

# Dr. Anu (Anuradha) Ramaswami

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Director, M.S. Chadha Center for Global India  
Sanjay Swani '87 Professor of India Studies  
Professor of Civil and Environmental Engineering, Princeton Institute for International and Regional Studies, and the High Meadows Environmental Institute  
Princeton University

Lead PI, NSF Sustainable Healthy Cities Network  
Lead PI, USDA-NSF Innovations at the Nexus of Food, Energy and Water Systems  
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## **1. PROFESSIONAL EXPERIENCE, TRAINING, AND AWARDS**

### **1A. EDUCATION**

Indian Institute of Technology, Madras	1987	BTech	Chemical Engineering
Carnegie Mellon University	1989	M.S.	Civil Engineering
Carnegie Mellon University	1995	Ph.D.	Civil & Environmental Engineering

### **1B. PROFESSIONAL EXPERIENCE IN BRIEF**

August 2019 –	Sanjay Swani '87 Professor of India Studies; Professor of Civil and Environmental Engineering, Princeton Institute for International and Regional Studies, and the High Meadows Environmental Institute; Director of the M.S. Chadha Center for Global India, Princeton University
Sept. 2019 –	Director and Lead PI, USDA-NSF INFEWS: <i>Sustainable Urban Food (SURF) Actions for environment, health, equity &amp; resilience at the FEW Nexus: Linking distributed agriculture, new technologies &amp; behavioral nudges</i>
Sept. 2012 – Aug. 2019	Denny Chair Professor of Science, Technology & Public Policy, Director, Center for Science Technology & Public Policy Humphrey School of Public Affairs, University of Minnesota (UMN) Professor, Bioproducts & Biosystems Engineering, UMN
August 2017 - 2022	Co-Director, NSF Smart & Connected Communities (S&CC): <i>Connecting the Smart-City Paradigm with a Sustainable Urban Infrastructure Systems Framework to Advance Equity in Communities</i>
August 2015 - 2022	Director and Lead PI, NSF Sustainability Research Network: <i>Integrated Infrastructure Solutions for Sustainable, Healthy and Livable Cities</i>
Nov. 2012 - 2016	Director and Lead PI, NSF PIRE: <i>Developing Low Carbon Cities in USA, China &amp; India through Interdisciplinary Integration</i>
Aug. 2007 - 2013	Director and Lead PI, NSF IGERT - <i>Sustainable Urban Infrastructure</i>
Aug. 2007 - 2012	Professor of Civil Engineering, University of Colorado Denver (UCD) Director, Center for Sustainable Infrastructure Systems, UCD
2003 - 2007	Associate Professor, University of Colorado Denver
1996 - 2003	Assistant Professor, University of Colorado Denver
1995 - 1996	Research Assistant Professor, Colorado School of Mines

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### 1C. LEADERSHIP & AWARDS

2022	Steven K. Dentel AEESP Award for Global Outreach
2022	AAEES Science Award
2018 - 2022	Chair, 2020 Gordon Research Conference on Industrial Ecology (postponed to 2022 due to COVID-19)
2016 - 2021	Member of the US National Science Foundation's External Advisory Committee on Environmental Research and Education (ACERE)
2016 - 2018	Elected Vice-Chair, Gordon Research Conference on Industrial Ecology
2016 - 2017	Co-Lead of the United Nations International Resource Panel Inaugural Report presented at the UN Environmental Assembly, December 2017
2014 - present	Member, UN Environment's International Resource Panel
2012 - 2013	Lead Author IPCC Working Group III Chapter 12: Human Settlements, Infrastructure & Spatial Planning
2009	Recipient of the 2009 ATT Faculty Fellowship Award for Industrial Ecology
2008	USEPA C2P2 Pollution-Prevention Partnerships: 1st Place Winner (with City of Denver)
2008	The Wirth Chair Sustainability Award for " <i>Pioneers of the New Energy Economy</i> "
2005	University of Colorado Denver <i>Campus-wide Teacher of the Year Award</i> , 2005. College of Engineering <i>Teacher of the Year Award</i> , UCD, 2005.
2005	Faculty Advisor for winning student team at <i>US Environmental Protection Agency's National P3 Student Design Contest</i> for People, Prosperity and the Planet, Washington DC, May.
2002	College of Engineering <i>Researcher of the Year Award</i> , UCD, 2001-02.
2000	Karen Morehouse Best Paper Award: Annual Meeting of the Great Plain/Rocky Mountain Region Hazardous Substance Research Center, Rubin, E.; Ramaswami, A; " <i>Potential for Phytoremediation of MTBE</i> "
1998	College of Engineering <i>Teacher of the Year Award</i> , UCD, 1997-98.
1994	SmithKline Beecham <i>Award for Women in Environmental Engineering</i>
1983	<i>All-India 11th rank</i> (Science) in the National Secondary School Examination.

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### 1D. STUDENT AWARDS & FELLOWSHIPS REFLECTING FACULTY MENTORING

- 2020 World Economic Forum's Global Future Council on Cities of Tomorrow 2020-2021 – postdoctoral researcher Kangkang Tong
- 2019 AAAS Science & Technology Fellowship – PhD student Andrew Fang
- 2017 International Institute for Applied Systems Analysis, Young Scientists Summer Program – PhD student Andrew Fang, one of 50 students selected globally to work with the Air Quality & Greenhouse Gases (AIR) group to evaluate air pollution exposure & health in China
- 2016 U.S. Borlaug Global Food Security Summer Institute Fellow, PhD student Dana Boyer selected to participate as one of 40 graduate students researching issues related to food security, funded by USAID, Feed the Future.
- 2016 Interdisciplinary Center for Global Change, University of Minnesota: Food Security Fellowship, \$30,000 for support for PhD student Dana Boyer for doctoral research related to food security.
- 2011 Kennedy School of Government, Harvard University: The National Practitioner's Network Fellowship and Think Tank – Six week Closed Network Fellowship awarded to IGERT PhD Trainee, Abel Chavez
- 2011 Golden Key FORD Engineering Scholarship (\$10,000) to PhD student, Joshua Knight
- 2010 Center for Progressive Leadership (CPL) - Colorado Political Leaders Fellowship: 9-month Fellowship program with political, business, and organizational leaders, won by Abel Chavez
- 2006 Christine Mirzayan Science & Technology Policy Fellowship, National Academy of Sciences Urban Sustainability Program awarded to GAANN PhD student, Mike Whitaker
- 2005 P3 Competition Winner from among 66 university teams at the EPA's National Student Design Competition for People, Prosperity and the Planet, Washington D.C., May, 2005
- 2005 United Nations Environmental Program Life Cycle Assessment Award for Developing Nations, awarded to GAANN PhD student, Mike Whitaker, 2005.
- 2001 Best Poster Award (1st Place): Denver meeting of the Air and Waste Management Association of America, Kadrmis, K.; Isleyen, M.; Ramaswami, A; "Dissolution of PAHs from Coal Tar"
- 2001 Karen Morehouse Best Paper Award: Annual Meeting of the Great Plain/Rocky Mountain Region Hazardous Substance Research Center, Rubin, E.; Ramaswami, A; "*Potential for Phytoremediation of MTBE*"
- 2000 Best Poster Award (Special Mention): Annual Meeting of the Great Plain/Rocky Mountain Region Hazardous Substance Research Center. Tawachsupa, S.; Isleyen, M. "Zero-Valent Iron for Treatment of High Arsenic Waters"
- 2000 Best Poster Award (1st Place): Denver meeting of the Air and Waste Management Association of America, Ramaswami, A; Tawachsupa, S.; Isleyen, M. "Zero-Valent Iron for Treatment of High Arsenic Waters"

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- 2000 Best Poster Award (2nd Place): Denver meeting of the Air and Waste Management Association of America, Bonola, S; Ramaswami, A. “Uptake of MTBE by Grasses”
- 2000 Best Poster Award (3rd Place): Denver meeting of the Air and Waste Management Association of America, Sipple, J; Putnam, P; Ramaswami, A. “Effect of Low Humidity on Carbon Adsorption of VOCs”
- 1999 Best Poster Award (1-st Place): Denver meeting of the Air and Waste Management Association of America, Riffel, A; Bielefeldt, A; Ramaswami, A: “Biostabilization of PCBs”
- 1999 Best Poster Award (2nd Place): Denver meeting of the Air and Waste Management Association of America, Rubin, E and Ramaswami, A: “Phytoremediation of MTBE”

### 1E. PROJECT MANAGEMENT: SELECT EXAMPLES W/ RAMASWAMI AS LEAD PI

- 2019- **US DEPARTMENT OF AGRICULTURE-NATIONAL SCIENCE FOUNDATION (USDA-NSF): INNOVATIONS AT THE NEXUS OF FOOD, ENERGY & WATER SYSTEMS (INFEWS) PROGRAM**  
Sustainable Urban Food (SURF) Actions for environment, health, equity & resilience at the FEW Nexus: Linking distributed agriculture, new technologies & behavioral nudges  
Lead PI: Anu Ramaswami, Funding: **\$2,500,000**  
Co-PIs: Jason Ren (Princeton University), Hikaru Peterson (University of Minnesota), Tracy Twine (University of Minnesota), Nic Jelinski (University of Minnesota), Saba Siddiki (Syracuse University)  
**Achievements:** Developing an interdisciplinary convergence science of Sustainable Urban Food (SURF) systems to advance wellbeing, health, environment, resilience & equity (WHERE) outcomes at the urban food-energy-water (FEW) nexus, using a trans-boundary coupled social-biophysical systems framework
- 2019- **METROPOLITAN COUNCIL OF THE TWIN CITIES USA**  
Director: Anu Ramaswami, Funding: **\$350,000**  
**Achievements:** Established a partnership between the Metropolitan Council of the Twin Cities, ICLEI USA, and the Sustainable Healthy Cities Network to develop a state-of-the-art multi-sector low-carbon scenario planning tool
- 2017- **NSF SMART & CONNECTED COMMUNITIES (S&CC)**  
Connecting the Smart-City Paradigm with a Sustainable Urban Infrastructure Systems Framework to Advance Equity in Communities  
Lead PI: Shashi Shekar (University of Minnesota), Funding: **\$2,500,000**  
Co-PI and co-Director: Anu Ramaswami (Princeton University)  
Co-PIs: Venkatesh Merwade (Purdue University), Julian Marshall (University of Washington), Tian Tang (Florida State University)  
**Achievements:** Studying multiple "smart" infrastructure sectors in cities, including water, energy, food, shelter, transportation, and waste management, with specific attention paid to the equity impacts of the “smart city” paradigm
- 2015- **NSF SUSTAINABLE RESEARCH NETWORK (SRN)**  
Integrated Urban Infrastructure Solutions for Environmentally Sustainable, Healthy, and Livable Cities  
Lead PI: Anu Ramaswami, Funding: **\$12,000,000**

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Co-PIs: Patricia Culligan (Duke University), Armistead Russell (Georgia Tech), Yingling Fan (University of Minnesota), Benjamin Orlove (Columbia University)

**Achievements:** Developed an interdisciplinary science-action network bridging nine research universities and major metropolitan cities, as well as infrastructure firms and policy groups—the first network of its size to focus on ways to reimagine infrastructure across sectors to create sustainable cities

- 2012-17 **NSF PARTNERSHIP IN INTERNATIONAL RESEARCH AND EDUCATION (PIRE)**  
Developing Low-Carbon Cities in the US, China, and India Through Integration Across Engineering, Environmental Sciences, Social Sciences, and Public Health  
Lead PI: Anu Ramaswami, Funding: **\$5,000,000**  
Co-PIs: Marian Chertow (Yale University), Patricia Romero-Lankao (University Corporation for Atmospheric Research), Armistead Russell (Georgia Tech), Christopher Weible (UC Denver)  
**Achievements:** Applied a broadly interdisciplinary framework for developing low carbon and sustainable cities in a transformative research and education program, comparing cities of different typologies in the US, India, and China.
- 2013-17 **NSF RESEARCH COORDINATION NETWORK (RCN)**  
SEES: Sustainable Cities - People and the Energy-Climate-Water Nexus  
Lead PI: Anu Ramaswami, Funding: **\$700,000**  
**Achievements:** Developed an interdisciplinary systems framework related to sustainable cities, established a virtual collaborative forum on this topic, and developed products during research coordination workshops; laid groundwork for a city data network project
- 2007-12 **NATIONAL SCIENCE FOUNDATION IGERT Program**  
Sustainable Urban Infrastructure- Integrating Engineering, Planning, Policy & Health  
Lead PI: Anu Ramaswami (Engineering), Funding: **\$3,200,000**  
Co-PIs: Brian Muller (Arch. & Planning); Paul Teske (Public Affairs); John Brett (Anthropology) and Debbi Main (Family Medicine).  
**Achievements:** Built a large inter-disciplinary teaching and research program with 30 PhD students, 70+ MS students and about 15 faculty drawn from diverse disciplines, spanning the physical sciences and engineering, architecture, social sciences and health.
- 2008-09 **CITY AND COUNTY OF BROOMFIELD & THE NATIONAL CIVIC LEAGUE**  
Analysis and Deliberation for Sustainable Urban Planning in US Cities  
Lead PI: Anu Ramaswami, Amount Awarded: **\$50,000**  
Co-PIs: Debbi Main  
**Achievements:** Conducted community-based participatory research in real-time with sustainability planning activities ongoing in communities
- 2006-08 **CITY AND COUNTY OF DENVER, DEPT. OF ENVIRONMENTAL HEALTH**  
Greenhouse Gas Inventory and Climate Action Plan for Denver, Colorado  
Principal Investigator: Anu Ramaswami, Amount Awarded: **\$165,000**  
Co-PIs: Bruce Janson  
**Achievements:** Interfaced engineering with public policy at the city-scale; communicating model insights and quantitative data in a policy-relevant manner
- 2001/02 **COLORADO COMMISSION ON HIGHER EDUCATION:**

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### ADVANCED TECHNOLOGY PROGRAM

Three Waste-to-Value Projects for Sustainable Urban Infrastructures in Colorado

Principal Investigator: Anu Ramaswami; Amount Awarded: **\$150,000**

Co-PI: Dr. Kevin Rens

**Achievements**: Installed large-scale field test beds in an urban environment (porous concrete parking lots and roof-top wind generators)

2003/08

### US DEPARTMENT OF EDUCATION

#### GRADUATE ASSISTANCE IN AREAS OF NATIONAL NEED (GAANN)

Urban Sustainable Infrastructure Engineering Project

Principal Investigator: Anu Ramaswami; Amount Awarded: **\$577,000**

Co-PIs: Lynn Johnson, Sarosh Khan and Kevin Rens

**Achievements**: Developed inter-disciplinary research in urban infrastructure engineering, linking various tracks in civil engineering and mechanical engineering

2005-07

### ENVIRONMENTAL PROTECTION AGENCY, P3 STUDENT DESIGN TEAM WINNERS

Renewable Energy Systems Design for a Tribal Village in India (Phase 2)

Principal Investigator: Anu Ramaswami; Amount Awarded: **\$75,000**

**Achievements**: Global engineering education, student team-building, managing NGO-collaborations and implementing sustainable infrastructure projects on the ground in international contexts.

Total of **~\$27M** in sponsored research funding from 1996-Present, with significant project management, faculty team-building, systems thinking and field implementation.

## **2. SCHOLARLY ACTIVITIES**

### **PUBLICATIONS/PRODUCTS FEATURING GLOBAL OUTREACH/ENGAGEMENT ARE LISTED IN BLUE TEXT**

#### **2A. GRADUATE LEVEL TEACHING TEXTBOOK**

- 2005 Ramaswami, A.; Milford, J.B.; Small, M.J. **Integrated Environmental Modeling: Pollutant Transport Fate and Risk in the Environment**. Graduate-level textbook, **John Wiley Inc.**, New York, NY. **ISBN: 978-0-471-35953-1**

#### **2B. MAJOR REPORTS**

- 2022 International Resource Panel (2022). ***The Potential for Urban Agriculture to Advance Multiple Sustainability Goals: An International Resource Panel Summary for Policymakers***. Ramaswami, A., Ayuk, E.T., Das, K., Teixeira, I., Akpalu, W., Ferreira, J., and de Souza Leao, V. ***A Summary for Policymakers of a Think Piece of the International Resource Panel***. United Nations Environment Programme. Nairobi, Kenya.  
**[https://wedocs.unep.org/bitstream/handle/20.500.11822/38399/urban\\_agriculture\\_pol.pdf](https://wedocs.unep.org/bitstream/handle/20.500.11822/38399/urban_agriculture_pol.pdf)**
- 2022 International Resource Panel (2022). ***Contextualizing Urban Agriculture's Potential to Advance Multiple Sustainability Goals: An International Resource Panel Think Piece***. Ayuk, E.T., Ramaswami, A., Teixeira, I., Akpalu, W., Ferreira, J., Kirti, D. and de Souza Leao, V. ***A think piece of the International Resource Panel***. Nairobi: United Nations Environment Programme.

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- <https://www.unep.org/resources/publication/urban-agricultures-potential-advance-multiple-sustainability-goals>.
- 2020 World Bank Group (2020). *A Review of Integrated Urban Planning Tools for Greenhouse Gas Mitigation*. Ramaswami, A., Fang, A., & Tabory, S. (lead authors). Available at: <https://www.thegpsc.org/knowledge-products/integrated-urban-planning/review-integrated-urban-planning-tools-greenhouse-gas>.
- 2018 ACERE (2018). *Sustainable Urban Systems: Articulating a Long-Term Convergence Research Agenda*. A Report from the NSF Advisory Committee for Environmental Research and Education. Prepared by the Sustainable Urban Systems Subcommittee: Ramaswami, A., Bettencourt, L., Clarens, A., Das, S., Fitzgerald, G., Irwin, E., Pataki, D., Pincetl, S., Seto, K., Waddell, P., Nichols, L.G., & Tabory, S. (Ramaswami served as Lead Author and Chair of the Sustainable Urban Systems Subcommittee. The report is available at: <https://www.nsf.gov/ere/ereweb/ac-ere/sustainable-urban-systems.pdf>)
- 2018 UNEP (2018). *Sustainable Urban Infrastructure Transitions in the ASESAN Region: A Resource Perspective*. Ramaswami, A., Tabory, S., McFarlane, A., & Pelton, R. (Summary available at: <https://resourceefficientcities.org/2018/02/sustainable-urban-infrastructure-transitions-in-the-asean-region/>)
- 2018 IRP (2018). *The Weight of Cities: Resource Requirements of Future Urbanization*. Swilling, M., Hajer, M., Baynes, T., Bergesen, J., Labbé, F., Musango, J.K., Ramaswami, A., Robinson, B., Salat, S., Suh, S., Currie, P., Fang, A., Hanson, A. Kruit, K., Reiner, M., Smit, S., Tabory, S. A Report by the International Resource Panel. United Nations Environment Programme, Nairobi, Kenya. (Available at: <http://www.resourcepanel.org/reports/weight-cities>)
- 2017 IRP (2017). *Assessing global resource use: A systems approach to resource efficiency and pollution reduction*. Bringezu, S., Ramaswami, A., Schandl, H., O'Brien, M., Pelton, R., Acquattella, J., Ayuk, E., Chiu, A., Flanegin, R., Fry, J., Giljum, S., Hashimoto, S., Hellweg, S., Hosking, K., Hu, Y., Lenzen, M., Lieber, M., Lutter, S., Miatto, A., Singh Nagpure, A., Obersteiner, M., van Oers, L., Pfister, S., Pichler, P., Russell, A., Spini, L., Tanikawa, H., van der Voet, E., Weisz, H., West, J., Wijkman, A., Zhu, B., Zivy, R. (Ramaswami served as Co-Lead Author. The report is at: <http://www.resourcepanel.org/reports/assessing-global-resource-use>)
- 2014 A Lead Author of: Chapter 12: Human Settlements, Infrastructure and Spatial Planning in *Climate Change 2014: Mitigation of Climate Change, Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC)*, Working Group III. (with Dhakal, S., Seto, K. corresponding lead authors, and: Bigio, A.; Blanco, H.; Delgado, J.C.; Dewar, D.; L. Humang, Inaba, A.; Kansal, A.; Lwasa, McMahon, J.; Mueller, D.; Murakami, J.; Nagendra, H.; Ramaswami, A. (lead authors in alphabetical order)
- 2013 Ramaswami, A. "Understanding Infrastructure Impacts on Urban Greenhouse Gas Emissions and Key Mitigation Strategies," Chapter 11 in *Infrastructure and Land Policies*, published by the Lincoln Land Institute, Boston, MA.
- 2011 Kennedy, C., Ramaswami, A., Carney, S., Dhakal, S. (2011). "Greenhouse Gas Emission Baselines for Global Cities and Metropolitan Regions." In *Cities and Climate Change: Responding to an Urgent Agenda*, Chapter 2, pp 15-49, Edited by D. Hoornweg, M. Freire, M. J. Lee, P. Bhada-Tata, B. Yuen, The World Bank, Washington D.C, USA.

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- 2011 Ramaswami, A. and Sperling, J. “Epilogue: Knowledge and Field Measurements on Cities and Climate Change.” In *Cities and Climate Change: Responding to an Urgent Agenda*, pp 255-259, Edited by D. Hoornweg, M. Freire, M. J. Lee, P. Bhada-Tata, B. Yuen, The World Bank, Washington D.C, USA.

### 2C. PEER-REVIEWED JOURNAL ARTICLES AND BOOK CHAPTERS

(\* =RAMASWAMI ADVISEE IS FIRST AUTHOR OR RAMASWAMI IS CORRESPONDING AUTHOR)

- 2022 Nagpure, A., Tong, K. & Ramaswami, A. (2022). Socially-differentiated urban metabolism methodology informs equity in coupled carbon-air pollution mitigation strategies: insights from three Indian cities. *Environmental Research Letters*, 17(9). doi: 10.1088/1748-9326/ac881e.
- 2022 Das, K., Ramaswami, A., Fan, Y., & Cao, J. (2022). Connecting the dots between urban infrastructure, well-being, livability, and equity: a data-driven approach. *Environmental Research: Infrastructure and Sustainability*. 2(3). doi: 10.1088/2634-4505/ac7901.
- 2022 Ramaswami, A. & Boyer, D. (2022). Principles for a Sustainable Circular Economy at the Urban-Regional Food-Energy- Water Nexus: Advancing Environment, Health, and Equity. *The Bridge*. 52(2).
- 2022 Lal, R.M., Tibrewal, K., Venkataraman, C., Tong, K., Fang, A., Ma, Q., Wang, S., Kaiser, J., Ramaswami, A., & Russell, A.G. (2022). Impact of Circular, Waste-Heat Reuse Pathways on PM2.5-Air Quality, CO2 Emissions, and Human Health in India: Comparison with Material Exchange Potential. *Environmental Science & Technology*. 56(13). doi: 10.1021/acs.est.1c05897.
- 2022 Nixon, P.\* & Ramaswami, A. (2022). County-Level Analysis of Current Local Capacity of Agriculture to Meet Household Demand: A Dietary Requirements Perspective. *Environmental Research Letters*, 17(4), doi: 10.1088/1748-9326/ac5208.
- 2022 Lal, R.M., Tibrewal, K., Venkataraman, C., Tong, K., Fang, A., Ma, Q., Wang, S., Kaiser, J., Ramaswami, A., & Russell, A.G. (2022). Impact of Circular, Waste-Heat Reuse Pathways on PM2.5-Air Quality, CO2 Emissions, and Human Health in India: Comparison with Material Exchange Potential. *Environmental Science & Technology*, 56(13), 9773-9783. DOI: 10.1021/acs.est.1c05897.
- 2022 Clark, L.P.\*, Tabory, S., Tong, K., Servadio, J. Kappler, K., Xu, C.K., Lawal, A., Wiringa, P., Kne, L., Feiock, R., Marshall, J.D., Russell, A., & Ramaswami, A. (2021). A Data Framework for Assessing Social Inequality and Inequity in Multi-Sector Social, Ecological, Infrastructural and Urban Form Systems: Focus on Fine-Spatial Scales. *Journal of Industrial Ecology*. doi: [10.1111/jiec.13222](https://doi.org/10.1111/jiec.13222)
- 2021 Seto, K., Churkina, G., Newman, P.W.G., Qin, B., & Ramaswami, A. (2021). From Low- to Net-Zero Carbon Cities: The Next Global Agenda. *Annual Review of Environment and Resources*, 46, doi: [10.1146/annurev-environ-050120-113117](https://doi.org/10.1146/annurev-environ-050120-113117).
- 2021 Tong, K.\* , Ramaswami, A., Xu, C., Feiock, R., Schmitz, P., & Ohlsen, M. (2021). Measuring social equity in urban energy use and interventions using fine-scale data. *Proceedings of the National Academy of Sciences (PNAS)*, 118 (24), e2023554118, doi: [10.1073/pnas.2023554118](https://doi.org/10.1073/pnas.2023554118).

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- 2021 Ramaswami, A., Tong, K., Canadell, J.G., Jackson, R.B., Stokes, E., Dhakal, S., Finch, M., Jittrapirom, P., Singh, N., Yamagata, Y., Yewdall, E., Yona, L., & Seto, K.C. (2021). Carbon analytics for net-zero emissions sustainable cities. *Nature Sustainability*, 4, 460-463, doi: 10.1038/s41893-021-00715-5.
- 2021 Tong, K.\* , Nagpure, A.S., & Ramaswami, A. (2021). All urban areas' energy use data across 640 districts in India for the year 2011. *Scientific Data*, 8(104), doi: 10.1038/s41597-021-00853-7.
- 2020 Lawal, A., Servadio, J., Davis, T., Ramaswami, A., Botchwey, N., Russell, A. (2020). Orthogonalization and machine learning methods for residential energy estimation with social and economic indicators. *Applied Energy*, 116114. doi: 10.1016/j.apenergy.2020.116114.
- 2020 Milnar, M\*. and Ramaswami, A. (2020). Impact of urban expansion and in situ greenery on community-wide carbon emissions: Method development and insights from 11 US cities. *Environmental Science & Technology*, 54, 16086–16096. doi: 10.1021/acs.est.0c02723.
- 2020 Das, K., Jones-Harrell, C., Fan, A., Ramaswami, A., Orlove, B., Botchwey, N. (2020). Understanding subjective well-being: perspectives from psychology and public health. *Public Health Reviews*, 41(25). doi: 10.1186/s40985-020-00142-5.
- 2020 Tabory, S\*. and Ramaswami, A. (2020). Considering the role of urban types in coproduced policy guidance for sustainability transitions. *Urban Transformations*, 2, 8. doi: 10.1186/s42854-020-00013-x.
- 2020 Hu, Y., Cui, S., Bai, X., Zhu, Y., Gao, B., Ramaswami, A., Tang, J., Yang, M., Zhang, Q., & Huang, Y. (2020). Transboundary environmental footprints of the urban food supply chain and mitigation strategies. *Environmental Science & Technology*, 54(17), 10460-10471. doi: 10.1021/acs.est.0c01294.
- 2020 Fang, A\*. and Ramaswami, A. (2020). *Managing Air Quality and Energy Systems*, Chapter 41, “Review of fine-scale air quality modeling for carbon and health co-benefits assessments in cities.” In *Managing Air Quality and Energy Systems*, Faith, Brian D. (Ed), Taylor & Francis, ISBN: 9781003043461.
- 2020 Lal, R.M., Ramaswami, A., Russell, A. (2020). Assessment of the near-road (Monitoring) Network including comparison with nearby monitors within U.S. cities. *Environmental Research Letters*, 15(11), 114026, doi: 10.1088/1748-9326/ab8156.
- 2020 Lal, R.M., Das, K., Fan, Y., Barkjohn, K., Botchwey, N., Ramaswami, A., Russell, A.G. (2020) Connecting air quality with emotional well-being and neighborhood infrastructure in a US city. *Environmental Health Insights*, doi: 10.1177/1178630220915488.
- 2020 Tong, K.\* and Ramaswami, A. (2020). Environmentally sustainable transitions of US district energy systems: Perspectives from infrastructure operators/designers through the co-evolutionary lens. *Journal of Cleaner Production*, 268, 121894, doi: 10.1016/j.jclepro.2020.121894.
- 2020 Ambrose, G.\* , Das, K., Fan., Y., Ramaswami, A. (2020). Is gardening associated with greater happiness of urban residents? A multi-activity, dynamic assessment in the Twin-Cities region, USA. *Landscape and Urban Planning*, 198, 103776, doi: 10.1016/j.landurbplan.2020.103776.

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- 2020 Zeng, L.\* and Ramaswami, A. (2020). Impact of locational choices and consumer behaviors on personal land footprints: An exploration across the urban-rural continuum in USA. *Environmental Science & Technology*, 54(6), 3091-3102, doi: 10.1021/acs.est.9b06024.
- 2020 Ramaswami, A. (2020). Unpacking the urban infrastructure nexus with environment, health, livability, well-being, and equity. *One Earth*, 2(2), 120-124, doi: 10.1016/j.oneear.2020.02.003.
- 2020 Boyer, D\* and Ramaswami, A. (2020). Comparing urban food system characteristics and actions in US and Indian cities from a multi-environmental impact perspective: Toward a streamlined approach. *Journal of Industrial Ecology*, doi: 10.1111/jiec.12985.
- 2020 Tao, T., Wu, X., Cao, J., Fan, Y., Das, K., & Ramaswami, A. (2020). Exploring the nonlinear relationship between the built environment and active travel in the Twin Cities. *Journal of Planning Education and Research*, doi: 10.1177/0739456X20915765.
- 2019 Chertow, M., Gordon, M., Hirsch, P., Ramaswami, A. (2019). Industrial symbiosis potential and urban infrastructure capacity in Mysuru, India. *Environmental Research Letters*, 14(7).
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### 2D. EDITORIALS AND COMMENTARIES

- 2021 Xu, M., Daigger, G., Xi, C., Liu, J., Qu, J., Alvarez, P., Biswas, P., et al. (2021). U.S.–China Collaboration is Vital to Global Plans for a Healthy Environment and Sustainable Development. *Environmental Science & Technology*, 55, 14, 9622–9626.
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- 2012 Zborel, T., Holland, B., Thomas, G., Baker, L., Calhoun, K., Ramaswami, A. (2012). “Translating Research to Policy for Sustainable Cities: What Works and What Doesn’t?” *J. Industrial Ecology*, Special Issue on Sustainable Urban Systems, 16(6), 786-788, doi: 10.1111/j.1530-9290.2012.00569.x.
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### 2E. COVERAGE OF RESEARCH IN THE NEWS: SELECT MEDIA COVERAGE FEATURING RAMASWAMI’S WORK

- **Knowable Magazine** interviewed Prof. Ramaswami about climate change: “How cities can fight climate change” (June 10, 2022). <https://knowablemagazine.org/article/food-environment/2022/how-cities-can-fight-climate-change>
- **ABC News** interviewed Prof. Ramaswami about research published in PNAS: “Researchers highlight how social inequity is part of climate crisis” (July 9, 2021). <https://www.abcactionnews.com/news/national/researchers-highlight-how-social-inequity-is-part-of-climate-crisis>
- **NPR** interviewed Prof. Ramaswami about research published in PNAS: “Tackling ‘Energy Justice’ Requires Better Data. These Researchers Are On It” (June 13, 2021). <https://www.npr.org/2021/06/13/1004873139/tackling-energy-justice-requires-better-data-these-researchers-are-on-it>
- **New Scientist** interviewed Prof. Ramaswami about sustainable cities: “How to shape the cities of the future” (June 9, 2021). <https://www.newscientist.com/article/mg25033380-800-anu-ramaswami-interview-how-to-shape-the-cities-of-the-future/>
- **The Washington Post** interviewed Prof. Ramaswami about the relationship between climate and population: “It’s wrong to blame ‘overpopulation’ for climate change” (May 25, 2021). <https://www.washingtonpost.com/climate-solutions/2021/05/25/slowing-population-growth-environment/>
- *The High Meadows Environmental Institute* featured Prof. Ramaswami’s framework for net-zero carbon cities: “What is a net-zero city? Depends on how you count urban carbon emissions” (May 13, 2021). <https://environment.princeton.edu/news/what-is-a-net-zero-city-depends-on-how-you-count-urban-carbon-emissions/>
- **The Times of India** featured Prof. Ramaswami in an article on food systems: “Better food waste management will give India both nutritional and environmental security” (April 3, 2021). <https://timesofindia.indiatimes.com/better-food-waste-management-will-give-india-both-nutritional-and-environmental-security/articleshow/81876281.cms>

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- *Princeton University home page* featured Prof. Ramaswami's spring 2021 class on post-COVID-19 cities: "Teaching a pandemic in real time" (March 22, 2021).  
<https://www.princeton.edu/news/2021/03/22/teaching-pandemic-real-time>
- *Princeton University* highlighted Prof. Ramaswami's work on food systems in an overview of the university's food researchers: "The future of food in a changing climate" (September 21, 2020).  
<https://www.princeton.edu/news/2020/09/21/future-food-changing-climate>
- **New York Times Magazine** chef and author Samin Nosrat mentioned Ramasawmi's gardening study in her article "Gardening made me happier. It will work for you too."  
<https://www.nytimes.com/2020/07/15/magazine/gardening-made-me-happier-it-will-work-for-you-too.html> (July 15, 2020)
- **The National Science Foundation** featured Prof. Ramaswami's High Meadows Environmental Institute video on sustainable urban systems in its Multimedia Gallery (July 2020).  
[https://www.nsf.gov/news/mmg/mmg\\_disp.jsp?med\\_id=186581](https://www.nsf.gov/news/mmg/mmg_disp.jsp?med_id=186581)
- *Princeton Engineering* feature article from June 18, 2020: "A systems-level approach to sustainability helps cities work better for people and the planet."  
<https://engineering.princeton.edu/news/2020/06/18/systems-level-approach-sustainability-helps-cities-work-better-people-and-planet>
- **The Washington Post** article from May 15, 2020: "Gardening boosts your mood as much as some types of exercise, study finds," <https://www.washingtonpost.com/business/2020/05/15/gardening-boosts-your-mood-much-some-types-exercise-study-finds>.
- *Princeton Environmental Institute* feature article from May 11, 2020: "Sowing seeds of happiness: Emotional well-being while gardening similar to other popular activities, study finds,"  
<https://environment.princeton.edu/news/emotional-well-being-while-home-gardening-similar-to-other-popular-activities-study-finds>.
- The HEAD Foundation **THINK Digest**, May/June 2020: "Interview with Prof. Anu Ramaswami: An insight into a sustainable model in urban planning," [https://headfoundation.org/wp-content/uploads/2020/05/THINK-6\\_SUSTAINABILITY\\_SPREADS2.pdf](https://headfoundation.org/wp-content/uploads/2020/05/THINK-6_SUSTAINABILITY_SPREADS2.pdf).
- *Princeton Environmental Institute* feature article from March 23, 2020: "Beyond your doorstep: What you buy and where you live shapes land-use footprint,"  
<https://environment.princeton.edu/news/beyond-your-doorstep-what-you-buy-and-where-you-live-shapes-land-use-footprint>.
- *Princeton Engineering* feature article from March 13, 2020: "Food systems are fodder for curbing cities' environmental impacts," <https://engineering.princeton.edu/news/2020/03/13/food-systems-are-fodder-curbing-cities-environmental-impacts>.
- *Princeton University* feature news article from November 6, 2019: "Princeton researchers receive \$2.5 million to advance the science of urban food sustainability,"  
<https://www.princeton.edu/news/2019/11/06/princeton-researchers-receive-25-million-advance-science-urban-food-sustainability>.

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- **MPR News Climate Cast** interview with Paul Huttner on May 22, 2019: “Study: Fossil fuels will be necessary in cold winters,” <https://www.mprnews.org/story/2019/05/22/study-fossil-fuels-will-be-necessary-in-cold-winters>.
- **Farm to Fork** radio interview from November 8, 2018, “U.S. Cities are Food Producers, Too,” [www.northshoreproductions.com/downloads\\_reg\\_version.html](http://www.northshoreproductions.com/downloads_reg_version.html).
- **MN Daily** from October 18, 2018: “UMN study maps urban food capabilities” <http://www.mndaily.com/article/2018/10/acproduce>.
- *Press Conference* from March 6, 2018: Release of two interlinked reports from the International Resource Panel and UN Environment via a press conference at IPCC Conference in Edmonton, Canada: “The Weight of Cities: Resource Requirements of Future Urbanization (global findings)” and “Sustainable Urban Infrastructure Transitions in the ASEAN Region.”
- *Humphrey School Magazine* from October 2017: “Urban Outfitting: Imagining cities for a changing world”
- **The New Indian Express** from July 25, 2017: “Climate change: Untreated sewage major contributor.” <http://www.newindianexpress.com/cities/hyderabad/2017/jul/25/climate-change-untreated-sewage-major-contributor-1633181.html>
- **European Commission on International Cooperation and Development**: from February 2016, “Voices and Views: Building Safer and More Inclusive Cities for Women”. <http://capacity4dev.ec.europa.eu/article/building-safer-and-more-inclusive-cities-women>
- **The Times of India**: article from July 2016: “Smart Ideas for a Smart City”. <http://timesofindia.indiatimes.com/city/allahabad/Smart-ideas-for-a-Smart-City/articleshow/53351580.cms>
- ICLEI Local Governments for Sustainability: article from October 2016: “Smart, healthy and sustainable cities: PEER learnings from US, China & India”. <http://southasia.iclei.org/newsdetails/article/smart-healthy-and-sustainable-cities-learnings-from-us-china-india.html>
- **Live Mint**: article from January 2017: “Systems-level thinking for cities”. <http://www.livemint.com/Politics/qhaP6Onzm2mbZk4lIOHBZL/Systemslevel-thinking-for-cities.html>
- **Phys.org**: article from October 2016: “*Taj Mahal study examines particulate problems in Agra*”. <http://phys.org/news/2016-10-taj-mahal-particulate-problems-agra.html>
- **The Hindu**: article from October 2016: “*Burning of municipal waste discolouring Taj Mahal?*” <http://www.thehindu.com/news/national/Burning-of-municipal-waste-discolouring-Taj-Mahal/article16073264.ece>
- **The Times of India**: article in October 2016: “*Large-scale open burning of garbage damaging Taj: US study*”. <http://timesofindia.indiatimes.com/india/Large-scale-open-burning-of-garbage-damaging-Taj-US-study/articleshow/49567408.cms>

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- **The Indian Express:** article in October 2016: “Burning of municipal waste in vicinity contributes to discolouring of Taj Mahal”. <http://indianexpress.com/article/india/india-news-india/burning-of-municipal-waste-in-vicinity-contributes-to-discolouring-of-taj-mahal/>
- **Environmental Research Web:** *Is burning of municipal waste darkening the Taj Mahal?* Discussing the urban environmental field study on Municipal Solid Waste burning in Indian cities in October 2016. <http://environmentalresearchweb.org/cws/article/news/66526>
- **The John Batchelor Show:** June 2016 interview on what it means to develop smart, sustainable, and healthy cities.
- **The New York Times:** December 2015 article: “The Cleanest Cities? It’s Not So Simple.” Discusses challenges in measuring and ranking sustainable cities. [http://www.nytimes.com/2015/12/09/business/energy-environment/the-cleanest-cities-its-not-so-simple.html?\\_r=2](http://www.nytimes.com/2015/12/09/business/energy-environment/the-cleanest-cities-its-not-so-simple.html?_r=2)
- **New York Times, The Wall Street Journal, The Times of India, Navbhart Times** covered the urban environmental field study on Municipal Solid Waste burning in Indian cities in Nov. 2015.
- **NPR:** National Science Foundation radio production on “*Sustainable Design: Sustainability from the Seat of a Bike*”, produced by Lisa Raffensperger (NSF); February 22, 2011.
- **The New York Times:** January 2010 article on Urban Sustainability Academic Programs: <http://www.nytimes.com/2010/01/03/education/03urbansustain.html>
- **Colorado Public Radio:** October 2009 feature discussing challenges in measuring city-scale carbon footprints (“Cities Struggle to Measure their Carbon Footprints”)
- **PRI’s The World Science Forum:** Interview and discussion on inter-disciplinary training of engineers in social, cultural and other aspects of development work. November 2009. <http://www.world-science.org/forum/making-technology-work-anu-ramaswami>.
- *Documentary Film 2009:* Featured as an expert interviewed in the award-winning documentary: “**The Great Squeeze: Surviving the Human Project**”; Tiroir A Film Productions, 2009. <http://www.thegreatsqueeze.com/experts.html>.
- *Summit Daily News:* December 2009 - Dillon gets grant to help town go green: UC Denver will conduct urban infrastructure reviews and greenhouse gas evaluations for the town <http://www.summitdaily.com/article/20091207/NEWS/912069981/1078/NOTES&parentprofile=1055>.
- *2008 SustainLane Web Report* on Ramaswami’s work with US and International Cities: How Big is Your Carbon Footprint? <http://www.sustainlane.com/us-city-rankings/articles/how-big-is-your-carbon-footprint/US8ZCJH4RFR98XCSBP4PMVUIMO3A>.
- *2007 Denver’s Channel 7 Interview:* Green Concrete Policies in Denver <http://www.thedenverchannel.com/news/14718809/detail.html>.
- *2007 Environmental Science & Technology (ACS) News Article* on Sharing Sustainable Solutions across Developed and Developing Worlds: <http://ehsmanager.blogspot.com/2007/04/sharing-sustainable-solutions.html>.

**2F. INVITED CONFERENCE KEYNOTE LECTURES AND PLENARY PANELS**

**Keynote speaker**, First Indian Institute of Technology Madras International Conference on Circular Economy for Sustainable Water Management, “Transboundary urban systems analysis to quantify circularity benefits at the food-energy-water nexus,” virtual, March 24, 2022.

**Plenary panelist**, American Society of Agricultural and Biological Engineers (ASABE) Annual International Meeting, “Systems science at the urban Food-Energy-Water (FEW) nexus for resource circularity with environmental and health co-benefits,” virtual, July 12, 2021.

**Moderator**, Princeton University Alumni-Faculty Forums, “Sustainability Now: Changing the Way We Do Business,” virtual, May 21, 2021.

**Panelist**, Cities Matter: Resilient Cities After COVID-19, hosted by Consortium for Sustainable Urbanization, UN Habitat, and AIA New York. “Science Matters,” virtual, May 12, 2021.

**Plenary panelist**, National Organization of Research Development Professionals, “Building, Maintaining, and Sustaining Productive International Research Partnerships: Perspectives of Principal Investigators,” virtual, May 4, 2021.

**Keynote speaker**, Women in Data Science New Jersey, “Data Science for Sustainable, Healthy, and Equitable Cities,” virtual, March 12, 2021.

**Keynote panelist** at the United Nations Environment Programme Science Policy Business Forum, session on Rethinking Cities: Bringing Nature to the Environment, “The Weight of Cities,” virtual, February 19, 2021.

**Keynote speaker** at American Institute of Chemical Engineers' (AIChE) Food-Energy-Water Nexus Conference, “Leveraging the Urban Food-Energy-Water Nexus for Sustainability and Health,” virtual, February 10, 2021.

**Panelist** at the Lincoln Institute Consortium for Scenario Planning Conference, “Measuring Equity Outcomes in Greenhouse Gas Mitigation Exploratory Scenario Planning for the Twin Cities,” virtual, January 15, 2021.

**Plenary Panelist** at the Association of Environmental Engineering and Science Professors (AEESP) virtual conference, “Converging COVID-19, environment, health, and equity,” Session 3: “COVID-19 and the Creation of Efficient, Healthy and Resilient Cities,” virtual, October 30, 2020.

**Keynote speaker** at the Vaibhav Summit: Global Summit of Overseas and Resident Indian Scientists and Academicians, “Urban planning with a focus on socially deprived groups,” virtual (hosted in India), October 17, 2020.

**Keynote speaker** at the Agricultural Model Intercomparison and Improvement Project (AgMIP) Virtual Workshop, session on Circularity in Food Systems, “The urban food system and opportunities for circularities,” virtual, October 12, 2020.

**Invited speaker** at the AGU Fall Meeting, “Toward a New Science of Sustainable Urban Systems (SUS): What Is it, and, What is it for?” in San Francisco, California, December 12, 2019

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**Invited speaker** at the Innovations in the Food System: Shaping the Future of Food (Food Forum Workshop) hosted by the National Academy of Sciences, “Urban Food System Innovations—Multiscale Modeling and Action Analysis,” August 7-8, 2019 in Washington, DC.

**Keynote speaker** at SUS-RURI: Developing a Convergence SUS Agenda for Redesigning the Urban-Rural Interface along the Mississippi River Watershed, “The SUS Convergence Research Agenda” August 12-13, 2019 at Iowa State University in Ames, IA.

**Keynote speaker** at the “Multi-Sector Dynamics Workshop” hosted by the U.S. Department of Energy & Stanford University in Snowmass, CO from July 16-18, 2019.

**Keynote speaker** at “Social Justice and Equity in the Engineering of Smart and Connected Cities” – a workshop as part of the NSF-funded SCC-RCN entitled, MOHERE: Mobility, Health, and Resilience: Building Capacities and Expanding Impact, “*Meta-Principles for Developing Smart, Sustainable, and Healthy Cities*” Seattle, WA, December 10-11, 2018.

**Keynote speaker** at the Urban Food Systems Symposium, “*Toward a more equitable, healthy, and environment-friendly urban food system*”, Minneapolis, MN. August 8-11, 2018.

**Invited Speaker** at the Institute of Science, Technology and Policy (ISTP) Colloquium, “*Urban Infrastructure Transitions for Sustainable Healthy Cities*”, Zurich, Switzerland. May 29, 2018.

**Invited speaker** at the World Resources Institute (WRI) Brown Bag “*GHG Accounting at the City-Level*”, Washington DC, April 25, 2018.

**Invited speaker** at the World Bank Global Platform for Sustainable Cities- Spring Expert Meeting “*A Review of Modeling Tools for Integrated Urban GHG Mitigation*,” Washington, D.C, April 23-24, 2018.

**Invited speaker** at the University of Toronto - Distinguished Lecture Series, “*Urban infrastructure Transitions for Sustainable Healthy Cities*,” Toronto, Canada. April 4, 2018.

**Plenary Speaker** at World Urban Forum 9, “*Special Session on Ecological Landscapes in Cities*,” Kuala Lumpur, Malaysia. February 12, 2018.

**Plenary Speaker** at the Second Annual Meeting of the Global Platform for Sustainable Cities (GPSC), “*High Impact and Innovative Strategies for Developing Low Carbon, Healthy, and Inclusive Cities*,” New Delhi, India, November 1, 2017.

**Invited speaker** at The National Governors Association Center for Best Practices (NGA Center), in collaboration with the Smart Cities Council and the state of Illinois, during the session “*Characteristics of a “Smart State”, taking place at the “Experts Roundtable on Creating a “Smart States” Initiative*,” Washington, D.C. August 16, 2017.

**Plenary Speaker** at the Association of Southeast Asian Nations’ (ASEAN) 3rd Annual Mayors Forum, “*50 Years of ASEAN: Empowering Communities for a Stronger Region, “Re-imagining ASEAN Cities: Intelligent, Resource Efficient, and Innovative*,” Taguig City, Philippines, July 27, 2017.

**Invited Speaker** at the United Nations Environment Program Technical Workshop, “*Decoupling in Cities in Asia: An Infrastructure Transitions Perspective*,” Taguig City, Philippines, July 24 & 25, 2017.

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**Keynote Speaker** at Engineering Sustainability 2017: Innovation and the Triple Bottom Line, "*Urban Infrastructure Transformations toward Sustainable, Healthy and Equitable Cities*," Pittsburgh, PA. April 10, 2017.

**Plenary Speaker** at the Gordon Research Conference on Industrial Ecology, Stowe, VT, June 2016.

**Keynote Speaker** at Rutgers University-Newark Urban Sustainability Workshop on Building Partnerships: Education & Community as a Path to Urban Sustainability, October 20 & 21, 2016

**Keynote Speaker** at workshop *Developing Smart, Healthy and Sustainable Cities: Learnings from US, China and India* convened by ICLEI South Asia and University of Minnesota, USA, in New Delhi, India, 2016 January 201

**Invited Speaker** at National Academy of Sciences Workshop on Partnerships, Research, and Innovation for Urban Sustainability: Confronting Local Sustainability Challenges in a Global Environment. Washington, DC October 15, 2015

**Keynote Speaker** at Denver Region GHG Inventory Tools Workshop, Dec 1, 2015, hosted by City & County of Denver.

**Keynote Speaker**, Toward Resilient and Resource Efficient Cities - Side Event of ICLEI/IRP meeting, April 2015, Seoul, Republic of Korea

**Plenary Speaker**, Vibrant Gujarat, Smart Cities for the next Generation, Gandhinagar, India, January 2015.

**Invited Speaker**, Gordon Research Conference on Industrial Ecology, July 2010

**Invited Plenary Speaker**, fPET: Forum on Philosophy, Engineering, Technology. May 2010

**Invited Plenary Speaker** at US EPA's National By-Products Beneficial Use Summit, San Francisco, November 2006. *Partnerships for Developing a Sustainable Materials Policy*.

**Invited Panelist and Speaker** at the National AAAS Conference of the American Association for the Advancement of Science on *Technology and Policy Transformations for Sustainability*, Washington D.C., February, 2005.

**Keynote Speaker** at the Anita Borg Institute for Women and Development: National Annual Design Conference: April, 2004

**Invited Panelist and Speaker** at the Colorado Conference on Renewable Energy Strategies: "*Don't Be Left in the Dark*", Convened by State Senator Ken Gordon, October, 2003.

**Invited Participant** at the conference on: "*Green Engineering: Defining the Principles*," Sandestin, FL, May 2003.

### 2G. OTHER INVITED TALKS

**Invited Speaker**, Advancing the Global Energy Transition: Young Global Leaders Executive Education Module, Princeton University Andlinger Center for Energy and the Environment, "Decarbonization and the Global Energy Transition," June 26, 2022.

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**Invited speaker**, Georgia Tech School of Civil and Environmental Engineering, CEE Cross-Cutting Research Seminar, “From Low-Carbon to Net-Zero Carbon Cities: A Systems Approach,” virtual, April 4, 2022.

**Invited speaker**, President’s Circle Roundtable, Princeton University, “Climate and Cities,” virtual, March 30, 2022.

**Invited speaker**, Princeton Envision Conference, “The Future of Cities,” virtual, April 8, 2021.

**Invited speaker**, Northern Arizona University Ecoinformatics Seminar Series, “An Interdisciplinary Career Trajectory in Urban Sustainability,” virtual, March 29, 2021.

**Invited speaker**, Energy and Environment Table Discussions on Research in Pursuing a Sustainable Planet, Princeton University, “Sustainable Urban Systems,” virtual, March 17, 2021.

**Invited speaker**, Purdue University School of Industrial Engineering, Spring Seminar Series, virtual, March 5, 2021.

**Keynote speaker** at the Princeton University Community Auditing Lecture, “Sustainable Urban Systems,” virtual, December 4, 2020.

**Plenary panelist** at A4P Asian-American Leadership Series, “Managing Barriers & Challenges for Asian Americans Becoming Leaders, Princeton University (virtual), November 19, 2020.

**Keynote speaker** at the Center for Policy Research on Energy and Environment webinar series, Princeton University, “Are Cities and Utilities Ready for Deep Decarbonization?,” virtual, November 16, 2020.

**Panelist and organizer**, Princeton Mellon Forum: The Geography of the Post-Pandemic City, “The Geography of the Post-Pandemic City,” virtual, November 6, 2020.

**Invited speaker** at a Sustainable Princeton webinar, “Shrink Your Footprint: On Your Plate,” virtual, June 3, 2020.

**Keynote speaker** at a Princeton Club of India/India Chamber of Commerce webinar, “Reimagining India: Cities in the post-COVID World,” virtual, May 28, 2020.

**Invited speaker** at the Climate Futures Initiative seminar, on October 23, 2019, Princeton University

**Panelist** at the Princeton Environmental Forum, “Breaking the Environmental Logjam” October 24-25, 2019, Princeton University

**Panelist** at the US-China Environment and Sustainability Forum at the University of Michigan, October 1-2, 2019, Ann Arbor, MI – panel titled “Climate, Carbon and Energy”

**Keynote Speaker** at “Building the Future: New Technological Frontiers in Cities” at Princeton University on May 6, 2019. <https://cefr.princeton.edu/events/building-future-new-technological-frontiers-cities>

**Invited Speaker** at Boston University’s Biogeoscience Seminar Series on April 29, 2019.

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**Invited Speaker** at Yale University for the F&ES Research Seminar, “Transforming Urban Infrastructure and Food Systems” on April 24, 2019

**Invited Lecturer** at the Weston Roundtable Series hosted by the University of Wisconsin Madison on February 14, 2019, “Sustainable Urban Systems: A New Trans-disciplinary Science.” Link to recorded lecture:

<https://mediasite.engr.wisc.edu/Mediasite/Play/c9d97f063eae422893762494ace60c9f1d?catalog=7b399ee95a21457491e921a3fe66a51b21>

**Invited Speaker** at the Hennepin-University Partnership Management Team Meeting, Minneapolis, MN. May 19, 2017.

**Invited Speaker** at the Minnesota Academy of Science’s Science Salon, “*Reinventing Cities*,” Minneapolis, MN. February 15, 2017.

**Invited Speaker**, Georgia Institute of Technology, School of Public Policy Speaker Series. *Urban Infrastructure Transitions toward Environmentally Sustainable and Livable Cities: Connecting Analysis to Action*. April 2015

**Invited Speaker**, *An Integrated Infrastructure-Systems Approach for Developing Environmentally Sustainable and Healthy Cities in China, India & U.S.A.* Ezra’s Roundtable Systems Seminar Series at Cornell University, April 17, 2015.

## 2H. OTHER CONFERENCE PAPERS AND PRESENTATIONS

(\* = presenting author is Ramaswami)

- 2022\* Ramaswami, A. (2022). “Co-Producing Zero-Carbon Urban Infrastructure Transitions with 182 Communities in a US Metro Region.” Oral presentation, **Association of Environmental Engineering & Science Professors (AEESP) Conference**, St. Louis, MO, June 30, 2022.
- 2022 Chen, J. & Ramaswami, A. Lifecycle analysis of byproducts from food waste valorization technologies: Implications for soil, energy use, and GHG emissions. **Association of Environmental Engineering & Science Professors (AEESP) Conference**, St. Louis, MO, June 30, 2022.
- 2022 Nixon, P. & Ramaswami, A. Land, water, and nutrient co-benefits of localizing agriculture in and around US metropolitan areas: Nationwide study. Poster, **Association of Environmental Engineering & Science Professors Conference (AEESP)**, St. Louis, MO, June 30, 2022.
- 2022\* Ramaswami, A. (2022). *Co-designing urban infrastructure and food systems for sustainability, health, wellbeing, and equity*. Workshop presentation, **Association of Environmental Engineering & Science Professors (AEESP) Conference**, St. Louis, MO, June 28, 2022.
- 2021\* Ramaswami, A. *Multi-Sector Modeling for Zero-Carbon and Equitable Cities: Implementation in Twin Cities, USA*, **AGU Fall Meeting**, virtual, December 13, 2021.
- 2021 Eastman, J., Milnar, M., Rao-Ghorpade, A., & Ramaswami, A. Quantifying Tree Canopy and Carbon Sequestration Potential Across 5 Indian Cities Through Remote Sensing, in-situ Testing, and Machine Learning. **AGU Fall Meeting**, virtual, December 15, 2021.

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- 2021 Zeng, L. & Ramaswami, A. *Urban-rural patterns and building morphology impacts on residential energy use: Insights from India, China, and the US*, **AGU Fall Meeting**, virtual, December 14, 2021.
- 2020 Tong, K., Ramaswami, A., *Method to Assess Spatiotemporal Impact of Tree Canopy on Energy Related Carbon Emissions: Unpacking Fine Scale Social-Ecological-Infrastructural Urban Field Data*, **AGU Fall Meeting**, virtual, December 10, 2020.
- 2020 Zeng, L., Ramaswami, A., *Mapping inequality and vulnerability to urban flooding in Twin City Metro Area, US: A combined approach by citizen science survey and a simplified inundation model*, **AGU Fall Meeting**, virtual, December 10, 2020.
- 2020 Milnar, M., Ramaswami, A., *The impact of urban expansion and in-situ greenery on community-wide carbon emissions: Method development and insights from eleven US cities*, **AGU Fall Meeting**, virtual, December 7, 2020.
- 2020 Liess, S., Twine, T.E., Milnar, M., Ramaswami, A., *Urban Street-Scale Climate Simulations for Sustainability, Health, and Social Equity*, **AGU Fall Meeting**, virtual, December 2020.
- 2020 Saksena, S., Zeng, L., Salvi, N.A., Dey, S., Merwade, V., Ramaswami, A., Singhofen, P., *Comparing simplistic versus complex modeling approaches for simulating localized urban flooding*, **AGU Fall Meeting**, virtual, December 15, 2020.
- 2019 Tong, K., Ramaswami, A., *Comparing Urban Energy Use and Carbon Emission Patterns in the US and China*, **AGU Fall Meeting**, San Francisco, California, December 12, 2019
- 2019 Zeng, L., Ramaswami, A., *What Is the Consumption-Based Land Use Footprint of Urban and Rural Residents In USA?* **AGU Fall Meeting**, San Francisco, California, December 12, 2019
- 2019\* Ramaswami, A., *Toward a New Science of Sustainable Urban Systems (SUS): What Is it, and, What is it for?* **AGU Fall Meeting**, San Francisco, California, December 12, 2019
- 2019 Ramaswami, A., Nagpure. A., *The Urban Burden of Disease: Linking Data on 42 Indian Cities to Action for Health & Sustainable Development*, **AGU Fall Meeting**, San Francisco, California, December 12, 2019
- 2019 Saksena, S., Salvi, NA., Dey, S., Merwade, V., Singhofen, P., Zeng, L. *Simulating the flood hydrodynamics of complex urban systems using a hyper resolution integrated modeling framework*, **AGU Fall Meeting**, San Francisco, California, December 12, 2019
- 2019 Zeng, L., Ramaswami, A. *Rapid fine scale flood modelling in urban areas to understand the nexus between climate risk and equity: informing vulnerability and green infrastructure design*, **AGU Fall Meeting**, San Francisco, California, December 12, 2019
- 2018 Ramaswami, A., Macias, J., Velasco, G., *Can Metropolitan Areas Achieve Local and Global Sustainable Development Targets? A Systems Focus on Urban Infrastructure and Food Supply*, Roundtable hosted at the **Summer International APPAM Conference** on Sustainable Metropolitan Development, Mexico City, July 16, 2018.
- 2018 Ramaswami, A., Pincetl, S., Rai, V., Perez, D., *The Next Generation of Sustainable Urban Systems (SUS) Science: Articulating a Long-Term Convergence Research*

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- Agenda*, Roundtable hosted at the **Summer International APPAM Conference** on Sustainable Metropolitan Development, Mexico City, July 16, 2018.
- 2018 Ramaswami, A., Culligan, P., Orlove, B., Boyer, D., Fleming, C., Tabory, S. *Is Localized and Distributed Infrastructure More Sustainable? A Multi-Sector Perspective*. Workshop hosted at the **National Council for Science and the Environment Annual Conference**, Washington, D.C., January 24, 2018.
- 2018\* Ramaswami, A. Irwin, E., Clarens, A., Janetos, A., *The Next Generation of Sustainable Urban Systems (SUS) Science: Articulating a Long-Term Convergence Research Agenda*, Presentation at the **National Council for Science and the Environment Annual Conference**, Washington, D.C., January 24, 2018.
- 2017\* Ramaswami, A., Botchwey, N., Fang, A., Kruit, K., *Designing an Interdisciplinary Multi-Institutional Curriculum on Infrastructure Transitions for Sustainable Healthy Cities*, **Joint Conference ISIE/ISSST**, Chicago, IL, June 29, 2017.
- 2017\* 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*, **Joint Conference ISIE/ISSST**, Chicago, IL, June 29, 2017.
- 2017 Nixon, P., Ramaswami, A., *Assessing the Food-Energy-Water (FEW) Nexus at the US County Level from a Production Perspective: Hot Spots of Production and Water-vulnerability*, **Joint Conference ISIE/ISSST**, Chicago, IL, June 28, 2017.
- 2017 Boyer, D., Ramaswami, A., *What is the contribution of city-scale actions to the overall food system's environmental impacts? Assessing water, GHG, and land impacts of future urban food scenarios*, **Joint Conference ISIE/ISSST**, Chicago, IL, June 28, 2017.
- 2016\* Ramaswami, A. *Developing Sustainable Urban Water-Energy Infrastructures: Applying a Multi-Sectoral Social-Ecological-Infrastructural Systems (SEIS) Framework*. and \*Ramaswami, A. *Quantifying the Contribution of Urban-Industrial Efficiency and Symbiosis to Deep Decarbonization: Impact of 637 Chinese Cities*. Presentations at the **American Geophysical Union Fall Meeting**, San Francisco, CA, December 2016.
- 2016\* Ramaswami, A. *Urban Infrastructure Transitions toward Sustainable Healthy Cities: Examples from US, China & India*. 2016 **International Conference on Sustainable Infrastructure (ICSI 2016)**, Shenzhen, China, October 2016
- 2016\* Ramaswami, A. *Urban Infrastructure Systems for Environmentally Sustainable and Healthy Cities*. **Gordon Research Conference: Industrial Ecology**, Stowe, VT, June 2016.
- 2016\* Ramaswami, A. and Culligan, P. co-moderated a panel entitled: *The Nexus in Cities: Measuring Impact and Exploring Solutions*. **16th National Conference and Global Forum on Science, Policy and the Environment: The Food-Energy-Water Nexus**. Washington D.C., January 2016.
- 2016\* Ramaswami, A.; Leon, M. *City-level Decoupling: Urban Resource Flows and Governance of Infrastructure Transitions*. and Ramaswami, A.; Leon, M. *From Urban Metabolism to Urban Environmental Footprinting: A Review of Developments in the Field*. Presented at the **World Resources Forum Latin America and the Caribbean**, International Sustainable Building

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- Congress & III GBCCR EXPO in San Jose, Costa Rica to a delegation of people from the UNEP International Resource Panel, May 18-20, 2016.
- 2016\* Ramaswami, A. *Socio-Environmental Systems Design*, Presentation to the **Advisory Committee for Environmental Research and Education (AC-ERE)**, Arlington, VA, March 30-31, 2016.
- 2015 Tong, K. and Ramaswami, A. *Exploring the determinants of investing in the capital assets of urban infrastructure in China*. and Fang, A.; Tong, K.; Ramswami, A. *How Community-Wide Infrastructure-Based GHG Footprinting Informs Climate Action Plans in China, India, and the United States*. Presentations at the Annual **APPAM Fall Research Conference**, November 2015, Miami, FL.
- 2015 Presented at the *Workshop on Urban Municipal Solid Waste and Biomass Burning: Impacts on Air Pollution, Climate and Health*, Indian Institute of Technology-Kanpur, October 2015
- 2015 Fang, A.; Lal, R.; Kang, J.; Johnson, K.; Cui, S.; Russell, A.; Ramaswami, A. *Co-Benefits of Carbon Mitigation: Impact on PM2.5 Emissions and Water Consumption in a Chinese City*. Annual Conference of the **International Society of Industrial Ecology**, University of Surrey, Guildford, UK, July 2015.
- 2014 Participated in *Urbanization and Global Environmental Change scoping meeting on a new urban research initiative* at Royal Holloway, University of London in Egham, UK, February 2014.
- 2013\* Ramaswami, A. *Framing mitigation challenges and opportunities in the climate compatible urban development and key indicators*, presented at Asian Institute of Technology – Climate Compatible Urban Development, Bangkok. March 2013.
- 2013\* Ramaswami, A. gave plenary presentation at the *International Conference of the International Society of Industrial Ecology*. Seoul, S Korea, June 2013.
- 2013\* Ramaswami, A., Anderson, A. *Understanding Multi-Level Governance for Sustainable cities using a Social-Ecological-Infrastructural Systems (SEIS) Framework*. **International Conference of the International Society of Industrial Ecology**. Seoul, S Korea, June 2013
- 2013\* Ramaswami, A., Anderson, A., & Cohen, E. *Water Footprints of Urban Energy Systems - Managing Supply Chain Risk to Cities at the Water-Energy-Climate Nexus*. *International Conference of the International Society of Industrial Ecology*. Seoul, S Korea, June 2013
- 2013\* Ramaswami, A. gave plenary presentation at the Conference celebrating *Indira Gandhi Institute of Development Research*. 2013.
- 2013\* Ramaswami, A. Graduate education on Energy Ethics- Energy Ethics and Sustainable Development: Sufficiency and Responsibility. Arizona State University, September 2013.
- 2013\* Ramaswami A. presentation regarding latest policies, protocols and technologies being adopted in the United States and internationally, especially in water-scarce China and India at *Minnesota Water Technology Export Roundtable*. Minneapolis, September 2013.
- 2013\* Ramaswami A. presentation to the Regional Council of Mayors on *Sustainable Infrastructure and Cities*.

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- 2012 Ramaswami, A. *Energy Ethics in A Curriculum on Sustainable Urban Infrastructure*, presented at the 21-st Annual Meeting of the **Association for Practical and Professional Ethics (APPE)**, Cincinnati, OH, March 2012.
- 2012 Ramaswami, A. *Social Actors, Participation Rates and Carbon Footprint Mitigation in US Cities: Case Study of Denver, CO*. Presented at the **Local Benefits of Sustainability Workshop**, Florida State University (FSU), March 2012
- 2012 Ramaswami, A. *Innovations in Greenhouse Gas Accounting at the City -Scale*, Presented to the **BSI Publicly Available Standards Steering Committee**, London, UK, January 2012.
- 2011 National Academy of Engineering COGGE
- 2011 Ramaswami, A. *Energy Ethics in Education*, presented at the **National Academy of Engineering** – Workshop on Energy Ethics in Science and Engineering Education, September, 2011.
- 2011 Ramaswami, A. *Transboundary Carbon Emissions Footprints – A Framework for Low Carbon Urban Infrastructure*, Presented at the **Durban Climate Conferences**, December 2011.
- 2011 Ramaswami, A. *Sustainable Urban Infrastructure*, Invited Speaker, **Twin Cities Urban Sustainability Forum**, November 2-3.
- 2011 Weible, Christopher, Anu Ramaswami, Mark Davis, Saba Siddiki, Zeljko Spiric, and Tanya Heikkila. 2011. “*Studying Cross-Scale Infrastructure, Actors, and Institutions: An Interdisciplinary Approach to Sustainable Cities.*” American Political Science Association meeting, Seattle, WA. September 2, 2011
- 2011 Ramaswami, A. *Transboundary Carbon Emissions Footprints and A Framework for Sustainable Cities*, Presented at the **AIChE National Conference**, Minneapolis, October, 2011.
- 2011 Ramaswami, A. *Urban Greenhouse Gas Emissions, Climate Change, and Mitigating Impacts*, presented at the **American Chemical Society National Meeting**, Denver, CO. August, 2011.
- 2011 Chavez, A., & Ramaswami, A. *Comparing Geographic, Hybrid, and Full Consumption-Based Greenhouse Gas Accounting Methods for 45 U.S. Cities*. Presented at the **International Society for Industrial Ecology (ISIE) Conference**, June, 2011. Berkeley, CA.
- 2011 Cohen, E., & Ramaswami, A. *Water Footprint of Urban Energy Systems: A Case Study of Denver, Colorado*. Presented at the **International Society for Industrial Ecology (ISIE) Conference**, June, 2011. Berkeley, CA.
- 2011 Ramaswami, A., Weible, C., Heikkila, T., & Main, D. *Developing an Inter-Disciplinary Graduate Curriculum on Sustainable City Systems using a Social-Ecological-Infrastructural Systems Framework*. Presented at the **International Society for Industrial Ecology (ISIE) Conference**, June, 2011. Berkeley, CA.
- 2011 Solis, A., Ramaswami, A., & Durham, S. *Regional Material Flow And Life Cycle Analysis of Cement Manufacturing in India*. Presented at the **International Society for Industrial Ecology (ISIE) Conference**, June, 2011. Berkeley, CA.

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- 2011 Solis, A., Durham, S. A., Ramaswami, A. (2011). "Thermal Performance of High Volume Fly Ash Concrete," presented at the *2011 World of Coal Ash (WOCA) Conference* in Denver, CO, <http://www.flyash.info>.
- 2011 Ramaswami, A. *City carbon foot printing methods, approaches and challenges*, Presented at the *International Workshop on Urban Energy and Carbon Modeling in Rapidly Urbanizing World Organized by Global Carbon Project (GCP), and International Institute for Applied System Analyses (IIASA), March 2011*.
- 2010\* Ramaswami A., & Chavez, A. Are We There Yet? Measuring Progress Towards Low Carbon Trans-Boundary Challenges in City-Scale Greenhouse Gas Accounting. **NSF US-China Workshop on Low-Carbon Cities**. Hong Kong, China, December 2010.
- 2010 Chavez, A., & Ramaswami, A. Hybrid Greenhouse Gas Accounting Methodology for Cities: Past Work & New Developments. **American Center for Life Cycle Assessment (ACLCA)**. Portland, OR, November 2010.
- 2010 Chavez, A., & Ramaswami, A. Greenhouse Gas Emissions Accounting: Framework and Innovations at the City-Scale. **Colorado Environmental Health Association (CEHA)**. Colorado Springs, CO, October 2010.
- 2010 Chavez, A., & Ramaswami, A. Greenhouse Gas Emissions Accounting at the City-Scale. **SACNAS National Conference**. Anaheim, CA, October 2010.
- 2010\* Ramaswami, A, Ewing-Thiel, J., & Chavez, A. Innovations in Greenhouse Gas Emissions Accounting at the City-Scale. **EPA Conference on Emission Inventories**, San Antonio, TX, October 2010.
- 2010\* Ramaswami, A, & Chavez, A. Innovations in Greenhouse Gas Emissions Accounting at the City-Scale. **ICLEI-USA Annual Conference**. Washington D.C., September 2010.
- 2010 Miller, L.; Ramaswami, A.; Amerasinghe, P. Energy Assessment of Wastewater Treatment Plants with Water Reuse for Urban Agriculture in India. Oral Presentation at the **7th Annual Joint WEF/AWWA Rocky Mountain Region Student Conference**, Boulder, CO.
- 2010 Solis, A. V., Durham, S. A., Rens, K., L, & Ramaswami, A. Sustainable concrete for the urban environment: A proposal to increase fly ash use in concrete. *Green Streets and Highways 2010: An Interactive Conference on the State of the Art and How to Achieve Sustainable Outcomes - Proceedings of the Green Streets and Highways 2010 Conference*, 389, p. 401.
- 2010\* Ramaswami, A. Trans-boundary Greenhouse Gas Emissions Accounting for Cities. **Living City Block Banking & Finance Workshop**, Denver, CO, October 2010.
- 2010\* Ramaswami, A., & Culpen, A. *Greenhouse Gas Emissions Accounting: A Framework for Sustainable Cities*, National Renewable Energy Laboratory (NREL). Golden, CO, April 2010
- 2010\* Ramaswami, A.; "Addressing the Sustainability Challenge"; Presentation summary published in **Engineering, Social Justice, and Sustainable Community Development: Summary of A**

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- Workshop**, National Academy of Sciences, National Academy Press. pp. 8-10. [See also 2008 Workshop]
- 2010 Rogowski, S.; Pitterle, M.; Ramaswami, A.; Kuchenrither, D. “*Denver Metro District: Quantifying Energy and Greenhouse Gas Mitigation Opportunities for Biosolids Treatment Alternatives*”, Conference Paper published in **Water Environment Federation Residuals and Biosolids 2010**
- 2009\* Kennedy, C., Ramaswami, A., Carney, S., and Dhakal, S. “*Greenhouse Gas Emission Baselines for Global Cities and Metropolitan Regions*”, **World Bank Commissioned Paper for the Urban Research Symposium 2009**, Marseille, France. June 27 – June 3.
- 2009\* Ramaswami, A. “*Trans-boundary Contributions to City-Scale Carbon Footprints and Policy Implications*”; Presented at the International Symposium: Cities and Carbon Management: Towards Enhancing Science-Policy Linkages. University of Tokyo, November, 2009.
- 2009\* Ramaswami, A.; Solis, A. “*Sustainable Infrastructure Materials Policy at the City-Scale: Data and Institutional Needs*”; Paper presented at the US-Japan Workshop on Life Cycle Assessment of Sustainable Infrastructure Materials; Sponsored by the US NSF, Sapporo, Japan, October, 2009. <http://www.hucc.hokudai.ac.jp/~m16120/workshop2009/program.html>
- 2009 Kocman, S.; Guo, J.Y.C.; Ramaswami, A. “*Waste Incorporated Sustainable Design of Storm Water Detention Basins*”, paper presented at Engineering Sustainability 2009, **Mascaro Sustainability Conference**, Pittsburgh, Pennsylvania, April 2009.
- 2009 Liu, R., Ramaswami, A., Durham, S.A., & Rens, K.L. (2009, May). *LCA of post mercury control fly ash concrete*, Poster presented at the 2009 Symposium on Industrial Ecology for Young Professionals, Tempe, AZ, USA.
- 2008 Liu, R., Ramaswami, A., Rens, K.L., & Durham, S.A. (2008, Sept.). *Comprehensive utilization of fly ash in civil engineering infrastructure in the United States and China*. Paper presented at the Global Waste Management Symposium, Copper Mountain, CO, USA
- 2008\* Ramaswami, A.; “*Addressing the Sustainability Challenge: Three Questions to Ask in Engineering for Sustainable Community Development*”; presented at the NAE Workshop on **Engineering, Social Justice, and Sustainable Community Development**, National Academy of Sciences, Washington, D.C. October 2–3, 2008. [See also 2010 workshop publication].
- 2008\* Ramaswami, A. “*Educating Self and Others Across Boundaries*”, Paper presented at The Globalizing Engineers Workshop: Personal Geographies of Engineering Educators, Center for the Advancement of Scholarship on Engineering Education (CASEE) Workshop, National Academy of Engineering, Washington, D.C., USA, September 5-6.
- 2008\* Ramaswami, A. “*Evaluating Greenhouse Gas Emissions at the City Scale: Challenges and Benchmarks*”, **The Evaluation Conference**, American Evaluation Association, Denver, CO, November 2008
- 2008\* Hillman, T.; Ramaswami, A.; *Computing Greenhouse Gas Footprints: Results from 8 U.S. Cities*, Poster Presented at the **Gordon Conference on Industrial Ecology**, New Hampshire, USA, August, 2008.

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- 2008 Kronoveter, K.; Pitterle, M.; Miller, L.; Ramaswami, A. *Quantifying Urban Food Waste and Energy Flows in Denver, Colorado: Potential for Decentralized Waste-to-Energy Infrastructures*, Poster Presented at the **Gordon Conference on Industrial Ecology**, New Hampshire, USA, August, 2008.
- 2008 Kronoveter, K.; Ramaswami, A. *Decentralized Organic Waste to Energy in Denver, Colorado*, Paper accepted for poster presentation at **Global Waste Management Symposium**, September 8-10, 2008
- 2008 Kocman, S.; Hager, A.; Ramaswami, A.; Guo, J.Y.C.; Durham, S. *Waste-Incorporated Porous Landscape Detention and Pavements for Sustainable Storm Water Management*, Paper accepted for poster presentation at **Global Waste Management Symposium**, September 8-10, 2008
- 2008\* Ramaswami, A. *Linking Materials and Energy for Sustainability*, Platform presentation at **The 2008 Beneficial Use of Industrial Materials Summit**, Sponsored by the USEPA, Denver, CO March 31-April 1, 2008.
- 2008 Kocman, S.; Hager, A.; Ramaswami, A.; Guo, J.Y.C.; Durham, S. *Waste-Incorporated Porous Landscape Detention and Pervious Concrete Pavement for Sustainable Storm Water Management*, Poster presentation at **The 2008 Beneficial Use of Industrial Materials Summit**, Sponsored by the USEPA, Denver, CO March 31-April 1, 2008
- 2008\* Ramaswami, A.; Hillman, T.; Janson, B.; Reiner, M.; Thomas, G. “*Cities, Greenhouse Gas Emissions, and Inventory Protocols*” Platform presentation at the **Colorado Department of Transportation Winter Conference**, Denver, CO February 2008.
- 2007\* Mihelcic, J.; Jones, S.; Patterson, K.; Ramaswami, A. (Workshop Panel Presentation): American Association of Environmental Engineering and Science Professors (AEESP) Workshop: *Implementing an International Sustainable Development Initiative*, **AEESP Conference**, Virginia, July 2007.
- 2007 Pitterle, M; Ramaswami, A. “*Quantitative Sustainability Assessment of US Wastewater Treatment Plants*”, platform presentation, **American Association of Environmental Engineering and Science Professors (AEESP) Conference**, Virginia, July 2007.
- 2007 Reiner, M.; Ramaswami, A.; Rens, K. “*Quantifying the Role of High Performance Green Concrete (HPGC) in Sustainable Urban Infrastructure in Denver, Colorado*”, Platform presentation at the **American Association of Environmental Engineering and Science Professors (AEESP) Conference**, Virginia, July 2007.
- 2007\* Ramaswami, A.; Reiner, M.; Rens, K. “*Partnerships for Developing a Sustainable Materials Policy*”, Invited Plenary Speaker at **USEPA’s National By-Products Beneficial Use Summit**, San Francisco, November 2006.
- 2005\* Pitterle, M; Whitaker, M.B.; Ramaswami, A. “*Sustainable Energy Systems Design for Tribal Village Homes in India*”, paper accepted for oral presentation at Engineering Sustainability 2005, **Mascaro Sustainability Conference**, Pittsburgh, Pennsylvania, April 10-12, 2005.
- 2005\* Pitterle, M; Ramaswami, A. “*Urban Sustainable Infrastructure Engineering Project (USIEP): Urban Water Solutions*,” paper accepted for oral presentation at Engineering Sustainability 2005, **Mascaro Sustainability Conference**, Pittsburgh, Pennsylvania, April 10-12, 2005.

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- 2005 Pitterle, M., Whitaker, M., Ramaswami, A. “*Industrial Ecology for Sustainable Energy Systems Design in Remote Rural India.*” Paper accepted for presentation at the International Conference of the **International Society for Industrial Ecology**, Stockholm, June 2005.
- 2005 Whitaker, M.B.; Ramaswami, A. Khan, Sarosh, S. *Life Cycle Assessment of New Generation Diesel Buses for Sustainable Transport in India* , paper accepted for presentation at the **International Conference of the International Society for Industrial Ecology**, Stockholm, June 2005.
- 2001\* Ramaswami, A. *Phytoremediation of VOCs: Upscaling Issues*, Paper presented at the Annual Hazardous Waste Conference of the **Great Plains/Rocky Mountain Hazardous Substance Research Center**, Manhattan, Kansas, May, 2001 (Nominated for best paper award)
- 2001\* Ramaswami, A.; Illangasekare, I.; Bielefeldt, A. *Biostabilization of DNAPLs*, Paper presented at the **International Containment Conference**, Orlando, FL, June, 2001
- 2000\* Rubin, E; Ramaswami, A. *Potential for Phytoremediation of MTBE*, Paper presented at the Annual West Coast Conference on Contaminated Soils, **Association for the Environmental Health of Soils (AEHS)**, San Diego, CA, March, 2000.
- 2000\* Tawachsupa, S; Isleyen, M; Ramaswami, A. “*Zero Valent Iron for Treatment of High Arsenic Waters*”, Poster presented at the 4-th **International Arsenic Conference**, San Diego, CA; July, 2000. pp. 182.
- 2000 Rubin, E.; Ramaswami, A. “*Phytoremediation of MTBE*”, Paper presented at the **Annual Hazardous Waste Conference**, Denver, CO, June, 2000, pp. 27.
- 2000 Rubin, E.; Ramaswami, A. “*Phytoremediation of MTBE*”, Paper presented at the **ASCE Convergence 2000: Environmental Pipeline Engineering Conference** , Kansas City, July, 2000.
- 2000\* Rubin, E.; Ramaswami, A. “*Phytoremediation of MTBE*”, Paper presented at the **Seventh International Petroleum Environment Conference**, Albuquerque, New Mexico, November, 2000.
- 1999 Vestal, E.; Illangasekare, I.; Bielefeldt, A.; Ramaswami, A. *Modeling of Net Interphase Mass Exchange in NAPL-Water Systems Undergoing Biodegradation*, Paper presented at the 1999 EPA **Hazardous Substance Research Center**, Kansas City, April, pp. 18.
- 1999\* Morrison, K.; Ramaswami, A.; Riffel, A.; Bielefeldt, A. “*Biodegradation and Biostabilization of PAHs in Coal Tar-Water Systems*”, Poster presented at the 1999 EPA **Hazardous Substance Research Center** Conference, Kansas City, April, 1999, pp. 77.
- 1999\* Morrison, K.; Johansen, P.; Ramaswami, A. “*The Potential for Biostabilization of Coal Tar in the Aqueous Environment*”, Paper presented at the 4-th International **Symposium of Subsurface Microbiology**, American Society of Microbiologists, Aug., 1999, pp. 40.
- 1999\* Morrison, K.; Donahue, T.J.; Johansen, P. K.; Ramaswami, A.; Bielefeldt, A.; Illangasekare, T. “*Biodegradation and Biostabilization Potential of DNAPL Coal Tar in the Subsurface*”, Annual meeting of the **Geological Society of America**, Denver, CO, October, 1999.

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- 1998\* Ramaswami, A.; Bielefeldt, A.; Illangasekare, T.; Riffel, A.; Vestal, E. “*Assessing the Biostabilization Potential of Multicomponent DNAPLs*”, **National Bioremediation Conference** of the US EPA, Arlington, VA, September, 1998, pp.41-42.
- 1998 Vestal, E.; Illangasekare, I., Ramaswami, A.; Bielefeldt, A.; Riffel, A. “*Modeling of Net Interphase Mass Exchange in NAPL-Water Systems Undergoing Biodegradation at the Spill-Site Scale*”, Proceeding of the national meeting of the **American Geophysical Union**, 1998.
- 1996\* Ramaswami, A; Marquina, M.; Vollbrecht, J. “*Investigation of Uranium-238 Uptake by Plants.*” Proceeding of the **VIII-th Annual Symposium on Emerging Technologies for Hazardous Waste Management**, sponsored by the Industrial and Engineering Chemistry Division of the American Chemical Society, Birmingham, AL, pp. 499-501.
- 1995\* Johansen, P. and A. Ramaswami. “*Biodegradation of Polycyclic Aromatic Hydrocarbons from Non-Aqueous Phase Liquids.*” Proceedings of the **American Chemical Engineers Society Annual Conference**, Miami, FL, November, 1995.
- 1994\* Ghoshal, S., A. Ramaswami and R.G. Luthy, “*Mass Transfer and Biodegradation of Naphthalene from Coal Tar*”, paper presented at the 207th National Meeting of the Environmental Chemistry Division of the **American Chemical Society**, pp. 388-391.
- 1994 Ramaswami, A., J. Nadzam; R.G. Luthy, “*Effect of Interfacial Films on Mass Transfer in Coal Tar (NAPL)-Water Systems*”, presented at the **Water Environment Federation** Conference on Innovative Solutions for Contaminated Site Management, March 1994.
- 1992\* Ramaswami, A., S. Ghoshal and R.G. Luthy, “*Dissolution and Biodegradation of PAH Compounds from Coal Tar at Residual Saturation in Porous Media*”, paper presented at the symposium on Emerging Technologies for Hazardous Waste Management sponsored by the Industrial and Engineering Chemistry Division of the **American Chemical Society**, Atlanta, GA, September, 1992, pp. 463-466.
- 1990\* Ramaswami, A., and M.J. Small, “*Spatial Variability of Trace Elements in Groundwater*”, poster presented at the **American Society of Civil Engineers Specialty Conference on Environmental Engineering**, Arlington, VA, July, 1990, pp. 911-912.

### **3. TEACHING**

#### **PEDAGOGY**

The major theme of Dr. Ramaswami’s teaching career has been **integration and synthesis** - the ability to systematically integrate a wide range of processes and concepts pertaining to the environment. This **integrated systems approach**, coupled with **cross-disciplinary learning**, has had a major impact on pedagogy in three main areas, as described below.

**A. Integrated Environmental Systems and Processes:** The program track Dr. Ramaswami developed at UC Denver in Hazardous Wastes and Environmental Engineering offered a unique, *systems approach* to environmental science and engineering. Consistent with human exposure to pollutants, the program *integrated physical, chemical and biological processes occurring in air, water, soil and living systems*, traditionally taught in separate courses. The unified approach was evaluated very favorably by students, with course evaluations ranging from “Very Good” to “Excellent”. A comprehensive *teaching textbook* was

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published in 2005, titled “***Integrated Environmental Modeling: Pollutant Transport, Fate and Risk in the Environment***”, by authors Ramaswami, Milford and Small, John Wiley & Sons (Publishers).

- The book is being actively used in several universities including Carnegie Mellon University, Georgia Institute of Technology, Princeton University, Texas A&M University, University of Colorado, University of Maryland, and others.
- Unsolicited reviews rate the textbook highly as seen in: Karthikeyan, R. *Ecological Engineering*, 32 (2008), 360-361:

“This textbook is written in a lucid style and maintains an overall focus on fate and transport of chemicals in air, soil, and water. I thoroughly enjoyed reading this book. The homework problems provided at the website are realistic and can build insight into fate and transport modeling. ...The authors achieved their goal of providing a broad overview of integrated environmental modeling of chemicals in multimedia environment. Students with agricultural, environmental, and chemical engineering and earth and soil science background will find the discussion on transport processes interesting and a good introduction to mathematical modeling of transport processes. The book is an informative resource for environmental modelers and practicing consultants as well.”

**B. Cross-Disciplinary & Experiential Learning for Sustainable Infrastructure Engineering:** Since 2005, Dr. Ramaswami has developed a unique program on sustainable infrastructure engineering. At UC Denver, this was housed within the College of Engineering initiated by a grant from the US Department of Education GAANN Program. The program focused on:

- **Systems integration across disciplines *within* engineering for sustainability**, e.g., integrating energy, water, waste, buildings, transportation and information sectors of urban infrastructure systems, to address natural resource constraints, environmental pollution and health dimensions of sustainability.
- The experiential hands-on sustainable infrastructure projects associated with this program, many implemented in developing communities in India and Sri Lanka, helped develop pedagogy around ***globalizing engineering education***.
- Collaborative projects with cities and communities highlighted the need for training **sustainability engineers in concepts and methods drawn from social sciences**.

Peer-reviewed publications that reflect both the initial formulation of pedagogy/ curriculum concepts and of research in this area included:

- Mihelcic, J.R.; Zimmerman, J.B.; Ramaswami, A. “*Integrating Developing World Knowledge into Global Discussions and Strategies for Sustainability, Part 1: Science & Technology; Environmental Science & Technology*, 2007, 41(10): 3415-30
- Ramaswami, A.; Zimmerman, J.B.; Mihelcic, J.R. “*Integrating Developing World Knowledge into Global Discussions and Strategies for Sustainability, Part 2: Economics and Governance*”, ***Environmental Science & Technology***, 2007, 41(10): 3415-30
- Ramaswami, A. *Finding and Educating Self and Others Across Multiple Domains: Crossing Cultures, Disciplines and Research Modalities*, In **What is Global Engineering Education For? The Making of International Educators**, Downey, G.; Beddoes, K. (Eds); Morgan Claypool Publishers, (doi: 10.2200/S00302ED1V01Y201010GES001).

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**C. A Social Ecological Infrastructural Systems framework for inter-disciplinary study of Sustainable City-Systems:** A third and most important level of integration is *across* the engineering and physical sciences, architecture and planning, and the social sciences (including economics, public affairs, health and behavioral sciences) to address the sustainability challenge in cities. Given the inter-connections between human and natural systems inherent in sustainability, multi-disciplinary learning across the physical and social sciences is essential in the pedagogy of sustainability science and engineering. Given the important role of infrastructures in shaping resource use, economic development, environmental pollution and health impacts both within and outside cities, a framework that explicitly brings infrastructure engineering and design into discussions of urban sustainability is of critical importance.

- a) Sponsored by a \$3.2M NSF IGERT Program, Ramaswami led the development of a **broadly integrative graduate program at UC Denver on Sustainable Urban Infrastructure**, across Engineering, Architecture & Planning, Public Affairs and Health and Behaviors Sciences that has been evaluated favorably by more than 70 MS and 25 PhD students across these disciplines.
- b) To formalize the pedagogy, a **Social-Ecological-Infrastructural Systems framework (SEIS)** has been developed for inter-disciplinary study of city-systems, linking concepts from infrastructure engineering, environmental engineering, architecture and urban planning, urban metabolism and industrial ecology with theories and frameworks drawn from the behavioral sciences, public health and public affairs.
- c) The SEIS framework was a major advancement both in pedagogy and in inter-disciplinary research. It has been well received in student evaluations since it was initially created, and was described in a peer-reviewed article (Ramaswami et al., 2012).
- d) Dr. Ramaswami's latest teaching at Princeton University includes an undergraduate course that focuses on interdisciplinary concepts drawn from the SEIS framework (**Sustainable Cities in the US and India: Technology & Policy Pathways**), as well as a newly-developed special topics course for graduate students on the disruptions and innovations spurred by the COVID-19 pandemic (**Special topics in Sustainable, Resilient Cities and Infrastructure Systems: Engineering the Post-COVID City**). Ramaswami's teaching has been featured on the Princeton University homepage as part of a story on teaching innovations during the pandemic ("Teaching a Pandemic in Real Time," March 22, 2021, <https://www.princeton.edu/news/2021/03/22/teaching-pandemic-real-time>).

**D. Networked multi-institutional student and professional training in sustainable urban systems:** Through multi-institution grants from the National Science Foundation, Dr. Ramaswami has expanded educational efforts across universities and beyond academia, reaching not only students but also policy-makers and practitioners through workshops and other unique educational opportunities.

- a) **Sustainable Healthy Cities Online Certificate Program:** Sponsored by a \$12M NSF Sustainable Research Network grant, Dr. Ramaswami's Sustainable Healthy Cities Network created a unique three-course certificate program that trained graduate students in interdisciplinary systems thinking and research. Courses included "Interdisciplinary Environmental Study," "Interdisciplinary Sustainable Systems Research Seminar," and "Urban Infrastructure Systems for Sustainable and Healthy Cities." Thirty-one students across eight universities completed the program and were awarded a graduate education certificate in 2018.
- b) **Practitioner and Policy-Maker Workshops:** Multiple of Dr. Ramaswami's grants from the National Science Foundation (including the above SRN SHCN, as well as PIRE) have supported annual educational workshops where city policy-makers, environmental engineers

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and utilities convene with academics for dialogue sessions. These workshops not only provide opportunities for practitioners to learn about research, but also inform researchers' future work based upon pressing policy issues municipalities face. For example, in 2018, the SHCN hosted 11 US cities for a two-day workshop on equity and livability. This workshop led to the continued collaboration (including data sharing) between researchers, utilities, and cities, culminating in a publication in *PNAS* on energy use inequity in two US cities (Tong et al., 2021). Other workshops have included a PIRE international workshop held in Delhi in 2016, which connected students to local municipal leaders to share learnings on "Developing Smart, Healthy and Sustainable Cities: Learnings from US, China & India."

- c) **Translated Research Briefs:** As part of this broader educational mission, the SHCN publishes research briefs that translate high-impact journal articles for a wider policy audience. These research briefs are shared via an email newsletter with 300+ policy makers across the US, and are also available online at SustainableHealthyCities.org.
- e) **Food Action Planning:** Dr. Ramaswami's most recent USDA-NSF grant, Innovations at the Nexus of Food, Energy and Water Systems (INFEWS), is in the process of developing educational materials about sustainable urban food systems actions that will be distributed through food policy councils and through direct engagement with local municipal leaders. Through intensive food action policy planning efforts with the City of Minneapolis (and, in the coming year, with Paterson and Newark, NJ), the INFEWS team interacts directly with policy-makers to implement effective actions and share findings.

### **4. SERVICE TO THE PROFESSION**

#### **4A. INTERNATIONAL DELEGATIONS**

**Panel Member: 27<sup>th</sup> Meeting of the International Resource Panel**, United Nations Environment - International Resource Panel, virtual, 2021.

**Invited Expert: Global Environmental Facility (GEF) Secretariat Technical Advisory Groups**, cluster on Sustainable Cities and Urban Systems, virtual, 2021.

**Panel Member: International Resource Panel Group of Scientific Reviewers**, virtual, 2021.

**Panel Member: 24<sup>th</sup> Meeting of the International Resource Panel**, United Nations Environment - International Resource Panel, Nairobi, Kenya, 2019.

**Panel Member: 21<sup>st</sup> Meeting of the International Resource Panel**, United Nations Environment - International Resource Panel, Lima, Peru, 2017.

**Panel Member: International Resource Panel Working Group Meeting**, United Nations Environment - International Resource Panel, Tunis, Tunisia, 2017.

**Panel Member: 20<sup>th</sup> Meeting of the International Resource Panel and its Steering Committee**, United Nations Environment - International Resource Panel, Helsinki, Finland, 2017.

**Panel Member: 17<sup>th</sup> Meeting of the International Resource Panel of the UNEP** in Davos, Switzerland, October 2015.

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**Panel Member: 16<sup>th</sup> Meeting of the International Resource Panel of the UNEP** in Hanoi, Vietnam, May 2015.

**Invited Expert: Global Carbon Project Workshop** at the International Institute for Applied Systems Analysis (IIASA), Vienna, Austria, March 2011.

**Invited Delegate – Nominated by the US NSF to the Joint OECD-Global Science Forum Activity** on Evaluating Policy Application of Urban Models to Address Climate Change and Sustainability, June 2010 (Paris, France), February 2011 (Melbourne, Australia).

**Invited Delegate – US –Japan Workshop on Life Cycle Assessment of Sustainable Infrastructure Materials**, October 2009

**Invited by the US National Science Foundation** as one of 14 delegates to represent the US at the **World Science Forum on Knowledge & Ethics**, Budapest, Hungary, Nov. 2005.

### 4B. EDITOR/OFFICE-BEARER

- **Editorial Advisory Board, *Nature Sustainability*** (2017-)
- **Editorial Board, *Urban Sustainability***
- **Editorial Board, *Environmental Research: Infrastructure and Sustainability***
- **Special Issue Editorial Team Member**, Special Issue on Data Innovation in Industrial Ecology, *Journal of Industrial Ecology*, with Niko Heeren, Jean-Marc Frayret, Guillaume Majeaux-Bettez, and Yang Li (2020-21)
- **Guest Editor**, Special Issue on the Urban Food-Energy Water Nexus, *Environmental Research Letters*, with Joshua Newell, 2017
- **Co-Editor**, Special Issue on Sustainable Urban Systems, *Journal of Industrial Ecology*, with Larry Baker, Shobhakar Dhakal and Chris Kennedy, 2011
- **Lead Editor**, Special Issue on Pathways Toward Low Carbon Cities, in *Carbon Management*, 2011
- **Chairperson of the Board**, Sustainable Urban Systems section at the *International Society of Industrial Ecology*, Elected January 2011.
- **Lead Faculty Editor** (with Kennedy, Carney, Dhakal) of the *Proceedings of the International Urban Research Symposium on Cities and Climate Change*, 2010-11.

### 4C. WORKSHOPS/CONFERENCES ORGANIZED (RECENT)

- **Organizer and Co-Host** – NSF-USDA INFEWS Closing PI Workshop (virtual), February 9-11, 2022
- **Organizer and Host** – Sustainable and Resilient Post-COVID Cities: Innovations and Lessons Learned (virtual workshop for cities), April 16, 2021
- **Conference Session Co-Chair** – AGU Fall Meeting, session on Multisector Dynamics: Urban System Interactions and Resilience, (virtual), December 10, 2020
- **Organizer and Host** – Urban Sustainability Transitions in India and the World: Advancing Science and Policy (virtual conference of the M.S. Chadha Center for Global India at Princeton University), March 27-28, 2020

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- **Organizer and Host** – An Urban Data Workshop in Minneapolis, MN from June 26-28, 2019.
- **Host** – Global Carbon Project “*Annual Scientific Steering Committee (SSC) meeting*” in Minneapolis, MN from June 24-26, 2019.
- **Organizer and Host** – A National Science Foundation - Sustainable Research Network (SRN), “*Annual Sustainable Healthy Cities Workshop and Retreat*”, Bloomington, MN. May 14-16, 2019.
- **Organizer**, A National Science Foundation - Sustainable Research Network (SRN) workshop, “*How Do We Define Equity and Livability for Sustainable Cities? A Joint Science-Policy Dialogue on Concepts and Metrics*”, Tallahassee, FL, Oct. 17-18, 2018.
- **Organizer**, United Nations High-Level Political Forum on Sustainable Development - Side Event for Sustainable Healthy Cities Network, “*Tracking Urban-to-Global SDG Infrastructure Linkages*”, UN Headquarters, New York City, NY. July 9, 2018.
- **Co-Chair**, Gordon Research Conference on Industrial Ecology. “*The Role of Industrial Ecology in Reaching the Sustainable Development Goals*”, Held in Les Diablerets, Switzerland. May 20 - 25, 2018.
- **Organizer and Host**, – A National Science Foundation - Sustainable Research Network (SRN), “*Annual Sustainable Healthy Cities Workshop and Retreat*”, Chaska, MN. May 9-10, 2018.
- **Organizer and Host**, – A National Science Foundation - Sustainable Research Network (SRN), “*Annual Sustainable Healthy Cities External Advisory Committee (EAC) Meeting*”, Chaska, MN. May 10-11, 2018.
- **Organizer and Host**, A National Science Foundation - Sustainable Research Network (SRN) annual workshop, “*Annual Conference on Distributed Infrastructure Solutions for Sustainable Healthy Cities*”, Minneapolis, MN. August 28-30, 2017.
- **Organizer and Host**, A National Science Foundation - Research Coordination Network (RCN) workshop, “*Interdisciplinary Perspectives on Distributed and Localized Infrastructures for Urban Sustainability: Potential Applications and Best Practices*”, Minneapolis, MN. August 27, 2017.
- **Host**, A National Science Foundation - Research Coordination Network (RCN) workshop, “*Tribal Colleges & Tribal Lands: Developing Future Leadership for Infrastructure, Environment, Sustainability, & Wellbeing*”, Minneapolis, MN. August 25, 2017.
- **Host**, A National Science Foundation - Research Coordination Network (RCN) Interdisciplinary Urban Sustainability Career Workshop, “*Now That I Have an Interdisciplinary PhD in Sustainable Urban Systems, What’s Next?*”, Minneapolis, MN. August 7-9, 2017.
- **Host**, A National Science Foundation - Research Coordination Network (RCN) workshop, “*Food Waste Research Workshop*”, Minneapolis, MN. April 17-20, 2017.
- **Organizer**, workshop at the Humphrey School of Public Affairs, “*Achieving Sustainability in Minnesota and the World: A Science-Policy Dialogue MN Leaders and International Resource Panel (UNEP)*” A public panel with representatives from Minnesota government and IRP members, Minneapolis, MN, March 20, 2017.
- **Organizer and Host**, A National Science Foundation - Sustainable Research Network (SRN), “*Annual Sustainable Healthy Cities External Advisory Committee (EAC) Meeting*”, Minneapolis, MN. March 7-8, 2017.

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- **Co-Chair**, UNEP's International Resource Panel workshop in Kassel, Germany, September 2016.
- **Organizer and Host**, A National Science Foundation - Sustainable Research Network (SRN) annual workshop, "*Sustainable Healthy Cities Research Planning and Integration Workshop & City-University Workshop*", Minneapolis, MN. August 28-29, 2016.
- **Organizer and Host**, A National Science Foundation - Sustainable Research Network (SRN), "*Annual Sustainable Healthy Cities External Advisory Committee (EAC) Meeting*", Minneapolis, MN. March 10-11, 2016.
- **Organizer**, workshop at the 16<sup>th</sup> National Conference and Global Forum on Science, Policy and the Environment: The Food-Water-Energy Nexus, Washington D.C., January 19-21, 2016.
- **Co-Organizer**, A National Science Foundation - Partnership in International Research and Education (PIRE) workshop, "*Developing Smart, Healthy and Sustainable Cities: Learnings from US, China & India*", Delhi, India. January 11-12, 2016.
- **Organizer**, A National Science Foundation - Partnership in International Research and Education (PIRE) winter school in India & China. January 2-18, 2016.
- **Host and Keynote Speaker**, *Minneapolis Agritecture Design Workshop*, September 2015
- **Keynote Speaker, Co-PI and Organizer**, NSF FEW: "Scaling Up" Urban Agriculture to Mitigate Food-Energy-Water Impacts. Workshop at University of Michigan, October 2015
- **Organizer and Host** of *PIRE Pre-trip Training and Research Meeting*, November 2015
- **Chair**, A National Science Foundation - Sustainability Research Network (SRN) "*Summer Interdisciplinary Environmental Study Course & Faculty Planning Workshop*", Atlanta, GA. August 16 -20, 2015.
- **Organizer and Host**, *RCN-Global Carbon Project Workshop: Urban Metabolism & Environmental Footprints*. University of Minnesota, March 25, 26, & 27, 2015
- **Co-Chair and Organizer**, *Urban Infrastructure Transformation in China, India & the US: Connecting Local Priorities with Global Carbon Targets*. Held at the National Academy of Engineering, Aug 23-24, 2015. <https://www.nae.edu/Projects/CEES/57196/70831/141455.aspx>
- **Organizer**, A National Science Foundation - Partnership in International Research and Education (PIRE) summer school in China, 2014.
- **Organizer**, A National Science Foundation - Partnership in International Research and Education (PIRE) workshop, "*Sustainable Cities and Interdisciplinary International Education: A Workshop on Core Knowledge and Skills*", Washington D.C. April 24-26, 2013.
- **Organizer**, A National Science Foundation - Partnership in International Research and Education (PIRE) summer school in India, June 1 July 7, 2013.
- **Session Chair**, Sustainable Cities, *US-EU Frontiers of Engineering Symposium* at Irvine, CA, November 2011.
- **Chair, Workshop** organized for the *Sustainable Urban Systems* Section of the International Society of Industrial ecology, associated with the International Conference on Industrial Ecology, Berkeley, CA, June 2011
- **Chair, US-China Workshop** on *Pathways Toward Low-Carbon Cities: Measurement and Diffusion Challenges*, sponsored by the US National Science Foundation CMMI Division, Hong Kong, December 14-15, 2010.

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- **Conference Session Chair**, *Urban Greenhouse Gas Emissions, Climate Change and Mitigating Impacts*, to be held at the 242-nd National Meeting of the American Chemical Society, Denver, CO, September, 2011
- **Co-Chair, Joint Global Science Forum-OECD Workshop** on Urban Environmental Models for Sustainability and Climate Change, 1/31-2/1, 2011, Melbourne, Australia
- **Conference Session Chair** on “*Building Sustainable Communities: New Research Horizons*” at the National SACNAS Conference on “Science, Technology and Diversity for a Sustainable Future”, October 1, 2010.

### Other Service Activities

- **Member**, M.S. Chadha Center Faculty Executive Committee
- **Member**, High Meadows Environmental Institute Faculty Committee
- **Member**, Andlinger Center Advisory Committee
- **Member**, International Resources Panel
- **Ad Hoc Committee Member**, Track on Sustainable Resilient Infrastructure Systems at CEE, December, 2019
- **Member of the Editorial Advisory Panel** for the journal Nature Sustainability
- **Science Advisory Board Member** for the Engineering Research Center for Re-Inventing the Nation’s Urban Water Infrastructure (ReNUWIt)
- **Member** American Chemical Society (ACS), International Society for Industrial Ecology (ISIE), Association of Environmental Engineering & Science Professors (AEESP)
- **Reviewer for Journals**: ASCE Journal of Environmental Engineering, Carbon Management, Environmental Science & Technology, Journal of Industrial Ecology, Urban Management, Environmental Research Letters, Nature Climate Change.
- **Panel and Site Review** for NSF Center and Project proposals in Engineering and cross-cutting programs.
- **Technical Advisor** for Sustainability Assessments and Planning for 20 Cities in the US; technical expert for ICLEI-USA the Sustainability Advisory Board of ATT Corporation.