Tanya Tsui

Google scholar | LinkedIn | GitHub | Medium

Biography

Tanya is a postdoctoral researcher at Leiden University's Institute of Environmental Sciences (CML). Her research uses spatial statistical methods to analyze location data of materials and waste in order to generate insights for circular regional development, adding a spatial perspective to the fields of circular cities and urban metabolism.

Education

Delft University of Technology, Ph.D. in Urbanism — June 2019 – Dec 2023

- Dissertation title: Spatial approaches to a circular economy

Delft University of Technology, Master of Architecture (M.Arch) — Sept 2016 – June 2018

University of Hong Kong, Bachelor's degree in Architecture — Sept 2011 – June 2014

Research and professional experience

Postdoctoral researcher, Leiden University – the Netherlands — Feb 2025 – now

- Developing a framework to combine prospective LCA and dynamic MFA for assessing the environmental impact of biobased building products

Postdoctoral research fellow, MIT Senseable City Amsterdam – the Netherlands — Feb 2024 – Jan 2025

- Calculated embodied and operational emissions for housing in the Netherlands from 2011 - 2022

PhD researcher, Delft University of Technology – the Netherlands — June 2019 – Dec 2023

- Conducted PhD research on circular economy, spatial data science, and cities
- Calculated transportation emissions of circular construction hubs in Amsterdam for multiple scenarios using Agent-Based Modelling
- Managed and conducted research on circular maker spaces in EU Horizon project "Pop Machina"

Geospatial consultant, Trendi – remote — Jan 2021 - June 2021

- Optimized scale and locations of agricultural waste processing plants in Canada

Architectural assistant, Aziza Chaouni Projects – Toronto, Canada — Nov 2015 - Aug 2016

Architectural assistant, Rural Urban Framework – Hong Kong — June 2014 - Aug 2015

Publications

- **Tsui, T.**, Duarte, F., Venverloo, T., Benson, T. (2024) Spatial Optimization of Circular Timber Hubs. *npj Urban Sustainability.* https://doi.org/10.1038/s42949-024-00153-0
- **Tsui, T.**, Wuyts, W., Van den Berghe, K. (2024) Geographic information systems for circular cities and regions. *Circular Economy and Sustainability.* https://doi.org/10.1007/978-3-031-39675-5_2
- **Tsui, T.**, Furlan, C., Wandl, A., van Timmeren, A. (2023) Spatial Parameters for Circular Construction Hubs: Location Criteria for a Circular Built Environment. *Circular Economy and Sustainability.* https://doi.org/10.1007/s43615-023-00285-y
- **Tsui, T.**, Derumigny, A, Peck, D, van Timmeren, A and Wandl, A (2022) Spatial clustering of waste reuse in a circular economy: A spatial autocorrelation analysis on locations of waste reuse in the Netherlands using global and local Moran's I. *Frontiers in Built Environment.* doi: 10.3389/fbuil.2022.954642
- **Tsui, T.**, Peck, D., Geldermans, B., & van Timmeren, A. (2020). The Role of Urban Manufacturing for a Circular Economy in Cities. *Sustainability, 13(1), 23.* https://doi.org/10.3390/su13010023
- Boorsma, N., Balkenende, R., Bakker, C., **Tsui, T.**, & Peck, D. (2020). Incorporating design for remanufacturing in the early design stage: a design management perspective. *Journal of Remanufacturing, 11(1), 25–48.* https://doi.org/10.1007/s13243-020-00090-y

Research Grants

Geography of the Circular Economy of Tomorrow, funded by Province of South Holland — Sept 2022 - Dec 2022

- Co-wrote grant proposal
- Led two research assistants in spatial data science component of research project
- Prioritized industrial sites using network and clustering analysis

Modeling circular hubs in Amsterdam, funded by TNO — Sept 2023 - Dec 2023

- Led scenario modeling for circular logistics hubs in Amsterdam

Teaching

Masters thesis supervision, Delft University of Technology, MIT, Leiden University — Sept 2020 - now

- Kim van Bruggen (2025) – The role of paludiculture in sustainable construction
- Yaser Harara (2024) - Circular Construction Hubs in Amsterdam
- Hongjie Huang (2020) - A Cluster Scale Decentralized Water Management System

Research seminars for Architects, Delft University of Technology — Sept 2019 - June 2023

- Designed framework on using new technology (miro) to guide research design
- Taught seminars to Masters students using framework

Talks

"**Optimizing circular hubs in Amsterdam**" — April 2024

- Oral presentation at AMS Reinventing Cities Conference

"**Optimizing spatial scale of circular construction hubs**" — Jan 2023

- Lecture in MIT Global Classroom - Summer School for MIT masters students

"**Geography of the circular economy of tomorrow**" — Sept 2022

- Oral presentation at the ISIE-SEM Conference

"**Spatial data analysis for circular food startups**" — Mar 2022

- Oral presentation at Regions of Recovery Conference

"**Identifying waste reuse clusters using spatial analysis**" — Feb 2022

- Oral presentation at Ecocity Summit

"**Spatial analysis of waste-to-resource makers**" — June 2021

- Lunch talk at Institute of Environmental Sciences, Leiden University

"**Spatial drivers and barriers for urban manufacturing in circular cities**" — Mar 2021

- Oral presentation at Crossing Boundaries Conference

Skills

Languages: English (native), Cantonese (native), Mandarin (fluent), Dutch (intermediate A2/B1)
Computer skills: Python, R, PostgreSQL, PostGIS, QGIS

References

- **Dr. Mingming Hu** Associate Professor, Leiden University, hu@cml.leidenuniv.nl
- **Dr. Fábio Duarte** Principal Research Scientist, Massachusetts Institute of Technology, fduarte@mit.edu
- **Prof. Eveline van Leeuwen** Scientific Director, AMS Institute, eveline.vanleeuwen@wur.nl
- **Prof. Arjan van Timmeren** Professor, Delft University of Technology, a.vanTimmeren@tudelft.nl
- **Dr. David Peck** Associate Professor, Delft University of Technology, D.P.Peck@tudelft.nl