

F&ES 798E/YID3202b
China's Energy and Sustainability Challenge
Spring 2017

Syllabus last updated Jan. 3, 2017 and subject to change! Check Canvas for most up to date readings and information

Instructor

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Class Sessions: 7:00 – 8:50 am SGT Wednesdays / 6:00 – 7:50 pm EST Tuesdays (Daylight savings will shift the start time to 7 pm EDT starting Week 10). This course is a flipped module course, so students will be required to watch lectures, supplementary videos, and complete a pre-class exercise before simultaneous discussion sections on Wednesdays.

**** The first class will meet on Tuesday, January 17 EST/Wednesday, January 18 SGT to accommodate Yale FES's schedule and will run until April 19 (during Yale-NUS's Reading Week) ****

Office Hours: Sign up here <http://tinyurl.com/ot9d5je> and by appointment

**Note for FES students: No shopping is allowed for this course – only students who have applied and been accepted may enroll.*

*** Note for all students: Due to the misalignment of Yale-NUS and Yale FES academic calendars, some adjustments regarding start and end-date of sessions will be made, **including one class meeting during FES Spring Break in March.***

**** Note for Yale-NUS students: We will NOT be using Yale-NUS's Canvas site for this class. If you have not yet received an email invitation to set up your Yale Canvas account, please e-mail Jordanna.Packtor@yale.edu. Link to the Canvas site: <https://yale.instructure.com/courses/6433/pages/chinas-energy-and-sustainability-challenge>*

Course Description

Developing solutions for global energy and climate challenges necessitates an understanding of China. This course will examine China's economic rise in the context of its energy and environment, as they relate both within China and abroad. Issues of security, the long-term sustainability of current resource consumption and growth, and the need for innovative technology and policy are all challenges China's energy system faces. At the same time, as the world's largest consumer of energy and emitter of greenhouse gases, China has the ability to singlehandedly shape the course of the global climate system. The environmental consequences of China's energy consumption and growth are also critical considerations, particularly as China's air and water pollution have become transboundary in nature.

Topics that will be explored in the course include:

- China's energy system and structure
- Drivers of environmental change, including urbanization, industrialization/market reform, technology and innovation, consumption patterns
- Politics and governance
- Environmental consequences of China's energy consumption
- Renewable energy and technology innovation
- Internationalization of China's policymaking

Course Goals

At the completion of this course, students will:

- Become well-versed in understanding major energy and environment-related challenges China faces and their importance within the global context
- Develop specific expertise in at least one area of interest related to energy and environmental issues
- Explore broader academic investigations and policy debates as they relate to this course
- Learn how to apply data and quantitative methods to answer policy-relevant questions
- Strengthen critical reading and analysis skills

Course Structure

All class materials are available on Canvas. Lectures are pre-recorded and available online. It is expected that all students will attend each weekly in-person discussion session, with 1 "free pass" or unexcused absence allowed.

Course Requirements and Grading

1. Participation (20%) – attendance in discussion sessions and class presentations
2. Pre-class quizzes (10%)
3. Policy memo (15%)

4. Analytical Exercises/Problem Sets (20%)
5. Final Take-Home Exam (25%)

Reading and Pre-Class Exercise

Each student will be required to submit one to two questions (one discussion-based, the other a clarification of the readings or lecture materials) based on the readings and lecture via Canvas by 9:00 pm on Mondays (in respective time zones), which will form the basis of class discussion each week.

In addition, each student will take an online quiz via Canvas intended to ensure students have completed the readings and watched all lecture materials. A student's lowest quiz grade will be dropped.

Presentations

Each class, following Q&A discussion on the lecture and readings, students, according to a rotating schedule, will sign up to present an energy fact sheet (detailed below) based on the week's theme.

The sign-up sheet is available here: <http://tinyurl.com/huc9wnc>. Each student must sign up for one presentation for the semester in teams of no more than 3 students.

Energy Fact Sheet – Issue overview

The Energy Fact Sheet provides students experience with researching energy data and statistics and placing this information within the China national and international context. More information is provided on the Canvas site.

Each Wednesday discussion, a team of two (no more than 3) students who has prepared the Energy Fact Sheet will present in class. Each presentation should last 10 minutes (including Q&A). A Powerpoint or other visual presentation is highly encouraged.

Breaking news – Contemporary China Energy and Environment Presentation

Students will also be expected to monitor media reports on energy and environment in China and report weekly to the class. (All students should set up a “Google alert” <http://www.google.com/alerts>) or Feedly to monitor articles. Suggested search terms include “China” and “energy and/or environment”; you can also add any key words related to topics you are particularly interested in “renewable energy; water; coal; nuclear; air pollution;” and may want to pick something relevant to your your memo topic once you've decided with your team.

Students will sign up on Canvas to present one week a set (~3-4 articles on the same topic) of current (within 1 to 2 years, ideally within the last year) news articles related to the week's topic. These articles can be drawn from any credible news source (e.g., China Dialogue, Bloomberg News, NYT China). Each presentation should last 10 minutes (including Q&A). While not expected, a Powerpoint or other visual presentation is highly encouraged. While the format of this presentation is somewhat flexible (given the topic), students should be prepared to address:

- What is the contemporary energy or environment issue being addressed, and what is new about the issue that has not been addressed in the readings or lecture?
- Where are the central tensions or challenges present?
- How is this issue being addressed? If it's not being addressed, what institutions or factors could cooperate to develop a solution?

Analytical Exercises

Students will complete three short analytical exercises throughout the semester to apply analytical skills covered in class to real-world data related to China's energy and environment. The analytical exercises/problem sets will include:

- Energy systems analysis
- Energy decomposition exercise
- Emissions scenario analysis to familiarize students with existing tools to project future emission pathways.

More specific details regarding these assignments will be distributed on the Canvas site and in class.

Policy Memo

In small groups (4 students max, 2 from each side), students will prepare a short (less than 3-page) policy memo briefing a selected government agency within China identifying an opportunity for collaboration (with a student's home country, for example), a strategic position, etc. on an energy or environmental challenge related to China. The memo must address some aspect of the recently-released 13th Five-Year Plan and recommendations for how China should meet its goals. Teams should consist of at least 2 Yale-NUS students and 2 Yale F&ES students.

Why work in teams?

Increasingly, we need the help of others to answer and solve contemporary environmental questions and issues. Regardless of your professional aspirations, it is likely that at some point,

you will need to work on a team to produce a product. Ideally, working with someone else will help broaden your perspective and provide a deeper understanding than working alone.

Final Take-Home Exam

The final assessment for the course will be a take-home examination that asks students to address 2 questions in a short-essay format. The final exam will be due by 11:59 pm (in your respective time zone) on Thursday, May 4.

Intellectual and Professional Ethics

Students are expected to uphold standards of academic honesty. Detailed at greater length in the publication Undergraduate Regulations - <http://www.yale.edu/ycpo/undregs/pages/appendF.html> - and Yale-NUS College - <http://studentlife.yale-nus.edu.sg/policies/academic-integrity> - the concept of academic dishonesty or cheating includes any misrepresentation of another's work as your own, including unacknowledged paraphrasing or quoting, use of another student's material, incomplete acknowledgement of sources including Internet sources, or submission of the same work to complete the requirements of more than one class.

In this course, we will hold you to the highest academic standards, which you will be expected to follow throughout your tenure at Yale-NUS College and Yale. We expect each student to complete original, independent work. Plagiarism will not be tolerated. Proper citation of all sources is essential. If you are ever unclear about what constitutes academic dishonesty, it is *your* responsibility to contact me or another University resource for clarification.

Please see <http://library.yale-nus.edu.sg/plagiarism/> for more information regarding plagiarism and how to avoid it. Another good resource our library has put together to walk you through how to write a research paper is here: <http://library.yale-nus.edu.sg/tutorials/>.

Weekly Readings and Assignments (*available via Canvas and subject to change, so please check Canvas frequently*)

Week 1 - Jan 15-21. Introduction - Why China?

F&ES: Anyone unfamiliar with Canvas should have a mandatory TA session with Jordanna Packtor to learn Canvas.

Multimedia:

Lecture 1: Introduction to China's Environmental Challenges

Background readings:

- ** Lawrence, S., & Martin, M. F. (2012). Understanding China's political system. pp. 1-19; 33-38.
- Judith Shapiro. (2012). [Introduction: The Big Picture](#). *China's Environmental Challenge*. Polity.
- Hsu, A. (2014). [A Real War, More Ammo Required](#). *China Economic Quarterly*, September 2014.
- Liu, J., & Diamond, J. (2005). China's environment in a globalizing world. *Nature*, 435(7046), 1179-1186.

** if you've taken Chinese politics, you can skim this reading.

Week 2 – Jan 22-28. Overview of China's Political System and Implications for Environmental Management

- How is China's government structured and what implications does this system have on China's management of energy and environment issues?
- What characteristics of China's institutions and governance structure make addressing environmental issues so challenging?

Multimedia:

- Lecture 2: Environment and Energy Governance in China

Background readings:

- Lieberthal, K. (2000). China's governing system and impact on environmental policy implementation. *China Environment Series*.
- Andrews-Speed, P. (2011). "China's Institutions of Governance," in *The Governance of Energy in China*. Palgrave MacMillan. Pp. 123-132 only.
- Andrews-Speed, P. (2011). "Energy Policymaking," in *The Governance of Energy in China*. Palgrave MacMillan. Pp.140-148 only.
- Kostka, G., & Mol, A. P. (2013). Implementation and participation in China's local environmental politics: challenges and innovations. *Journal of Environmental Policy & Planning*, 15(1), pp. 1-10 only.

Optional:

Wubbeke, J. (2014). The three-year battle for China's new environmental law. *China Dialogue*. Available: <https://www.chinadialogue.net/article/show/single/en/6938-The-three-year-battle-for-China-s-new-environmental-law>

Week 3 – Jan. 29-Feb. 4. China's Energy System

- How is China's energy system structured?



- What are the major energy sources powering China's economy?

**If you've taken Energy Systems Analysis, I've indicated where you may want to skim over materials with a **; but if you've never taken a class on energy, I recommend you review these materials.*

Multimedia:

- Lecture 3: Introduction to China's Energy System.
- Expert Q&A with Alvin Lin, NRDC China
- **300 Years of FOSSIL FUELS in 300 Seconds (6 min):
<http://www.youtube.com/watch?v=cJ-J91SWP8w>

Background readings:

- ** Bradford, Travis. 2006. *Solar Revolution: The Economic Transformation of the Global Energy Industry*. Boston, USA: MIT Press. Chapter 2 "A Brief History of Energy", pg. 23-43.
- ** "[Energy Primer: Based on Chapter 1 of the Global Energy Assessment \(GEA\)](#) , " *Energy Primer Online Textbook, Section 2 – The Global Energy System*.
- Levine, M. D., Liu, F., & Sinton, J. E. (1992). China's energy system: historical evolution, current issues, and prospects. *Annual review of energy and the environment*, 17(1), 405-435
- Rosen, D.H., and T. Houser. (2007). "China's Energy Supply System" in "[China Energy: A Guide for the Perplexed](#) , " *China Balance Sheet*, pp. 17-27.

***Analytical Exercise 1 Assigned: Chinese Energy Consumption and Emissions*


Week 4 – Feb. 5-11. Understanding Drivers of Energy and Environmental Change in China

- Investigating drivers of energy consumption (e.g., Industrialization, urbanization, consumption, transportation) and energy end uses (e.g., electricity, transportation, buildings, and industry)

Multimedia:

- Lecture 4: Drivers of Energy and Environmental Change in China
- Preparing for China's Urban Billion: <https://www.youtube.com/watch?v=OoOiPzg0Yzg>

Background readings:

- "[Economic Drivers of Energy Use and Carbon Emissions in China](#)," ChinaFAQs.
- Rosen, D.H., and T. Houser. (2007). "What's Driving Demand?" in "[China Energy: A Guide for the Perplexed](#) , " *China Balance Sheet*, pp. 6-14.
- Bai, X. et al. (2014). "Society: Realizing China's Urban Dream," *Nature*.

- [*"China Motorization Trends: New Directions for Crowded Cities, The Journal of Transport and Land Use*](#)

Optional:

["Preparing for China's Urban Billion: Executive Summary"](#)  *McKinsey Global Institute/*
Focus on the Executive Summary

**** Policy memo assignment distributed to the class. Start forming teams and indicate via the class sign-up sheet (<http://tinyurl.com/huc9wnc>) your team members and intended topic.**

Week 5 – Feb. 12-18. China’s Energy System: Production and Consumption in the Global Context

- How does China’s domestic energy system influence the global picture?
- How does China’s energy consumption and greenhouse gas emissions compare with other countries, or other countries’ development trajectories?

Multi-media Materials:

- Lecture 5: China’s Energy System in the Global Context
- Expert Q&A with Xizhou Zhou, IHS Energy
- Elizabeth Economy and Michael Levi:
<https://www.youtube.com/watch?v=6zPIKmjaeAY>

Background readings:

- Rosen, D.H., and T. Houser. (2007). “Global Impacts” in [“China Energy: A Guide for the Perplexed,”](#) *China Balance Sheet*, pp. 28-35.
- Bader, Jeffrey A. 2008. "Rising China and Rising Oil Demand: Real and Imagined Problems for the International System." In *The Global Politics of Energy*, edited by Kurt M. Campbell and Jonathon Price, 97-111. USA: The Aspen Institute.
- Economy, E. and M. Levi. (2014). *By all means necessary: How China's resource quest is changing the world.* Chapter 3.
- Mol, A. P. (2011). China's ascent and Africa's environment. *Global Environmental Change*, 21(3), 785-794.

***Analytical Exercise 2 Assigned: Decomposing drivers of China’s Carbon Emissions*

**** Feb 19-25 - YALE-NUS SPRING BREAK: CLASSES WILL NOT MEET. INSTEAD PROF. HSU WILL BE IN NEW HAVEN AND THERE**

WILL BE A DINNER MEET AND GREET IN SAGE LOUNGE AT 6 PM.

Week 6 – Feb. 26 – March 4. Consequences of China’s Energy System for Climate Change

- What are the climate change implications of China’s energy system? What sectors contribute the most to climate change in China?
- How do path-dependent processes and socio-technical complexes make change in China’s energy system particularly challenging?
- How do uncertainties in China’s energy data contribute to global climate emissions questions?

Multimedia:

- Lecture 6: Climate Impacts of China’s Energy System

Background readings:

- Lewis, J., J. Logan, and M. Cummings. (2011). “Understanding the Climate Challenge in China” in *Climate Science and Policy*, Edited by Schneider, S., Rosencranz, A., Mastrandrea, M.D., and Kuntz-Duriseti, K.
- Unruh, G. C. (2000). Understanding carbon lock-in. *Energy policy*, 28(12), 817-830.
- Grubb, M., Sha, F., Spencer, T., Hughes, N., Zhang, Z., & Agnolucci, P. (2015). A review of Chinese CO2 emission projections to 2030: the role of economic structure and policy. *Climate Policy*, 15(sup1), S7-S39.
- Marland, G. (2012). Emissions accounting: China's uncertain CO2 emissions. *Nature Climate Change*, 2(9), 645-646.
- Liu, Z., Guan, D., Crawford-Brown, D., Zhang, Q., He, K., & Liu, J. (2013). [Energy policy: A low-carbon road map for China](#). *Nature*, 500(7461), 143-145.

Optional:

- China’s Second National Climate Change Communication. <http://en.ccchina.gov.cn/Detail.aspx?newsId=39278&Tid=100>
- Hsu et al. (2016). Making sense of China’s Drop in Coal Use. *Scientific American*. <https://blogs.scientificamerican.com/guest-blog/making-sense-of-china-s-drop-in-coal-use/>



Week 7 – March 5 – 11. Environmental Pollution and Environmental Regulation

- What are the environmental consequences of China’s energy consumption?
- How has China’s government sought to address major sources of air and water pollution?
- How does China’s 13th Five-Year Plan address energy and the environment?

Multimedia:

- Lecture 7: Addressing Air and Water Pollution in China
- Expert Q&A with Deborah Seligsohn, UC San Diego
- [Understanding the Water-Energy Nexus: Choke Point China.](#) Browse website, watch some of the videos.
- Chai Jing's 'Under the Dome' - if you haven't seen it already (can watch the first 20 minutes or so to get the gist).
<https://www.youtube.com/watch?v=T6X2uwlQGQM#t=122>

Readings:

- ["Energy Primer: Based on Chapter 1 of the Global Energy Assessment \(GEA\)"](#) , "Energy Primer Online Textbook, Section 7 – Energy impact on the Human and Natural Environment. Pp. 53-64.
- "Seeing Through the Smog: China's Air Pollution Challenge for East Asia,"(2014). Routledge Handbook of Environment and Society in Asia.
- China Air 2015: Air Pollution and Control Prevention in China's Cities. (2016). Clean Air Asia. [Focus on Section II: Policy Implementation and Status/]
- Barnett, J., Rogers, S., Webber, M., Finlayson, B., & Wang, M. (2015). Sustainability: transfer project cannot meet China's water needs. *Nature*, 527, 295-297.
- Seligsohn, D., and A. Hsu. (2016). How does China's 13th Five-Year Plan Address Energy and the Environment? ChinaFile. <https://www.chinafile.com/reporting-opinion/environment/how-chinas-13th-five-year-plan-addresses-energy-and-environment>
- ["Addressing China's Water Scarcity: Recommendations for Selected Water Resource Management"](#) , " Ch 3 only, can skim rest. *The World Bank*.
- Buckley, Chris. (2016). Rural water, not smog, may be China's biggest pollution nightmare. The NY Times. <http://www.nytimes.com/2016/04/12/world/asia/china-underground-water-pollution.html>

Week 8 – March 12 – 18. Renewable Energy in China: Key Technologies and Policy Drivers

- What renewable energy technologies has China invested in as fossil fuel alternatives?

**** YALE F&ES STUDENTS: BE AWARE THAT THIS CLASS TAKES PLACE DURING THE FIRST WEEK OF YOUR SPRING BREAK. AS ALL MATERIALS ARE RECORDED, YOU HAVE THE OPTION TO UTILIZE YOUR 1 FREE UNEXCUSED ABSENCE SHOULD YOU CHOOSE TO NOT ATTEND. OTHERWISE YOUR ATTENDANCE IS MANDATORY AND EXPECTED. WE WILL PROVIDE A ZOOM LINK IF YOU NEED TO PARTICIPATE REMOTELY.**

Multimedia:

- Lecture 8: Renewable Energy in China
- Expert Q&A with Joanna Lewis, Georgetown University
- Expert Q&A with Michael Davidson, MIT

Readings:

- "[Chapter 3: China in the Global Wind Power Innovation System](#)," *Green Innovation in China: China's Wind Power Industry and the Global Transition to a Low-Carbon Economy*.
- Zhang, S., Zhao, X., Andrews-Speed, P., & He, Y. (2013). The development trajectories of wind power and solar PV power in China: A comparison and policy recommendations. *Renewable and Sustainable Energy Reviews*, 26, 322-331.
- China's Wind and Solar Sectors: Trends in Deployment, Manufacturing, and Energy Policy. US-China Economic and Security Review Commission. http://origin.www.uscc.gov/sites/default/files/Research/Staff%20Report_China%27s%20Wind%20and%20Solar%20Sectors.pdf. Pp. 7-17 only.
- Winglee, M. (2016). How China can stop wasting wind energy. China Dialogue. <https://www.chinadialogue.net/article/show/single/en/9119-How-China-can-stop-wasting-wind-energy>
- China has become a green energy superpower. These 5 charts show how. World Economic Forum. <https://www.weforum.org/agenda/2016/06/china-green-energy-superpower-charts/>

**** Policy Memo due, March 17 at 11:59 pm EST uploaded via Canvas by group ****

Week 9 – March 20-26. Optional Field Trip in China

This field trip will give you an opportunity to meet with policymakers, government officials, private sector individuals, and civil society groups in China. It is 100% optional and you will not be penalized if you are unable to participate.

**** ALL YALE-NUS STUDENTS MUST CONFIRM IN WRITING PERMISSION FROM ANY INSTRUCTORS' CLASSES THEY WILL MISS MARCH 24-25****

Yale F&ES students will depart no later than Monday, March 20 (to arrive on Tuesday, March 21). Any earlier departures for tourism and other personal reasons ONLY from NYC and costs for flight fare differences, hotels, food, etc., will be borne by the student. The F&ES Dean's office has also instituted a mandatory 10% co-pay. We will let you know asap what this cost is once we have the full budget tallied.

Yale-NUS students will depart on at 12:15 am on Thursday, March 23 morning (but leave

campus on Wednesday, March 22 evening) on Air China flight 970 to minimize missed classes. The Dean's office has required that students co-pay the cost of the flight (currently priced at \$304 USD/\$433 SGD) or \$750 SGD, whichever is cheaper at the time of booking.

If you are unable to make these co-pays, please let Prof. Hsu or Tyler know asap and we will work with Financial Aid to make arrangements.

**** ALL STUDENTS: PLEASE ENSURE YOU HAVE A VALID PASSPORT WITH AT LEAST 6 MONTHS VALIDITY; AT LEAST ONE FULL BLANK PAGE FOR THE VISA IF YOU REQUIRE IT. WE ARE NOT RESPONSIBLE FOR YOUR PASSPORT VALIDITY. ****

Week 10 - March 26-April 1. More Controversial Energy Technologies in China

**** NOTE: DUE TO DAYLIGHT SAVINGS, CLASS IN NEW HAVEN WILL CONVENE AT 7 PM FROM THIS WEEK FORWARD ****

Guest lecture by Philip Andrews-Speed, Energy Studies Institute, Singapore

Multimedia

- Lecture 10: Controversial Energy Technologies in China
- Expert Q&A with Sarah Forbes, US DOE
- Explaining CCS: <https://www.youtube.com/watch?gl=SG&v=ROEFaHKVmSs&hl=en-GB>
- How does IGCC work: <https://www.youtube.com/watch?v=3TYA6wkWTw4>

Readings

- "China's Nuclear Energy in Light of the Disaster in Japan" *Eurasian Geography and Economics*
- "Environmental Impact Assessments of the Three Gorges Project in China: Issues and Interventions." *Earth-Science Reviews*.
- Hart, Craig A. and Hengwei LIU. "Advancing Carbon Capture and Sequestration in China: A Global Learning Laboratory." *China Environment Series* no. 11 (2010/2011).
- Lee, J and J. West. (2014). The Great Frack Forward. Mother Jones. <http://www.motherjones.com/environment/2014/09/china-us-fracking-shale-gas>

Optional:

- Hvinstendahl, M. (2008). China's Three Gorges Dam: An Environmental Catastrophe? *Scientific American*. <https://www.scientificamerican.com/article/chinas-three-gorges-dam-disaster/>

Week 11 – April 2 – 8. China's Role in Global Climate Change: The National &


International Challenge

- What role has China played in the global climate negotiations?
- What climate goals has China committed to, and what are their global implications?

Multimedia:

- Lecture 11: China's Role in Global Climate Change
- Expert Q&A with Li Gao, Deputy Director, China National Climate Change Coordination Office, NDRC

Readings:

- Hart et al. (2015). Mapping China's Climate Policy Formation Process. China Carbon Forum. <http://www.chinacarbon.info/wp-content/uploads/2015/11/Mapping-Chinas-Climate-Policy-Formation-Process.pdf>
- "[Written Testimony on China's Green Energy and Environmental Policies](#) , " U.S.-China Economic and Security Review Commission
- Liu, Z., Guan, D., Moore, S., Lee, H., Su, J., & Zhang, Q. (2015). Climate policy: Steps to China's carbon peak. *Nature*, 522, 279-281.
- [How China and US became unlikely partners on Climate Change, Orville Schell, Yale E360.](#)

Optional readings:

- "[China's National Climate Change Programme](#) , " National Development and Reform Commission
- [Fact Sheet: US-China Climate Leaders Summit.](#)

*** Analytical Exercise 3 Assigned: Using policy modeling tools to project China's future emissions pathways*

Week 12 – April 9-15. Bottom-up Drivers of Environmental Change in China

- What is the role of civil society and individual citizens in China's environmental movements and policy?

Multimedia:

- Lecture 12: Role of Civil Society in China
- Expert Q&A with Ma Jun, Director, Institute of Public and Environmental Affairs (IPE), former Yale World Fellow

Readings:

- "Environmental NGOs in China: Roles and Limits" (2004) by Jonathan Schwartz
http://www.jstor.org/stable/40022273?seq=1#page_scan_tab_contents
- Tang, S. Y., & Zhan, X. (2008). Civic environmental NGOs, civil society, and democratisation in China. *The Journal of Development Studies*, 44(3), 425-448.
- Ma, Q. (2002). The governance of NGOs in China since 1978: how much autonomy?. *Nonprofit and Voluntary Sector Quarterly*, 31(3), 305-328.

Relevant News Articles (Pick 2 to read)



- "Enter the Chinese NGO" (2014) in *The Economist* <http://www.economist.com/news/leaders/21600683-communist-party-giving-more-freedom-revolutionary-idea-enter-chinese-ngo>
- "New law invigorates China's environmental NGOs" (2014) http://www.chinadaily.com.cn/china/2014-04/29/content_17474999.htm
- "China: Locals Turn to Environmental Activism" (2008) in The Climate Institute. <http://www.climate.org/topics/international-action/chinese-environmental-action.html>
- "Environmental NGOs grow across China but still struggle for support" (2012) <http://www.globaltimes.cn/content/714330.shtml>
- "China encourages environmental groups to sue polluters" (2015) <http://www.theguardian.com/environment/2015/jan/07/china-encourages-environmental-groups-to-sue-polluters>
- China wrestles with Draft Law for Non-Governmental Organizations. (2016). http://www.nytimes.com/2016/03/12/world/asia/china-ngo-law.html?_r=0
- For more on Ma Jun's work:
 - *Institute for Public and Environmental Affairs'* website: <http://www.ipe.org.cn/en/default.aspx> .
 - *A list of their publications is here: http://www.ipe.org.cn/en/about/report.aspx of interest might be the 'Greening the Supply Chain' and 'Pollution Information Transparency Index' reports*
 - *See Yale FES alum Amy Weinfurter's piece on the Blue Map APP on China Dialogue:*

Week 13 – April 16-22. Future Pathways and Scenarios for China

Multi-media Materials:

- Lecture 13: Future Scenarios and Looking Ahead
- Expert Q&A with Jiang Kejun, Energy Research Institute, NDRC
- Expert Q&A with Lynn Price, China Energy Group, LBNL

Readings:

- "[Carbon Emissions in China: How Far Can New Efforts Bend the Curve](#), " Energy Economics
- "[China's Role in Attaining Global 2°C Target](#), " Climate Policy
- Green, Fergus and Stern, Nicholas (2016) China's changing economy: implications for its carbon dioxide emissions. Climate Policy.
- Wubbeke and Conrad. (2015). China's climate promises under economic pressure: Scenarios and implications. MERICS China Policy Brief.