

Bernardo Alves Furtado

*Senior Researcher and Public Manager
Quantitative Modeling and Data Science for Public Policy*

Public management experience

- 2013–2015 **Deputy Director**, *Regional, Urban and Environmental Studies (DIRUR)*, Ipea
- 2015–2019 **Coordinator**, *Sectoral Studies (DISET)*, Ipea
- 2023 **Coordinator**, **Financing and Investment Studies**, *DISET*, Ipea
- 2019–2021 **Division Chief**, *Productive Systems*, Ipea
- 2022–2023 **Acting Coordinator**, **Master's Program**, *DISET*, Ipea
- 2011–2013 **Coordinator**, **Urban Studies**, Ipea

Civil service position

- 2009–present **Planning and Policy Researcher (TPP)**, *Institute for Applied Economic Research (Ipea)*, Ministry of Planning, Full-time, tenured
Ranked 3rd in national competitive examination.

Key deliverables

- Fiscal simulation PolicySpace – simulation platform modeling municipal public finances, real estate markets, and public policies across Brazilian metropolitan regions (2015–present).
- Housing Study on urban insertion, accessibility, and costs of Brazil's Minha Casa Minha Vida program, in cooperation with the Ministry of Cities (2013–2015).
- Carbon and emissions Counterfactual simulations of carbon tax effects on emissions and firm-level innovation in Brazil (*Energy Policy*, 2026), supporting the regulation of the Brazilian Emissions Trading System (SBCE, Law 15.042/2024).
- Open platform PolicySpace3 – open, reproducible ex ante policy simulation platform (source code, documentation and interactive dashboard published, 2026).
- Infrastructure Integrated infrastructure model with University of Oxford (ITRC), 2018.
- International cooperation ECLAC project on urban networks in Latin America (2009–2012). Foresight for Development, ECLAC/Chile (2025).

Education

- 2018 **Post-doctoral fellow / Visiting scholar**, *University of Oxford*, UK, Infrastructure Transitions Research Consortium (ITRC)
- 2008–2009 **PhD in Geosciences**, *Utrecht University*, Netherlands, co-tutorship with UFMG
- 2005–2009 **PhD in Economics**, *Federal University of Minas Gerais*, CEDEPLAR
- 2000–2003 **Master's in Geography – Spatial Information**, *PUC Minas*
- 1989–1994 **Bachelor's in Architecture and Urbanism**, *UFMG*

Brasília–DF – Brazil

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Relevant complementary training

- 2025 **Foresight for Development**, ECLAC/CEPAL, Chile, 60h
- 2023 **Causal Econometrics**, Ipea, 20h
- 2019 **Machine Learning**, Ipea, 20h
- 2017 **Systemic Thinking**, ENAP (*National School of Public Administration*), 20h
- 2014 **Complex Systems Summer School**, Santa Fe Institute, USA, 160h

Technical competencies

- Programming Python (advanced), SQL, R, Stata, SAS, Matlab, Julia, L^AT_EX
- Modeling Agent-based simulation (ABM), spatial econometrics, machine learning, counterfactual analysis
- Tools Git/GitHub, data science workflows, GIS/geoprocessing, large-scale data analysis
- Management Multidisciplinary team leadership, research project management, interinstitutional coordination, graduate student supervision (9 Master's students completed)

Current projects

- 2025– CAPES PROCAD (88887.203355/2025-00): Strategies for addressing environmental macro-crime – computational modeling applied to public safety.
- 2023– PolicySpace3: comparative public policy simulation with endogenous, empirical, and spatial approach.
- 2024– SobreVIDA (CNPq 404452/2023-0): simulation of intimate partner violence.
- 2023– Energy transition in oil-dependent cities (with University of Leeds and NIBR/Oslo Metropolitan University).

Teaching

- 2015–present **Permanent faculty**, *Master's in Public Policy and Development*, Ipea
Courses: Agent-based modeling, Python for public policy, Territorial development and infrastructure.
- 2021–2022 **Adjunct lecturer**, IDP/IBMEC, MBA in Data Science and Digital Finance

Recognition

- 2018 Offered tenure-track Assistant Professor position in Geography and Geoinformation Systems, George Mason University (Fairfax, VA) – declined to remain in Brazilian public service.
- 2014–2023 Research Productivity Fellowship, CNPq (Level 2).
- 2012 V SOF Monograph Award, Ministry of Planning.
- 2009 Ranked 1st in competitive examination for Associate Professor, Architecture and Urbanism, UFMG.

Languages

- Portuguese Native
- English Proficient (C2)

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Selected high-impact publications

- 2026 Rocha Lima, G.L., **Furtado, B.A.**, Lopes, O.F. Innovation or contraction? Unpacking the effects of carbon taxes and subsidies on emissions in Brazil. *Energy Policy*, v. 211.
- 2026 **Furtado, B.A.**, Rocha Lima, G.L., Vasconcelos, J.V.L. PolicySpace3: an open platform for ex ante public policy simulation. *Radar*, n. 82, Ipea.
- 2025 **Furtado, B.A.** Complex systems interplay: cities and institutions. *Handbook on Institutions and Complexity*. Edward Elgar.
- 2025 Mori Madeira, L., **Furtado, B.A.**, Ribeiro, L. Empowering Change: Harnessing Computer Simulations to Combat Violence Against Women in Brazil. *Palgrave Handbook of Criminology and the Global South*. Springer.
- 2022 **Furtado, B.A.** Simulation Modeling as a Policy Tool. *The Routledge Handbook of Policy Tools*.

Full record: 25+ peer-reviewed articles, 6 books, 15+ book chapters. OrCID: 0000-0002-1545-8490