



[linkedin.com/in/paulacsborba/](https://www.linkedin.com/in/paulacsborba/)

Paula Borba

Civil Engineer, D.Sc

Research profile

Energy systems researcher specializing in long-term decarbonization pathways, climate impacts on renewables, land-energy modeling, and optimization-based planning. Experienced with high-resolution spatial modeling, climate datasets, uncertainty analysis, and integrated assessment frameworks. Proven ability to lead multidisciplinary research and consultancy work.

Areas

- High-renewable energy systems and long-term expansion planning
- Decarbonization pathways for industry, transport, and electricity
- Climate change impacts on wind and solar resources
- Optimization models (dispatch, capacity expansion, land-use constraints)
- Offshore wind and hydrogen production systems
- Integration of land use, biodiversity, and renewable energy
- Energy and water nexus, drought resilience, and system adequacy

Experience

Associate researcher fellow at Princeton

Sep 2026 –
Princeton University
Net Zero Projects – worldwide

Visiting researcher at BOKU

Sep 2021– Jul 2023
University of Natural Resources and Life Sciences, Vienna
Institute of Sustainable Economic Development
Vienna, Austria
Climate neutral energy- and land systems

Researcher at INPE

Aug 2023– Sep 2026
National Institute for Space Research (INPE)
Laboratory of Modeling and Studies on Renewable Energy Resources
São José dos Campos – São Paulo – Brazil
Energy system modeling, climate change, renewable resources, land use, remote sensing, biofuels, green hydrogen

External consultant at IEMA

Sep 2025 – Sep 2026
Instituto de Energia e Meio Ambiente (IEMA)
Net Zero Brazil Project (Princeton University)
Energy system modeling, climate change, land-use, energy planning, operational planning

Visiting doctoral researcher at TU Delft

Sep 2021– Jul 2023
TU Delft
Technology, Policy and Management
Delft, The Netherlands
Energy system modeling, energy transition, linear optimization



Education

Doctor of Science in Engineering

Sep 2020– Jul 2023
Aeronautics Institute of Technology
Civil Engineering Department
São José dos Campos – Brazil

BS in Civil Engineering (visiting)

Feb 2014– Jul 2015
Ruhr Universität Bochum
Bochum – Germany

BS in Civil Engineering

Mar 2010– Apr 2016
State University of Londrina
Londrina– Brazil



Knowledge

- Energy system modeling (5/5)
- Statistical data analysis (5/5)
- Linear optimization (5/5)
- Remote sensing (5/5)
- Emission inventories (5/5)
- Econometrics (4/5)
- Machine learning (3/5)

Skills

- R Studio (5/5)
- GIS (5/5)
- LaTeX (5/5)
- Excel VBA (5/5)
- Python (4/5)

Languages

Portuguese (Native)
English (C1)
German (B2)
Spanish (B1)

Reference

Stefan Pfenninger
Professor at TU Delft
Supervisor
Email : S.Pfenninger@tudelft.nl

Fernando Ramos
Professor at Unifesp
Supervisor
Email : fernando.martins@unifesp.br

• Lecture assistant

Mar 2023– Jul 2023
Aeronautics Institute of Technology
Civil Engineering Department
São José dos Campos – São Paulo – Brazil
Energy system modeling and sustainable pathways

• Civil engineer

Apr 2016– Aug 2018
Independent engineer
Londrina – Paraná – Brazil
Construction management

• Intern

Apr 2015– Aug 2015
Essen – Germany
Construction management

• Undergraduate researcher at UEL

Apr 2012– Jul 2013

Awards

MapBiomass Award 6th Edition

General category
2nd place
MapBiomas | 2024
<https://brasil.mapbiomas.org/premio-mapbiomas-6a-edicao/>

Best thesis of Civil Engineering Department – Nomination

Aeronautics Institute of Technology
2024

Unifesp Optimization Championship

2nd place
Unifesp | 2018

Others

Lecturer

Course: Energy System Modeling
National Institute for Space Research (INPE)
Duration: 8 hours
Oct – 2023

Talks

Integrating renewable energy into the system (UFRJ),
Offshore wind energy (ABBEólica), Workshop: renewable
energy and sustainability (multiple institutes)

German Course in Berlin

Grant for intensive German Course in Berlin (2020–DAAD)

Publications

Land conservation and large-scale renewable energy systems are simultaneously possible in Brazil

Borba, P. C. S., Sousa, W. C., and Pfenninger, S.
Published in One Earth – 2025

Integrating renewable energy for power security under water stress scenarios due to climate change: strategies and opportunities

Borba, P. C. S., *et al.*
Published in Energy – 2024

Enhancing drought resilience and energy security through complementing hydro by offshore wind power—The case of Brazil

Borba, P. C. S., Sousa, W. C., Shadman, M., and Pfenninger, S.
Published in Energy Conversion and Management – 2023

Climate change impact on fixed, one-axis, and two-axis solar PV technologies in Brazil

Borba, P. C. S., *et al.*
Conference paper – Solar World Congress 2025

Modeling highly renewable systems: integration of wind and solar energy in Brazil by 2050

Borba, P. C. S., Gonçalves, A., Costa, R., and Martins, F.R.
Conference paper – Solar Energy Conference 2024 – Brazil

Technical potential of offshore wind energy in Northeastern Brazil: sustainable development of the electricity system

Borba, P. C. S., Sousa, W. C., and Shadman, M.
Conference paper – Wind power 2021 – Brazil

Submissions/ co-authored

Climate change impacts on wind power density in Brazil using CMIP6 climate models

Lima et al.
Submitted to Energy and Climate Change – 2025

Renewable electricity supply in Amazonas: energy modeling to decarbonize isolated systems

Cumplido et al.
Submitted to Solar Energy Advances – 2025