

Kangkang (KK) Tong

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Address: 130 Humphrey School of Public Affairs
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EDUCATION

2013-2018 Ph.D., Public Affairs, Humphrey School of Public Affairs, University of Minnesota

Focus Area: **Science, Technology, and Environmental Policy**

Minor: **Statistics**

Dissertation: Low-carbon Cities: Accounting, Infrastructure Analysis, and Transitions

Expected graduation date: May 14 2018

2008-2011 M.S., Ecology, Research Center for Eco-Environmental Sciences, Chinese Academy of Sciences

Dissertation: Assessment Methods on Carbon Emissions of Energy Consumption from Different Scales in China

2004-2008 B.S., Environmental Science, Wuhan University of Technology

RESEARCH EXPERIENCE

University of Minnesota

Minneapolis, MN, USA

2017-2018 **Doctoral Dissertation Fellowship**

2013-2016 **Research Fellow on National Science Foundation-Partnerships for International Research and Education (NSF-PIRE)**

- Led a team of students from the U.S. and China to implement community-wide infrastructure-based greenhouse gas (GHG) footprinting in Chinese cities
- Developed a new database of over 600 Chinese cities through collaborating with international scholars across disciplines, covering data from social-economic status, public finance, energy use, carbon dioxide (CO₂) and fine particulate matter (PM_{2.5}) emissions and public health
- Estimated carbon mitigation potential of utilizing industrial waste heat in district energy system in 20 Chinese cities
- Examined collective carbon emissions from cities by different categories to the national total
- Investigated the patterns and variations in financial resource allocation to capital projects of urban infrastructure in Chinese cities
- Policy intervention of GHG inventory focusing on infrastructure and local actions
- Supported international education activities in China

2015-Present **Research Fellow on National Science Foundation-Sustainability Research Network (NSF-SRN)**

- Lead project on transition pathways of district energy systems in U.S. cities
- Advise master students who participated in the energy testbed and collaborate with other scholars from this testbed
- Support the education activities, i.e. guest lecturer, syllabi development

Research Center for Eco-Environmental Sciences, Chinese Academy of Sciences

Beijing, China

2009-2011 **Graduate Research Assistant**

- Estimated GHG from energy use across the individual level, the city, and the national level in China
 - Estimated carbon mitigation in the scenario for matching job-housing space in Beijing
 - Investigated the niches and related environmental parameters of a species and wrote the final report of this project
 - Contributed to the fieldwork of quadrat sampling to develop a database of urban green infrastructure in Beijing
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TEACHING EXPERIENCE

Fall 2016 **Independent Instructor**. Material and Energy Flows for a Sustainable Society (PA5752)

Fall 2018 **Guest Instructor**. Networks and Places: Transportation, Land Use, and Design (PA 8202)

Fall 2017 **Guest Instructor**. Interdisciplinary Environmental Study of Urban Sustainability (PA5742)

Fall 2015 Teaching Assistant. Material and Energy Flows for a Sustainable Society (PA5752)

Summer 2014 Teaching Assistant. Summer School in China on Sustainable Infrastructure and Cities (PA 5790)

PUBLICATIONS

Refereed Journal Articles

- Tong, K.**, Fang, A., Yu, H., Li, Y., Shi, L., Wang, Y., Wang, S., Ramaswami, A. The potential for re-utilization of industrial waste heat to urban district energy systems: Method development and application to Chinese cities. *Environmental Research Letters*. 2017. 12(12): 125008
- Ramaswami, A., **Tong, K.**, Fang, A., Lal, R., Nagpure, A., Li, Y., Yu, H., Jiang, D., Russell, A., Shi, L., Chertow, M., Wang, Y., Wang, S.. Urban Cross-Sector Actions for Carbon Mitigation with Local Health Co-Benefits in China. *Nature Climate Change*. 2017. 7: 736–742. DOI: 10.1038/nclimate3373
- Ramaswami, A., Jiang, D., **Tong, K.**, Zhao, Z., Impact of the Economic Structure of Cities on Urban Scaling Factors: Implications for Urban Material-Energy Flows in China. *Journal of Industrial Ecology*. 2017. DOI: 10.1111/jiec.12563
- Tong, K.**, Fang, A., Boyer, D., Hu, Y., Cui, S., Shi, L., Kalmykova, Y. and Ramaswami, A. Greenhouse gas emissions from key infrastructure sectors in larger and smaller Chinese cities: Method development and benchmarking. *Carbon Management*, 2016, 7(1-2): 27-39.
- Tong, K.**, Ma, K. Greenhouse gas emission inventory from energy consumption of Beijing based on the Input-Output analysis. *Acta Scientiae Circumstantiae*, 2012, 32(9): 2228~2235.
- Tong, K.**, Ma, K., Significant impact of job-housing distance on carbon emissions from transport: A scenario analysis. *Acta Ecologica Sinica*, 2012, 32(10): 2975~2984.
- Tong, K.**, Ma, K., The relationship between GDP and CO₂ emissions from energy consumption in China. *China Environmental Science*, 2011, 31(7): 1212~1218.

Manuscripts under Review

- Tong, K.**, Zhao, Z., Feiock, R., Ramaswami, A.. Polarized Capital Investment in Urban Infrastructure in Chinese Cities and An Explanation through a Political Market Lens. *Journal of Urban Affairs*. (Revise and resubmit)
- Tong, K.**, Fang, A., Li, Y., Shi, L., Wang, Y., Wang, S., Ramaswami, A. The Collective Contribution of Chinese Cities to Territorial and Electricity-related CO₂ Emissions. *Journal of Cleaner Production*. (Revise and resubmit)

CONFERENCE PRESENTATIONS

Invited Talks

- Sep 2017 Low-carbon Urban Infrastructure Transitions: Analysis and Future Transitions. *Seminar at Local Governance Research Laboratory*, Florida State University, Tallahassee, USA.
- Aug 2017 Governance Structure and the Development of District Energy Systems in the U.S. cities. *Workshop on Interdisciplinary Perspectives on Distributed and Localized Infrastructures for Urban Sustainability: Potential Applications and Best Practices*. Minneapolis, USA
- Jun 2017 Urban Infrastructure in China: Carbon Footprinting, Low-carbon Strategy Analysis, and Financial Investment Trajectories. *ISIE Workshop-Advances in Industrial Ecology Research and Education in China*. Chicago, USA.

Organizer of Conference Panel

- Jun 2017 Cross-Sectoral Strategies for Urban Sustainability and Health for Cities in US, China, & India. *ISIE-ISSST 2017: Science in Support of Sustainable and Resilient Communities*. Chicago, USA.

Oral Presentations

- Apr 2018 Co-evolutionary Perspectives on the Enablers and Barriers for Low-carbon Transitions of City-Wide District Energy Systems in the U.S. *Urban Affairs Association Annual Conference*. Toronto, CA
- Mar 2018 Low-carbon Transitions of District Energy Systems in the U.S. Cities. *Cities & Climate Change Science Conference*. Edmonton, CA.
- Feb 2018 Low-carbon Cities: Accounting, Infrastructure Analysis, and Transitions. *Seminar on Science Technology and Environmental Policy Feedback and Research (STEP-FAR)*. Minneapolis, USA.
- Sep 2017 Fixed Capital Investment in Urban Infrastructure in Chinese Cities: An Explanation from the

- Political Market Approach. *ABFM Annual Conference 2017*. Washington DC, USA.
- Jun 2017 Governance structure and the development of district energy systems in the U.S. cities. *ISIE-ISSST 2017: Science in Support of Sustainable and Resilient Communities*. Chicago, U.S.
- Apr 2017 Identifying and Comparing Governance Structures of District Heating or Cooling Systems in the U.S. and Chinese Cities. *Urban Affairs Association Annual Conference*. Minneapolis, USA.
- Apr 2016 Exploring the Determinants of Investing in the Capital Assets of Urban Infrastructure in China: Demand and Supply Capacity at City Level. *Western Social Science Association Annual Conference*. Reno, USA.
- Nov 2015 Governmental Willingness-to-Pay for Urban Infrastructure and Its Influential Factors in Chinese Cities. *Association for Public Policy Analysis and Management, Fall Conference*. Miami, USA.
- Aug 2015 Exploring Environmental Sustainability Priorities in China's Five-year Plan at the National and Provincial Levels. *PIRE Workshop on Urban Infrastructure Transformations in the US, China & India*. Washington D.C., USA.
- Nov 2014 Urban Infrastructure: GHG Footprints and Energy Use Benchmarks in Large and Smaller Size Chinese Cities. *International Society for Industrial Ecology (ISIE) Socio-Economic Metabolism section conference*. Melbourne, Australia.
- Mar 2014 Implementing Two Approaches to Greenhouse Gas Emissions Footprinting in Beijing, China. *Seminar on Science Technology and Environmental Policy Feedback and Research (STEP-FAR)*. Minneapolis, USA.

Conference Poster

- May 2018 Enabling Factors for Low-carbon Transitions of City-Wide District Energy Systems in the U.S.: Linkage with Multiple UN-SDGs. *Gordon Research Conference (GRC) in Industrial Ecology*. Les Diablerets, Switzerland
- Apr 2018 Low-carbon Cities: Accounting, Infrastructure Analysis, and Transitions. Doctoral Research Showcase, University of Minnesota, Minneapolis, USA
- Jun 2017 The potential for utilizing recoverable industrial waste heat in urban district energy systems at the city level: Method development and application to Chinese cities. *ISIE-ISSST 2017: Science in Support of Sustainable and Resilient Communities*. Chicago, USA.
- Jun 2016 Impact of the Economic Structure of Cities on Urban Scaling Factors: Implications for Urban Material-Energy Flows in China. *Gordon Research Seminar & Conference (GRS & GRC) in Industrial Ecology*. Stowe, Vermont, USA.

WORKSHOP ORGANIZER AND PARTICIPATION

Organizer of NSF-RCN workshop

- Aug 2017 "Now That I Have an Interdisciplinary PhD in Sustainable Urban Systems, What's Next?"- An NSF-RCN Interdisciplinary Urban Sustainability Career Workshop. Minneapolis, USA.
- Invited 15 speakers across environmental engineering, environmental science, public health, public administration, and urban planning
 - Recruited more than 30 students/post-doctors for the workshop
 - Created a student committee to integrate interdisciplinary perspectives
 - Designed the workshop program
 - Wrote a blog post summarizing the workshop

Actively participated workshop

- Mar 2018 *Southern California Qualitative Comparative Analysis Workshop 2018*. University of California, Irvine. USA
- May 2017 Workshop on *Policy Actors and Governance for Healthy Sustainable Cities: Theories and Analysis*. Tallahassee, USA.
- Jan 2016 Workshop on *Developing Smart, Healthy and Sustainable Cities: Joint Learnings from the US, China, and India*. New Delhi, India.
- Jan 2016 Winter School in India on *Sustainable Infrastructure and Sustainable Cities*. India.
- Aug 2015 Workshop on *Urban Infrastructure Transformations in China, India & the US: Connecting Local Priorities with Global Carbon Targets*. Washington D.C. USA.
- Aug 2015 Workshop on *Interdisciplinary Environmental Study of Sustainable Cities*. Atlanta, USA.

Aug 2014 Workshop on *Sustainable Urban Development and Low Carbon Infrastructure Construction*.
Xiamen, China

JOURNALS REFERRED AND OTHER PROFESSIONAL SERVICES

Referees of Academic Journals

Journal of Industrial Ecology; *Journal of Cleaner Production*; *Resources, Conservation & Recycling*; *Ecological Economics*; *Transportation Research Part D: Transport and Environment*; *Journal of Transport and Land Use*; *Public Administration Review*

Other Professional Services

2016-Present Editor in the WeChat public account of Chinese Society for Industrial Ecology
 Spring 2017 Grants Committee for Council of Graduate Students, University of Minnesota.
 Spring 2017 Abstract Reviewing Committee for the *International Society for Industrial Ecology-International Symposium on Sustainable Systems and Technology (ISIE-ISSST) 2017 Joint Conference*
 Spring 2015 Consultant in the Advance Professional Degree Consulting Club (APDCC) working on a consulting project
 2013-2014 Editorial Board of *Humphrey Public Affairs Review*.

GRANTS, SCHOLARSHIPS AND HONORS

2018 Travel Grant from IPCC and Cities Conference Edmonton, CA
 2017-2018 Doctoral Dissertation Fellowship (\$25,000).
 2017 Excellence in Review Awards of *Resources, Conservation and Recycling*
 Summer 2017 Humphrey School Graduate Summer Scholarship (\$5,000).
 Summer 2017 ISIE Student Chapter Scholarship
 Summer 2017 Interdisciplinary Perspectives on International Development (IPID) International Travel Grants
 2011 Outstanding Students at Graduate University of Chinese Academy of Sciences
 2009 & 2010 Scholarship, Research Center for Eco-Environmental Sciences, CAS
 2006 Outstanding Students in College, Wuhan University of Technology

REFERENCES

Professor Anu Ramaswami

Phone: 303-526-8130
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Professor Jerry (Zhirong) Zhao

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 Address: 246 Humphrey School, 301 19th Ave. S.,
 Minneapolis, MN, 55455

Professor Armistead G. Russell

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 Atlanta, GA 30332

Professor Richard Feiock

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 University, Tallahassee, FL 32306-3250