

Andrés André Camargo Bertel

PhD Candidate in Mechanical Engineering Uninorte | Barranquilla, Colombia

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PROFESSIONAL SUMMARY

Mechanical Engineer, M.Sc. in Mechanical Engineering, and PhD Candidate specializing in energy systems modeling, transport decarbonization, and industrial decarbonization. Combines short-, medium-, and long-term energy modeling with renewable energy integration analysis and systems optimization to support data-driven decision-making. Brings strong experience in simulation using EnergyPLAN and OSeMOSYS, as well as data analysis, bridging technical and policy perspectives to design low-carbon development pathways across Latin America. Driven by a passion for research and innovation, aims to connect energy modeling with policymaking to support the energy transition.

EDUCATION

PhD Candidate in Mechanical Engineering | Universidad del Norte, Colombia (08.2024-06.2028)

M.Sc. in Mechanical Engineering | Universidad del Norte, Colombia (07.2022-07.2024)

B.Sc. in Mechanical Engineering | Universidad del Norte, Colombia (01.2017-11.2021)

PROFESSIONAL & RESEARCH EXPERIENCE

Energy Modeler | National Mining and Energy Planning Unit (UPME), Colombia

Energy system modelling for Colombia's national government to support informed policy decision-making.

- Energy Modeler (01.2026-present)
- Energy Data Analyst (08.2025-12.2025)

Teaching Assistant | Universidad del Norte, Colombia

Teaching and mentoring undergraduate engineering at Universidad del Norte.

- Dynamic Systems Modeling (02.2024-05.2025)
- Process Instrumentation and Control Laboratory (07.2023-11.2024)
- Fluid Mechanics Laboratory (02.2023-05.2023)
- Thermodynamics II (02.2023-05.2023)
- Manufacturing Processes Laboratory (07.2022-05.2023)
- Thermodynamics I (07.2022-11.2022)

Consulting Engineer-Researcher | Universidad del Norte, Colombia

Technical support to industry and academia in solving applied engineering problems.

- Technical, economic, and environmental assessment of green ammonia production in Colombia: Towards a national roadmap (2026)
- Experimental modeling and validation of carbon monoxide dispersion in residential buildings from natural gas appliances (2025)
- Evaluation of palm rachis treatment alternatives in a 20-25 ton/day crude palm oil processing plant (2024)
- Technical specifications for boiler HRSG-3 coating selection per ISO 12944 (2023)
- Role of transport electrification in renewable energy integration in Colombia: future scenario analysis (2022-2023)
- Gecelca Hydrogen Phase II: design and evaluation of a pilot project for hydrogen use in the Gecelca G3.2 auxiliary boiler (2022)

PUBLICATIONS

National Mining and Energy Planning Unit (UPME), *National Energy Plan, Volume II - Results 2025-2055*, Bogotá, Colombia. Member of the document's drafting team; transport-sector modeler. (*Institutional Report, Forthcoming-Expected August 2026*)

A. A. Camargo-Bertel, A. González-Quiroga, and O. Pupo-Roncallo, "Decarbonizing the cement industry in Latin America and the Caribbean," *International Cement Review*, UREMA Research Unit, Universidad del Norte, Colombia. (*Invited Contribution, Forthcoming-Expected August 2026*)

A. A. Camargo-Bertel, J. Alvarez-Navas, J. Mercado-Barrera, B. Fronk, A. Gonzalez-Quiroga, and O. Pupo-Roncallo, "Strategies, barriers, and policies for the decarbonization of the iron and steel industry in Latin America," *Energy Research & Social Science*, vol. 2026, p. 104711, 2026. doi: 10.1016/j.erss.2026.104711 (*Scientific Publication*)

A. A. Camargo-Bertel, A. Gonzalez-Quiroga, **M. Yuan**, and O. Pupo-Roncallo, "Electrification of passenger road transport to support renewable energy integration: A case study of Colombia," *Smart Energy*, vol. 20, p. 100217, 2025. doi: 10.1016/j.segy.2025.100217 (*Scientific Publication*)

A. A. Camargo-Bertel, D. Hincapie, V. Pugliese, A. González-Quiroga, and O. Pupo-Roncallo, "Decarbonizing the cement industry in Latin America and the Caribbean: A comprehensive review of strategies, barriers, and policies," *Energy Conversion and Management: X*, vol. 2025, p. 100956, 2025. doi: 10.1016/j.ecmx.2025.100956 (*Scientific Publication*)

A. A. Camargo-Bertel, C. Lizarazo, L. Corredor, J. Campillo, A. González-Quiroga, and O. Pupo-Roncallo, "Analyzing trends in energy modeling tools in Latin America: A comprehensive review," *Energy Reports*, vol. 2024, p. 08.080, 2024. doi: 10.1016/j.egyr.2024.08.080 (*Scientific Publication*)

A. A. Camargo-Bertel, *The role of passenger road transport electrification in renewable energy integration in Colombia: future scenario analysis*, Master's thesis, Universidad del Norte, Barranquilla, Colombia, 2024. Available at: <http://hdl.handle.net/10584/12884> (*Master's Thesis*)

Manuscripts Under Review

C. Lizarazo, **A. A. Camargo-Bertel**, J. Fajardo, L. Corredor, A. Gonzalez-Quiroga, and O. Pupo-Roncallo, "A scenario-based model for assessing hydrogen production pathways in Colombia with horizons 2030 and 2050" (*Manuscript under review*).

A. A. Camargo-Bertel, P. Forero-Ocho, A. M. Orozco-Idrobo, A. Gonzalez-Quiroga, and O. Pupo-Roncallo, "Strategies, barriers, and policies for decarbonizing road transport in Latin America" (*Manuscript under review*).

AWARDS & HONORS

- Best Adjunct Professor Award-Universidad del Norte (2024)
- 100k-Clima Fellowship-Penn State University (2024)
- National PhD Scholarship (933)-Minciencias (2024)
- Julio Muvdi Master's Scholarship-Universidad del Norte (2022)
- Academic Excellence Recognition-Universidad del Norte (2022)
- "Ser Pilo Paga" National Scholarship-Mineducacion (2016)

SKILLS

Energy modelling: EnergyPLAN, OseMOSYS
Programming & Data Analysis: Python, R