THOMAS ELLIOT

Environmental Scientist, MEngSt, PhD

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Location
Aalborg, Denmark

About Me

I am an environmental scientist from Aotearoa New Zealand, specialised in modelling socio-ecological systems. Currently my work relates to social tipping points influencing climate change.

My work incorporates methods from life cycle assessment and carbon footprint to better understand the cause-effect relationships between human and ecosystem health.

My interests include bicycle touring, sailing, cricket, and trivia. In 2015 I travelled from New Zealand to Europe by sailing and cycling before commencing my PhD in Portugal.

Expertise

- Industrial ecology
- Ecosystem services
- Tipping points
- Social-ecological contagion
- Nature-based solutions
- Climate adaptation

Awards

Best poster: Sustainable Urban Systems

2023, International Society for Industrial Ecology conference

Best paper

2020, International Conference on Sustainable Development

Language

English (native)

Experience

Visitng Scientist 2024 - present

Potsdam Institute for Climate Impact Research (PIK)

- Research visit on positive tipping points in the Earth Resilience Science Unit (ERSU)
- Modelling scenarios for climate social tipping points using system dynamics
- Dynamic system strategies for climate social tipping points (DARETOTIP)

Marie Curie Postdoctoral Fellow 2023 - present

Aalborg University

Marie Skłodowska-Curie Actions (MSCA) Individual Fellowship

- Project: Dynamic system strategies for climate social tipping points (DARETOTIP)
- Master student supervision
- Board member, Sustainable Urban Systems section of the International Society for Industrial Ecology

Postdoctoral Fellow 2021 - 2023

École de technologie supérieure (ÉTS)

Canada Research Chair in Measuring the Impact of Human Activity on Climate Change

- Socio-ecological systems modelling applied to measuring human impacts on climate change with a focus on urbanisation
- Scenario development for climate policy analysis

Education

PhD (Sustainable Energy Systems) 2017 - 2021

University of Lisbon/MIT Portugal

ESTIMUM (Ecosystem Service Toolbox developed from multi-scale Integrated Modelling of Urban Metabolism)

- Urban Nature-Based Solutions and ecosystem service assessment
- Urban metabolism and Carbon Footprint of urban processes
- Thesis: "The far-reaching impacts of urbanisation on ecosystem services and how we can tackle them"

Post Graduate Certificate (Planning) 2017

Massey University

- Urban ecology and sustainable landscape planning
- Ecological economics

Master of Engineering Studies 2014-2015

Massey University

- Supervised by Professor Sarah McLaren and Professor Emeritus Ralph Sims
- Life Cycle Assessment methodology and practice
- Thesis on environmental impacts of electric bicycles in Wellington

Selected academic research

24. **Elliot, T.**, Donges, J., Otto, I., Pizzol, M. et al. (f.c.). Manifesting tipping points in pro-environmental behaviour for climate change mitigation.

23. **Elliot, T.**, Goldstein, B, & Charlebois, S. (2024). Over 6 billion liters of Canadian milk wasted since 2012. *Ecological Economics.*

22. **Elliot, T.**, Kouchaki-Penchah, H., Brial, V., Levasseur, A., & McLaren, S. (2024). Dynamic environmental payback of concrete due to carbonation over centuries. *Sustainable Production and Consumption.*

21. Cardinal, T., Alexandre, C., **Elliot, T.**, Kouchaki-Penchah, H., & Levasseur A. (2024). Climate change substitution factors for Canadian forest-based products and bioenergy. Ecological Indicators.

20. Meyer, F., **Elliot, T.**, Craig, S., & Goldstein, B. (2024). The carbon footprint of future engineered wood construction in Montreal. Environmental Research: Infrastructure and Sustainability.

19. **Elliot, T.**, Vigier, M., & Levasseur, A. (2024). Teleconnections and spatial metabolic rifts in urban construction material circularity. Resources, Conservation and Recycling.

18. Kouchaki-Penchah, H., Bahn, O., Bashiri, H., Bedard, S., Bernier, E., **Elliot, T.**, Hammache, A., Vaillancourt, K., & Levasseur, A. (2023). The role of hydrogen in a net-zero emission economy under alternative policy scenarios. International Journal of Hydrogen Energy.

17. **Elliot, T**., Carter, A., Ghattuwar, S. & Levasseur, A. (2023). Environmental impacts of road pavement rehabilitation. Transportation Research Part D: Transport and Environment.

16. Babí Almenar, J., Petucco, C., Sonnemann, G., Geneletti, D., **Elliot, T**., & Rugani, B. (2023). Modelling the net environmental and economic impacts of urban nature-based solutions by combining ecosystem services, system dynamics and life cycle thinking: An application to urban forests. Ecosystem Services.

15. **Elliot, T**. & Levasseur, A. (2022). System dynamics life cycle-based carbon model for consumption changes in urban metabolism. Ecological Modelling.

14. **Elliot, T**., (2022). Socio-ecological contagion in Veganville. Ecological Complexity.

13. **Elliot, T**., Goldstein, B., Gómez-Baggethun, E., Maes, J., Proença, V. & Rugani, B. (2022). Ecosystem service deficits of European cities. Ecosystem Services.

12. **Elliot, T**., Torres-Matallana, J. A., Goldstein, B., Babí Almenar, J., Gómez-Baggethun, E., Proença, V. & Rugani, B. (2022). An expanded framing of ecosystem services is needed for a sustainable urban future. Renewable and Sustainable Energy Reviews.

11. Hackenhaar, I. C., Babí Almenar, J., **Elliot, T.**, & Rugani, B. (2022). A spatio-temporally differentiated product system modelling framework for consequential life cycle assessment. Journal of Cleaner Production.

10. Rugani, B., Babí Almenar, J., **Elliot, T**., & Othoniel, B. (2022). Intertwining Ecosystem Services with Life Cycle Assessment: Recommendation for Paradigm Shift. In H.H. Khoo (Ed.), Integration of Ecosystem Services in Life Cycle Assessment. World Scientific Co.

9. Babí Almenar, **Elliot, T**., Bodénan, P., Navarrete Gutiérrez, T., Sonnemann, G., & Geneletti, D. (2021). Nexus between nature-based solutions, ecosystem services and urban challenges. Land Use Policy.

8. **Elliot, T**., Babí Almenar, J., & Rugani, B. (2020). Impacts of policy on urban energy metabolism at tackling climate change: the case of Lisbon. Journal of Cleaner Production.

7. **Elliot, T**., Babí Almenar, J., & Rugani, B. (2020). Modelling the relationships between urban land cover change and local climate regulation to estimate urban heat island effect. Urban Forestry & Urban Greening.

6. Rugani, B., Babí Almenar, J., & **Elliot, T** (2020). On the contribution of nature-based solutions to address urban metabolism challenges.

5. **Elliot, T.**, Bertrand, A., Almenar, J. B., Petucco, C., Proença, V., & Rugani, B. (2019). Spatial optimisation of urban ecosystem services through integrated participatory and multi-objective integer linear programming. Ecological Modelling.

4. **Elliot, T**., Babí Almenar, J., Niza, S., Proença, V., & Rugani, B. (2019). Pathways to Modelling Ecosystem Services within an Urban Metabolism Framework. Sustainability.

3. Babí Almenar, J., Bolowich, A., **Elliot, T.**, Geneletti, D., Sonnemann, G., & Rugani, B. (2019). Assessing habitat loss, fragmentation and ecological connectivity in Luxembourg to support spatial planning. Landscape and Urban Planning.

2. **Elliot, T.**, Rugani, B., Babí Almenar, J., & Niza, S. (2018). A Proposal to Integrate System Dynamics and Carbon Metabolism for Urban Planning. Procedia CIRP.

1. **Elliot, T**., McLaren, S. J., & Sims, R. (2018). Potential environmental impacts of electric bicycles replacing other transport modes in Wellington, New Zealand. Sustainable Production and Consumption.

Reports

McLaren, S., **Elliot, T.**, Dowdell, D., Wakelin, S., Kouchaki-Penchah, H., & P. Hall (2024). Modelling the Role of Time in Carbon Footprints for Building Elements: Testing Different Methodologies (Report No. ER83). Ministry of Business, Innovation and Employment (MBIE), and Building Research Association of New Zealand (BRANZ).

Elliot, T., Duncan, J., & B. Field (2012). Changes in energy use: New Zealand 1990-2011. Ministry of Business, Innovation and Employment (MBIE), and Energy Efficiency and Conservation Authority (EECA).