

CURRICULUM VITAE

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Education:

Ph.D., Chinese Academy of Sciences (CAS), Major: Industrial Ecology, 07/2013

Graduated with CAS Presidential Special Award

Thesis title: Pattern and process of carbon emissions from fossil fuel combustion and cement process

M.S., China Agricultural University, Major: Landscape Ecology. 06/2009

B.S., Northwest University, Major: Geology. 06/2007

Experience:

Harvard University

Giorgio Ruffolo Post-doctoral Research Fellow in Sustainability Science, 09/2013-present

Energy Technology Innovation Policy Research Fellow, 09/2013-present

Chinese Academy of Sciences (CAS)

Guest Scholar, Institute of Applied Ecology, 09/2013-present

University of Cambridge

Visiting Research Fellow, Cambridge Centre for Climate Change Mitigation Research (4CMR),

03/2012-07/2012

Tsinghua University

Visiting Research Fellow, Center for Earth System Science, 05/2013-09/2013

United Nations University (UNU)

Scholar, UNU-ProSPER.Net Young Researchers School (Vietnam campus), 10/2010-11/2010

Publications:

Books

1. Dabo Guan, **Zhu Liu**. Source Analysis and Control Strategies for PM 2.5 Pollution in Beijing-Tianjing-Hebei, China Environment Press, Beijing China, 2014.

Publications in International Peer-reviewed Journals (SCI Indexed)

1. **Zhu Liu**, Kuishuang Feng, Klaus Hubacek, Sai Liang, Laura Diaz Anadon, Chao Zhang, Dabo Guan. Four System Boundaries for Carbon Accounts. *Ecological Modelling* (Accepted, coming soon).
2. **Zhu Liu**, Dabo Guan, Douglas Crawford-Brown, Qiang Zhang, Kebin He, Jianguo Liu. Energy policy: A low-carbon road map for China. *Nature* 500 (7461), 143-145 (2013), (Reported by [China Science Daily](#)).
3. Kuishuang Feng, Steven J Davis, Xin Li, Dabo Guan, Laixiang Sun, Weidong Liu, **Zhu Liu**, Klaus Hubacek. Outsourcing CO₂ within China. *Proceedings of the National Academy of Sciences (PNAS)*. 110(28) 11654-11659 (2013), (Highlighted by [PNAS](#), [Nature Climate Change](#))
4. **Zhu Liu**, Dabo Guan, Fengming Xi, Tie carbon emissions to consumers (correspondence). *Nature*. (2013) 493, 304-305.

5. Dabo Guan, **Zhu Liu**, Yong Geng, Soeren Lindner, Klaus Hubacek. The gigatonne gap in China's carbon dioxide inventories. *Nature Climate Change*. 2, 672-5. (2012). (Highlighted by [Nature Climate Change](#), reported by [Nature](#), [Le Figaro](#), [Le Monde](#), [Reuters](#), [New Scientist](#), [The Economist](#) and so forth.)
6. Dabo Guan, Stephan Klasen, Klaus Hubacek, Kuishuang Feng, **Zhu Liu**, Kebin He, Yong Geng, Qiang Zhang, Determinants of Stagnating Carbon Intensity in China. *Nature Climate Change* 4, 1017-1023 (2014)
7. Guan, Dabo, Klaus Hubacek, Martin Tillotson, Hongyan Zhao, Weidong Liu, **Zhu Liu**, and Sai Liang. Lifting China's Water Spell. *Environmental Science & Technology* 48, 11048-11056 (2014).
8. Zhang, Chao, Laura Diaz Anadon, Hongpin Mo, Zhongnan Zhao, and **Zhu Liu**. The Water-Carbon Trade-off for Coal Power Industry in China. *Environmental Science and Technology* 48 (19), 11082-11089 (2014)
9. Hongyan Zhao, Qiang Zhang, Steven J. Davis, Dabo Guan, **Zhu Liu**, Hong Huo, Jintai Lin, Weidong Liu, Kebin He. Assessment of China's virtual air pollution transport embodied in trade by a consumption-based emission inventory. *Atmospheric Chemistry and Physics Discussion*. 14, 25617-25650, doi:10.5194/acpd-14-25617-2014 (2014).
10. Kuishuang Feng, Klaus Hubacek, Laixiang Sun, **Zhu Liu**. Consumption-based CO₂ accounting of China's megacities: The case of Beijing, Tianjin, Shanghai and Chongqing. *Ecological Indicators* (coming soon, 2014, DOI: 10.1016/j.ecolind.2014.04.045)
11. Dabo Guan, Xin Su, Qiang Zhang, Glen Peters, **Zhu Liu**, Yu Lei, Kebin He, The socioeconomic drivers of China's primary PM_{2.5} emissions. *Environmental Research Letters* 9 (2), 024010 (2014)
12. Sai Liang; **Zhu Liu**; Douglas Crawford-Brown; Yafei Wang; Ming Xu, Decoupling Analysis and Socioeconomic Drivers of Environmental Pressure in China. *Environmental Science & Technology* 48,1103-1113 (2014).
13. Soeren Lindner, **Zhu Liu**, Dabo Guan, Yong Geng, Xin Li, CO₂ emissions from China's power sector at the provincial level: Consumption versus production perspectives. *Renewable and Sustainable Energy Reviews*. 19,164-172 (2013).
14. Sai Liang, **Zhu Liu**, Ming Xu, Tianzhu Zhang, Waste oil derived biofuels in China bring brightness for global GHG mitigation. *Bioresource Technology*, 131, 139-145 (2013).
15. Liang Dong, Tsuyoshi Fujita, Hui Zhang, Ming Dai, Minoru Fujii, Satoshi Ohnishi, Yong Geng, **Zhu Liu**, Promoting low-carbon city through industrial symbiosis: A case in China by applying HPIMO model. *Energy Policy* 61, 864-873 (2013).
16. Yong Geng, Hongyan Zhao, **Zhu Liu**, Bing Xue, Tsuyoshi Fujita, Fengming Xi, Exploring driving factors of energy-related CO₂ emissions in Chinese provinces: a case of Liaoning. *Energy Policy* 60, (0), 820-826 (2013).
17. **Zhu Liu**, Yong Geng, Soeren Linder, Dabo Guan. Uncovering China's greenhouse gas emission from regional and sectoral perspectives. *Energy*. 45, 1059-68 (2012).
18. **Zhu Liu**, Yong Geng, Soeren Linder, Hongyan Zhao, Tsuyoshi Fujita, Dabo Guan. Embodied energy consumption in Chinese industries. *Energy Policy*, 49,751-8 (2012).
19. **Zhu Liu**, Soeren Linder, Yong Geng, Bing Xue, Fengming Xi, Ying Pan, TianZhu Zhang, Tsuyoshi Fujita. Features, trajectories and driving forces for energy-related GHG emissions from Chinese mega cities: the case of Beijing, Tianjin, Shanghai and Chongqing, *Energy*, 37, 245-254 (2012).
20. **Zhu Liu**, Yong Geng, Bing Xue. Inventorying energy-related CO₂ for city: Shanghai Study, *Energy Procedia*, 5, 2303-2307 (2011).
21. Fengming Xi, Yong Geng, Xudong Chen, Yunsong Zhang, Xinbei Wang, Bing Xue, Huijuan Dong, **Zhu Liu**, Wanxia Ren, Tsuyoshi Fujita, Qinghua Zhu. Contributing to local policy making on GHG emission reduction through inventorying and attribution, *Energy Policy*, 39, 5999–6010 (2011).

Publications in Chinese Peer-reviewed Journals (In Chinese)

22. **Zhu Liu**, Yong Geng, Bing Xue, Fengming Xi, Jiangbo Jiao. A calculation method of CO₂ emission from urban energy consumption, *Resources Science*, 33, 00-06 (2011). (In Chinese)

23. **Zhu Liu**, Yong Geng, Bing Xue, Jiafeng Fu, Xiaofei Tang. Relationships between economic growth and CO₂ emissions for low-carbon pilot provinces in China, *Resources Science*, 33, 620-625 (2011). (In Chinese)
24. **Zhu Liu**, Yong Geng, Bing Xue, Huijuan Dong, Haonan Han. Low-carbon city's Quantitative assessment indicator framework based on Decoupling model, *China Population, Resources and Environment*, 21, 19-24 (2011). (In Chinese)
25. **Zhu Liu**, Yong Geng, Bing Xue, Huijuan Dong. Low-carbon scenario and technologies in modern city, *Engineering Sciences*, 13, 101-105 (2011). (In Chinese and English)
26. Bing Xue, Chenyu Lu, Yong Geng, **Zhu Liu**, Weiwei Zhang, Chunrong Li. Practice and Prospect of Low Carbon City Development in China, *Economic Geography*, 1, 10-14 (2012). (In Chinese)
27. Bing Xue, Li Chunrong, **Zhu Liu**, Yong Geng, Fengming Xi. Mechanism of global carbon emissions and urbanization process during 1970-2007, *Climate Change Research*, 7, 423-427 (2011). (In Chinese)
28. Chunrong Li, Yong Geng, Bing Xue, **Zhu Liu**, Huijuan Dong, The causality analysis between industry structure and economic growth of Shenyang, *Ecological Economy*, 2011, 9(243): 99-102. (in Chinese)
29. Yong Geng, Huijuan Dong, Fengming Xi, **Zhu Liu**. A review of the research on carbon footprint responding to climate change, *China Population, Resources and Environment*, 20, 6-12 (2010). (In Chinese)

Conference papers

1. Dabo Guan, **Zhu Liu**, "Uncertainty of CO₂ emissions", AGU Fall meeting, December 11th 2013, San Francisco, USA.
2. **Zhu Liu**, "Uncovering China's Industrial Energy Use and CO₂ Emissions based on Environmental-Economic Input-Output Model", The Third ISIE Asia-Pacific Meeting, October 22, 2012, Tsinghua University, China
3. **Zhu Liu**, "Challenges and opportunities of China's low-carbon development", University of Leeds, June 9th, 2012, Leeds, UK.
4. **Zhu Liu**, "Challenge on China's Energy and Climate Policy", National Institute of Environmental Studies, 6th January, 2012, Tsukuba, Japan.
5. **Zhu Liu**, "Race among Production, Consumption and Emission: A Decoupling Analysis of GDP, Energy Consumption and CO₂ Emission in China During 1980-2008", presentation in 2011 International Society for Industrial Ecology (ISIE) Conference, 7th June, 2011, University of California, Berkeley, US.
6. **Zhu Liu**, "Realizing Low Carbon Development of Chinese Industry: An Analysis from Spatial-temporal Perspectives", The Symposium on Industrial Ecology for Young Professionals, 11th June, 2011, University of California, Berkeley, US.
7. **Zhu Liu**, "Realizing CO₂ Emission in China: Pattern and the Process", the 8th World Congress of International Association for Landscape Ecology, 18th August, 2011, Beijing, China.
8. **Zhu Liu**, "A Sustainable Future for the Mekong Delta", Young Researchers School of The network for the Promotion of Sustainability in Postgraduate Education and Research, 5th November, 2010, Ho Chi Minh City, Vietnam.

Research Grant:

1. **Zhu Liu** (PI), Harvard University, Giorgio Ruffolo Fellowship in Sustainability Science at Harvard University, USA. Initiative on Sustainable Energy Development in China. 09/2013-09/2015. \$110,000.
2. **Zhu Liu** (Co-PI), Fengming Xi, People's Government of Shenyang City, Ecological planning for thirteen 5-Year's Social and economic development in Shenyang. 04/2014-04/2015. \$200,000.
3. Bin Chen, **Zhu Liu** (Co-PI), Energy Foundation, Research and Application on Big Data on Environment and Energy in the Chinese Industrial Sector. 08/2014-08/2015. \$150,000
4. Fengming Xi, **Zhu Liu** (Co-PI), National Development and Reform Commission (NDRC), China. The greenhouse gas emission inventory in Chinese city-Shenyang study. 04/2014-04/2015. \$150,000.

5. Fengming Xi, **Zhu Liu** (Co-PI), Shenyang Science and Technology Bureau, China. Low carbon technology and innovation in heating sector. 06/2014-06/2015. \$150,000.
6. Dabo Guan, **Zhu Liu** (Co-PI), Greenpeace, USA. Beyond Beijing's smog: China Coal Burning and Health Scenarios. 06/2013-06/2013. \$20,000.

Selected Awards

1. 2013 Giorgio Ruffolo Fellowship, Sustainability Science Program, Harvard University.
2. 2013 Presidential Award of Chinese Academy of Sciences (CAS). The highest honour of CAS graduates, offer to top 1/500 graduates.
3. 2013 Best Ph.D. Dissertation Award, Chinese Academy of Sciences (CAS). (top 1/100)
4. 2013 Outstanding volunteer contribution award, Jane Goodall's Roots & Shoots.
5. 2012 Scholarship for study aboard, Institute of Applied Ecology, Chinese Academy of Sciences.
6. 2011 Young scientist scholarship for supporting the attendance of 2011 International Society for Industrial Ecology (ISIE) Conference, International Society for Industrial Ecology (ISIE) and Yale University.
7. Student scholarship for supporting the attendance of Symposium on Industrial Ecology for Young Professionals (SIEYP), International Society for Industrial Ecology (ISIE) and Carnegie Mellon University, 2011.
8. Scholarship of "Young Researchers School of The network for the Promotion of Sustainability in Postgraduate Education and Research (ProSPER.Net)", United Nations University, 2010.
9. Student Leader Scholarship, University of China Agricultural University, 2009.

Teaching Experience

Guest Lecture: course ENVR E-103 Energy: Perspectives, Problems, and Prospects. Fall, 2013 Harvard Extension School, Harvard University.

Guest Lecture: course ENVR E-169 Introduction to China's Energy and Environmental Challenges . Fall, 2014 Harvard Extension School, Harvard University.

Guest Lecture: Energy productivity in China, presented in course IGA-410 Energy Policy: Technologies, Systems, and Markets. Fall 2013. John F. Kennedy School, Harvard University.

Teaching Assistant: 2007-2009: Landscape Ecology in China Agricultural University.

Graduate Student/ Postdoctoral Advise (As external Advisor)

Jiaoyue Wang, 1st year postdoc, Chinese Academy of Sciences (co advised by Prof. Fengming Xi).

Yuli Shan, 1st year Ph.D. student, University of East Anglia (co advised by Prof. Dabo Guan)

Li Wang, 1st year Master student, Chinese Academy of Sciences (co advised by Prof. Fengming Xi).

Shasha Chang, 1st year Master student, Chinese Academy of Sciences (co advised by Prof. Fengming Xi).

Professional Activities

Conference Section Chair: The Third International Society for Industrial Ecology Asia-Pacific Meeting, October 22th, 2012, Tsinghua University, China.

External Review Expert: The Fifth Assessment Report (AR5) of the United Nations Intergovernmental Panel on Climate Change (IPCC), Working Group III-Mitigation of Climate Change.

Reviewer: *Nature Climate Change, Environmental Science & Technology, Renewable and Sustainable Energy Reviews, Energy, Energy Policy, Ecological Economics, Global Environmental Change, Journal of Environmental Management, Climate Policy, Science of Total Environment, Journal of Cleaner Production, Sustainability Science, NPG Scientific Report, Energy Economics.*

Member: The American Association for the Advancement of Science (AAAS), American Geophysical Union (AGU), The International Society for Industrial Ecology (ISIE), Association of American Geographers (AAG), Ecological Society of America (ESA).

Volunteer Services

2012-2013: Jane Goodall Institute China, Roots & Shoots Beijing Office.

2009: The Nature Conservancy, Yunnan Office, China Yunnan National Park Project.

2008: Beijing Olympic Game, student volunteer.

Language:

Chinese (native speaker), English (IELTS 6.5).

References

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