

SOSC 4290 *China's Sustainable Development*

Instructor: Jimin Zhao (jiminzhao@ust.hk) Office Hours: by appointment, 2348 (lift 3)
TA: William Hoi Wing CHAN (williamchan@ust.hk) Office Hours: Tuesday 11:00-13:00, 3005 (lift 4)

Tuesday and Thursday 9:00-10:20 am; Room 6573 (lift 29-30)

Syllabus

While the emergence of China as an economic power has been characterized by steady and rapid economic development and higher living standards, it has also inflicted enormous damage on China's environment and the health and well-being of its people. Given the severe resource and environmental constraints on economic development, China still faces an arduous task to continue improving people's livelihoods. China was ranked 73rd in the world in terms of GDP per capita in 2015 and there are 83 million people living in poverty (less than 1US\$ per day in 2013). Sustainability means meeting human needs while limiting harmful impacts on the environment so that future generations may also live comfortably and prosper. Sustainable development is society's way of dealing with environmental challenges in a manner that integrates economic, social and environmental considerations and recognizes their inter-linkages. There is a great necessity and responsibility for China to shift to a more sustainable development path by transforming its development mindset and innovating to realize new modes of development, so as to not only benefit Chinese citizens but also make greater contributions to global sustainable development.

This course begins with the introduction of the concepts, principles, and evaluation methodologies of sustainable development. The main objective of the course is designed to apply these principles and methods to analyze and understand sustainable development issues in China. China's sustainable development issues to be covered include energy resources, water resources and water pollution, transportation and urbanization, climate change, and etc. The course also explores solutions for China's future development. Governance and policy, technology, organizational and individual behaviour are important elements affecting sustainable development and will be examined at international, national, and local levels. **Prerequisite(s):** SOSC1170 or SOSC 3150 or SOSC3180/ENVR3110.

1. Intended Learning Outcomes (ILOs)

By the end of this course, students will be able to:

- a) Explain and understand the concepts, principles and significance of sustainable development;
- b) Understand and critique the existing assessment methodologies for evaluating sustainable development
- c) Understand and explain the drivers, origins and challenges behind environmental issues in China;
- d) Apply the principles and methodologies of sustainable development to evaluate and analyse environmental issues and development in China

- e) Explore solutions for achieving a more sustainable development path for China from a multi-disciplinary perspective

This course also provides students with opportunities to develop their ability to:

- f) Use effective skills in communication, analysis, information collection, presentation, and stakeholder facilitation
- g) Work within a team and take leadership

2. Teaching Approach

Sustainable development is an area of study and practice with few clear answers. Yet the study of sustainable development is based on established principles and practices that are modified to suit specific environmental challenges. This course is designed to balance an introduction to the fundamental principles of sustainable development with the equally important need to discover the many ways that sustainability can be creatively brought into being.

Classes will be a combination of discussions of theories and examples, case studies, group work, debates, guest speakers and so on. This course will be heavily interactive in that students are expected to engage in discussion and team research and presentation. Students must read the literature that is provided before class and prepare questions and thoughts before class to enhance class discussions.

3. Readings

Mandatory readings are on the reading list and are posted on CANVAS. More readings can be recommended to better understand environment and development issues in China.

Recommended Books

- Elizabeth Economy (2010) *The River Runs Black: The Environmental Challenges to China's Future*. Ithaca: Cornell University Press.
- Harris, P. (2012). *Environmental policy and sustainable development in China: Hong Kong in global context*. Bristol: Policy.
- Andressen, C., Mubarak A. R., & Wang, Xiaoyi. (2013). *Sustainable development in China* (Routledge contemporary China series; 101). Milton Park, Abingdon, Oxon; New York: Routledge.
- Turiel, J., Ding, I., & Liu, J. (2017). *Environmental governance in China: State, society, and market* (Brill research perspectives). Leiden: Brill.

4. Assessment

This is a lecture and participatory course. Students must be prepared to present and discuss course-related materials in class. Class participation is evaluated by the extent to which students contribute new information

and knowledge to the subject during discussion. Major discussion questions will be posted on previous class PPT at Canvas.

Reading article review presentation	15%
Leading discussion	10%
Project	25%
Individual paper and presentation	35%
Attendance and class participation	15%

5. Academic Integrity

You come to university to learn how to use information creatively. To do so you are exposed to and search out new ideas, theories, and practices. You learn how to use them to create your own ideas, to argue their importance, and see them put into action. Simply copying other people's work or ideas (usually called cheating) doesn't help you develop creativity. In this course you will work on how to extend other people's ideas, learn how to use them for your own purposes and generate your own ideas. Cheating shouldn't be an issue. Any intentional falsification or invention of data or citation in an academic exercise will be considered a violation of academic integrity. If the words or ideas of another are used, acknowledgement of the original source must be made through recognized referencing practices. Submitting a paper written by or obtained from another, using a paper or essay in more than one class without the teacher's permission is academic dishonesty. In such cases, the University must deal with you harshly (<http://www.ust.hk/vpao/integrity/>).

6. Course Outline

Class 1-2 Introduction to the Course and China's Environmental Problems (January 31, Feb 12)

- (1) Elizabeth Economy, 2010, *The River Runs Black: The Environmental Challenges to China's Future*. Ithaca: Cornell University Press. Chapter 3, 59-94.

Class 3-5 Concept, Integrated Assessment and Analysis Framework of Sustainable Development (Feb 14, 19, 21)

- (1) Robert F. Durant, Daniel J. Fiorino and Rosemary O'Leary (ed.), 2004, *Environmental Governance Reconsidered*, Cambridge: The MIT Press. Chapter 1: 35-68, Sustainability.
- (2) Graedel T and B Allenby, 2003, *Industrial Ecology*. Upper Saddle River: Prentice-Hall, Chapter 15, An Introduction to Life-Cycle Assessment.
- (3) Dawei Wang, Nada Zamel, et al, 2013, Life cycle analysis of internal combustion engine, electric and fuel cell vehicles for China, *Energy*, 59, 402-412.
- (4) Yue, Alun, & Bolin. (2017). Relationship between Industrial Water Consumption and Economic Growth in China Based on Environmental Kuznets Curve. *Energy Procedia*, 105, 3557-3564.

Class 6 Governance and Policy Evaluation (Feb 26)

- (1) Bodin Ö, 2017, Collaborative environmental governance: Achieving collective action in social-ecological systems. *Science*, 357(6352). pii: ean1114. doi: 10.1126/science.aan1114.
- (2) Paavola, J. (2016). Multi-Level Environmental Governance: Exploring the economic explanations. *Environmental Policy and Governance*, 26(3), 143-154.

Class 7-9 China's Environmental Governance and Public Acceptance (Feb28, March 5, 7)

Environmental Governance

- (1) Bo Zhang, Cong Cao, Robert M. Hughes, Wayne S. Davis, 2017, China's new environmental protection regulatory regime: Effects and gaps, 464-469
- (2) Young, Oran R., Guttman, Dan, Qi, Ye, Bachus, Kris, Belis, David, Cheng, Hongguang, . . . Zhu, Xufeng. (2015). Institutionalized governance processes: Comparing environmental problem solving in China and the United States. *Global Environmental Change*, 31, 163-173.

NIMBY and Public Acceptance

- (3) Huang, Youliang, Yan Ning, Tao Zhang, and Ying Fei. 2015. "Public Acceptance of Waste Incineration Power Plants in China: Comparative Case Studies." *Habitat International* 47 (0): 11-19.
- (4) Wu, Yican. 2017. Public acceptance of constructing coastal/inland nuclear power plants in post-Fukushima China, *Energy Policy*, 101:484-491.

Class 10-13 Urbanization and Air Pollution (March 12, 14, 19, 21)

Air Pollution Science and Science-Policy Interface

- (1) Wu, J., Zhang, P., Yi, H., & Qin, Z. (2016). What Causes Haze Pollution? An Empirical Study of PM2.5 Concentrations in Chinese Cities. *Sustainability*, 8(2).
- (2) Zhong, L., Louie, P., Zheng, J., Yuan, Z., Yue, D., Ho, J., & Lau, A. (2013). Science-policy interplay: Air quality management in the Pearl River Delta region and Hong Kong. *Atmospheric Environment*, 76, 3-10.

Social Media

- (3) Kay, S., Zhao, B., & Sui, D. (2014). Can Social Media Clear the Air? A Case Study of the Air Pollution Problem in Chinese Cities. *The Professional Geographer*, 1-13.
- (4) Fedorenko, I., & Sun, Y. (2016). Microblogging-Based Civic Participation on Environment in China: A Case Study of the PM 2.5 Campaign. *VOLUNTAS: International Journal of Voluntary and Nonprofit Organizations*, 27(5), 2077-2105.

Air Pollution Policy Effectiveness

- (5) Jin, Y., Andersson, H., & Zhang, S. (2016). Air Pollution Control Policies in China: A Retrospective and Prospects. *International Journal of Environmental Research and Public Health*, 13 (12).
- (6) Jiang, Xujia, Hong, Chaopeng, Zheng, Yixuan, Zheng, Bo, Guan, Dabo, Gouldson, Andy, . . . He, Kebin. (2015). To what extent can China's near-term air pollution control policy protect air quality and human health? A case study of the Pearl River Delta region. *Environmental Research Letters*, 10(10):1-13.
- (7) Wong, C. & Karplus, V.J., 2017. China's War on Air Pollution: Can Existing Governance Structures Support New Ambitions? , *The China Quarterly*, 231, pp.662-684.

Class 14 Project Presentation (March 26)

Class 15-19 Sustainable Energy Policy and Technology Development (March 28, April 2, 4, 9, 11)

Energy Security and Energy Policy

- (1) Yao, & Chang. (2015). Shaping China's energy security: The impact of domestic reforms. *Energy Policy*, 77, 131-139.
- (2) Zhao, & Wu. (2016). Interpreting the Evolution of the Energy-Saving Target Allocation System in China (2006–13): A View of Policy Learning. *World Development*, 82, 83-94.

Energy Consumption Peak and EKC

- (3) Yuan, Xu, Hu, Zhao, Xiong, & Guo. (2014). Peak energy consumption and CO2 emissions in China. *Energy Policy*, 68, 508-523.
- (4) Wang, & Li. (2017). Decline in China's coal consumption: An evidence of peak coal or a temporary blip? *Energy Policy*, 108, 696-701.
- (5) Tang, B.M. et al., 2018. How to peak carbon emissions in China's power sector: A regional perspective. *Energy Policy*, 120, pp.365–381.

Renewable Energy

- (6) Zhen-Yu Zhao, Yu-Long Chen and Rui-Dong Chang (2016), How to stimulate renewable energy power generation effectively? China's incentive approaches and lessons, *Renewable Energy*, 92:147-156.
- (7) Hua, Y. J., Oliphant, M., & Hu, E. (2016). Development of renewable energy in Australia and China: A comparison of policies and status. *Renewable Energy*, 85, 1044-1051.
- (8) Liu, D. et al., 2018. Comprehensive effectiveness assessment of renewable energy generation policy: A partial equilibrium analysis in China. *Energy Policy*, 115, pp.330–341.
- (9) Liu, J., 2019. China's renewable energy law and policy: A critical review. *Renewable and Sustainable Energy Reviews*, 99, pp.212–219.

Electric Vehicle Development

- (10) Han Hao, Xunmin Ou, Jiuyu Du, Hewu Wang, & Minggao Ouyang. (2014). China's electric vehicle subsidy scheme: Rationale and impacts. *Energy Policy*, 73, 722-732.
- (11) Li, Zhan, De Jong, & Lukszo. (2016). Business innovation and government regulation for the promotion of electric vehicle use: Lessons from Shenzhen, China. *Journal of Cleaner Production*, 134, 371-383.
- (12) Wu, J.W. et al., 2019. The role of environmental concern in the public acceptance of autonomous electric vehicles: A survey from China. *Transportation Research Part F: Traffic Psychology and Behaviour*, 60, pp.37–46.

Class 20-23 Climate Change and Low Carbon Economy (April 16, 25, 20, May 2)

The Paris Agreement and China's Role

- (1) Hilton, I., & Kerr, O. (2017). The Paris Agreement: China's 'New Normal' role in international climate negotiations. *Climate Policy*, 17(1), 48-58.

(2) Yu, & Zhu. (2015). Toward Paris: China and climate change negotiations. *Advances in Climate Change Research*, 6(1), 56-66.

Carbon Emission Trading

(3) Zhang, Da, Karplus, Valerie J., Cassisa, Cyril, & Zhang, Xiliang. (2014). Emissions trading in China: Progress and prospects. *Energy Policy*, 75, 9-16.

(4) Bin Ye, Jingjing Jiang, Lixin Miao, Ji Li, & Yang Peng. (2015). Innovative Carbon Allowance Allocation Policy for the Shenzhen Emission Trading Scheme in China. *Sustainability*, 8(1), 3.

(5) Lo et al., 2018. Towards network governance? The case of emission trading in Guangdong, China. *Land Use Policy*, 75(C), pp.538–548.

Climate Governance and Low Carbon City Development

(6) Lo, Kevin, 2014, China's low-carbon city initiatives: The implementation gap and the limits of the target responsibility system, *Habitat international*, 42, 236-244.

(7) Schreurs, M. (2017). Multi-level Climate Governance in China. *Environmental Policy and Governance*, 27(2), 163-174.

(8) Shin, K., 2018. Environmental policy innovations in China: a critical analysis from a low-carbon city. *Environmental Politics*, 27(5), pp.830–851.

Class 24-25 Presentation: Future China--What is the Sustainable Development Path for China and How to Get There? (May 7, 9)