

Yixuan (Wendy) Wang

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Education

- 2017–2021 Ph.D., Civil Engineering
North Carolina State University, Raleigh, NC, United States
Dissertation: Improving Life Cycle Assessment for Sustainable Solid Waste Management Decision Making
- 2014–2017 M.S., Environmental Engineering
Dalian University of Technology, Dalian, Liaoning, China
Thesis: Potentials for Improvement of Resource Efficiency and Environmental Impact in Printed Circuit Board Manufacturing Using Material Flow Cost Analysis and Input-Output Analysis
- 2010–2014 B.S., Environmental Engineering
Tianjin University, Tianjin, China

Research Experience

- 2017–2021 Graduate research assistant, Prof. James W. Levis's group
North Carolina State University, Raleigh, NC, United States
- Developed the state-of-the-practice life cycle assessment (LCA) of a regulatory compliant U.S. municipal landfill
 - Assessed dynamic global warming impacts associated with long-term emissions from landfills
 - Developed a streamlined LCA framework for solid waste management systems
 - Developed a comprehensive attributional LCA of a commercial NO₂ filter
 - Developing a U.S. national emission inventory of Per- and Polyfluoroalkyl Substances (PFAS) in landfill gas and released to the atmosphere
- 2014–2017 Graduate research assistant, Prof. Shushen Zhang's group
Dalian University of Technology, Dalian, Liaoning, China
- Quantified the carbon footprint along the supply chain of a printed circuit board manufacturing company using the Environmentally Extended Input-Output Analysis (EEIOA)
- 2015–2016 Visiting scholar, Prof. Allen H. Hu's group
Sustainability, Innovation and Assessment Center (SIAC), Taipei University of Technology, Taiwan, China
- Developed a hybrid model of Material Flow Cost Accounting (MFCA) and

Input-Output Analysis (IOA) model to identify the hotspot processes for resources and cost losses in a printed circuit board manufacturing process and its supply chain

- 2013–2014 Environmental Science Project Team Leader, Environmental Science and Technology Research Funds, Tianjin University, China
- Designed experiments, led the project team, conducted data analyses, and earned the 2nd place award for the project *Utilization of Fenton Reagent and Sonocatalytic-Fenton Reaction for Pretreatment of Corn Stover*.

Skills and Software

Skills	Application Practices and/or Software
Life cycle assessment (LCA)	LCA process modeling using <i>Excel</i> , <i>VBA</i> , <i>OpenLCA</i> , <i>GaBi</i> , <i>SimaPro</i>
Material flow cost accounting (MFCA)	MFCA in <i>Umberto</i> and <i>Excel</i> for printed circuit board manufacturing
Programming & Data Science in <i>R</i>	Modeling streamlined LCA; machine learning; data mangling, cleaning, manipulation, and visualization; statistical analysis
Programming & Data Science in <i>Python</i>	Optimization (linear programming) for sustainable waste management systems; machine learning; distribution fitting; data mangling, cleaning, manipulation, and visualization; statistical analysis
Technic-economic analysis (TEA)	Agent-based modeling in <i>NetLogo</i> for a household recycling system (Wake County, NC) considering human intentions, actions, and economic incentives of waste disposal
Version control & Git code management	Sourcetree Bitbucket

Publications

*Corresponding Author

8. **Wang, Y.***; Levis, J. W.; Barlaz, M. A. Life Cycle Assessment of A Regulatory Compliant U.S. Municipal Solid Waste Landfill. *Environmental Science and Technology*, in revision.
7. **Wang, Y.***; Levis, J. W.; Barlaz, M. A. Development of Streamlined Life Cycle Assessment for Solid Waste Management Systems. *Environmental Science and Technology* 2021, 55 (8), 5475–5484. <https://dx.doi.org/10.1021/acs.est.0c07461>
6. **Wang, Y.**; Levis, J. W.*; Barlaz, M. A. An Assessment of the Dynamic Global Warming Impact Associated with Long-Term Emissions from Landfills. *Environmental Science and Technology* 2020, 54 (3), 1304–1313. <https://doi.org/10.1021/acs.est.9b04066>.
5. Zhang, L.; Ma, X.; **Wang, Y.**; Song, R.; Li, J.; Yuan, W.; Zhang, S*. The Increasing District Heating Energy Consumption of the Building Sector in China: Decomposition and Decoupling Analysis. *Journal of Cleaner Production* 2020, 271, 122696.

<https://doi.org/10.1016/j.jclepro.2020.122696>.

4. Song, G.*; Gao, X.; Fullana-i-Palmer, P.; Lv, D.; Zhu, Z.; **Wang, Y.**; Bayer, L. B. Shift from Feeding to Sustainably Nourishing Urban China: A Crossing-Disciplinary Methodology for Global Environment-Food-Health Nexus. *Science of the Total Environment* 2019, 647, 716–724. <https://doi.org/10.1016/J.SCITOTENV.2018.08.040>.
3. **Wang, Y.**; Kuo, C.; Song, R.; Hu, A.*; Zhang, S*. Potentials for Improvement of Resource Efficiency in Printed Circuit Board Manufacturing: A Case Study Based on Material Flow Cost Accounting. *Sustainability* 2017, 9 (6), 907. <https://doi.org/10.3390/su9060907>.
2. Yuan, Q.; Song, G.*; Fullana-i-Palmer, P.; **Wang, Y.**; Semakula, H. M.; Mekonnen, M. M.; Zhang, S. Water Footprint of Feed Required by Farmed Fish in China Based on a Monte Carlo-Supported von Bertalanffy Growth Model: A Policy Implication. *Journal of Cleaner Production* 2017, 153, 41–50. <https://doi.org/10.1016/J.JCLEPRO.2017.03.134>.
1. Song, G.*; Li, M.; Fullana-i-Palmer, P.; Williamson, D.; **Wang, Y.** Dietary Changes to Mitigate Climate Change and Benefit Public Health in China. *Science of the Total Environment* 2017, 577, 289–298. <https://doi.org/10.1016/J.SCITOTENV.2016.10.184>.

In Progress

Wang, Y.*; Levis, J. W. Development of Life Cycle Assessment for Commercial Air Filters. Expected submission 10/2021.

Zhang, Y.*; Xu, X.; Wang, F.; **Wang, Y.*** Early Cost-effectiveness Assessment for Restaurants and Canteens Food Waste Collection in High-density Asian Cities: A Case Study in Dalian City, China. Expected submission 9/2021.

Presentations

Presenter Underlined

8. **Wang, Y.**, Levis, James W., Barlaz, Morton A. (March 2021). Evaluation of the Fugitive Methane Emissions from a Municipal Solid Waste Landfill. Oral presentation at the Environmental, Water resources, and Coastal engineering (EWC) Graduate Research Symposium, Raleigh, NC.
7. **Wang, Y.**, Levis, James W., Barlaz, Morton A. (March 2020). Effects Of Dynamic GWP Accounting Methods on Estimates of the Global Warming Impacts from Landfills. Oral and poster presentation at the SWM-LCA workshop, RTI International, Washington DC.
6. **Wang, Y.**, Levis, James W., Barlaz, Morton A. (March 2020). A Framework for Streamlining Solid Waste Management Life Cycle Assessment (SWM-LCA). Oral and poster presentation at the SWM-LCA workshop, RTI International, Washington DC.
5. **Wang, Y.**, Levis, James W. (February 2020). An Assessment of the Dynamic Global Warming Impact Associated with Long-Term Emissions from Landfills. Oral presentation at the Global Waste Management Symposium (GWMS) 2020, Indian Wells, California.
4. **Wang, Y.**, Levis, James W. (March 2019). Identifying Critical Impacts and Flows in Life Cycle Assessments of Municipal Solid Waste Systems. Poster presented at the

Environmental, Water resources, and Coastal engineering (EWC) Graduate Research Symposium, Raleigh, NC.

3. **Wang, Y.**, Levis, James W. (May 2018). An Assessment of the Dynamic Global Warming Impact Associated with Long-Term Emissions from Landfills. Poster presented at the 4th Chinese Environmental Scholars Forum (CESF) 2018, Durham, NC.
2. **Wang, Y.**, Levis, James W. (February 2018). An Assessment of The Dynamic Global Warming Impact Associated with Long-Term Emissions from Landfills. Poster presented at the Environmental, Water resources, and Coastal engineering (EWC) Graduate Research Symposium, Raleigh, NC.
1. **Wang, Y.**, Levis, James W., Barlaz, Morton A. (March 2021). Evaluation of the Fugitive Methane Emissions from a Municipal Solid Waste Landfill. Oral presentation at the Environmental, Water resources, and Coastal engineering (EWC) Graduate Research Symposium, Raleigh, NC.

Invited Presentation

Wang, Y., Levis, James W., Barlaz, Morton A. (October 2020). Streamlined Life Cycle Assessment for Solid Waste Management Systems. Invited seminar, Department of Civil, Construction, and Environmental Engineering, NC State University.

Awards and Honors

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| 2021–2022 | Air & Waste Management Association (AWMA) Award in Waste Management Research and Study |
| 2017–2021 | NC State University Graduate Research Assistantship |
| 2017–2018 | NC State University Graduate Merit Fellowship |
| 2014–2017 | Dalian University of Technology First-grade Scholarship |
| 2011–2013 | Tianjin University Merit Student Honor |
| 2013–2014 | Shanghai Pudong Development Bank Scholarship |

Service and Extracurricular Activities

Reviewer of *Resource, Conservation & Recycling* and *Waste Management*

Founder of [XXpresso Clips](#), a science-based environmental education website

- Mission: To improve public awareness of environmental sustainability with focuses on recycling, life cycle thinking, and lifestyle choices for reducing environmental burdens
- Topics (examples): *Recyclable ≠ Recycled, Where do the plastics end up, What is life cycle assessment and what contexts can it apply to, etc.*

References

Dr. James W. Levis
(Ph.D. Advisor and Dissertation Committee Chair)
Research Assistant Professor
NC State University
jwlevis@ncsu.edu

Dr. Morton A. Barlaz
(Co-author and Dissertation Committee Member)
Distinguished University Professor and Department Head
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Dr. Joseph DeCarolis
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Professor
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