

*Curriculum Vitae, Full*

**Peter Berrill**

Born: 18<sup>th</sup> May, 1989  
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**EDUCATION**

- 2016 – 2021** *Doctor of Philosophy* in Industrial Ecology – Yale University (USA).  
Thesis: “Energy and emissions in the U.S. residential sector, historical perspectives and opportunities for climate change mitigation”
- 2013 – 2015** *Master of Science* in Industrial Ecology – Double degree awarded by University of Graz (Austria) & TU Delft/Leiden University (Netherlands)
- 2014 –2015** *Master of Science* – Waseda University (Japan), study exchange
- 2015** *Master of Science* – Norwegian University of Science and Technology Industrial Ecology Programme (Norway), research exchange
- 2009 – 2013** *Bachelor of Engineering* in Energy Systems Engineering, with minor in Civil Engineering – National University of Ireland, Galway (Ireland)
- 2008 – 2009** *Higher Certificate in Music Performance* – Royal Conservatoire of Scotland (UK)

**PROFESSIONAL EXPERIENCE**

- 2020** **Doctoral intern researcher**, Residential Buildings Research Group, National Renewable Energy Laboratory (USA)
- 2016-Present** **Researcher and Doctoral Candidate**, Yale University, Centre for Industrial Ecology. Supervision from Edgar G. Hertwich, Kenneth T. Gillingham, Karen C. Seto, and Peter Yost
- 2016** **Business English Instructor**, IBEC (Japan)
- 2015** **Researcher**, Industrial Ecology Programme, Norwegian University of Science and Technology (Norway)
- 2012** **Intern** civil, environmental engineer, Alan Kerins Project (Ireland, Zambia)
- 2009 – 2016** Musician, EMK Productions and Freelance (Ireland)

**TEACHING EXPERIENCE:**

During my PhD, I have served as a teaching fellow six times, for four different courses. Tasks associated with this position include design and grading of homework assignments, assisting professors with communications to students and input to course design, and offering feedback and advice to students on course projects.

*Teaching fellow posts:*

- 2020** Industrial Ecology, with Prof. Marian Chertow and Dr. Stijn van Ewijk
- 2019** Energy Systems Analysis, with Prof. Narasimha Rao
- 2019, 2017** Green Building: Issues and Perspectives, with Mr. Peter Yost
- 2018** Energy Systems Analysis, with Prof. Edgar Hertwich
- 2017** Carbon Footprints: Modelling and Analysis, with Prof. Edgar Hertwich

*Selected guest classroom lectures:*

- 2020** Guest lecture in Industrial Ecology: Impacts Embodied in Trade
- 2019** Guest lecture in Green Building: Issues and Perspectives course:

2018  
2017

“Trends and drivers of US residential energy consumption, 1990-2015”  
Guest lecture in Industrial Ecology: “Input-Output Life Cycle Assessment”  
Guest lecture in Industrial Ecology: “Life Cycle Assessment - Introduction”

## SCIENTIFIC PUBLICATIONS

**Summary (Google Scholar):** h-index (5), total citations (119)

Peer-reviewed publications in scientific journals, as first author:

**Berrill, P.**, Gillingham, K. T., & Hertwich, E. G. 2021. Drivers of change in U . S . residential energy consumption and greenhouse gas emission , 1990-2015. *Environmental Research Letters (Accepted, In Press)*

**Berrill, P.**, K.T. Gillingham and E.G. Hertwich. 2021. Influence of housing policy and housing typology on residential energy demand in the United States. *Environmental Science & Technology*  
<http://dx.doi.org/10.1021/acs.est.0c05696>

**Berrill, P.**, T.R. Miller, Y. Kondo, and E.G. Hertwich. 2020. Capital in the American carbon, energy, and material footprint. *Journal of Industrial Ecology* 24(3): 589–600.

**Berrill, P.** and E.G. Hertwich. 2018. Ground truthing the environmental benefits of a polygeneration system: when to combine heat and power? *Energy & Buildings* 173: 221–238.  
<https://doi.org/10.1016/j.enbuild.2018.05.020>.

**Berrill, P.**, A. Arvesen, Y. Scholz, H.C. Gils, and E.G. Hertwich. 2016. Environmental impacts of high penetration renewable energy scenarios for Europe. *Environmental Research Letters* 10(12): 123002.  
<https://doi.org/10.1088/1748-9326/11/1/014012>

Peer-reviewed publications in scientific journals, as co-author:

Pauliuk, S., T. Fishman, N. Heeren, **P. Berrill**, Q. Tu, P. Wolfram, and E.G. Hertwich. 2020. Linking service provision to material cycles: A new framework for studying the resource efficiency–climate change (RECC) nexus. *Journal of Industrial Ecology*: 1–14.

Miller, T.R., **P. Berrill**, P. Wolfram, R. Wang, Y. Kim, X. Zheng, and E.G. Hertwich. 2019. Method for endogenizing capital in the United States Environmentally-Extended Input-Output model. *Journal of Industrial Ecology* 23(6): 1410–1424.

Wang, C., X. Zheng, W. Cai, X. Gao, and **P. Berrill**. 2017. Unexpected water impacts of energy-saving measures in the iron and steel sector: Tradeoffs or synergies? *Applied Energy*.

Reports, Book chapters, pre-prints, papers under review, and theses, as first and co-author:

Hertwich, E., Lifset, R., Pauliuk, S., Heeren, N., Ali, S., Tu, Q., Ardente, F., **Berrill, P.**, Fishman, T., Kanaoka, K., Kulczycka, J., Makov, T., Masanet, E., & Wolfram, P. (2020). *Resource Efficiency and Climate Change: Material Efficiency Strategies for a Low-Carbon Future*.

Fishman, T., N. Heeren, S. Pauliuk, **P. Berrill**, Q. Tu, P. Wolfram, and E.G. Hertwich. 2020. A comprehensive set of global scenarios of housing, mobility, and material efficiency for material cycles and energy systems modelling. *SocArXiv (Preprint)*. 10.31235/osf.io/tqsc3

Pauliuk, S., Heeren, N., **Berrill, P.**, Fishman, T., Nistad, A., Tu, Q., Wolfram, P., & Hertwich, E. (2020). Global Scenarios of Resource and Emissions Savings from Systemic Material Efficiency in Buildings and Cars. *Research Square (Preprint)*, 1–18.

Peter Berrill – C.V.

Chertow, M.R., K.S. Kanaoka, T.R. Miller, **P. Berrill**, P. Wolfram, N. Heeren, and T. Fishman. 2020. The Systems Science of Industrial Ecology: Tools and Strategies Toward Meeting the Sustainable Development Goals. In *Science, Technology, and Innovation for Sustainable Development Goals*, ed. by Adenle A. Ademola, Marian R. Chertow, Ellen H. M. Moors, and David J. Pannell. Oxford University Press.

**Berrill, P.** 2015. Life cycle assessment of power systems with large shares of variable renewable energy (Masters Thesis) University of Graz.

**Berrill, P.,** Moran, P. 2013 Environmental Life Cycle Assessment of a University Building in Ireland (Bachelors Thesis) National University of Ireland, Galway.

### **ACADEMIC SERVICE**

Academic Referee: Performed peer-reviews of articles submitted to *Journal of Industrial Ecology*, *Environmental Science & Technology*, *Environmental Research Letters*, *Resources, Conservation & Recycling*, *Applied Energy*

Student Representative on Faculty Search Committee: Yale School of the Environment, Professor in Industrial Ecology and Sustainable Systems

Leader of advisory group on reducing air travel GHG emissions from international conferences - International Society for Industrial Ecology

### **ORAL PRESENTATIONS AT SCIENTIFIC CONFERENCES**

#### *Invited Presentation*

30/06/2020: “Estimation of demolition and new construction of housing in US counties until 2060 - Implications for building material reuse potential” - The 15th International Conference on Waste Management and Technology Zero-waste City High Level Forum (Online)

#### *Presentations*

03/06/2020: “Housing policy, housing typology, and residential energy in the United States” - Actionable Science for Urban Sustainability (Online)

08/07/2019: “Dynamic stock, energy and lifecycle analysis of residential buildings in the US” - 10th biennial International Conference on Industrial Ecology (ISIE 2019), Beijing (China)

11/04/2019: “Drivers of residential energy consumption in the US and options for GHG reductions” – Yale FES Research Day, New Haven (USA)

20/04/2018: “Making less bad things happen when we build houses and make our homes feel warm” (Up-Goer-Five presentation) – Yale FES Research Day, New Haven (USA)

28/06/2017: “Environmental performance of university campus buildings: An energy system evaluation” 9th biennial International Conference on Industrial Ecology (ISIE 2019), Chicago (USA)

28/09/2016: “Life Cycle Analysis of Electricity Systems: High Penetration Renewable Scenarios and the Roles of Energy Storage and Grid Transmission” - American Center for Life Cycle Assessment, LCA XVI, Charlestown (USA)

03/06/2016: “Environmental impacts of high penetration renewable energy scenarios for Europe” – International Energy Workshop, Cork (Ireland)

### **INVITED SEMINAR PRESENTATIONS**

01/11/2019: “Drivers of change in residential energy consumption in the US, 1990-2015, The roles of housing age cohorts, fuel switching, and household size” – Yale University (USA)

08/06/2018: “Reducing carbon, energy, and material footprints from the residential sector in the united states: the importance of capital stocks and energy supply systems” – Waseda University, Tokyo (Japn)

03/08/2017: “Accounting for consumption of capital in the US Input-Output tables: approaches and impacts” – Waseda University, Tokyo (Japan)

### **POSTER PRESENTATIONS AT SCIENTIFIC CONFERENCES**

23/05/2018: “Reducing carbon, energy, and material footprints from the residential sector in the US: The importance of capital stocks and energy supply systems” – Industrial Ecology Gordon Research Conference, Les Diablerets (Switzerland)

27/06/2017: “Environmental performance of university campus buildings: An energy system evaluation” 9th biennial International Conference on Industrial Ecology (ISIE 2019), Chicago (USA)

### **PERSONAL GRANTS AND AWARDS**

December 2018	Yale Institute for Biospheric Studies, Doctoral Dissertation Improvement Grants, \$5,000
April 2017	Charles Kao Fund Research Grant, for project “Low-carbon Energy Development in 21st Century Japan”, \$5,000
March 2014	Sole student to win competitive award for one-semester study exchange to Waseda University (Japan) as part of Erasmus Mundus MSc in Industrial Ecology
September 2013	Finalist in national competition for best final year project (bachelor thesis project). held by the Republic of Ireland Regional Group of the Institution of Structural Engineers
March 2013	Erasmus Mundus Masters in Industrial Ecology (MIND) Category B scholarship award (covering tuition, plus stipend totalling €16,000 over two years)
September 2012	National University of Ireland, Galway ‘University Scholar’, awarded to undergraduate students achieving excellence in overall grades, €500

### **MENTORING EXPERIENCE**

2020	Research mentor to high-school student with Lumiere Education
2020	Research mentor to two masters students for summer internship research projects: “US economy-wide non-hazardous waste generation: an extension the us Input-Output tables”, and “Comparison of physical vs economic allocation for airline GHG emissions”
2017	Research mentor to visiting masters student for thesis research project: “Assessment of the Embodied and Operational Trade-offs of a U.S. Multi-Family Building With Changing Energy Codes and Different Climate Zones”

### **PERSONAL SKILLS**

Native Languages: English

Other Languages (European CEFR level): Japanese (Independent – B1), Dutch (Basic user – A1), French (Basic User – A1)

Computer Programming Languages:

Programming languages: R (advanced), Matlab (advanced), Google Earth Engine (proficient), Bash/Shell (basic), Python (basic), Javascript (basic), ArcGIS/ArcPy (basic)