

Tosin Kolajo GBADEGESIN

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EDUCATION	Ph.D. Economics (Applied Economics) M.A. Economics (<i>awarded en route to Ph.D.</i>) Howard University, Washington DC, USA	2023 - 2026
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M.Sc. Sustainable Development (Economic Development) University of Ibadan, Ibadan, Nigeria	2016 - 2018
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B.Sc. Microbiology Obafemi Awolowo University, Ile-Ife, Nigeria	2009 - 2013
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NON-DEGREE PROGRAMS	Artificial Intelligence with Python , Harvard University Extension School, 2023
	Post Graduate Program in Data Science , Career Era and Birchwood University, Orlando, Florida, USA – 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
	Certificate Course on Foundation of Sustainable Development , The Earth Institute, Columbia University, New York, USA – 2017

TECHNICAL SKILLS	Econometrics Time Series & Panel Data, Nonlinear & Bayesian Econometrics, Spatial Econometrics & Structural Equation Modeling, Quantile Regression, Factor/Component Analysis, IV Regression, Vector Autoregression & Cointegration, Monte Carlo & Stochastic Frontier Simulations, MLE, Traditional Causal Inference (DiD, FE, RDD, RCT), Machine Learning–Based Causal Techniques (Causal Forest, TMLE, DR ML, Quantile Models)
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Data Science	Data analysis & visualization, Data preprocessing & cleaning, statistical modeling & inference, Predictive modeling, ML algorithms, NLP, LLM, deep learning, computer vision and image processing, reinforcement learning, model evaluation, and optimization techniques, big data technologies, database management, experimental design and A/B testing, data mining, and feature engineering, distributed computing and parallel processing, and cloud computing.
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Programs	Python, R, Stata, IBM SPSS, Google Earth, Tableau, KNIME, MATLAB, PowerBI, SQL, HTML, ArcGIS, JavaScript, GitHub, Azure, and AWS services.
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WORK EXPERIENCE	Economist , 01/2025 – Date World Bank Group - IFC Gender & Economic Inclusion Department (CGETL) <ul style="list-style-type: none">Lead the technical vision and architecture for the IFC's Private Sector Gender & Economic Inclusion Data Hub, overseeing the design and implementation of scalable data infrastructure, including data engineering, visualization, data stories, and UI/UX.Authored a methods paper for the Data Hub, outlining thematic coverage, indicator selection criteria, and statistical standards to ensure transparency.Provides strategic and technical leadership to data engineers and scientists, translating economic research objectives into practical data solutions.Lead stakeholder engagement and cross-functional coordination, bridging the data needs of industry specialists, economists, academics, and policy researchers; oversee legal and data security protocols for data licensing, privacy, and access control.Serves as Lead Author for IFC's flagship report on gender data gaps (incorporated as a chapter in UN Flagship Report on Gender Equality).
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Economist , 11/2023 – 12/2024 World Bank Group WB Chief Statistician (DECCS) Agriculture & Food Global Practice (AGFGP) <ul style="list-style-type: none">Developed model-based approaches for Early Response Financing in food insecurity, using Afghanistan and Yemen as case studies to create advanced monitoring systems with improved lead times.

- Conducted comprehensive risk analyses by reviewing recent research and IDA documents, enabling the activation of Early Response Finance up to 12 months in advance.
- Performed detailed analyses on Real-Time Price data to identify emerging food crisis risks, ensuring timely and targeted response measures.
- Utilized analytical techniques, including Logit and VAR models, to generate insights that informed Food Security Crisis Preparedness Plans and were effectively communicated to diverse audiences.

Economist, 08/2023 – 06/2024

World Bank Group - IFC | Economic Policy Research Department (CERCD)

- Contributed to the development of the comprehensive Compact with Africa (CwA) report by providing country-level private sector diagnostics, climate, and development analyses, generating actionable insights.
- Led the outcome assessment chapter and synthesized key findings, directly informing high-level CwA activities such as the Germany-Africa Head of State Summit and Annual General Meetings.
- Employed econometric methods including TMLE, Propensity Score Matching, and Difference-in-Differences to quantify CwA's impact on both macro and microeconomic factors.
- Applied machine learning ensemble models (Random Forest, LightGBM, Gradient Boosting) for average treatment effect estimation, ensuring robust and data-driven causal insights.

Economist, 07/2023 – 06/2024

World Bank Group - IFC | Development Impact Infrastructure Unit (CDIIN) | Energy & Extractives

- Conducted in-depth research and analytics on power market structure while developing and refining AIMM frameworks to assess IFC's investments in energy and extractives industry.
- Applied AIMM frameworks across various stages of the investment cycle to evaluate the development impact of energy projects and analyze global and regional trends in power market dynamics.
- Led data collection, market research, and econometric analysis using methods such as fixed effects, random effects, and DiD to uncover relationships between energy sector outcomes and power market structure.

Data Scientist, 01/2023 – 08/2023

World Bank Group- IFC | Corporate Portfolio Management (CPMDO)

- Utilized financial data and risk metrics to conduct deep-dive research into IFC's debt portfolio, identifying potential risks and assessing performance.
- Extracted data from ODS and Dremio using SQL, Python, and Excel to perform complex analyses, develop machine learning models (Histgradient Boost, LightGBM, CatBoost, XGBoost) for predicting non-performing loans, and generate visualizations.
- Employed natural language processing methods (BERT, LDA, LSA, NMF, spaCy) to extract critical insights from investment and portfolio reports, enhancing the depth and accuracy of the analysis.

Research and Analyst – Part-time, 09/2022 – 12/2022

Edelman Global Advisory (EGA), Washington DC

- Conducted in-depth research and analysis on trade, regulatory issues, climate change, and health across six regions and multiple sectors, while tracking EGA clients to understand evolving needs.
- Utilized advanced data analysis techniques to interpret complex datasets and delivered informative reports that enabled strategic decision-making.

Energy Efficiency Analyst, 06/2022 – 12/2022

DC Sustainable Energy Utility (DCSEU) & DC Department of Energy and Environment (DOEE)

- Analyzed extensive benchmarking data and fielded inquiries from DCSEU and DOEE, delivering actionable insights to support energy efficiency and decarbonization initiatives.
- Created comprehensive guidance documents and educational materials for pilot decarbonization and affordable housing retrofit programs, translating research findings into practical support for low-income households.
- Conducted benefit-cost analyses and emissions savings calculations for large DC buildings, and produced detailed reports for decarbonization and solar initiatives to drive measurable improvements in renewable energy outcomes.

Bridge Policy Research Fellowship – Part-time, 08/2020 – 08/2021

Nigerian Economic Summit Group

- Conducted comprehensive data analysis on COVID-19's socioeconomic impact and critically assessed national development plans in water resources and sanitation, generating actionable insights for policy reform.

- Served as a research fellow on Nigeria's water bill and co-led the establishment of the UN CEO Water Mandate in Nigeria, contributing expert recommendations that shaped national water management frameworks.
- Participated in high-level technical committees and strategic planning for Nigeria's Medium-Term National Development Framework and Economic Summits, integrating key themes like gender mainstreaming and digital technology to drive sustainable outcomes.

Data Analyst, 09/2019 – 07/2021

International Institute for Local Development, Abuja, Nigeria

- Utilized comprehensive statistical analysis and machine learning models (random forest, AdaBoost, KNN, SVM, CNN) to extract valuable insights for World Bank-funded rural and agricultural projects, enhancing decision-making and project evaluation.
- Employed MS Excel, R, and Tableau for precise data manipulation and visualization, producing detailed reports and presentations that effectively conveyed key findings and actionable recommendations.

Team Lead, 06/2017 – 12/2020

Projects & Programs - Part-time, Clean Edge Exclusive Solution

- Spearheaded project teams to deploy Mini-Grid Solar and Energy Efficiency Solutions in Nigeria, while leading initiatives such as Save the Environment, Sustainable Agriculture, and Energy for Minorities with a team of over 60 volunteers.
- Implemented robust evaluation processes to assess project performance against strategic objectives, ensuring consistent delivery of outputs.
- Co-convened the first Annual Youth Summit on Environment and led an in-depth assessment of Nigeria's Plastic Circularity Landscape in collaboration with leading organizations.

Development Finance Specialist, 01/2020 – 09/2020

Jerusalem Institute for Policy Research | Gigawatt Global Inc., Israel

- Conducted comprehensive reviews of pre-feasibility and feasibility studies for grid-connected solar projects, evaluating solar yield, infrastructure requirements, and environmental and social impacts.
- Utilized tools like Google Earth and PVSYST to optimize power transmission and interconnection designs, performing solar irradiation and energy demand assessments.
- Developed and analyzed robust financial models to assess project returns, risk factors, and capital requirements for renewable energy initiatives.

Research Fellow, 07/2018 – 12/2018

Africa Water Association & USAID West Africa, Nigeria

- Conducted evidence-based research on water supply challenges in Ibadan, Nigeria, incorporating survey data collection using Kobo Collect.
- Applied IBM SPSS for descriptive and inferential statistics and developed a data reporting infrastructure with Tableau.
- Disseminated findings through publication in an international journal and presentation at a major sustainable development conference.

Research Fellow, 01/2018 – 06/2018

International Fund for Agricultural Development, Arusha, Tanzania

- Conducted a study on factors affecting smallholder farmers' market access, funded by the International Fund for Agricultural Development and supported by the Master's in Development Practice Global Association at Columbia University, New York.
- Employed IBM SPSS for descriptive and inferential statistical analysis to generate insights, with findings published in reputable journals such as the Africa Journal of Sustainable Development and the African Journal of Economic and Sustainable Development.

Research Analyst, 06/2013 – 06/2016

Crown FM Broadcast Group & Independent Media

- Conducted research to identify trending topics and audience interests, guiding the creation and refinement of compelling, multi-platform stories.
- Analyzed social media and website performance metrics, including SEO insights, to optimize content quality and enhance audience engagement.

Work in Progress	Heterogeneous Effects of Cooling Demand on Electricity Consumption: Evidence from U.S. Households using Causal ML
	Impact of Climate Change on Electricity Demand and Electricity Cost in U.S. Residential Households
	The Building Energy Performance Standard Program: Impacts on Building's Energy Efficiency and GHG Emissions in Washington, DC
	Beyond Affordability: A Spatial Econometric Analysis of Renter Cost Burdens and Social Determinants in the United States
PUBLICATIONS	Gbadegesin, T. K. (2024). Climate change and energy dynamics: Evidence from BRICS and G7 countries. <i>Energy & Environment</i> , 0(0). https://doi.org/10.1177/0958305X241302692
	Gbadegesin, T., and Yameogo, N. (2024). Evaluating the Economic Impact of the G20 Compact Initiative: Evidence from Causal Inference Using Advanced Machine. <i>Journal of Sustainable Development</i> , 17(5): 56 -76. https://doi.org/10.5539/jsd.v17n5p56 .
	Gbadegesin, T. (2024). Defense Expenditure and National Well-Being: Evidence from the G7 Countries. <i>Defence and Peace Economics</i> , 1–12. https://doi.org/10.1080/10242694.2024.2413232 .
	Gbadegesin, T. & Popoola, L. (2020). Effectiveness of collective action in reducing transaction cost for smallholder paddy farmers in Tanzania. <i>African Journal of Economic and Sustainable Development</i> , 7(4): 391–404.
	Gbadegesin, T., & Olayide, O. (2021). Water Availability Challenges in Low-Income Areas of Agbowo Community, Ibadan, Nigeria. <i>International Journal of Circular Economy and Waste Management</i> , 1(1): 81–96.
	Gbadegesin, T., & Olayide, O. (2019). Assessment of Women and Children Vulnerability to Water Use in Low-Income Urban Area of Agbowo Community, Ibadan, Nigeria. <i>International Journal of Sustainability Management and Information Technologies</i> , 5(2): 29-34.
World Bank Group Papers	Gbadegesin, T., Popoola L., & Muhoni, L. (2019). Transaction Cost Factors Affecting the Economic Life of Smallholder Paddy Farmers in Tanzania. <i>Africa Journal of Sustainable Development</i> , 8(1).
	Gbadegesin, T. K., Andree, B. P. J., & Braimoh, A. (2024). <i>Climate shocks and their effects on food security, prices, and agricultural wages in Afghanistan</i> . Policy Research Working Paper; PLANET. World Bank Group. http://documents.worldbank.org/curated/en/099903212122414533/IDU18ea67e261706514cf21842c1d1f2cfc6bedd
	Gbadegesin, T., & Andrée, B. P. J. (2024). <i>Reproducibility package for Climate Shocks and Their Effects on Food Security, Prices, and Agricultural Wages in Afghanistan</i> . World Bank Policy Research Working Papers. https://reproducibility.worldbank.org/index.php/catalog/232/study-description#project_desc_container1674845066822
World Bank Group Reports	International Finance Corporation. (2024). <i>Repurposing power markets: The path to sustainable and affordable energy for all</i> . International Finance Corporation. https://www.ifc.org/en/insights-reports/2024/repurposing-power-markets-for-sustainable-and-affordable-energy
	Integrated Food Security Phase Classification (IPC). (2024). <i>IPC Acute Food Insecurity Analysis: Afghanistan, March - October 2024</i> . ReliefWeb. https://reliefweb.int/report/afghanistan/afghanistan-ipc-acute-food-insecurity-analysis-march-october-2024-published-27-may-2024
	The World Bank Group. (2023). <i>Compact monitoring report: Africa Advisory Group meeting, November 2023</i> . G20 Compact with Africa. https://thedocs.worldbank.org/en/doc/d47e065b71247ba031d57c3d1da09faf-0630012024/original/CwA-Monitoring-Report-Nov-2023-Nov15-Final.pdf
Book Chapters	Gbadegesin, T. (2020). <i>A Review on Impact of Changing Climate on Sustainable Food Consumption</i> . Global Food Politics and Approaches to Sustainable Consumption, 54–76.
	Gbadegesin, T. (2018). <i>Climate Change Implication on Airborne Infections: Roadmap for Nigeria's Health Sector Development</i> . Handbook of Climate Change Resilience, 1–10.
Blog	Gbadegesin, T. K., Andree, B. P. J., & Braimoh, A. (2025, February 13). Better data for better outcomes: New tools and analysis to break Afghanistan's food security crisis. <i>World Bank Blogs</i> . https://blogs.worldbank.org/en/opendata/better-data-for-better-outcomes--new-tools-and-analysis-top-brea
NOTABLE ACHIEVEMENTS	Early Career Conference Grant , Association of Commonwealth Universities (ACU), London, UK – 2019
	Outstanding Research Contribution Award , Young African Leaders Journal of Development Africa Union, Ethiopia – 2018

Young WASH Scholar, Africa Water Association (AfWA) in collaboration with USAID West Africa – 2018

YALI Leadership Award in Energy and Environmental Sustainability, Mandela Washington Alumni Fellowship of Nigeria and US Embassy, Nigeria – 2018

Young IFAD Scholar, International Fund for Agricultural Development in collaboration with Global Master's in Development Practice, Columbia University, New York, and the University of Ibadan, Nigeria – 2018

Conference Grant Award, University of Ibadan, Nigeria Africa Conference on Business Ethics and Corporate Social Responsibility – 2017

**SELECTED
CONFERENCES
& SEMINARS**

Annual Economic Measurement Seminar, National Association for Business Economics (NABE), Washington DC, USA. – 2025

International Workshop on Empirical Methods in Energy Economics – 2025

American Economic Association (National Economic Association) Conference – 2024

Development Studies Association Conference organized by Marino Institute of Education and Trinity College, Dublin, Ireland – 2023

Access to Water Challenges in Low-Income Urban Areas at Nigeria's National Conference on Water Supply and Hygiene – 2019

Ibadan Sustainable Development Conference, Centre for Sustainable Development, University of Ibadan, Nigeria – 2018

Symposium for Climate Change and Adaptation in Africa, University of Ibadan, Nigeria – 2018