

# CURRICULUM VITAE

## ZHU LIU, Ph.D.

### **Current Position:**

#### **Resnick Prize Postdoctoral Fellow, California Institute of Technology**

Resnick Sustainability Institute with cooperation of NASA's Jet Propulsion Laboratory,  
California Institute of Technology, Pasadena, California 91125, USA

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#### **Research Associate, Harvard University**

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### **Education:**

#### **Ph.D., Chinese Academy of Sciences (jointed training by University of Cambridge),**

Major: Industrial Ecology, 07/2013

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

Selected as "[Springer Theses Recognizing Outstanding Ph.D. Research 2015](#)"

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

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

### **Experience:**

#### **California Institute of Technology**

Resnick Prize Postdoctoral Fellowships in Sustainability Science, 09/2015-present

#### **Harvard University**

Research Associate, Sustainability Science Program and Energy Technology Innovation Policy Group,  
09/2015-present

Giorgio Ruffolo Post-doctoral Research Fellow, 09/2013-08/2015

Energy Technology Innovation Policy Research Fellow, 09/2013-08/2015

#### **University of Cambridge**

Visiting Research Fellow, Cambridge Centre for Climate Change Mitigation Research (4CMR), 2012

#### **Tsinghua University**

Visiting Research Fellow, Center for Earth System Science, 2013

#### **United Nations University (UNU)**

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

### **Publications (Total citation >[1000 times](#)):**

#### **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 Peer-reviewed Journals**

1. **Zhu Liu**, Dabo Guan, Wei Wei, Steven J. Davis, Philippe Ciais, Jin Bai, Shushi Peng, Qiang Zhang, Klaus Hubacek, Gregg Marland, Robert Andres, Douglas Crawford-Brown, Jintai Lin, Hongyan Zhao, Chaopeng Hong, Tom Boden, Kuishuang Feng, Glen Peters, Fengming Xi, Junguo Liu, Yuan Li, Yu Zhao, Ning Zeng, and Kebin He. Reduced carbon emission estimates from fossil fuel combustion and cement production in China. *Nature*, 524 (7565), 335-338 (2015) (Highlighted and reported by [Nature](#), [Science](#), [New York Times](#), [BBC](#), [CNN](#) and 300+ of medias globally) (In the **top 1%** of all articles scored by Altmetric).
2. **Zhu Liu**, Steven J. Davis, Kuishuang Feng, Klaus Hubacek, Sai Liang, Laura Diaz Anadon, Bin Chen,

- Jingru Liu, Jinyue Yan and Dabo Guan. Targeted opportunities to address the climate–trade dilemma in China. *Nature Climate Change* (advance online publication, DOI: 10.1038/NCLIMATE2800). (In the **top 1%** of all articles scored by Altmetric)
3. **Zhu Liu**, Dabo Guan, Scott Moore, Henry Lee, Jun Su, Qiang Zhang. Climate policy: Steps to China's carbon peak. *Nature* 522 (7556), 279-281(2015)
  4. **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). (In the **top 5%** of all articles scored by Altmetric) (cited >50 times)
  5. **Zhu Liu**, Dabo Guan, Weiwei. Make emissions data public in China. *Nature* (coming soon, 2015)
  6. **Zhu Liu**. National Carbon Emissions from the Industry Process: Production of Glass, Soda Ash, Ammonia, Calcium Carbide and Alumina. *Applied Energy* (coming soon, 2015)
  7. Kuishuang Feng, Steven J Davis, Xin Li, Dabo Guan, Laixiang Sun, Weidong Liu, **Zhu Liu**, Klaus Hubacek. Outsourcing CO<sub>2</sub> within China. *Proceedings of the National Academy of Sciences (PNAS)*. 110(28) 11654-11659 (2013). (cited >50 times, in the **top 1%** of all articles scored by Altmetric)
  8. **Zhu Liu**, Dabo Guan, Fengming Xi, Tie carbon emissions to consumers (correspondence). *Nature* 493, 304-305 (2013).
  9. 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). (150+ media reports globally, cited>100 times). (In the **top 1%** of all articles scored by Altmetric). (cited >100 times)
  10. 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). (In the **top 2%** of all articles scored by Altmetric)
  11. **Zhu Liu**, Kuishuang Feng, Klaus Hubacek, Sai Liang, Laura Diaz Anadon, Chao Zhang, Dabo Guan. Four System Boundaries for Carbon Accounts. *Ecological Modelling* (in press, coming soon, 2015).
  12. 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).
  13. 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)
  14. 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, (2014).
  15. Kuishuang Feng, Klaus Hubacek, Laixiang Sun, **Zhu Liu**. Consumption-based CO<sub>2</sub> accounting of China's megacities: The case of Beijing, Tianjin, Shanghai and Chongqing. *Ecological Indicators* 47:26-31.(2014)
  16. Dabo Guan, Xin Su, Qiang Zhang, Glen Peters, **Zhu Liu**, Yu Lei, Kebin He, The socioeconomic drivers of China's primary PM<sub>2.5</sub> emissions. *Environmental Research Letters* 9 (2), 024010 (2014)
  17. 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).
  18. Soeren Lindner, **Zhu Liu**, Dabo Guan, Yong Geng, Xin Li, CO<sub>2</sub> emissions from China's power sector at the provincial level: Consumption versus production perspectives. *Renewable and Sustainable Energy Reviews*. 19,164-172 (2013).
  19. 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).
  20. 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).
  21. Yong Geng, Hongyan Zhao, **Zhu Liu**, Bing Xue, Tsuyoshi Fujita, Fengming Xi, Exploring driving factors of

energy-related CO<sub>2</sub> emissions in Chinese provinces: a case of Liaoning. *Energy Policy* 60, (0), 820-826 (2013).

22. **Zhu Liu**, Yong Geng, Soeren Linder, Dabo Guan. Uncovering China's greenhouse gas emission from regional and sectoral perspectives. *Energy*. 45, 1059-68 (2012). (cited >50 times)
23. **Zhu Liu**, Yong Geng, Soeren Linder, Hongyan Zhao, Tsuyoshi Fujita, Dabo Guan. Embodied energy consumption in Chinese industries. *Energy Policy*, **49,751-8 (2012)**.
24. **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). (cited >50 times)
25. **Zhu Liu**, Yong Geng, Bing Xue. Inventorying energy-related CO<sub>2</sub> for city: Shanghai Study, *Energy Procedia*, 5, 2303-2307 (2011).
26. 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).

### **Conference papers**

1. **Zhu Liu**, "Uncertainty of CO<sub>2</sub> emissions", AGU Fall meeting, December 11th 2013, San Francisco, USA.
2. **Zhu Liu**, "Uncovering Industrial Energy Use and CO<sub>2</sub> 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 National Energy and Climate Policy", National Institute of Environmental Studies, 6th January, 2012, Tsukuba, Japan.
5. **Zhu Liu**, "Race among Production, Consumption and Emission: Decoupling Analysis of GDP Energy Consumption and CO<sub>2</sub> 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: 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 CO<sub>2</sub> Emission: 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.

### **Selected Research Grant:**

1. **Zhu Liu** (PI), National Natural Science Foundation of China (NSFC No. 41501605), Study on Carbon Emissions from Global Cities. 09/2015-09/2018. \$40,000.
2. **Zhu Liu** (PI), California Institute of Technology, Resnick Prize Fellowship in Sustainability Science. 09/2015-09/2017. \$130,000.
3. **Zhu Liu** (PI), Harvard University, Giorgio Ruffolo Fellowship in Sustainability Science at Harvard University, USA. Initiative on Sustainable Energy Development. 09/2013-09/2015. \$110,000.
4. Bin Chen, **Zhu Liu** (Co-PI), Energy Foundation, Research and Application on Big Data on Environment and Energy in the Industrial Sector. 08/2014-08/2015. \$150,000
5. Dabo Guan, **Zhu Liu** (Co-PI), Greenpeace, USA. Beyond Beijing's smog: China Coal Burning and Health Scenarios. 06/2013-06/2013. \$15,000

## **Selected Awards**

1. 2015 Resnick Prize Fellowship, Resnick Sustainability Institute, California Institute of Technology.
2. 2013, 2014 Giorgio Ruffolo Fellowship, Sustainability Science Program, Harvard University.
3. 2013 Presidential Award of Chinese Academy of Sciences (CAS). CAS highest graduates award (award to 1/1000 graduates).
4. 2013 Best Ph.D. Dissertation Award, Chinese Academy of Sciences (CAS). (award to 1/1000 graduates)
5. 2013 Outstanding volunteer contribution award, Jane Goodall's Roots & Shoots.
6. 2012 Scholarship for study abroad, Institute of Applied Ecology, Chinese Academy of Sciences.
7. 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.
8. 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.
9. Scholarship of “Young Researchers School of The network for the Promotion of Sustainability in Postgraduate Education and Research (ProSPER.Net)”, United Nations University, 2010.
10. 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:** 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.

## **Professional Activities**

**Conference Chair:** International Workshop on China's Carbon Emissions(CCE 2015), June 9-11, 2015, Shanghai.

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

**Founder:** Oversea Chinese Young Scholar Forum on Environmental Science, 2014- present

**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 .