

ARPAD HORVATH, PH.D.

L. E. Peirano Professor of Civil and Environmental Engineering
University of California, Berkeley

(a) Professional Preparation

Technical University of Budapest (Hungary)	Civil Engineering	B.S.	1993
Technical University of Budapest (Hungary)	Civil Engineering	M.S.	1993
Carnegie Mellon University, Pittsburgh, PA	Civil and Environmental Engineering	M.S.	1995
Carnegie Mellon University, Pittsburgh, PA	Civil and Environmental Engineering	Ph.D.	1997
Carnegie Mellon University, Pittsburgh, PA	Civil and Environmental Engineering	Postdoc	1997

(b) Appointments

2018-2019	Departmental Vice Chair for Graduate Studies
2017-present	Lawrence E. Peirano Professor of Civil and Environmental Engineering
2015-present	Member, External Advisory Committee, EcoCore Doctoral Program in Eco-Construction and Rehabilitation, Portuguese NSF, Technical University of Lisbon and other partners
2015-present	Director, Transportation Sustainability Research Center, UC Berkeley
2015-2019	Chair, Graduate Admissions, Department of Civil and Environmental Engineering
2013-present	Member, UC Sustainability Steering Committee, UC Office of the President
2013-2015	Member, Committee on the Beneficial Use of Graywater and Stormwater, The National Academies of Sciences, Engineering, and Medicine
2012-present	Executive Board Member, Environmental Research Letters
2011-2016	Member, Science Advisory Board, Scientific and Technological Achievement Awards, US Environmental Protection Agency
2009-2015	Member, Science Advisory Board, Environmental Engineering Committee, US Environmental Protection Agency
2010-2011	Chair, International Society for Industrial Ecology Conference on Science, Systems, and Sustainability, Berkeley, June 7-10, 2011
2010-present	Professor, Department of Civil and Environmental Engineering, UC Berkeley
2010-present	Director, Energy, Civil Infrastructure and Climate Graduate Program, UC Berkeley
2007-present	Director, Engineering and Business for Sustainability Certificate Program, UC Berkeley
2005-present	Editorial Board Member, Journal of Industrial Ecology
2005-2010	Associate Professor, Department of Civil and Environmental Engineering, UC Berkeley
2005-2007	Member, Committee on Environmental Impacts of Wind Energy Projects, National Research Council, The National Academies
2002-present	Associate Editor, Journal of Infrastructure Systems, American Society of Civil Engineers
1999-2005	Assistant Professor, Department of Civil and Environmental Engineering, UC Berkeley
1998-1999	Research Faculty, Civil and Environmental Engineering, Carnegie Mellon University

(c) Publications Most Closely Related to the Proposed Project

1. Cheng, H., Mao, C., Madanat, S. and Horvath, A. (2018), "Minimizing the Total Costs of Urban Transit Systems Can Reduce Greenhouse Gas Emissions: The Case of San Francisco." *J. of Transport Policy*, 66, 40-48, <https://doi.org/10.1016/j.tranpol.2018.02.009>
2. Stokes-Draut, J., Taptich, M., Kavvada, O. and Horvath, A. (2017), "Evaluating the Electricity Intensity of Evolving Water Supply Mixes: The Case of California's Water Network." *Environmental Research Letters*, 12(11), 114005, <https://doi.org/10.1088/1748-9326/aa8c86>
3. Saynajoki, A., Heinonen, J., Junnila, S. and Horvath, A. (2017), "Can Life-cycle Assessment Produce Reliable Policy Guidelines in the Building Sector?" *Environmental Research Letters*, 12(1), 013001, <http://dx.doi.org/10.1088/1748-9326/aa54ee>
4. Miller, S. A., Monteiro, P. J., Ostertag, C. P. and Horvath, A. (2016), "Concrete Mix Proportioning for Desired Strength and Reduced Global Warming Potential." *Construction and Building Materials*, 128, 410-421, <http://dx.doi.org/10.1016/j.conbuildmat.2016.10.081>
5. Miller, S. A., Horvath, A. and Monteiro, P. J. (2016), "Readily Implementable Techniques Can Cut Annual CO2 Emissions from the Production of Concrete by Over 20%." *Environmental Research Letters*, 11(7), 074029, <http://dx.doi.org/10.1088/1748-9326/11/7/074029>

6. Miller, S. A., Monteiro, P. J., Ostertag, C. P. and Horvath, A. (2016), "Comparison Indices for Design of Concrete Taking Environmental Impacts into Account." *Cement & Concrete Composites*, 68, 131-143
7. Hendrickson, T., Nguyen, M., Sukardi, M., Miot, A., Horvath, A. and Nelson, K. L. (2015), "Life-cycle Energy Use and Greenhouse Gas Emissions of a Building-Scale Wastewater Treatment and Non-potable Reuse System." *Environmental Science & Technology*, 49(17), 10303-10311, <http://dx.doi.org/10.1021/acs.est.5b01677>
8. Committee of The National Academies of Sciences, Engineering, and Medicine on the Beneficial Use of Graywater and Stormwater (2015). "Using Graywater and Stormwater to Enhance Local Water Supplies: An Assessment of Risks, Costs, and Benefits." Washington, DC: National Academies Press.
9. Stokes, JR and Horvath, A. (2011). Life-cycle assessment of urban water provision: Tool and case study in California. *Journal of Infrastructure Systems*, 17(1), 15-24. DOI: 10.1061/(ASCE)IS.1943-555X.0000036.
10. Vergara, S., Damgaard, A. and Horvath, A. (2011), "Boundaries Matter: Greenhouse Gas Emission Reductions from Alternative Waste Treatment Strategies for California's Municipal Solid Waste." *Resources, Conservation and Recycling*, 57, 87-97, <http://dx.doi.org/10.1016/j.resconrec.2011.09.011>
11. Chester, M., Horvath, A. and Madanat, S. (2010), "Comparison of Life-cycle Energy and Emissions Footprints of Passenger Transportation in Metropolitan Regions." *Atmospheric Environment*, 44(8), pp. 1071-1079, <http://dx.doi.org/10.1016/j.atmosenv.2009.12.012>
12. Stokes, JR and Horvath, A. (2010). Supply chain environmental effects of wastewater utilities. *Environmental Research Letters*, 5(1), 014015. DOI: /10.1088/1748-9326/5/1/014015
13. Chester, M. and Horvath, A. (2009), "Environmental Assessment of Passenger Transportation Should Include Infrastructure and Supply Chains." *Environmental Research Letters*, 4(2), <http://dx.doi.org/10.1088/1748-9326/4/2/024008>; "The most downloaded ERL paper of 2009."
14. Stokes, JR and Horvath, A. (2009). Energy and air emission effects of water supply. *Environmental Science & Technology*, 43(8), 2680-2687. DOI: 10.1021/es801802h
15. Vieira, P. and Horvath, A. (2008), "Assessing the End-of-Life Impacts of Buildings." *Environmental Science & Technology*, 42(13), pp. 4663-4669, <http://dx.doi.org/10.1021/es071345l>
16. Guggemos, A. and Horvath, A. (2006), "Decision-Support Tool for Assessing the Environmental Effects of Constructing Commercial Buildings." *J. of Architectural Engineering*, 12(4), pp. 187-195.
17. Guggemos, A. and Horvath, A. (2005), "Comparison of Environmental Effects of Steel- and Concrete-Framed Buildings." *J. of Infrastructure Systems*, 11(2), pp. 93-101
18. Horvath, A. (2004), "Construction Materials and the Environment." *Annual Review of Environment and Resources*, 29, pp. 181-204.
19. Kitou, E. and Horvath, A. (2003), "Energy-related Emissions from Telework." *Environmental Science & Technology*, ACS, 37(16), pp. 3467-3475, <http://dx.doi.org/10.1021/es025849p>

(d) Synergistic Activities

1. **Life-Cycle Assessment (LCA) Method and Tool Development.** (1) I was a developer of the Economic Input-Output Life Cycle Assessment method and web tool (<http://eiolca.net>) that has seen several million uses by now. It is one of the two prevailing LCA methods in the world. (2) I was a co-developer of the "GreenConcrete Life-cycle Assessment Tool" (<https://greenconcrete.berkeley.edu>). (3) I was a co-developer of the Construction Emissions Decision Support Tool for assessing the environmental effects of constructing buildings. (4) I was the co-developer of the The Telework Impact Estimation Tool (<http://greenmfg.me.berkeley.edu/green/SoftwareTools/Telework/index.html>).
2. **Sustainability Assessment Tool Development.** I have been the co-developer (with Jennifer Stokes) of two web- and Excel-based resources for sustainability assessment: the *Water-Energy Sustainability Tool (WEST)* and the *Wastewater-Energy Sustainability Tool (WWEST)*. Used by water system designers, utility operators, civil engineers, regulators, and researchers, these life-cycle assessment tools (west.berkeley.edu) calculate the environmental implications of various water and wastewater scenarios and inform the selection of sources, processes, operations, and disposal options.

3. **ReNUWit Project Leader.** I am the leader of life-cycle environmental and economic assessment and environmental cost abatement research on water and wastewater systems for the NSF-funded Engineering Research Center ReNUWit: Renewing the Nation's Urban Water Infrastructure (NSF 1028968; www.renuwit.org).
4. **Curriculum Development.** (1) I developed in 2010 and continue to direct a new Graduate Program in Energy, Civil Infrastructure and Climate at UC Berkeley. The program emphasizes assessing and improving the environmental performance of infrastructure: energy, buildings, construction, transportation, water and wastewater systems, and industrial sectors (e.g., batteries, electric vehicles, food). (2) I developed Berkeley's Certificate Program in Engineering and Business for Sustainability and have directed this program since 2007. It was the first, formally campus-approved certificate program of any kind at UC Berkeley. (3) I developed in 1999 and continue to teach Civil Systems and the Environment (CE 268E), the first and only course at UC Berkeley dedicated to life-cycle environmental (LCA) and economic assessment of products, services, and systems, including those in the energy, building, transportation, water and wastewater, and various industrial sectors. (4) I developed and teach Technologies for Sustainable Societies (CE 292), a course in which students explore current sustainability-related questions for energy, transportation, buildings, water and wastewater, food, and other systems.
5. **Editorial Activities.** I serve on the Executive Board of *Environmental Research Letters* (since 2012), and on the editorial advisory board of the *Journal of Industrial Ecology* (since 2005). In addition, I have been the Associate Editor of *ASCE Journal of Infrastructure Systems* since 2002.