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 & Causal Inference** Panel & Time-Series Models; IV & GMM; Spatial Econometrics; DiD; RDD; PSM; Fixed Effects; Synthetic Control; Quantile Regression; Causal ML (CATE, Causal Forest, DML, DTE, CDTE) **Data Science & Machine Learning** Exploratory Data Analysis; Predictive Modeling; Ensemble methods (Boosting: XGBoost, LightGBM; Bagging: Random Forest; Stacking: Super Learner), Model Evaluation & Optimization; NLP & LLMs; Deep Learning; Experimental Design, A/B Testing; Feature Engineering. **Programming & Tools** Python, R; Stata; SQL; Power BI; Tableau; MATLAB; ArcGIS; Google Earth; HTML/JavaScript; GitHub; Azure; AWS.
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]
Ongoing Research	• 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, including the design of automated data pipelines and BI dashboards. • 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 quantitative analyses that informed the Germany-Africa Head of State Summit and Annual Meetings. • Applied econometrics and machine learning methods (DiD, TMLE, PSM, Random Forest, LightGBM, Gradient Boosting) to evaluate policy and investment impacts, integrating statistical analysis and causal inference design. • 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) to identify risks and improve portfolio monitoring. • Engaged senior stakeholders across World Bank Group, academia, private sector, and government, translating complex data-driven findings into compelling narratives and strategic 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 quantitative analyses on trade, climate, and health data across regions and multiple EGA business sectors using Python to extract insights that informed strategic and regulatory decisions. • Developed automated tracking tools and dashboards to monitor client trends in priority sectors, translating complex datasets into actionable intelligence that supported evidence-based policy and business strategies. **DC Sustainable Energy Utility (DCSEU) & DC Department of Energy and Environment (DOEE)** Energy Efficiency Analyst	Washington, DC	06/2022 – 12/2022 • Analyzed benchmarking data for large DC buildings using Python to conduct cost-benefits and emissions savings analyses that informed energy efficiency initiatives. • Developed guidance materials and statistical reports for decarbonization pilots, affordable housing retrofits, and the Solar for All program. • Delivered data-driven insights and interactive dashboards by designing automated analytics pipelines and responding to stakeholder inquiries on renewable energy programs.

Nigerian Economic Summit Group – Bridge Policy Research Fellow (Nigeria | 08/2020 – 08/2021)
- Analyzed COVID-19 household impact data and reviewed national development plans in water resources and sanitation to inform policy reforms.
- Co-led the establishment of the UN CEO Water Mandate in Nigeria and contributed to medium-term national development frameworks and Agenda 2050.
- Provided technical input at the Nigerian Economic Summit, advancing gender mainstreaming and digital innovation strategies for private sector growth.

Jerusalem Institute for Policy Research | Gigawatt Global Inc. – Development Research Specialist
Israel | 01/2020 – 09/2020
- Assessed pre-feasibility and feasibility studies for grid-connected solar projects, analyzing solar yield, transmission infrastructure, financial structuring, and ESG impacts.
- Designed and optimized solar transmission and interconnection lines using Google Earth and PVSYST, conducting irradiation and energy demand analyses to inform project planning.
- Built financial models and mobilized project financing, engaging investors, development finance institutions, and diplomatic stakeholders to secure capital and trade support.

International Institute for Local Development – Data Analyst (Abuja, Nigeria | 09/2019 – 07/2021)
- Applied statistical analysis and machine learning (Random Forest, AdaBoost, KNN, SVM, CNN) to evaluate World Bank–funded rural access and agricultural projects, generating insights for decision-making.
- Processed, cleaned, and visualized data using Excel, R, and Tableau, ensuring accuracy and integrity across large datasets.
- Produced reports and presentations that translated analytical findings into actionable recommendations for project stakeholders.

Clean Edge Exclusive Solution – Team Lead, Projects & Programs (Nigeria | 06/2017 – 12/2020)
- Directed teams deploying mini-grid solar and energy efficiency projects, while coordinating sustainability initiatives with over 60 volunteers.
- Designed and implemented evaluation frameworks to measure project performance, alignment with objectives, and community impact.
- Co-convened Nigeria's first Annual Youth Summit on Environment and led a national assessment of plastic circularity in partnership with the World Bank Group and PwC.

Africa Water Association & USAID West Africa – Research Fellow (Nigeria | 07/2018 – 12/2018)
- Researched urban water supply challenges in Nigeria, designing and managing data collection pipelines with Kobo Collect survey tool, performing statistical analyses in SPSS and R, and generating actionable insights.
- Developed interactive Tableau dashboards and automated reporting workflows using SQL and Python, presenting results at an international sustainable development conference.

International Fund for Agricultural Development – Research Fellow (Arusha, Tanzania | 01/2018 – 06/2018)
- Analyzed survey data using R to identify factors influencing smallholder farmers' market access, applying econometric techniques to generate actionable insights.
- Authored and published findings in peer-reviewed journals, including the Africa Journal of Sustainable Development, translating technical results into policy-relevant recommendations.

Crown FM Broadcast Group & Independent Media – Research Analyst (Nigeria | 06/2013 – 06/2016)
- Led data-driven market research initiatives, integrating SQL-based querying and Python analytics to assess audience behavior and content performance across digital platforms.
- Developed interactive dashboards and performance metrics (engagement) to inform strategic content decisions and enhance multi-platform reach.