Tosin Kolajo GBADEGESIN

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EDUCATION	**Ph.D. Economics**, Howard University, Washington DC, USA – *Expected April 2026* **M.Sc. Economic Development**, University of Ibadan, Ibadan, Nigeria – *Sept 2018* **B.Sc. Microbiology**, Obafemi Awolowo University, Ile-Ife, Nigeria – Sept *2013*
PROFESSIONAL TRAINING & CERTIFICATES	**Artificial Intelligence with Python**, Harvard University Extension School – *2023* **Post Graduate Program in Data Science**, Career Era & Birchwood University, Orlando, Florida – *2022* **Data Analytics**, Google Career Certificate Program – *2021* **Machine Learning Engineering**, Amazon Web Services Certificate Program – *2021* **Blum Global Fellowship in Development Finance Practice**, Hebrew University Business School & Jerusalem Institute for Policy Research, Israel – *2020*
TECHNICAL SKILLS	**Econometrics** Time Series & Panel Data Analysis; Nonlinear & Bayesian Econometrics; Spatial Econometrics; Structural Equation Modeling; Quantile Regression; IV Regression & GMM; Vector Autoregression & Cointegration; Monte Carlo & Stochastic Frontier Simulations; Maximum Likelihood Estimation (MLE); Causal Inference (DiD, FE, RDD, RCT, PSM, Synthetic Control); Machine Learning–Based Causal Techniques (Causal Forest, CATE, DTE, DR Learners). **Data Science** Data Analysis & Visualization; Data Preprocessing & Cleaning; Statistical Modeling & Inference; Predictive Modeling; ML Algorithms (RF, XGBoost, LightGBM, CatBoost); NLP & Large Language Models (LLM); Deep Learning, Computer Vision & Image Processing; Reinforcement Learning; Model Evaluation & Optimization; Big Data Technologies; Database Management & SQL; Experimental Design & A/B Testing; Data Mining & Feature Engineering; Distributed Computing & Parallel Processing; Cloud Computing. **Programs** Python, R, Stata, IBM SPSS, Google Earth, Tableau, KNIME, MATLAB, PowerBI, SQL, HTML, ArcGIS, JavaScript, GitHub, Azure, and AWS services.
HONORS & AWARDS	**Frederick Douglass Doctoral Scholar**, Howard University Graduate School, 2023–2024 **World Bank Group Africa Doctoral Fellow –** selected as 1 of 32 fellows from over 3,000 applicants, 2023 **Early Career Conference Grant**, Association of Commonwealth Universities (ACU), London, UK – 2019 **Outstanding Research Contribution Award**, *Young African Leaders Journal of Development*, Ethiopia – 2018 **Young WASH Scholar**, Africa Water Association (AfWA) & USAID West Africa – 2018 **YALI Leadership Award in Energy and Environmental Sustainability**, Nigeria – 2018
JOB MARKET PAPER	The Building Energy Performance Standard Program: Impacts on Building's Energy Efficiency and GHG Emissions in Washington, DC [Link]
PUBLICATIONS	"Climate Change and Energy Dynamics: Evidence from BRICS and G7 Countries," *Energy & Environment*, 2024, 0(0). [Link] "Evaluating the Economic Impact of the G20 Compact Initiative: Evidence from Causal Inference Using Advanced Machine" (with N. Yameogo), *Journal of Sustainable Development*, 2024, 17(5), 56–76. [Link] "Defense Expenditure and National Well-Being: Evidence from the G7 Countries," *Defence and Peace Economics*, 2024, 1–12. [Link] "Effectiveness of Collective Action in Reducing Transaction Cost for Smallholder Paddy Farmers in Tanzania" (with L. Popoola), *African Journal of Economic and Sustainable Development*, 2020, 7(4), 391–404. [Link] "Water Availability Challenges in Low-Income Areas of Agbowo Community, Ibadan, Nigeria" (with O. Olayide), *International Journal of Circular Economy and Waste Management*, 2021, 1(1), 81–96. [Link] "Assessment of Women and Children Vulnerability to Water Use in Low-Income Urban Area of Agbowo Community, Ibadan, Nigeria" (with O. Olayide), *International Journal of Sustainability Management and Information Technologies*, 2019, 5(2), 29–34. [Link] "Transaction Cost Factors Affecting the Economic Life of Smallholder Paddy Farmers in Tanzania" (with L. Popoola and L. Muhoni), *Africa Journal of Sustainable Development*, 2019, 8(1). [Link]
World Bank Group Papers	"Climate Shocks and Their Effects on Food Security, Prices, and Agricultural Wages in Afghanistan" (with B. P. J. Andree and A. Braimoh), *Policy Research Working Paper, World Bank Group (PLANET)*, 2024. [Link] "Reproducibility Package for Climate Shocks and Their Effects on Food Security, Prices, and Agricultural Wages in Afghanistan" (with B. P. J. Andree), *World Bank Policy Research Working Papers*, 2024. [Link]

World Bank Group Reports	• International Finance Corporation. (2025). Closing the Gap: A Data Outlook on Women Economic Opportunities. [Link] • International Finance Corporation. (2024). *Repurposing power markets: The path to sustainable and affordable energy for all*. International Finance Corporation. [Link] • The World Bank Group. (2023). *Compact monitoring report: Africa Advisory Group meeting, November 2023*. G20 Compact with Africa. [Link]
Book Chapters	• "A Review on Impact of Changing Climate on Sustainable Food Consumption," in *Global Food Politics and Approaches to Sustainable Consumption*, 2020, 54–76. [Link] • "Climate Change Implication on Airborne Infections: Roadmap for Nigeria's Health Sector Development," in *Handbook of Climate Change Resilience*, 2018, 1–10. [Link]
Blog	• "Better Data for Better Outcomes: New Tools and Analysis to Break Afghanistan's Food Security Crisis" (with B. P. J. Andree and A. Braimoh), *World Bank Blogs*, 2025. [Link]
Work in Progress	• Heterogeneous Effects of Cooling Demand on Household Electricity Consumption using Causal ML Models, [Link] • Impact of Climate-Driven Cooling Demand on U.S. Household Electricity Consumption and Expenditure • Beyond Affordability: A Spatial Econometric Analysis of Renter Cost Burdens and Social Determinants in the United States
CONFERENCES & SEMINARS	**Annual NABE Tech Economics Conference,** NABE, Seattle WA, USA – 2025 **Annual Economic Measurement Seminar**, NABE, Washington DC, USA – 2025 **Empirical Methods in Energy Economics**, EMEE Network & The World Bank, Washington DC, USA – 2025 **American Economic Association / National Economic Association Conference (ASSA Meetings)** – 2024 **Development Studies Association Conference**, Trinity College, Dublin, Ireland – 2019
EMPLOYMENT	**World Bank Group** – Economist Washington, DC | 01/2023 – Present • Lead IFC's flagship research on gender data, producing the first global mapping of public and private indicators on women's economic opportunities and laying the foundation for the IFC's Private Sector Gender Data Hub. • Developed model-based early warning systems for food insecurity (Afghanistan, Yemen) using econometric and VAR approaches, improving lead times for IDA's Early Response Financing by up to 12 months. • Directed high-level economic diagnostics for the Compact with Africa (CwA), producing analyses that informed the Germany-Africa Head of State Summit and Annual Meetings. • Applied advanced econometrics and machine learning methods (DiD, TMLE, PSM, Random Forest, LightGBM, Gradient Boosting) to evaluate policy and investment impacts. • Conducted applied research on energy and extractives markets, refining IFC's AIMM framework to assess development impact and linking power market structure to sector outcomes. • Built predictive models for IFC's debt portfolio, applying machine learning (HistGradient Boosting, LightGBM, CatBoost, XGBoost) and natural language processing (BERT, LDA, LSA, NMF) to identify risks and improve portfolio monitoring. • Engaged senior stakeholders across World Bank Group, academia, private sector, and government, translating research into actionable policy recommendations. **Howard University Graduate School** – Research Assistant | Teaching Assistant Washington, DC | 2024 – 2025 • Collected and processed international trade flow data from the UN Comtrade database to support faculty research (Spring 2024). • Served as Teaching Assistant for *Economics Statistics* (third-year undergraduate), providing instruction support, grading, and student guidance (Fall 2024, Fall 2025). **Edelman Global Advisory** – Research Analyst (Washington, DC | 09/2022 – 12/2022) • Conducted research on trade, regulatory issues, climate change, and health across six regions, tracking client priorities and emerging needs. • Applied advanced data analysis to interpret complex datasets and delivered reports that informed client strategy.

DC Sustainable Energy Utility (DCSEU) & DC Department of Energy and Environment (DOEE)
Energy Efficiency Analyst | Washington, DC | 06/2022 – 12/2022
- Analyzed benchmarking data and responded to technical inquiries, generating actionable insights to support energy efficiency and decarbonization.
- Produced guidance documents and educational materials for decarbonization and housing retrofit programs, supporting low-income households.
- Performed benefit-cost analyses and emissions calculations for DC buildings, reporting on decarbonization and solar initiatives.

Nigerian Economic Summit Group – Bridge Policy Research Fellow (Nigeria | 08/2020 – 08/2021)
- Conducted analyses on COVID-19's socioeconomic impact and assessed national development plans for water and sanitation reform.
- Served as research fellow on Nigeria's water bill and co-led establishment of the UN CEO Water Mandate in Nigeria.
- Contributed to national technical committees and summits, integrating gender and digital technology themes into development planning.

Jerusalem Institute for Policy Research | Gigawatt Global Inc. – Development Finance Specialist
Israel | 01/2020 – 09/2020
- Reviewed feasibility studies for grid-connected solar projects, assessing solar yield, infrastructure, and ESG impacts.
- Applied Google Earth and PVSYST to optimize solar design and interconnection, and conducted energy demand forecasts.
- Built financial models to evaluate returns, risks, and capital requirements for renewable energy investments.

International Institute for Local Development – Data Analyst (Abuja, Nigeria | 09/2019 – 07/2021)
- Applied statistical and machine learning models (Random Forest, AdaBoost, KNN, SVM, CNN) to analyze World Bank–funded rural and agricultural projects.
- Used R, Excel, and Tableau for data visualization and reporting, producing actionable recommendations for decision-makers.

Clean Edge Exclusive Solution – Team Lead, Projects & Programs (Nigeria | 06/2017 – 12/2020)
- Directed project teams deploying mini-grid solar and energy efficiency solutions across Nigeria, engaging 60+ volunteers.
- Evaluated project performance against strategic goals and convened the first Annual Youth Summit on Environment.
- Led a national assessment of Nigeria's plastic circularity landscape with partner organizations.

Africa Water Association & USAID West Africa – Research Fellow (Nigeria | 07/2018 – 12/2018)
- Researched urban water supply challenges in Nigeria, collecting survey data via Kobo Collect and analyzing in SPSS.
- Built Tableau dashboards for reporting and presented findings at an international sustainable development conference.

International Fund for Agricultural Development – Research Fellow (Arusha, Tanzania | 01/2018 – 06/2018)
- Investigated factors affecting smallholder farmers' market access using survey data and analysed with SPSS software and published findings in peer-reviewed journals including *Africa Journal of Sustainable Development*.

Crown FM Broadcast Group & Independent Media – Research Analyst (Nigeria | 06/2013 – 06/2016)
- Conducted market research to guide multi-platform content strategy and analyzed digital performance metrics (SEO, engagement) to optimize audience reach.