analysis and Cost-Benefit Analysis: Comparing Alternative Frameworks for Integrated Valuation of Ecosystem Services.” *Ecosystem Services* 22:238–249.
- Willis, K. 2020. Environmental economics and cost-benefit analysis. In *Routledge Companion to Environmental Planning*. pp. 382-393.
- Wong, C. and W. Zheng. 2020. Indicator-based approaches to environmental planning. In *Routledge Companion to Environmental Planning*, pp. 329-345.

Week 9, March 16: Green Rating Systems and Group Project Discussion

Readings:

- Bauer, M., P. Möslle, and M. Schwarz. 2009. *Green building*. Springer Berlin Heidelberg. Chapter 1, pp. 8-21. USC E-book
- Doan, Dat Tien, Ali Ghaffarianhoseini, Nicola Naismith, Tongrui Zhang, Amirhosein Ghaffarianhoseini, and John Tookey. 2017. “A Critical Comparison of Green Building Rating Systems.” *Building and Environment* 123:243–260. On class website.
- Garde, A. (2009). Sustainable by Design? Insights from U.S. LEED-ND Pilot Projects. *American Planning Association* , 424-440.
- Newsham, Guy R., Sandra Mancini, and Benjamin J. Birt. 2009. “Do LEED-certified Buildings Save Energy? Yes, But...” *Energy and Buildings* 41 (8) (August): 897–905. doi:10.1016/j.enbuild.2009.03.014.
- Poveda, Cesar A., and Michael G. Lipsett. 2011. “A Review of Sustainability Assessment and Sustainability/Environmental Rating Systems and Credit Weighting Tools.” *Journal of Sustainable Development* 4 (6) (December 1): 36.
- Retzlaff, Rebecca C. 2008. “Green Building Assessment Systems.” *American Planning Association. Journal of the American Planning Association* 74 (4) (October 1): 505-519.
- Scofield, John H. 2009. “Do LEED-certified buildings Save Energy? Not Really.” *Energy & Buildings* 41 (12) (January 1): 1386–1390. doi:10.1016/j.enbuild.2009.08.006.
- U.S. Green Building Council. Url for LEED Building Rating Systems: <http://www.leed.us>
- U.S. Green Building Council. Url for LEED Neighborhood Development Rating System: <http://www.leed.us>

March 23 Wellness Day--No Class

Part II: Urban Sustainability Approaches

Week 10, March 30: Climate Impacts on Urban Areas and Urban Form Drivers of GHG Emissions

Readings:

- Bedsworth, L., et al. 2018. Statewide Summary Report. California's Fourth Climate Change Assessment. Pub. No.: SUM-CCCA4-2018-013. Retrieved from: <http://climateassessment.ca.gov/state/index.html>
- Chavez, Abel, and Joshua Sperling. 2017. "Key Drivers and Trends of Urban Greenhouse Gas Emissions." In *Creating Low Carbon Cities*, 157–168. Springer. On class website.
- Maxwell, K., S. Julius, A. Grambsch, A. Kosmal, L. Larson, and N. Sonti, 2018: Built Environment, Urban Systems, and Cities. In *Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II* [Reidmiller, D.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, K.L.M. Lewis, T.K. Maycock, and B.C. Stewart (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, pp. 438–478. doi: 10.7930/NCA4.2018.CH11
- Gonzalez, P., G.M. Garfin, D.D. Breshears, K.M. Brooks, H.E. Brown, E.H. Elias, A. Gunasekara, N. Huntly, J.K. Maldonado, N.J. Mantua, H.G. Margolis, S. McAfee, B.R. Middleton, and B.H. Udall, 2018: Southwest. In *Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II* [Reidmiller, D.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, K.L.M. Lewis, T.K. Maycock, and B.C. Stewart (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, pp. 1101–1184. doi: 10.7930/NCA4.2018.CH25
- Seto K. C., S. Dhakal, A. Bigio, H. Blanco, G. C. Delgado, D. Dewar, L. Huang, A. Inaba, A. Kansal, S. Lwasa, J. E. McMahon, D. B. Mueller, J. Murakami, H. Nagendra, and A. Ramaswami, 2014: Human Settlements, Infrastructure and Spatial Planning. Sections 12.3 Urban Systems and 12.4 Urban Form and Infrastructure. In: *Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Edenhofer, O., R. Pichs-Madruga, Y. Sokona, E. Farahani, S. Kadner, K. Seyboth, A. Adler, I. Baum, S. Brunner, P. Eickemeier, B. Kriemann, J. Savolainen, S. Schlömer, C. von Stechow, T. Zwickel and J.C. Minx (eds.)]. Cambridge

Week 11, April 6: Urban Climate Change Mitigation Planning

Readings:

- Azevedo, Isabel, and Vítor MS Leal. 2017. "Methodologies for the Evaluation of Local Climate Change Mitigation Actions: A Review." *Renewable and Sustainable Energy Reviews* 79:681–690. On class website
- Boswell, Michael R., Adrienne I. Greve, and Tammy L. Seale. 2014. Climate Action Planning. pp. 302-319. In *Elgar Companion to Sustainable Cities*.
- Creutzig, Felix, Peter Agoston, Jan C. Minx, Josep G. Canadell, Robbie M. Andrew, Corinne Le Quéré, Glen P. Peters, Ayyoob Sharifi, Yoshiki Yamagata, and Shobhakar Dhakal. 2016. "Urban Infrastructure Choices Structure Climate Solutions." *Nature Climate Change* 6 (12):1054–1056. On Class website.

- Hillman, T. and A. Ramaswami. 2010. Greenhouse Gas Emission Footprints and Energy Use Benchmarks for Eight U.S. Cities. *Environmental Science and Technology*, 44 (6): 1902-1910.
- Kennedy, C., A. Ramaswami, S. Carney, and S. Dhakal. 2009. Greenhouse Gas Emission Baselines for Global Cities and Metropolitan Regions. In Fifth Urban Research Symposium, Marseille, France, 2009.
<http://siteresources.worldbank.org/INTURBANDEVELOPMENT/Resources/336387-1256566800920/6505269-1268260567624/KennedyComm.pdf>
- Seto K. C., S. Dhakal, A. Bigio, H. Blanco, G. C. Delgado, D. Dewar, L. Huang, A. Inaba, A. Kansal, S. Lwasa, J. E. McMahon, D. B. Mueller, J. Murakami, H. Nagendra, and A. Ramaswami, 2014: Human Settlements, Infrastructure and Spatial Planning. Section 5. Spatial Planning and Climate Change Mitigation, and Section 12.7 Urban Climate Mitigation: Experiences and Opportunities. In: *Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Edenhofer, O., R. Pichs-Madruga, Y. Sokona, E. Farahani, S. Kadner, K. Seyboth, A. Adler, I. Baum, S. Brunner, P. Eickemeier, B. Kriemann, J. Savolainen, S. Schlömer, C. von Stechow, T. Zwickel and J.C. Minx (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

Week 12, April 13: Urban Climate change adaptation: Climate change adaptation planning, ICLEI's approach.

Readings:

- Anguelovski, Isabelle, Linda Shi, Eric Chu, Daniel Gallagher, Kian Goh, Zachary Lamb, Kara Reeve, and Hannah Teicher. 2016. "Equity Impacts of Urban Land Use Planning for Climate Adaptation: Critical Perspectives from the Global North and South." *Journal of Planning Education and Research* 36 (3):333–348. On class website
- Araos, Malcolm, Lea Berrang-Ford, James D. Ford, Stephanie E. Austin, Robbert Biesbroek, and Alexandra Lesnikowski. 2016. "Climate Change Adaptation Planning in Large Cities: A Systematic Global Assessment." *Environmental Science & Policy* 66:375–382. On class website
- Greve, A. I. and M.R. Boswell. 2014. Climate Change Adaptation. pp. 320-335. In *Elgar Companion to Sustainable Cities*.
- Hunt, Alistair, and Paul Watkiss. 2010. "Climate Change Impacts and Adaptation in Cities: a Review of the Literature." *Climatic Change* 104 (1) (December 8): 13–49. doi:10.1007/s10584-010-9975-6.
- Yi, Hongtao, Rachel M. Krause, and Richard C. Feiock. 2017. "Back-Pedaling or Continuing Quietly? Assessing the Impact of ICLEI Membership Termination on Cities' Sustainability Actions." *Environmental Politics* 26 (1): 138–160.
- Zeppel, Heather. 2013. "The ICLEI Cities for Climate Protection Programme: Local Government Networks in Urban Climate Governance." In *Climate Change and Global Policy Regimes*, 217–231. Springer.

Week 13, April 20: Sustainable Cities Indicator Systems

Readings:

- Bayulken, Bogachan, and Donald Huisinigh. 2015. "A Literature Review of Historical Trends and Emerging Theoretical Approaches for Developing Sustainable Cities (Part 1)." *Journal of Cleaner Production* 109:11–24. On class website.
- Blanco, H. 2018. Livable Cities: From Concept to Global Experience. In R. W. Caves and F. Wagner (eds.) *Livable Cities from a Global Perspective*. pp. 1-13. Routledge.
- Holden, Meg. 2006. "Revisiting the Local Impact of Community Indicators Projects: Sustainable Seattle as Prophet in Its Own Land." *Applied Research in Quality of Life* 1 (3) (September 1): 253–277. doi:10.1007/s11482-007-9020-8.
- Klopp, Jacqueline M., and Danielle L. Petretta. 2017. "The Urban Sustainable Development Goal: Indicators, Complexity and the Politics of Measuring Cities." *Cities* 63:92–97. on class website.
- Lohrey, Steffen, and Felix Creutzig. 2016. "A 'Sustainability Window' of Urban Form." *Transportation Research Part D: Transport and Environment* 45: 96–111.
- McCarney, P. Cities Leading: The pivotal role of local governance and planning for sustainable development. In *Routledge Companion to Environmental Planning*, pp. 200-208.
- Portney, K. E. 2014. Developing sustainable cities indicators. pp. 283-301. In *Elgar Companion to Sustainable Cities*.
- Tanguay, Georges A., Juste Rajaonson, Jean-François Lefebvre, and Paul Lanoie. 2010. "Measuring the Sustainability of Cities: An Analysis of the Use of Local Indicators." *Ecological Indicators* 10 (2) (March): 407–418. doi:10.1016/j.ecolind.2009.07.013.

Week 14, April 27: Group Project Presentations

Classes end April 30

Study Days May 3-7

Exams May 10-14