

# RACHAEL D. GARRETT

rachaelgarrett.weebly.com • rgarrett@ethz.ch

## **RESEARCH FOCI**

Sustainable supply chains; rural development; forest conservation; agricultural innovation

## **EDUCATION**

- 2013 Ph.D. *Environment and Resources (E-IPER)*, Stanford University, Stanford, CA  
2006 M.P.A. *Environmental Science and Policy*, Columbia University, New York, NY  
2003 B. A. *History and Environmental Analysis and Policy* (dual major), Boston University, Boston, MA  
\*Magna Cum Laude, Honors Program, Graduated in three years

## **APPOINTMENTS**

- 2019-Present *Assistant Professor of Environmental Policy*, Departments of Humanities, Social and Political Science and Environmental System Science, ETH Zürich, Zürich, Switzerland  
*Member*, Inst. for Environmental Decisions, & Inst. of Science, Technology, and Policy, World Food Systems Center, ETH for Development,  
2018-2019 *Associate Director*, Land Use and Livelihoods Initiative, Global Development Center, Boston University, Boston, USA  
2015-2019 *Assistant Professor of Human Dimensions of Global Change*, Department of Earth and Environment *Faculty Associate*, Pardee Center for the Study of the Longer Range Future and *Core Faculty*, Center for Latin American Studies, Boston University  
2013-2015 *Giorgio Ruffolo Postdoctoral Fellow in Sustainability Science*, J.F.K School of Government, Harvard University, Cambridge, MA

## **COURSES TAUGHT**

### *ETH Zurich*

- Quantitative Policy Analysis and Modeling (Graduate)  
Policy and Economics of Ecosystem Services (Graduate)

### *Boston University*

- Key Debates and Emerging Research in Land Change Science (Graduate)  
Food, Energy, and Water Policy (Undergraduate/Graduate)  
Environmental Change and Sustainability (Undergraduate)

### *Stanford University*

- Agricultural Systems in Emerging Economies. Co-taught with P. Vitousek (Graduate)  
World Food Economy, Lead TA. Instructors: W. Falcon; R. Naylor (Undergraduate/Graduate)  
Agribusiness, Policy and Land Use Change in Brazil, TA. Instructors: L Martinelli; R. Naylor (Graduate)

## **HONORS, FELLOWSHIPS, & AWARDS**

- 2015 *Pathways to Prosperity Paper Award*, Forests and Livelihoods: Assessment, Research, and Engagement conference  
2015 Nominated for the *Norman Borlaug Award for Field Research*, Rockefeller Foundation  
2014-2016 *Fulbright NEXUS Regional Scholar*, U.S. Department of State  
2014-2015 *Science Engineering and Education for Sustainability Postdoctoral Fellowship*, NSF  
2011-2013 *Richard and Rhoda Goldman Fellowship*, Stanford University  
2011 *School of Earth Science Excellence in Mentoring Award*, Stanford University

2009-2011 *Richard L. Kauffman and Ellen Jewett Fellowship, Stanford University*  
 2003 *Franklin C. Erickson Prize for Excellence in Geography, Boston University*  
 2000-2003 *Presidential Scholarship, Boston University*

## **GRANTS** (\$1.5 million in direct support)

### *Funded:*

- 2018-2019 The Jefferson Fund – Make our Planet Great Again Initiative “*Enabling the adoption of agroecological integrated crop-livestock systems,*” PIs – **R. Garrett**, J. Ryschawy \$20,000.
- 2018-2020 Boston University Global Development Policy Center “*Land Use and Livelihood Initiative,*” PIs – **R. Garrett**, A. Short-Gianotti, J. Klinger \$100,000.
- 2017-2020 NSF Geography and Spatial Sciences, “*Assessing the influence of zero-deforestation supply chain commitments on the conservation of ecosystems.*” PI – **R. Garrett**, CO-PIs – K. Carlson (UH-Manoa), N. Villoria (KSU), \$400,000.
- 2017-2020 NASA Land Cover/Land Use Change “*Comprehensive analysis of thirty years of land change in Georgia: patterns, carbon dynamics and drivers.*” PI - Pontus Olofsson (Boston U.), CO-Is, **R. Garrett**, C. Woodcock, \$640,385 total; \$250,000 to R. Garrett.
- 2017-2019 Catalyst Fund “*Assessment of integrated sheep-viticulture systems.*” PI – V. Snow (AgResearch NZ), CO-PIs – R. Dynes (AgResearch NZ), M. Niles (UVM), Collaborators – **R. Garrett**, A. Gaudin (UC Davis), \$9,900 to R. Garrett.
- 2016-2017 Fulbright Foundation NEXUS Regional Scholar Program, “*Technology-based climate change impact mitigation in small coffee farms in Jamaica and Mexico.*” PI – J. Onofre Pinto (Federal University of Mato Grosso do Sul), CO-PI – **R. Garrett**, \$2,000 to R. Garrett.
- 2016-2019 National Center for Socio-Environmental Synthesis, “*Assessing the potential influence of zero-deforestation corporate supply chain commitments on tropical land cover.*” Lead PIs- **R. Garrett** and K. Carlson (UH), \$100,000. (Supported by NSF #1052875 to PI- M. Palmer).
- 2016-2017 Gordon and Betty Moore Foundation, “*Strengthening supply chain interventions for deforestation-free cattle and soy production in the Brazilian Amazon and Cerrado Biomes.*” PI- H. Gibbs (UW-Madison), CO-PI- **R. Garrett**, \$29,415 to R. Garrett..
- 2015-2017 Gordon and Betty Moore Foundation “*Governance, displacement, and intensification in the soy and cattle commodity chains of South America*” PI – E. Lambin (Stanford U.), CO-PI – **R. Garrett**, \$111,340 to R. Garrett..
- 2015-2016 NSF Interactions of Food Systems with Water and Energy Systems: “*Closing the loop in water, energy, and nutrient cycles in agricultural systems*” #1541766, PI – **R. Garrett**, \$65,353.
- 2014-2016 NSF Science Engineering and Education for Sustainability: “*Improving agricultural practices in the US and Brazil for sustainable development: Enabling conditions for innovation through integration*” #1415352, PI – **R. Garrett**, \$327,981.
- 2014-2016 Fulbright Foundation NEXUS Regional Scholar Program, “*Climate change and food and water security in the Americas.*” PI – **R. Garrett**, \$35,000.
- 2014-2015 Harvard University Sustainability Science Program, “*Diversifying and integrating agricultural practices in Brazil, New Zealand, and the United States for climate smart agriculture and sustainable development.*” PIs – **R. Garrett** and M. Niles, \$15,500.

## **PUBLICATIONS**

(underlining indicates co-first authorship, \*indicates a student advisee, \*\*indicates a post-doc funded by a grant on which I am the PI, † provides additional pertinent information)

Book Chapters:

1. Stanmirova, R.\* and **Garrett, R.**, Forthcoming. (English) Pasturelands, Rangelands, and Other Grazing Social-ecological Systems In *Managing Soils and Terrestrial Systems, Volume Three* Boca Raton: Taylor and Francis
2. **Garrett, R.**, Rueda, X., 2019. (English) Telecoupling and consumption in agri-food systems. In *Global Land-Use Change: The relevance of telecoupling research*. Eds. J.O. Neilson, C. Friis. London: Palgrave.
3. **Garrett, R.**, Gil, J. and Valentim, J., *Forthcoming*. (Portuguese & English) Technology transfer: challenges and opportunities for the adoption of integrated crop-livestock-forestry systems in the Amazon. In *Integrated crop-livestock-forestry systems: A Brazilian experience for sustainable farming*. Eds. D. J. Bungenstab, R. G. Almeida, V. A. Laura, and L. C. Balbino, Brasilia: Embrapa.
4. Valentim, J. and **Garrett, R.** 2015 (Portuguese) Promoting the well-being of family farmers with the use of low carbon agriculture and forestry systems in the Amazon biome. In *Caminhos para uma agricultura familiar sob bases ecológicas: produzindo com baixa emissão de carbono*. Eds. Azevedo, A. A.; Campanilli, M.; Pereira, C., Brasília: IPAM.
5. **Garrett, R.** and Latiewec, A. 2015. (English) “Sustainability indicators – What are they for? In *Sustainability Indicators in Practice* Eds. A. Latiewec and D. Agol. Warsaw: De Gruyter.

Journal Articles:

1. Reis, J.C, Kamoi, M.Y.T, Latorraca, D., Chen, R.F.F., Michetti, M., Wruck, F.J., **Garrett, R.D.**, Valentim, J.F., 2019, “Assessing the economic viability of integrated crop-livestock systems in Mato Grosso, Brazil” *Renewable Agriculture and Food Systems*.
2. Gardner, C., Hartle, J., **Garrett, R.** Offringa, L., and Wasserman, A. 2019. “Amount and type of protein produced and consumed in America: Maximizing the intersection of human health and the health of the environment.” *Nutrition Reviews*. 77(4): 192-215.
3. Cortner, O.\*, **Garrett, R.**, Valentim, J., Niles, M., Ferreira, J., and Reis, J.C. “Local perceptions of benefits and challenges to adopting integrated crop and livestock systems in Brazil.” *Land Use Policy*. 92: 841-853.
4. **Garrett, R.D.**, Levy, S.\*, Carlson, K. et al. 2019. “Criteria for effective Zero-deforestation commitments.” *Global Environmental Change*. 54: 135–147. <https://doi.org/10.1016/j.gloenvcha.2018.11.003>
5. Carlson, A., Zaehring, J., **Garrett, R.D.**, Silva, R.B.S., Furumo, P. Raya Rey, A. Torres, A., Chung, M., Li, Y., Liu, J. 2018. “Toward rigorous telecoupling causal attribution: a systematic review and typology,” *Sustainability*. 10(12): 4426.
6. **Garrett, R.D.**, Koh, I.\*, Lambin, E.F., le Polain de Waroux, Y., Kastens, J., and Brown, J.C., 2018. “Intensification in agriculture-forest frontiers: land use responses to development and conservation policies in Brazil.” *Global Environmental Change*. 53: 233-243.
7. Meyfroidt, P. Roy Chowdhury, R., de Bremond, A., Ellis, E.C., Erb, K-H., Filatova, T., **Garrett, R.D.** et al., 2018. Middle-range theories of land system change. *Global Environmental Change*. 53: 52-67. <https://doi.org/10.1016/j.gloenvcha.2018.08.006>
8. Hayek, M. and **Garrett, R.**, 2018. “Nationwide shift to grass-fed beef requires larger cattle population.” *Environmental Research Letters*. 13(8). <https://doi.org/10.1088/1748-9326/aad401>  
†ERL Featured Article (2018), and IOP Select.
9. Carlson, K. and **Garrett, R.**, 2018. “Environmental impacts of oil crop expansion in the tropics: Contrasting soybeans in South America with oil palm in Southeast Asia.” *Oxford Research Encyclopedia of Environmental Science*. <https://doi.org/10.1093/acrefore/9780199389414.013.234>
10. Gil, J.D.B.\*\*\*, **Garrett, R.**, Rotz, A., Daioglou, V., Valentim, J. Pires, G. F., Costa, M.H., Lopes, L., and Reis, J. 2018. “Tradeoffs in the quest for climate smart agricultural intensification in Brazil.” *Environmental Research Letters*. 13(6). <https://doi.org/10.1088/1748-9326/aac4d1>
11. Gardner, T.A. Benzie, M., Dawkins, E., **Garrett, R.**, et al., 2018. “Transformative Transparency: Enabling greater supply chain accountability to motivate and deliver on zero-deforestation commitments,” *World Development*. <https://doi.org/10.1016/j.worlddev.2018.05.025>

12. Lambin, E., Gibbs, H., Heilmayr, R., Carlson, K. M., Fleck, L., **Garrett, R.**, et al. 2018. "The road to zero deforestation supply chains." *Nature Climate Change*. 8:109-116. <https://doi.org/10.1038/s41558-017-0061-1>
13. Niles, M., **Garrett, R.**, and Walsh, D. 2018. "Ecological and economic benefits and challenges for integrating sheep into viticulture production" *Agronomy for Sustainable Development*. 38(1). 38: 1. <https://doi.org/10.1007/s13593-017-0478-y>
14. **Garrett, R.**, Gardner, T., Fonseca, T., et al. 2017. "Explaining the persistence of low income and environmentally degrading land uses in the Brazilian Amazon". *Ecology and Society*. 22(3):27. <https://doi.org/10.5751/ES-09364-220327>
15. le Polain de Waroux, Y.\*\*\*, **Garrett, R.**, Graesser, J., Lambin, E., and Nolte, C. 2017. "The restructuring of South American soy and beef production and trade under changing environmental regulations." *World Development*. <https://doi.org/10.1016/j.worlddev.2017.05.034>
16. **Garrett, R.**, Niles, M., Gil, J.\*\*\*, Gaudin, A., Garbach, K., and 10 others. 2017. "Social-ecological analysis of integrated crop and livestock systems: Current knowledge and remaining uncertainty." *Agricultural Systems*, 155: 136-146. <https://doi.org/10.1016/j.agsy.2017.05.003>
17. **Garrett, R.**, Niles, M., Gil, J.D.B.\*\*\*, Dy, P.\*, Reis, J., and Valentim, J. 2017. "Policy conditions for re-integrating crop and livestock systems: a comparative analysis." *Sustainability*, 9(3): 473. <https://doi.org/10.3390/su9030473>
18. Rueda, X., **Garrett, R.**, and Lambin, E. 2017. "Corporate investments in supply chain sustainability: selecting instruments in the agri-food industry." *Journal of Cleaner Production*, 42(4). <https://doi.org/10.1016/j.jclepro.2016.11.026>
19. Gil, J.D.B.\*\*\*, **Garrett, R.**, Berger, T., 2016. "Determinants of crop-livestock integration in Brazil: evidence from the household and regional levels." *Land Use Policy*, 59:557-568. <https://doi.org/10.1016/j.landusepol.2016.09.022>
20. **Garrett, R.**, Carlson, K., Rueda, X., and Noojipady, P., 2016. "Assessing the potential additionality of certification by the Round table on Responsible Soybeans and the Roundtable on Sustainable Palm Oil" *Environmental Research Letters*, 11 045003. <https://doi.org/10.1088/1748-9326/11/4/045003>  
 †Special issue on "Food, Trade, and Environment"
21. le Polain de Waroux, Y.\*\*\*, **Garrett, R.**, Heilmayr, R., and Lambin, E., 2016. "Land-use policies and corporate investments in agriculture in the Gran Chaco and Chiquitano" *Proceedings of the National Academy of Sciences*, 113:4021–4026 <https://doi.org/10.1073/pnas.1602646113>
22. **Garrett, R. D.** and Rausch, L., 2016 "Green for gold: social and ecological tradeoffs influencing the sustainability of the Brazilian soy industry." *The Journal of Peasant Studies*, 43(2):461-493. <https://doi.org/10.1080/03066150.2015.1010077>  
 †Special issue on "Soy production in South America: Globalization, regionalization, and new agro-industrial landscapes"
23. **Garrett, R.**, Rueda, X., and Lambin, E., 2013. "Globalization's unexpected impact on soybean production in South America: linkages between preferences for non-genetically modified crops, eco-certifications, and land use." *Environmental Research Letters*, 8 044055. <https://doi.org/10.1088/1748-9326/8/4/044055>  
 †ERL's Annual Highlights (2013), Featured Article (March 2014), and IOP Select.
24. **Garrett, R.**, Lambin, E., and Naylor, R., 2013. "The new economic geography of land use change: supply chain configurations and Land Use in the Brazilian Amazon." *Land Use Policy*, 34: 265–275. <https://doi.org/10.1016/j.landusepol.2013.03.011>
25. Gardner, T., Ferreira, J., Barlow, J., Lees, A., Parry, L., . . . **Garrett, R.** et al., 2013. "A social and ecological assessment of tropical land-uses at multiple scales: the Sustainable Amazon Network." *Philosophical Transactions of the Royal Society – B.*, 368: 1619. <https://doi.org/10.1098/rstb.2012.0166>  
 †Special issue on "Ecology, economy and management of an agroindustrial frontier landscape in the southeast Amazon"

26. **Garrett, R.**, Lambin, E., and Naylor, R. 2012. "Land institutions and supply chains as determinants of local soy planted area and yields." *Land Use Policy*, 31: 385-396. <https://doi.org/10.1016/j.landusepol.2012.08.002>
27. Martinelli, L., **Garrett, R.**, Ferraz, S., and Naylor, R., 2011. "Sugar and ethanol production as a rural development strategy in Brazil: evidence from the state of São Paulo." *Agricultural Systems*, 104: 419–428. <https://doi.org/10.1016/j.agsy.2011.01.006>

*Policy briefs:*

1. Garrett, R., Cortner, O., Ferreira, J., Reis, J., and Valentim, J. 2019. *Linking science to policy to promote sustainable intensification of Brazilian agriculture and recuperation of degraded areas*. Embrapa. Brasília, Brazil
2. **Garrett, R.**, Lambin, E. and le Polain de Waroux, Y. 2017. To Eliminate Deforestation in South America, Reduce Differences in Regulations across Regions and Actors. ISID Policy Brief PB 2017-05. Montreal, Canada: Institute for the Study of International Development, McGill University.
3. Gardner T.A., Godar J., **Garrett R.D.** 2016. Caminhos para paisagens mais sustentáveis. Rede Amazônia Sustentável
4. Gardner T.A., Godar J., **Garrett R.D.** 2014. Governing for sustainability in agricultural-forest frontiers: A case study of the Brazilian Amazon. Stockholm Environment Institute Discussion Brief.

*Popular articles and blog entries:*

1. **Garrett, R.** September 18, 2019 *Partnerships to protect the forest ETH*. Zukunftsblog. Zürich, Switzerland.
2. **Garrett, R.** August 27, 2019. *What Will it Take for Brazilian Farmers to Decrease Fire Use in the Amazon?* The Globe Post. Washington D.C., United States
3. **Garrett, R.** November 5, 2018. Strict Amazon protections made Brazilian farmers more productive, new research shows. The Conversation. Cambridge, United States: <https://theconversation.com/strict-amazon-protections-made-brazilian-farmers-more-productive-new-research-shows-105789>  
[Also available in Spanish: December 5, 2018. <https://theconversation.com/la-proteccion-estricta-del-amazonas-fomenta-la-productividad-agricola-en-brasil-106488>]
4. **Garrett, R.** and Ferreira, J. November 10, 2017. Política agrícola na Amazônia. Valor Econômico. São Paulo, Brazil: <http://www.valor.com.br/opiniao/5188743/politica-agricola-na-amazonia>
5. **Garrett, R.** October 24, 2017. For cattle farmers in the Brazilian Amazon, money can't buy happiness. The Conversation. Cambridge, United States: <https://theconversation.com/for-cattle-farmers-in-the-brazilian-amazon-money-cant-buy-happiness-85349>

**PROFESSIONAL SERVICE**

<b>2018</b>	Truman Scholarship Nomination Committee, Boston University
<b>2017-Present</b>	Faculty Council Sustainability Committee, Boston University
<b>2017</b>	Department of Earth and Environment Merit Review Committee, Boston University
<b>2015-2016</b>	Human Dimensions of Global Change Faculty Search Committee, Boston University
<b>2015</b>	Environmental Analysis and Policy Curriculum Assessment Committee, Boston University
<b>2012-2013</b>	Center for Teaching and Learning (CTL) Liaison, Stanford University
<b>2010-2011</b>	Student representative on E-IPER Executive Committee, Stanford University
<b>2009-2010</b>	E-IPER Student Committee Representative, Stanford University
<b>2005-2006</b>	Class President, MPA in Environmental Science and Policy, Columbia University
<b>2001-2003</b>	Admissions Regional Student Speaker, Boston University
<b>2001-2002</b>	Treasurer, College of Arts and Sciences Student Government Boston University

**Editorial board member:** *Agricultural Systems*; *Land*

**Journals (selected):** *Land Use Policy*; *Environmental Research Letters*; *Global Environmental Change*; *Ecology and Society*; *Applied Geography*; *Frontiers in Ecology*; *Conservation Biology*; *Geoforum*; *Geographical Analysis*; *Global Change Biology*; *Global Policy*; *Journal of Cleaner Production*; *Land Degradation and Development*; *Nature Climate Change*; *Nature Ecology and Evolution*; *Philosophical Transactions of the Royal Society – B*; *Agricultural Economics*; *World Development*; *Climatic Change*; *Earth Interactions*.

**Grants:** *National Science Foundation - Geography and Spatial Sciences.*  
**Conference Abstracts:** *Society for Conservation Biology, 2017 ICCB*