

Justin Scott Baker, Ph.D.

Curriculum Vitae

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CONTACT INFORMATION

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EDUCATION

- **Ph.D.** Agricultural Economics, Texas A&M University, 2011.
 - o Dissertation: *The Impact of Biofuel and Greenhouse Gas Policies on Land Management, Agricultural Production, and Environmental Quality*
 - Advisor: Distinguished Professor Bruce A. McCarl
- **M.S.** Agricultural and Applied Economics, Texas Tech University, 2005.
 - o Master's Thesis: *Transboundary Water Resource Management and Conflict Resolution: A Coasian Strategic Negotiations Approach*
 - Advisor: Dr. David B. Willis
- **B.S.** International Economics, Texas Tech University, 2003.
 - o Minors: Mathematics, Spanish

POSITIONS AND AFFILIATIONS

- **Associate Professor of Forest Resource Economics**
 - o Forestry and Environmental Resources, North Carolina State University. 2020-Present.
- **Director, Southern Forest Resource Assessment Consortium (SOFAC)**
 - o North Carolina State University. 2020-Present
- **Associate Editor**
 - o RTI Press. 2021-Present
- **Guest Researcher**
 - o International Institute for Applied Systems Analysis. 2018-Present.
- **Affiliate**
 - o Center for Environmental and Resource Economic Policy. 2020-Present.
- **Faculty Fellow**
 - o Center for Geospatial Analytics. 2022-Present
- **Affiliate**
 - o Energy Access Project, Duke University. 2021-Present.
- **Director**

- RTI International. 2019-2020.
- **Senior Economist**
 - RTI International. 2011-2019.
- **Duke-RTI Scholar**
 - Sanford School of Public Policy, Duke University. 2019-2020.
- **Lecturer**
 - Dept. of Agricultural and Resource Economics, North Carolina State University. 2017 and 2018.
- **Guest Lecturer**
 - Dept. of Economics, University of North Carolina at Greensboro. 2014.
- **Research Associate in Economic Analysis**
 - Nicholas Institute for Environmental Policy Solutions, Duke University: 2009-2011
 - Center on Global Change, Duke University. 2007-2009.
- **Research Assistant**
 - Dept. of Agricultural Economics, Texas A&M University. 2006-2007.
- **Graduate Research Assistant**
 - Dept. of Ag. and Applied Economics, Texas Tech University. 2004-2005.

HONORS AND AWARDS

- KIETS Climate Leaders Program, Faculty Mentor. NC State University. 2022.
- Duke-RTI Scholar. Duke University. 2019/2020.
- RTI Highly Cited Author Award. RTI International. 2018.
- RTI Highly Published Author Award. RTI International. 2018.
- RTI Highly Cited Author Award. RTI International. 2016.
- RTI Highly Published Author Award. RTI International. 2014.
- RTI Early Career Author Award. RTI International. 2014.
- Outstanding Dissertation Award. Southern Ag. Economics Association. 2012.
- Texas Water Resources Institute. Mills Scholarship Program. 2007.
- Outstanding Master's Thesis Award. Western Ag. Economics Association. 2006.
- Regents Fellowship. College of Agri-Life Sciences, TX A&M University. 2005.

PUBLICATIONS AND OTHER MANUSCRIPTS

- Redmon, J., Mulhern, R, Castellanos, E., Herrera, I., Wood, E., McWilliams, A., Liyanapatrina, C., Weber, F., Levine, K., Thorp, E., Bynum, N., Amato, K., Acevedo, M. A., **Baker, J. S.**, Van Houtven, G., Henry, C., Wade, C., Kondash, A. J. (2022). A Participatory Science Approach to Evaluating Factors Associated with the Occurrence of Metals and PFAS in Guatemala City Tap Water. In Press. *International Journal of Environmental Research and Public Health*.
- Henderson, J., Abt, R. C., Abt, K. L., **Baker, J. S.**, Sheffield, R. (2022). The impact of hurricanes on forest markets and economic welfare: The case of Hurricane

- Michael. In press. *Forest Policy and Economics*.
- Abt, R. C., Galik, C., **Baker, J. S.** (2022). When burning wood to generate energy makes sense. In press. *Bulletin of the Atomic Scientists*.
- Wade, C. M., **Baker, J. S.**, Van Houtven, G., Fuentes, G., Alfaro, G., Leiva Crispin, B., Kondash, A. J., Henry, C., Shaw, B., Hoponick Redmon, J. (2022). Opportunities and spatial hotspots for irrigation expansion in Guatemala to support development goals in the food-energy-water nexus. In press. *Agricultural Water Management*.
- Wade, C. M., **Baker, J. S.**, Jones, J., Austin, K., Cai, Y., Bean, A., Latta, G., Ohrel, S., Ragnauth, S., Creason, J., McCarl, B. (2022). Projecting the impact of socioeconomic and policy factors on greenhouse gas emissions and carbon sequestration potential in U.S. forestry and agriculture. *Journal of Forest Economics*. 37(1): 127-161. <http://dx.doi.org/10.1561/112.00000545>
- Henry, C. L., **Baker, J. S.**, Shaw, B., Kondash, A. J., Leiva Crispi, B., Castellanos, E., Wade, C., Lord, B., Van Houtven, G., Redmon, J. (2021). How will renewable energy development goals affect energy poverty in Guatemala? *Energy Economics*. 104.
- Janssens, C., Havlik, P., Krisztin, T., **Baker, J. S.**, Frank, S., Hasegawa, T., Ohrel, S., Ragnauth, S., Valin, H., Maertens, M., Von Lipzig, N. (2021). Food security: International trade is a key component of climate change adaptation. *Nature Climate Change*. 11: 915-916.
- Kondash, A. J., Herrera, I., Castellanos, E., **Baker, J. S.**, Leiva, B., Van Houtven, G., Fuentes, G., Alfaro, G., Wade, C. M., Hoponick-Redmon, J. (2021). Food, energy and water nexus challenges in Guatemala: A systematic literature review. *Environmental Science and Policy*, 124: 175-185.
- Baker, J. S.**, Van Houtven, G., Cai, Y., Moreda, F. (2021). A Hydro-Economic Methodology for the Food-Energy-Water Nexus: Valuation and Optimization of Water Resources. RTI Press Publication No. MR-00442105. Research Triangle Park, NC: *RTI Press*. <https://doi.org/10.3768/rtipress.2021.mr.0044.2105>
- Morgan, S., **Baker, J. S.**, Orgill-Meyer, J., Jeuland, M. (2021). Valuing water quality with adaptation: Evidence from a natural experiment in Jordan. In press. *Water Economics and Policy*. 7(01): 2150003.
- Austin, K., **Baker, J. S.**, Sohngen, B. L., Wade, C., Ragnauth, S., Ohrel, S. (2020). The economic costs of planting, preserving, and managing the world's forests for climate change mitigation. *Nature Communications*. 11(1): 1-9.
- Janssens, C., Havlik, P., Krisztin, T., **Baker, J. S.**, Frank, S., Hasegawa, T., Ohrel, S., Ragnauth, S., Valin, H., Maertens, M., Von Lipzig, N. (2020). Global Hunger and Climate Change Adaptation through International Trade. *Nature Climate Change*. 10: 829-835.
- Baker, J. S.**, Proville, J., Latane, A., Aramayo, L., Parkhurst, R. (2020). Additionality and Avoiding Grassland Conversion in the Prairie Pothole Region of the United States. *Rangeland Ecology and Management*. 73(2): 201-215.
- Wade, C. M., **Baker, J. S.**, Latta, G., Ohrel, S. (2019). Evaluating potential sources of aggregation bias with a structural model of the U.S. forest sector. *Journal of*

- Forest Economics*. 34(3-4): 337-366.
- Wade, C. M., **Baker, J. S.**, Latta, G., Allpress, J., Ohrel, S. (2019). Projecting the spatial distribution of possible planted forest expansion in the United States. *Journal of Forestry*. 117(6): 560-578.
- Jones, J. P. H., **Baker, J. S.**, Austin, K. A., Latta, G., Cai, Y., Wade, C., Aramayo-Lipa, L., Beach, R., Ohrel, S., Ragnauth, S., Creason, J., Cole, J. (2019). The importance of cross-sector dynamics when projecting forest carbon across alternative socioeconomic futures. *Journal of Forest Economics*. 34(3-4): 2015-231.
- Sohngen, B., Salem, M., **Baker, J. S.**, Kim, S. J., Shell, M. (2019). The influence of parametric uncertainty on projected forest management, carbon, and markets. *Journal of Forest Economics*. 34(1-2): 129-158.
- Daigneault, A., Johnston, C., Kurosuo, A., **Baker, J. S.**, Forsell, N., Prestemon, J., and Abt., R. (2019). Developing Detailed Shared Socioeconomic Pathway (SSP) Narratives for the Global Forest Sector. *Journal of Forest Economics*. 34(1-2), 7-45.
- Baker, J. S.**, Sohngen, B. L., Latta, G., Forsell, N. 2019. State of the Art Methods for Projecting Forest Carbon. *Journal of Forest Economics*. 34(1-2): 1-5.
- Baker, J. S.**, Sohngen, B. L., Wade, C. H., Ohrel., S., and Fawcett, A. (2019). Potential Complementarity between Forest Carbon Sequestration and Bioenergy Expansion Policies. *Energy Policy*. 126, 391-401.
- Larson, J., **Baker, J. S.**, Latta, G., Ohrel, S. O., Wade, C. H. (2018). Modeling International Trade of Forest Products: Application of PPML to a Gravity Model of Trade. *Forest Products Journal*. 68(3), 303-316.
- Cai, Y., Wade, C. H., **Baker, J. S.**, Jones, J. P. H., Latta, G., Ohrel, S., Ragnauth, S. (2018). Implications of Alternative Land Conversion Cost Assumptions on Projections of Afforestation in the United States. *RTI Press*. Publication No. OP-0057-1811. Research Triangle Park, NC: RTI Press. <https://doi.org/10.3768/rtipress.2018.op.0057.1811>
- Baker, J. S.**, Havlík, P., Beach, R. H., Leclère, D., Valin, H., Schmid, E., Cole, J., Creason, J., Ohrel, S., McFarland, J. (2018). Evaluating Climate Change Impacts on U.S. Agricultural Markets: Sensitivity to Regional Impact and Trade Expansion Scenarios. *Environmental Research Letters*, 13 (6): 1-10.
- Kim, S. J., **Baker, J. S.**, Sohngen, B. L., Shell, M. (2018). Cumulative Global Forest Carbon Implications of Regional Bioenergy Expansion Policies. *Resource and Energy Economics*. 53: 198-218.
- Latta, G., **Baker, J. S.**, Ohrel, S., (2018). A Land Use and Resource Allocation (LURA) Modeling System for Projecting Localized Forest CO₂ Effects of Alternative Macroeconomic Futures. *Forest Policy and Economics*, 87: 35-48.
- Baker, J. S.**, Crouch, A., Cai, Y., Latta, G., Ohrel, S., Jones, J., Latane, A. (2018). Logging Residue Supply and Costs for Electricity Generation: Potential Variability and Policy Considerations. *Energy Policy*. 116: 397-409.

- Tian, X., Sohngen, B., **Baker, J. S.**, Ohrel, S. B., & Fawcett, A. (2018). Will U.S. forests continue to be a carbon sink? *Land Economics*, 94(1), 97–113. DOI: 10.3368/le.94.1.97
- Baker, J. S.**, Sohngen, B.L., Ohrel, S., Fawcett, A. (2017). Economic Analysis of Greenhouse Gas Mitigation Potential in the U.S. Forest Sector. *RTI Press*. (Publication No. PB-0011-1708). Research Triangle Park, NC: RTI Press. DOI: 10.3768/rtipress.2017.pb.0011.1708.
- Van Winkle, C., **Baker, J. S.**, Lapidus, D., Ohrel, S., Steller, J., Latta, G., Birur, D. (2017). U.S. Forest Sector Greenhouse Gas Mitigation Potential and Implications for Nationally Determined Contributions. *RTI Press*. (RTI Press Publication No. OP-0033-1705). Research Triangle Park, NC: RTI Press. DOI: 10.3768/rtipress.2017.op.0033.1705
- Ogle, S. M., McCarl, B. A., **Baker, J. S.**, Del Grosso, S. J., Adler, P. R., Paustian, K. H., & Parton, W. J. (2015). Managing the nitrogen cycle to reduce greenhouse gas emissions from crop production and biofuel expansion. *Mitigation and Adaptation Strategies for Global Change*, 1–10. doi:10.1007/s11027-015-9645-0
- Lacombe, G., Douangsavanh, S., **Baker, J. S.**, Hoanh, C. T., Bartlett, R., Jeuland, M., & Phongpachith, C. (2014). Are hydropower and irrigation development complements or substitutes? The example of the Nam Ngum River in the Mekong Basin. *Water International*, 39(5), 649–670. doi: 10.1080/02508060.2014.956205
- Jeuland, M., **Baker, J. S.**, Bartlett, R., & Lacombe, G. (2014). The costs of uncoordinated infrastructure management in multi-reservoir river basins. *Environmental Research Letters*, 9, 1–10. doi:10.1088/1748-9326/9/10/105006
- Latta, G. S., **Baker, J. S.**, Beach, R. H., McCarl, B. A., & Rose, S. K. (2013). A multisector intertemporal optimization approach to assess the GHG implications of U.S. forest and agricultural biomass electricity expansion. *Journal of Forest Economics*, 19(4), 361–383. doi: <http://dx.doi.org/10.1016/j.jfe.2013.05>
- Mosnier, A., Havlik, P., Valin, H., **Baker, J. S.**, Murray, B. C., Feng, S., et al. (2013). Alternative U.S. biofuel mandates and global GHG emissions: The role of land use change, crop management and yield growth. *Energy Policy*, 57, 602–614.
- Baker, J. S.**, Murray, B. C., McCarl, B. A., Feng, S., & Johannson, R. (2013). Implications of alternative agricultural productivity growth assumptions on land management, greenhouse gas emissions, and mitigation potential. *American Journal of Agricultural Economics*, 95, 435–441.
- Havlik, P., Valin, H., Mosnier, A., Obersteiner, M., **Baker, J. S.**, Herrero, M., et al. (2013). Crop productivity and the global livestock sector: Implications for land use change and greenhouse gas emissions. *American Journal of Agricultural Economics*, 95(2), 442–448.
- Galik, C. S., Cooley, D., & **Baker, J. S.** (2012). Analysis of the production and transaction costs of forest carbon offset projects in the USA. *Journal of Environmental Management*, 112, 128–136.
- Murray, B. C. and **Baker, J. S.** (2011). An Output-Based Intensity Approach to Crediting Greenhouse Gas Mitigation in Agriculture: Explanation and Policy Implications.

- Greenhouse Gas Measurement and Management*. Vol. 1(1): 27-36.
- Jackson, R. B. and **Baker, J. S.** (2010). Opportunities and Constraints for Forest Climate Mitigation. *BioScience*. Vol. 60 (9): 698-708.
- Baker, J. S.**, McCarl, B. A., Murray, B. C., Rose, S. K., Alig, R. J., Adams, D., Latta, G. Beach, R., and Daigneault, A. (2010). Net Farm Income and Land Use under a U.S. Greenhouse Gas Cap and Trade. *Policy Issues*. P17. April 2010. Available online at: <http://www.aaea.org/publications/policy-issues/PI7.pdf>
- Shaw, W. D. and **Baker, J.S.** (2010). Models of Location Choice and Willingness to Pay to Avoid Hurricane Risks for Hurricane Katrina Evacuees. *International Journal of Mass Emergencies and Disasters*. Vol. 28 (1): 87-114.
- Baker, J. S.**; Shaw, W.D., Riddell, M., and Woodward, R. (2009). Changes in Subjective Risks of Hurricanes as Time Passes: An Analysis of a Sample of Katrina Evacuees. *Journal of Risk Research* Vol. 12 (1), 2009. 59-74.
- Piñeiro, G., Jobbagy, E., **Baker, J. S.**, Jackson, R. B., and Murray, B.C. (2009). Set-asides could be better climate investments than corn ethanol. *Ecological Applications*. Vol. 19, No. 2: 277-282.
- Baker, J. S.**, Shaw, W. D., Bell, D., Brody, Sam, Nielson, Bill, Riddell, M., and Woodward, R. (2009). Explaining Risks of Hurricanes and the Role of Risk in Intended Moving and Location Choice Models. *Natural Hazards Review*. Vol. 10 (12): 102-112.
- Willis, D. B. and **Baker, J. S.** (2008). A Coasian Approach to Efficient Water Allocation of a Transboundary River. *Journal of Agricultural and Applied Economics*, Vol. 40(2): 473-484.
- Baker, J. S.** and D. B. Willis. (2006). Transboundary Water Resource Management and Conflict Resolution: A Coasian Strategic Negotiations Approach. *Western Agricultural Economics Forum*. Fall, 2006.

Book Chapter

- Galik, C. S., Rupert, D. J., Starkman, K., Threadcraft, J., & **Baker, J. S.** (2015). Enhancing home energy efficiency through natural hazard risk reduction: linking climate change mitigation and adaptation in the home. In B. G. Southwell, E. M. B. Doran, & L. S. Richman (Eds.), *Innovations in home energy use: a sourcebook for behavior* (pp. 111–140). Research Triangle Park, NC: RTI Press.
- Baker, J. S.** and Murray, B. C. (2011). An Emissions Intensity Approach to Crediting GHG Mitigation in Agriculture: Reconciling Climate and Food Security Objectives in the Developing World. In Wollenberg, E, Nihart, A, Tapio-Biström, ML, Grieg-Gran, M, eds. *Climate Change Mitigation and Agriculture*. Earthscan, London.

Book Review

- Baker, J. S.** 2009. *Carbon Finance: The Financial Implications of Climate Change*, Sonia Labatt and Rodney R. White. *Journal of Natural Resources Policy Research*. 1(2): 204-209.

Submitted Manuscripts

- Daigneault, A., **Baker, J. S.**, Guo, J., Lauri, P., Favero, A., Forsell, N., Johnston, C., Ohrel, S., Sohngen, B. L. (2021). The future of the forest carbon sink depends on markets, management, and carbon policy. Revise and resubmit. *Global Environmental Change*.
- Wu, G., **Baker, J. S.**, Wade, C. M., McCord, G., Fargione, J., Havlik, P. (2022). Contributions of healthier diets and agricultural productivity to sustainability and climate goals in the United States. Revise and resubmit. *Sustainability Science*.
- Favero, A., Daigneault, A., Sohngen, B., **Baker, J. S.** (2022). A system-wide assessment of forest biomass sustainability. Submitted. *GCB-Bioenergy*.
- Mosnier, A., et al. (2021). How to reconcile diverse food and land use priorities with global sustainability? Revise and resubmit. *Sustainability Science*.
- Baker, J. S.** Van Houtven, G., Phelan, J., Latta, G., Clark, C., Austin, K., Sodiya, O., Ohrel, S., Buckley, J., Gentile, L., Martinich, J. 2022. Projecting U.S. forest management, markets, and carbon sequestration responses to a high-impact climate scenario. Submitted. *Forest Policy and Economics*.
- Galik, C. S., **Baker, J. S.**, Daigneault, A., Latta, G. 2022. Crediting temporary forest carbon: Retrospective and empirical perspectives on a new approach. Submitted. *Frontiers in Forests and Global Change*.

Technical Reports

- Favero, A., Daigneault, A., Sohngen, B., **Baker, J. S.** (2021). *An Integrated Assessment of Sustainable Woody Biomass*.
- Wu G., **Baker J. S.**, McCord G. and Wade C. (2020), "Pathways to Sustainable Land-Use and Food Systems in the United States by 2050" In: FABLE 2020, Pathways to Sustainable Land-Use and Food Systems, 2020 Report of the FABLE Consortium. Laxenburg and Paris: International Institute for Applied Systems Analysis (IIASA) and Sustainable Development Solutions Network (SDSN), pp. 656-691. <https://doi.org/10.22022/ESM/12-2020.16896>
- Proville, J., Parkhurst, R., Koller, S., Kroopf, S., **Baker, J. S.**, Salas, W. (2020). *Agricultural Offset Potential in the United States: Economic and Geospatial Insights*. Environmental Defense Fund Economics Discussion Paper Series, EDF EDP 20-01.
- Fetter, R. and **Baker, J. S.** *Harnessing Data Analytics to Accelerate Energy Access*. Nicholas Institute Policy Brief. NI PB 20-03. Duke University. <https://nicholasinstitute.duke.edu/publications/harnessing-data-analytics-accelerate-energy-access-reflections-duke-rti-convening-data>
- Baker, J. S.**, Wade, C. M., Bean, A., Lapidus, D., Reeve, K. (2019). *Summary of Hydro-Economic Analysis of the Samalá Basin, Guatemala*. Memorandum submitted to the Sustainable Economic Observatory, Universidad del Valle de Guatemala.

- Baker, J. S.**, et al. (2019). *A multi-model assessment of GHG mitigation potential in U.S. agriculture and forestry*. Draft Report Prepared for the U.S. Environmental Protection Agency.
- Food, Agriculture, Biodiversity, Land-use, and Energy (FABLE) Consortium). 2019. *Pathways to Sustainable Land-Use and Food Systems. 2019 Report of the FABLE Consortium*. Laxenburg and Paris: International Institute for Applied Systems Analysis (IIASA) and Sustainable Development Solutions Network (SDSN). <https://www.foodandlandusecoalition.org/fableconsortium>
- Building Low Emissions Alternatives to Develop Economic Resilience and Sustainability Project (B-LEADERS). 2018. *Assessment of Water-Energy-Food Trade-offs for Mindanao: Final Report*. Report prepared for U.S. Agency for International Development.
- U.S. Environmental Protection Agency. 2018. *Multi-Model Framework for Sectoral Impacts Analysis: A Technical Report for the Fourth National Climate Assessment*. EPA-430-R-017-001. Prepared sections for report development.
- Bartlett, R.; **Baker, J.S.**, Lacombe, G., Douangsavanh, S. Jeuland, M. 2012. *Analyzing Economic Trade-offs of Water Use in the Nam Ngum River Basin, Lao PDR*. Nicholas Institute for Environmental Policy Solutions.
- Van Houtven, G., Loomis, R., **Baker, J. S.**, Beach, R., Casey, S. *Nutrient Credit Trading for the Chesapeake Bay: An Economic Study*. Chesapeake Bay Commission. May 2012.
- Mosnier, A., Valin, H., Havlík, P., **Baker, J.S.**, Murray, B. C., Feng, S., Obersteiner, M., Rose, S. K., & Schneider, U. (2011). *The net global effects of U.S. biofuel mandates: Fossil fuel displacement, indirect land use change, and the role of agricultural productivity growth*. Report NI R 12-01. Durham, NC: Nicholas Institute for Environmental Policy Solutions, Duke University.
- Baker, J. S.**, Murray, B. C., McCarl, B. A., Rose, S. K., & Schneck, J. (2011). *Greenhouse emissions and nitrogen use in U.S. agriculture: Historic trends, future projections, and biofuel policy scenarios*. NI R 11-08. Durham, NC: Nicholas Institute Environmental Policy Solutions, Duke University.
- Olander, L., Eagle, A., **Baker, J.S.**, Haugen-Kozyra, K., Murray, B. C., Kravchenko, A., Henry, L., & Jackson, R. B. (2011). *Assessing GHG mitigation opportunities and implementation strategies for land management in the United States Synthesis Report for the Technical Working Group on Agricultural GHGs (T-AGG)*. NI R 11-09. Durham, NC: Nicholas Institute for Environmental Policy Solutions, Duke University.
- Baker, J.S.**, & Galik, C. (2009). *Policy options for the conservation reserve program in a carbon-constrained economy*. Climate Change Policy Partnership Working Paper, Duke University.
- (Others available on request).

Manuscripts in Preparation

- Favero, A., Daigneault, A., Sohngen, B., **Baker, J. S.** 2022. Economic factors influence forest carbon debts. *In preparation.*
- Baker, J. S.**, Lauri, P., Daigneault, A., Johnston, C., Forsell, N., Guo, J., Favero, A., Ohrel, S., Sohngen, B. (2022). Greenhouse mitigation potential of wood products: A global multi-model assessment. *In preparation.*
- Latta, G., **Baker, J. S.** Daigneault, A., Ohrel, S., Galik, C. (2022). Estimating leakage potential from voluntary forest carbon market participation in the United States. *In preparation.*
- Dhungel, G., Henderson, J., Rossi, D., Abt, R., Sheffield, R., Harris, R., **Baker, J. S.** (2022). Critical market thresholds for high-grade white oak inventory decline in the central hardwoods region of the United States. *In preparation.*
- Baker, J. S.**, et al. 2022. The critical role of land in food, energy, water, nexus sustainability analysis. *In preparation*
- Liu, B., Sohngen, B. L., **Baker, J. S.** Federal timber restrictions impacts on U.S. softwood planting: Dynamics and investments in forest carbon leakage. (2022). *In preparation.*
- Rossi, D., **Baker, J. S.**, Henderson, J., Abt, R., Brandeis, C., Prestemon, J. (2022). A development of downscaled forest sector pathways for the US south: Implications for carbon storage and forest inventories. *In Preparation.*
- Larson, J., Yao, S., Steller, J., Bean, A., Franzen, K., Ohrel, S., and **Baker, J. S.** (2021). The effect of state-level renewable portfolio standards on biomass use in the U.S. electric power sector. Submitted. *In Preparation.*
- Baker, J. S.**, Havlik, P., Frank, S., Naumenko, A., Ragnauth, S., Ohrel, S. (2020). Implications of asymmetric greenhouse gas mitigation price incentives in agriculture and forestry. *In Preparation.*
- Wade, C. M., **Baker, J. S.**, Cobourn, K. (2022). Groundwater management and limiting damages from land subsidence: A spatiotemporal optimization approach. *In Preparation.*
- Baker, J. S.**, et al. (2022). Socioeconomic and policy factors driving future regional fertilizer demand in the U.S. *In Preparation.*
- Baker, J. S.**, Murray, B. C., McCarl, B. A. Prices vs. Quantities in Managing U.S. Agricultural Nitrogen and Phosphorus Pollution. *In Preparation.*

PROFESSIONAL OUTREACH AND SERVICE

- Director of the Southern Forest Resource Assessment Consortium.
- Research Theme Co-Lead (Regional and Global Scale Analysis), Executive Committee Member, and Co-PI for NSF STC Science and Technologies for Phosphorus Sustainability (STEPS).
- Co-organizer of the Forest Carbon Quantification Consortium

- Co-organizer and Co-PI of the Forest Model Inter-Comparison Project (For-MIP)
- External Advisory Board, ForestNavigator (European Commission Horizon2020 Project led by IIASA)
- Organized 2020/2021 Technical Meeting and 2021 Annual Meeting for SOFAC.
- Co-organized the stakeholder workshop: *Data Analytics and Accelerating Energy Access* with the Duke University Energy Access Project (Washington, D.C., December, 2019)
- Co-organized a one-day workshop to initiate the Forest Model Inter-comparison (For-MIP) effort. Ohio State University, Columbus, OH. (2019)
- Guest editor of a special issue on state-of-the-art approaches for projecting future forest carbon stocks in the *Journal of Forest Economics* (2019)
- Led a capacity building workshop focused on water resource valuation, hydro-economic modeling, and policy analysis at the Universidad del Valle de Guatemala, Guatemala City (2019)
- Participating as a coordinating partner of the U.S. team for the Food, Agriculture, Biodiversity, Land, and Energy (FABLE) Consortium.
<http://sdg.iisd.org/news/fable-consortium-launches-programme-on-integrated-land-use-and-food-systems/>
- Course Instructor: Environmental and Resource Policy (Graduate). North Carolina State University (Spring, 2017 and 2018)
- Co-organized forest economic modelers meeting at the International Institute for Applied Systems Analysis (IIASA).
- Provided technical and logistical support for and presented at the EPA workshop: *Fostering Dialog on the Role of Biomass in Supporting Stationary Source Carbon Strategies*. (2016)
- Helped co-organize Forestry and Agricultural GHG Modeling Forums (2014, 2016 and 2018).
- Presented at multiple U.S. Govt. stakeholder workshops on developing economic projections of greenhouse gas emissions for UNFCCC communication (2015-2016)

- Prepared and Co-Hosted training seminar on ecosystem service valuation *techniques* (Abu Dhabi Emirate, 2014)
- Course Instructor: Environmental Economics (Undergraduate). University of North Carolina, Greensboro (Fall, 2014)
- Co-Organized and spoke at multiple forums on the implications of climate and energy policy on farmers and foresters (2009-2011).
- Agricultural and Applied Economics Association (**Member**)
- Association of Environmental and Resource Economists (**Member**)
- International Society of Forest Resource Economics (**Member**)
- Invited Papers Session (Agricultural and Applied Economics Association Annual Meeting, 2012) (**Organizer**)
- Agricultural and Applied Economics Association Annual Meeting, 2014, 2012, 2010, Western Agricultural Economics Association Annual Meeting, 2006) (**Moderator**)
- *American Journal of Agricultural Economics, Biomass and Bioenergy, Climatic Change, Ecological Economics, Economics Research International, Energy Policy, Energy, Environmental Research Letters, Greenhouse Gas Measurement and Management, Land Economics, Journal of the Association of Environmental and Resource Economists, Journal of Environmental Economics and Management, Natural Hazards Review, Policy Issues, Resource and Energy Economics, Risk Analysis, Sustainability, Western Economic Forum* (**Reviewer**)
- U.S. Department of Agriculture (Economic Research Service) (**Reviewer**)
- U.S. Department of Agriculture (Economic Research Service), National Science Foundation (Decision, Risk, and Management Sciences), Maine Natural Resources Extension Service (**Grant Proposal Reviewer**)

SELECTED RESEARCH SUPPORT

- *Science and Technologies for Phosphorus Sustainability (STEPS)*. National Science Foundation Science and Technologies Center. Co-Principal Investigator. 2021-2026.
- *Quantifying intra-regional leakage from extended rotations in the southern United*

- States*. NCASI. Principal Investigator. 2022-2023.
- *US-China INFEWS*: National Science Foundation. Principal Investigator. 2021-2025.
 - *Modeling growth response of loblolly pine and economic returns from nutrient additions based on a gradient of soil characteristics across the southeastern US*. United States Department of Agriculture McIntire Stennis Program. Co-Principal Investigator. 2021-2024.
 - *A multi-scale decision support tool to quantify forest benefits on water quantity and quality in the Southern United States*. United States Forest Service. Co-Principal Investigator. 2020-2023.
 - *Disaggregated Hardwood Analysis with the Subregional Timber Supply Model (SRTS) – Hardwood SRTS*. Co-Principal Investigator. Virginia Dept. of Forestry. 2020-2022.
 - *Greenhouse Gas and Nitrogen Emissions Scenarios for U.S. Agriculture and Global Biofuels: An Integrated Assessment Approach*. David and Lucile Packard Foundation. Co-Principal Investigator. 2010-2011
 - *Managing Nitrogen in an Evolving U.S. Agricultural Economy*. Environmental NGO. Co-PI. 2011
 - *Cooperative Agreement with USDA-Office of the Chief Economist*. Duke University and USDA Cooperative Agreement. Co-PI.

SELECTED RTI PROJECT EXPERIENCE (2012-2020)

- *Building Resilience in Food, Energy, and Water Systems*. (2020-2021). RTI International Grand Challenge Grant. Principal Investigator.
- *Economic Modeling and Analysis of Clean Air Act Issues*. (2018-2020). U.S. Environmental Protection Agency, Office of Atmospheric Programs, Climate Change Division. Project Manager and Technical Lead.
- *Food, Agriculture, Biodiversity, Land use, and Energy (FABLE) Consortium*. (2019-2020). U.N. Sustainable Development Solutions Network (SDSN). Co-Principal Investigator.
- *Sustainable Economic Observatory, Guatemala*. (2018-2019). U.S. Agency for International Development. Economic Modeler.
- *B-LEADERS Philippines: Water-Energy-Food Trade-off Analysis in Mindanao*. (2017-2018). U.S. Agency for International Development. Economic Modeler

- *Economic Modeling of Environmental, Energy, and Climate Issues*. (2017-2018). U.S. Environmental Protection Agency, Office of Atmospheric Programs, Climate Change Division. Project Manager and Technical Lead.
- *Economic analysis of groundwater conservation strategies in the Abu Dhabi Emirate*. (2017-2019). Executive Affairs Authority, Abu Dhabi Emirate. Economic Modeler.
- *Research and Analysis on Biomass and Bioenergy Feedstocks*: (2015-2017). U.S. Environmental Protection Agency, Office of Atmospheric Programs, Climate Change Division. Project Manager and Technical Lead.
- *Analysis of U.S. and Global Impacts of Renewable Fuel Production and Policies* (2012 to 2020). U.S. Environmental Protection Agency, Office of Transportation and Air Quality. Work Assignment Leader and Economist.
- *Food-Energy-Water Nexus Case Study Application: Pernambuco, Brazil*. (2015). Inter-American Development Bank. Economic Modeler.
- *Driving Forest Productivity & Conservation through Spatial Analysis* (2015). American Forest Foundation. Project Manager and Technical Lead.
- *EPA's Biogenic Accounting Framework for Stationary Source Biomass Consumption* (2014-2015). U.S. Environmental Protection Agency, Office of Atmospheric Programs, Climate Change Division. Project Manager and Technical Lead.
- *Economic Valuation of Groundwater Resources in the Emirate of Abu Dhabi* (2014-2015). Environment Agency, Abu Dhabi. Project Co-manager and Technical Lead.
- *Hydro-economic Modeling in the Nam Ngum Basin, Lao PDR* (2012-2013). Nicholas Institute for Environmental Policy Solutions, International Water Management Institute. Project Manager and Technical Lead.
- *Nutrient Credit Trading in the Chesapeake Bay* (2012-2014): Chesapeake Bay Commission and US-EPA. Economic Modeler.
- *Economic Analysis of Carbon Sequestration Management Practices on Western U.S. Rangelands* (2013-2017). Environmental Defense Fund. Project Manager and Technical Lead.

PROFESSIONAL PRESENTATIONS

Invited Presentations and Seminars (2016-Present)

Baker, J. S. (2021, November). *Integrated Modeling Applications in Resource and Environmental Economics*. CEnREP Colloquia Seminar. Virtual.

- Baker, J. S.** (2021, September). *Climate Change Policy and the U.S. Forest Sector*. Presented at Timberland Investment Resources Annual Meeting. Virtual Event.
- Baker, J. S.** (2021, April). *The Economics of U.S. Forests as a Natural Climate Solution*. Webinar and panel discussion hosted by The Ohio State University. <https://aede.osu.edu/https%3A/aede.osu.edu/faculty-outreach/economics-us-forests-natural-climate-solution-webinar>
- Baker, J. S.** (2021, March). *Alternative Carbon Futures*. Keynote Panel Discussant. North American Carbon Program. Virtual Event.
- Baker, J.S.** (2019, September). *Management and Market Considerations when Projecting Forest Carbon Stocks and Mitigation Potential*. Impacts of Land Use and Land Management on Earth System Evolution: Biogeochemical Cycles, Extremes, and Inter-Sectoral Dynamics. Hosted by the Aspen Global Change Institute, Pacific Northwest National Laboratory, and National Center for Atmospheric Research. (Snowmass, CO)
- Baker, J. S.** (2018, October). *Economic and Policy Considerations on the Role of Natural Climate Solutions for Achieving Climate Stabilization Goals*. Departmental Seminar, Forestry and Environmental Resources, North Carolina State University.
- Havlik, P., and **Baker, J. S.** (2018, September). *Land for mitigation, food, biodiversity and energy: How can do/”model” it all?* Presented at the Low Emissions Solutions Conference at the Global Climate Action Summit. San Francisco, CA.
- Baker, J. S.** (2018, September). *Asymmetric mitigation price incentives in agriculture and forestry: implications for regional land management change and global emissions reduction*. 9th Forestry and Agriculture GHG Modeling Forum. Shepherdstown, WV.
- Baker, J. S., et al.** (2017, March). *The Role of the U.S. and Global Forest Sectors in Achieving Climate Stabilization Goals*. North American Carbon Program Principle Investigators Meeting. Bethesda, Maryland.
- Baker, J. S., et al.** (2017, March). *Potential food security implications of U.S. biomass electricity expansion*. Land use-related negative emissions technologies: Their relevance to food security and SDGs. IIASA, Laxenburg, Austria.
- Baker, J.S., et al.** (2017, February). *Potential Complementarity between Biomass Energy Expansion and Forest Carbon Sequestration Scenarios in a Deep Decarbonization Policy Environment*. CEnREP Colloquia Seminar. NCSU-ARE. Raleigh, NC.
- Baker, J. S.** (2016, October). *Land use mitigation in the U.S.* Presented at the IIASA Pre-COP 22 Planning Conference: Deep Climate Mitigation from Sustainable Agriculture. Laxenburg, Austria.
- Baker, J. S.** (2016, April). *Potential Biomass Demand and Recent Assessments of Biomass Expansion*. Presented at NC Breathe Conference. Charlotte, NC
- Baker, J. S., et al.** (2016, April). *Biomass Demand and Recent Biogenic CO₂ Assessments*. Presented at U.S. EPA Stakeholder Workshop: Fostering Dialog on the Role of Biomass in Supporting Stationary Source Carbon Strategies.

Baker, J. S. (2016). *The use of economic valuation studies in sustainable groundwater management*. Presented at International Water Summit, Abu Dhabi, United Arab Emirates.

(Others available on request).

Academic Conference Presentations (2016-Present)

Baker, J. S., et al., (2022, January). *Can healthier diets and agricultural productivity growth support climate and sustainability policies in the United States?* Presented at the Allied Social Sciences Association (ASSA) Annual Meeting. Virtual.

Liu, B., Sohngen, B. S., **Baker, J. S.** (2021, August). *Dynamics and Investments in Forest Carbon Leakage*. Presented at the Agricultural and Applied Economics Association Annual Meeting. Austin, TX.

Zerriffi, H., Gallardo, R. R., Gonzalez Abraham, C., **Baker, J. S.**, McCord, G. C., Mosnier, A., Wu, G. C. (2020, December). *Multi-country modeling of sustainable land use futures for North American*. Presented at the American Geophysical Union Fall Meeting (virtual).

Daigneault, A., **Baker, J. S.**, Favero, A., Sohngen, B. (2020, August). *A forest model inter-comparison project (For-MIP) to assess the future of forests under climate, policy, and technological stressors*. Presented at the American Agricultural Economics Association Annual Meeting (virtual).

Wade, C. M., **Baker, J. S.**, Cobourn, K. (2019, November). *Groundwater Management and Limiting Damages from Land Subsidence: A Spatial Optimization Approach*. Presented at the Southern Economic Association Annual Meeting (Fort Lauderdale, FL).

Baker, J. S., et al. (2019, July). *Climate Change, International Trade, and Food Security*. Presented at the American Agricultural Economics Association Annual Meeting (Atlanta, GA).

Larson, J., **Baker, J. S.**, Steller, J., Bean, A., Ohrel, S. (2019, June). *Effects of Renewable Portfolio Standards on Bioenergy: An Econometric Approach*. Presented at the International Association of Energy Economists Meeting. Montreal, Quebec.

Latta, G., **Baker, J. S.** Sohngen, B., Ohrel, S., Ragnauth, S. (2019, May). *Economic and policy considerations on large-scale investments in natural climate Solutions to achieve climate stabilization goals*. Association of Environmental and Resource Economists Annual Meeting. Lake Tahoe, Nevada.

Baker, J. S. et al. (2019, May). *Downscaling global forestry projections to regional conditions*. Presented at International Society of Forest Resource Economists. Columbus, OH.

Baker, J. S. et al. (2019, May). *Evaluating aggregation bias with a structural model of the U.S. forest sector*. Presented at International Society of Forest Resource Economists. Columbus, OH.

- Baker, J. S., et al.** (2018, September). *Asymmetric mitigation price incentives in agriculture and forestry: implications for regional land management change and global emissions reduction*. Presented at 9th Forest and Agriculture GHG Modeling Forum. Shepherdstown, WV.
- Baker, J. S., et al.** (2018, June). *Implications of Asymmetric GHG Price Incentives and Bioenergy Expansion on Global Agriculture and Forestry Emissions Mitigation*. Presented at the International Energy Workshop, Gothenburg, Sweden.
- Baker, J. S., et al.** (2018, April). *A general analytical framework for addressing the food-energy-water nexus in the developing world: challenges and opportunities*. Presented at Nexus 2018. University of North Carolina, Chapel Hill, NC.
- Baker, J. S., et al.** (2018, April). *A Hydro-economic Modeling Approach to Quantify FEW Nexus Trade-offs of Alternative Water Infrastructure Development and Management Pathways in Pernambuco, Brazil*. Presented at Nexus 2018. University of North Carolina, Chapel Hill, NC.
- Baker, J. S., et al.** (2017, August). *Potential complementarity between forest carbon sequestration and biomass energy expansion*. Presented at AAEE Annual Meeting, Chicago, IL.
- Baker, J. S., et al.** (2017, August). *Climate change impacts on U.S. agricultural markets: Sensitivity to zone of impact and trade expansion scenarios*. Presented at AAEE Annual Meeting, Chicago, IL.
- Baker, J. S., et al.** (2016, July). *Will the U.S. Forest Sector Remain a Carbon Sink?* Presented at AAEE Annual Meeting, Boston, MA.
- (Others available on request).*