

Climate and Development: Impacts, Mitigation and Adaptation in Less Developed Countries

Instructor: Maria Carmen Lemos

Fall 2021

Class Meeting Time: T-Th 10-11:30am

Room: 1024 Dana

Lemos Office Address: 2504 Dana

Office Hours: T 2:45-4:15pm

Phone: 764-9315

Email: lemos@umich.edu

I Course Description

Broadly understood, scholarship on climate change and development remains in its infancy. Whereas there has been an extensive attention paid to both issues through the years, only recently they have come together both as a field of inquiry and practice. Historically development policies emphasized centrally sponsored programs of change and large-scale projects to foment economic growth. Scholarship in the human dimensions of climate change have mostly focused on anthropogenic drivers and mitigation and only more recently has started to explore impacts and adaptation more seriously. This class seeks to bring these two themes together by focusing on how development and climate change intersect both in policy design and implementation as well as a new focus of research and production of knowledge.

The course is organized around themes interspersing climate change and development including a historical look on development theory and practice and the emergence of climate change as a critical stressor to be taken into account for future policy-making; potential impacts of climate change in less developed countries; scales, institutions and governance; and response options with an emphasis on adaptation, resources management, and synergies and trade-offs of integrating adaptation, mitigation and sustainable development. While the overall thrust of the course conforms to a theoretical framework that brings together a particular way to understand development and global climate change, the course will draw most empirical materials from less developed areas of the world.

1. Seminar Assignments:

Students for this class will be expected to read all assigned readings, actively participate in class discussion, and complete a series of weekly short essays. Students will be also expected to attend all classes unless there are attenuating circumstances that should be discussed with the instructor as soon as possible. Plagiarism is unacceptable and lateness handing in assignments will have to be discussed with the instructor before the assignment deadline. Moreover:

- Students are required to read all the assigned readings (average 3-4 articles per class) before each class meeting and to be prepared to discuss them in class. All readings will be available through the course Canvas page. In order to maximize each class discussion, students will be asked to answer the following questions about the readings:
 - Why were these readings grouped together?
 - How can these readings inform our understanding of other topics that we have discussed so far?
 - What are the strengths and weaknesses of each article?
 - What is your OPINION of each article?
- The main assignment for the class is a 400-500 words essay each week (for a total of ten essays for the whole course) addressing a discussion question made available the previous week. Please note that this is not a summary of the readings or a different version of the abstracts. The essay should specifically address the discussion question making use of the readings to support or challenge arguments; they should also contain your reflections about this readings and further questions that may arise as a result of you putting your ideas together. This exercise aims at not only preparing you for the discussion but also to provide some training on how to develop a well supported argument based both on the published literature and your own ideas.
- Each week a team of two students will be responsible for leading the discussion for 30 minutes of the class using their essay as a basis to ask questions, advance arguments and keep the discussion going.

III. Grading:

- Weekly essays: 5% for each essay for a total of 50% of the final grade
- Leading the discussion: 20% of the final grade
- In-class participation (including leading discussion): 30% of the final grade

The course grade will be assigned according to the following scheme:

90 points and above A

80 points and above B

70 points and above C

60 points and above D

Below 60 points F

Required Texts

The course will be taught principally through the medium of scholarly articles and papers. All the readings used for the course will be available at the CTools page at:

Useful writing support

Sweetland Writing Center Services for Graduate Students: The Sweetland Writing Center offers free, individual writing conferences for graduate students who are working on course papers, conference presentations, dissertations, grant proposals, resumes, and other writing for academic or employment purposes.

<http://www.lsa.umich.edu/sweetland/> (Links to an external site.)

The Elements of Style, by William Strunk, Jr. <http://www.bartleby.com/141/index.html> (Links to an external site.)

OWL on-line writing lab from Purdue's University

<https://owl.english.purdue.edu/> (Links to an external site.)

University of Wisconsin writing handbook <http://www.wisc.edu/writing/Handbook/PlanResearchPaper.html> (Links to an external site.)

Resources

There is now so much work and research on climate change that it is quickly becoming impossible to keep up with this research even for dedicated groups of scientists, let alone a single individual. Your interest in the topic should mean that you bring to the class's attention interesting publications and/or reports. So, you are a resource for the course as well. In addition, the following websites often provide interesting discussions and reports.

<http://www.realclimate.org> (Links to an external site.)

<http://www.whrc.org/> (Links to an external site.)

<http://www.pewresearch.org/science/> (Links to an external site.)

<https://unfccc.int/topics/resilience/workstreams/national-adaptation-programmes-of-action/introduction> (Links to an external site.)

<https://www.ipcc.ch/> (Links to an external site.)

Student Support, Resources, and Accommodations:

As part of the School for Environment and Sustainability (SEAS) at UM, the objectives and content of this course align with the SEAS mission of contributing to a "sustainable and just society". SEAS and PitE students represent a diversity of individual academic and cultural backgrounds, beliefs, and experiences. A diverse, equitable, and inclusive classroom is essential to your professional training. I do not wish to exclude anyone from a positive and productive learning environment. While working together in this course we ask everyone to commit to the following "ground rules":

- share their unique experiences, values and beliefs
- be open to the views of others
- honor the uniqueness of their colleagues
- appreciate the opportunity that we have to learn from each other in this community
- value one another's opinions and communicate in a respectful manner
- keep confidential discussions that the community has of a personal (or professional) nature

Your EAS 555 instructors use a variety of teaching approaches and examples, and in every activity we expect every member and instructor of this class to show respect for others. Please approach me, another instructor, and/or other resources on campus to voice concerns or suggestions about an event, comment, or course content that affects your own or another student's comfort or learning experience.

Here are some excellent on-campus resources to optimize your experience and performance:

- If you need accommodation for a disability, please let me know as soon as possible (ideally within the first two weeks of class), so that we can work with the **Services for Students with Disabilities (SSD)** office to help us determine appropriate and helpful academic accommodations. The office phone is (734)-763-3000.
- If English is not your first language and you may find it challenging to either understand or communicate well in this course, please meet often with instructors and definitely use both the **English Language Institute** and **Sweetland Center for Writing**, which provide a variety of resources for international students.
- The **Sweetland Center for Writing** is a great place for anyone to receive feedback to improve clear communication in written work.
- The **UM Library** provides a wealth of free, primary literature at your fingertips, you just need to make sure you do your searches while logged in or via the library homepage, even if you are using **Google Scholar** to reach the source for free (look for **MGet IT** links).
- The **Scholar Space** is an excellent resource for doing anything digital—image manipulation, citation management, web publishing, doc formatting, multimedia creation, text mining, etc.
- **Consulting for Statistics, Computing and Analytics Research (CSCAR)** provides consulting services and training in data science, statistics, and advanced research computation.
- **Counseling and Psychological Services (CAPS)** provides free and confidential support options for mental health and stress management issues, including: stress, mood changes, problems with eating and/or sleeping
- **CEW+** provides immediate, ongoing services and financial support, especially to women and nontraditional students, but also to any student who encounters education and career obstacles based on their non-linear paths to, and experiences within, the University community.
- **The Students with Children** website is dedicated to the needs of student caregivers at the University of Michigan who juggle parenting, other family care, work, and study.
- **Spectrum Center** works toward enhancing the campus climate and support services for LGBTQ+ students, staff, and faculty at the University through education, advocacy, and community building.
- For additional resources, see also the **Diversity, Equity, and Inclusion Offices** of the University of Michigan and SEAS.

Academic integrity policy: From the LSA Community Standards of Academic Integrity: “academic dishonesty may be understood as any action or attempted action that may result in creating an unfair academic advantage for oneself or an unfair academic advantage or disadvantage for any other member or members of the academic community.” Any written assignments you submit you should be your own original work, with any references properly cited. Any student found to have cheated or plagiarized will be referred to the appropriate disciplinary committees at the University.

Mental health and wellbeing: We also realize that the events of the last year and a half have been difficult, even traumatic, for students. If you are experiencing concerns, seeking help is a courageous thing to do for yourself and those who care about you. If the source of your stressors is academic, please contact us so that we can find solutions together. For personal concerns, U-M offers many resources including but not limited to those in this syllabus, some of which are listed at [Resources for Student Well-being \(Links to an external site.\)](#) on the Well-being for U-M Students website. You can also search for additional resources on that website.

COVID:

Classroom Culture of Care (from LSA recommendations) at

[mchttps://lsa.umich.edu/lsa/faculty-staff/student-academic-affairs/syllabus-statements.html](https://lsa.umich.edu/lsa/faculty-staff/student-academic-affairs/syllabus-statements.html) ([Links to an external site.](#))

We are committed to protecting the health and safety of the community, which includes minimizing the spread of COVID-19. Our entire LSA community is responsible for protecting the collective health of all members by being mindful and respectful in carrying out the guidelines laid out in our [Wolverine Culture of Care \(Links to an external site.\)](#) and the [University's Face Covering Policy for COVID-19 \(Links to an external site.\)](#).

Individuals seeking to request an accommodation related to the face covering requirement under the Americans with Disabilities Act should contact the [Office for Institutional Equity \(Links to an external site.\)](#).

In our classrooms all students are expected to adhere to the required safety measures and guidelines of the State of Michigan and the University of Michigan, wearing a face covering that covers the mouth and nose in all classrooms, and not coming to class when ill or in quarantine. It is important to also be thoughtful about group gatherings as well as about classroom activities and exercises that require collaboration.

Any student who is not able and willing to comply with campus safety measures for this [in-person/hybrid] course should contact the course instructor or their academic advisor to discuss alternate participation or course options. Students who do not adhere to these safety measures while in a face-to-face class setting, and do not have an approved exception or accommodation, may be asked to [participate on a remote basis or - include if available option] disenroll from the class.

For additional information refer to the [LSA Student Commitment to the Wolverine Culture of Care \(Links to an external site.\)](#) and the OSCR Addendum to the Statement of Student Rights and Responsibilities on the [OSCR website \(Links to an external site.\)](#).

Class recordings:

This class is in person only; our classroom is not equipped for recording and I respectfully request that you do not record any portion of this class. In case any participant is sick or unable to attend class, to the best of our ability we will work on plan so that students can

keep up with class materials and participate remotely whenever possible. Please do not come to class if you are feeling unwell.

Schedule of Classes

Week One /Aug 31 - Sep 2 Introduction and background

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

Rockström, J., Gupta, J., Lenton, T. M., Qin, D., Lade, S. J., Abrams, J. F., et al. (2021). Identifying a safe and just corridor for people and the planet. *Earth's Future*, 9, e2020EF001866. <https://doi.org/10.1029/2020EF001866> (Links to an external site.)

Moss, R. H., G. A. Meehl, et al. (2013). "Hell and High Water: Practice-Relevant Adaptation Science." *Science* **342**(6159): 696-698.

Agrawal, A. and M. C. Lemos. Adaptive Development. *Nature Climate Change*, forthcoming.

Week Two (Sep 7-9): Development Paradigms

Parpart, Jane L., and H. Veltmeyer. 2004. The development project in theory and practice: A review of its shifting dynamics. *Canadian Journal of Development Studies* 25(1, March): 39-59.

Radcliffe, S. A. (2015) Development Alternatives. *Development and Change*, 46, 855-874.

Lele, S. (1991). Sustainable Development A Critical Review. *World Development*, Vol. 19, No. 6, pp. 607-621.

Sen, Amartya (1999). Development as Freedom. Chapter 1. New York, Alfred Knoff.

Week Three (Sept 14-16): Development: capitals, poverty and climate

Bebbington, A. (1999). Capitals and Capabilities: A Framework for Analyzing Peasant Viability, Rural Livelihoods and Poverty, *World Development*, 27(12): 2021-44.

Zehr, S. (2015) The sociology of global climate change. *Wiley Interdisciplinary Reviews-Climate Change*, 6, 129-150.

Maru, Y. T., C. S. Fletcher, et al. (2012). "A synthesis of current approaches to traps is useful but needs rethinking for indigenous disadvantage and poverty research." *Ecology and Society* 17(2): 7.

Béné, C., Newsham, A., Davies, M., Ulrichs, M. and Godfrey-Wood, R. (2014), REVIEW ARTICLE: RESILIENCE, POVERTY AND DEVELOPMENT. *J. Int. Dev.*, 26: 598-623. <https://doi.org/10.1002/jid.2992> (Links to an external site.)

Week Four (Sept 21-23): The definitions quagmire: making sense of vulnerability, resilience, and adaptation

Discussion Leads: Jasmyn and Anna O.

Gallopín, G.C. (2006). Linkages between vulnerability, resilience, and adaptive capacity. *Global Environmental Change* 16: 293-303.

Nelson, D. R, N. Adger, K. Brown (2007). Adaptation to Environmental Change: Contributions of a Resilience Framework. *Annual Review of Natural Resources and Environment*, 32: 11.1-11-25.

Tanner, T., D. Lewis, D. Wrathall, R. Bronen, N. Cradock-Henry, S. Huq, C. Lawless, R. Nawrotzki, V. Prasad, M. A. Rahman, R. Alaniz, K. King, K. McNamara, M. Nadiruzzaman, S. Henly-Shepard & F. Thomalla (2015) Livelihood resilience in the face of climate change. *Nature Climate Change*, 5, 23-26.

Week Five (Sept 28-30): Sustainable development and Climate Change I

Discussion Lead: Emily A. and Anne Olsen

Folke, C. and S. R. Carpenter, e. a. (2002). 'Resilience and sustainable development: Building adaptive capacity in a world of transformations', *Ambio*, 31: 437-40.

Denton, F., T.J.Wilbanks, A.C. Abeyasinghe, I. Burton, Q. Gao, M.C. Lemos, T. Masui, K.L. O'Brien, and K.Warner, 2014: Climate-resilient pathways: adaptation, mitigation, and sustainable development. In: *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change.*

Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 1101-1131.

Agrawal, A., N. Kaur, C. Shakya & A. Norton (2020) Social assistance programs and climate resilience: reducing vulnerability through cash transfers. *Current Opinion in Environmental Sustainability*, 44, 113-123.

Davies, M., Béné, C., Arnall, A., Tanner, T., Newsham, A. and Coirolo, C. (2013), Promoting Resilient Livelihoods through Adaptive Social Protection: Lessons from 124 programmes in South Asia. *Development Policy Review*, 31: 27-58. <https://doi.org/10.1111/j.1467-7679.2013.00600.x> (Links to an external site.)

Week Six (Oct 5-7) Sustainable development and Climate Change II -- Sustainable Development Goals (SDGs)

Discussion Lead: Alison S. and Katlyn

Fuso Nerini, F., Sovacool, B., Hughes, N. *et al.* Connecting climate action with other Sustainable Development Goals. *Nat Sustain* 2, 674–680 (2019). <https://doi.org/10.1038/s41893-019-0334-y> (Links to an external site.)

Kroll, C., Warchold, A. & Pradhan, P. Sustainable Development Goals (SDGs): Are we successful in turning trade-offs into synergies?. *Palgrave Commun* 5, 140 (2019). <https://doi.org/10.1057/s41599-019-0335-5>

Sanchez Rodriguez, R., Ürge-Vorsatz, D. & Barau, A.S. Sustainable Development Goals and climate change adaptation in cities. *Nature Clim Change* 8, 181–183 (2018). <https://doi.org/10.1038/s41558-018-0098-9>

Week Seven (Oct 12-14) Development and Adaptation: vulnerability and adaptive capacity.

Discussion Lead: Frances and Liz K.

Eakin, H., M. Lemos, and D. Nelson, *Differentiating capacities as a means to sustainable climate change adaptation*. Global Environmental Change, 2014. 27: p. 1-8.

Fresque Baxter Jennifer A., Armitage Derek. Place identity and climate change adaptation: a synthesis and framework for understanding. WIREs Clim Change 2012, 3: 251-266. doi: 10.1002/wcc.164

Brown, K. and E. Westaway (2011). "Agency, Capacity, and Resilience to Environmental Change: Lessons from Human Development, Well-Being, and Disasters." Annual Review of Environment and Resources 36: 321-342.

Forsyth T. Community based adaptation: a review of past and future challenges. WIREs Clim Change 2013, 4: 439-446. doi: 10.1002/wcc.231

Week Eight (Oct 21): Mitigation

Discussion Lead: Moksha and Savannah

Twyman, C., T. A. Smith & A. Arnall (2015) What is carbon? Conceptualising carbon and capabilities in the context of community sequestration projects in the global South. Wiley Interdisciplinary Reviews-Climate Change, 6, 627-641.

Marcotullio, P. J., S. Hughes, A. Sarzynski, S. Pincetl, L. S. Pena, P. Romero-Lankao, D. Runfoia & K. C. Seto (2014) Urbanization and the carbon cycle: Contributions from social science. Earths Future, 2, 496-514.

Dercon, S. (2014) Climate change, green growth, and aid allocation to poor countries. Oxford Review of Economic Policy, 30, 531-549.

Week Nine (Oct 26,28) Mitigation, Adaptation and Development: synergies and tradeoffs

Discussion Lead: Robert and Isabelle

Campbell, B (2009). Beyond Copenhagen: REDD+, agriculture, adaptation strategies and poverty. Global Environmental Change, Editorial.

Dewulf Art. Contrasting frames in policy debates on climate change adaptation. WIREs Clim Change 2013, 4: 321-330. doi: 10.1002/wcc.227.

Watts, D., C. Albornoz & A. Watson (2015) Clean Development Mechanism (CDM) after the first commitment period: Assessment of the world's portfolio and the role of Latin America. Renewable & Sustainable Energy Reviews, 41, 1176-1189.

Suckall, N., E. Tompkins, and L. Stringer, Identifying trade-offs between adaptation, mitigation and development in community responses to climate and socio-economic stresses: Evidence from Zanzibar, Tanzania. Applied Geography, 2014. **46**(0): p. 111-121.

Sharifi, A. (2020) Trade-offs and conflicts between urban climate change mitigation and adaptation measures: A literature review. Journal of Cleaner Production, 276, 122813.

Week Ten (Nov 2, 4) Linking Adaptation and Mitigation and Sustainable Development—case studies

Discussion Lead: Francisco and Patricio

Somorin, O.A., et al., *The Congo Basin forests in a changing climate: Policy discourses on adaptation and mitigation (REDD+)*. Global Environmental Change, 2012. **22**(1): p. 288-298.

Kongsager, R. & E. Corbera (2015) Linking Mitigation and Adaptation in Carbon Forestry Projects: Evidence from Belize. World Development, 76, 132-146.

Viguie, V. and S. Hallegatte (2012). "Trade-offs and synergies in urban climate policies." Nature Climate Change **2**(5): 334-337.

Week 11 (Nov 9, 11) Policy, institutions, adaptation and resilience

Discussion Leaders: Luke F. and Mishal

McSweeney K, Coomes OT. 2011. Climate-related disaster opens a window of opportunity for rural poor in northeastern Honduras. Proceedings of the National Academy of Sciences of the United States of America 108

Dilling, L., M. E. Daly, W. R. Travis, O. V. Wilhelmi & R. A. Klein (2015) The dynamics of vulnerability: why adapting to climate variability will not always prepare us for climate change. Wiley Interdisciplinary Reviews-Climate Change, 6, 413-425.

Mark Pelling, Mark and Chris High (2005). Understanding adaptation: What can social capital offer assessments of adaptive capacity? Global Environmental Change 15 (2005) 308-319

Termeer, C. J. A. M., A. Dewulf, S. I. Karlsson-Vinkhuyzen, M. Vink & M. v. Vliet (2016) Coping with the wicked problem of climate adaptation across scales: The Five R Governance Capabilities. *Landscape and Urban Planning*, 154, 11-19.

Week 12 (Nov 16, 18) Transformation and policy transitions

Discussion Lead: Erika and Charlie

Westley, F.P., 2011: Tipping toward sustainability: Emerging pathways of transformation. Ambio, 40, 762-780.

Few, R., Morchain, D., Spear, D. *et al.* Transformation, adaptation and development: relating concepts to practice. *Palgrave Commun* **3**, 17092 (2017).
<https://doi.org/10.1057/palcomms.2017.92>

O'Brien, K., 2011: Global environmental change II: From adaptation to deliberate transformation. Prog Hum Geogr,

Pelling, Mark and David Manuel-Navarrete (2010). From Resilience to Transformation: the Adaptive Cycle in Two Mexican Urban Centers. Ecology and Society, vol 16 no 2.

Week 13 (Nov 23) Development, conservation and climate: a necessary connection

Discussion Leader: Evelyn

Tompkins, E. L. and Adger, W. N. (2004). Does adaptive management of natural resources enhance resilience to climate change? Ecology and Society, 9(2): 10.

McClanahan T.R., J.E. Cinner, J. Maina, N.A.J. Graham, T.M. Daw, S.M. Stead, A. Wamukota, K. Brown, M. Ateweberhan, V. Venus, & N.V.C. Polunin (2008). Conservation action in a changing climate. Conservation Letters (2008) 1-7.

Bustamante, M., et al., Co-benefits, trade-offs, barriers and policies for greenhouse gas mitigation in the agriculture, forestry and other land use (AFOLU) sector. Global Change Biology, 2014. 20(10): p. 3270-3290.

Munang, R., I. Thiaw, K. Alverson, M. Mumba, J. Liu & M. Rivington (2013) Climate change and Ecosystem-based Adaptation: a new pragmatic approach to buffering climate change impacts. Current Opinion in Environmental Sustainability, 5, 67-71.

Week 14 (Nov 30, Dec 2): Development, sustainability and climate: a necessary connection

Kates, R. W. (2000). "Cautionary Tales: Adaptation and the Global Poor." Climatic Change 45: 5-17.

Brown, K. (2011). "Sustainable adaptation: An oxymoron?" Climate and Development 3: 21-31.

Eriksen, S., P. Aldunce, et al. (2011). "When not every response to climate change is a good one: identifying principles for sustainable adaptation." Climate and Development 3(1): 7.

Jones, H.P., D.G. Hole, and E.S. Zavaleta, Harnessing nature to help people adapt to climate change. Nature Climate Change, 2012. 2(7): p. 504-509.

Week 15 (Dec 5, 7) Climate and Development: taking stock

TBD