Claire Alestra

Postdoctoral Fellow at Paris School of Economics

Paris School of Economics
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Research Fields

Environmental, Energy and Climate Economics, Policy Impact Evaluation.

Current Position

Since 2024 **Postdoctoral Fellow**, *Paris School of Economics (PSE)*, Urban New Deal Chair, Modelling electricity demand scenarios for France on the road to net-zero, Sponsored by Carine Staropoli, Marc Fleurbaey, Thomas Le Gallic, Julien Lefèvre.

Since 2024 **Associate Researcher**, *Centre de formation sur l'environnement et la société (CERES), Ecole Normale Supérieure (ENS-PSL).*

2024-2025 **Temporary Lecturer**, *University Paris 1 Panthéon-Sorbonne*, Graduate Tutorials, Statistics-Econometrics.

Education

2019-2024 **PhD in Economics**, *Aix-Marseille School of Economics (AMSE)*,
Title: Policy Impact Evaluation of Energy and Environmental Transitions,
Advisors: Olivier Chanel, Sarah Flèche.

2024 **Summer School**, *Aix-Marseille School of Economics (AMSE)*,
One-week training course in Discounting, Risk, and the Environment.

2021 **Summer School**, *Paris School of Economics (PSE)*,
One-week training course in Microeconometrics and Policy Evaluation - Modern Estimation Methods and Machine Learning.

2017-2019 **Master in Economics**, with honours, *Aix-Marseille School of Economics (AMSE),*
Track: Empirical and Theoretical Economics,
Dissertation: The Long-term Economic Impacts of Carbon Taxation,
Advisors: Gilbert Cette, Olivier Chanel.

2017 **Exchange Semester**, *University of Kent*, Canterbury, United Kingdom.

2016-2019 **Magistère Economist Engineer**, with honours, *Aix-Marseille School of Economics (AMSE),*
Economic analysis, quantitative methods, data science, bilingual: English-French.

2014-2017 **Bachelor in Economics and Management**, with honours, *Aix-Marseille University, Université Lumière Lyon II.*

2014-2016 **Preparatory Class ENS Cachan D2**, *Lycée Juliette Récamier*, Lyon,
Economics and Quantitative Methods.

Research Visits

May 2022 **Visiting Scholar**, *Scripps Institution of Oceanography*,
University of California, San Diego (UCSD)
Sponsored by Tarik Benmarhnia.

March-April 2022 **Visiting Scholar**, *Environmental Markets Lab (emLab)*,
Bren School of Environmental Science and Management,
University of California, Santa Barbara (UCSB)
Sponsored by Olivier Deschenes.

Publications in Peer-reviewed Journals

C. Alestra, G. Cette, V. Chouard, R. Lecat (2023), *How can technology significantly contribute to climate change mitigation?,* ***Applied Economics***, Vol. 56(41), p. 4925–4937.

C. Alestra, G. Cette, V. Chouard, R. Lecat (2022), *Growth impact of climate change and response policies: The advanced climate change long-term (ACCL) model,* ***Journal of Policy Modeling***, Vol. 44(1), p. 96-112.

Policy Briefs and Other Publications

C. Alestra, G. Cette, V. Chouard, R. Lecat, Sophie Bourlet (2024), *How can technology help limit climate change?,* ***Dialogues économiques***.

C. Alestra, G. Cette, V. Chouard, R. Lecat (2023), *Green Tech: Key Allies for Climate Goals,* ***Eco Notepad Post, No 322***.

C. Alestra, G. Cette, V. Chouard, R. Lecat (2023), *Catching the green-tech train: technology and climate change mitigation,* ***SUERF Policy Brief, No 567***.

C. Alestra, G. Cette, V. Chouard, R. Lecat (2020), *Climate policy: the challenge of a long term horizon and national interests,* ***Eco Notepad Post, No 169***.

Working Papers and Work in Progress

Powering down nuclear, a multidimensional impact evaluation of the German case.
Single-authored, Job Market Paper

Following the Fukushima nuclear accident, Germany has adopted the 2011 Atomic Energy Act, which plans the phase-out of nuclear power by 2022. It establishes the immediate and permanent shutdown of half of the country's nuclear reactors and the gradual closure of the remaining ones. Using German Socio-Economic Panel (2022) data at the district scale and the Difference-in-Difference approach, this paper aims to evaluate the overlooked local effects of this exogenous policy on socio-economic indicators. Employment and health estimates indicate a trade-off between a positive "direct" effect of the phase-out on energy workers and a negative "induced" effect on the other local economic activities revolving around the nuclear power plants. The dismantling of these plants and the adjustments required to compensate for the change in electricity supply might explain the "direct" impact. A

possible channel for the “induced" effect is adaptive behaviours to economic uncertainty, reflecting concerns for the future district's dynamism following the sudden shutdown. I find no evidence for real-estate outcomes. This study aspires to help fill the gap in empirical work assessing the effects of large-scale nuclear shutdowns, a policy considered by other countries, and to contribute to the discussion on the consequences of ambitious energy policies.

One day at a time: heterogeneous impact evaluation of air pollution peaks.
With Tarik Benmarhnia

We develop a novel approach to assess the heterogeneity of air pollution peaks and how their impact on mortality varies depending on their characteristics. Combining the Generalised Synthetic Control Method and a two-stage staggered design, we construct a synthetic control group to estimate average treatment effects for each peak, one by one, and conduct a meta-analysis on pooled results. We exploit daily data on pollution, weather and health in 18 French urban areas between 2008 and 2015. We find that both air pollution peaks and their mortality effects are highly heterogeneous. We identify policy threshold, seasonality, weather and pollutant concentrations as drivers of this variability. We believe this study can help address the “One size (does not) fit(s) all" issue: the potential mismatch between these homogeneous policies, triggered by a binary criterion on pollutant concentrations, and the heterogeneous pollution peaks they target. More broadly, this methodology can study the heterogeneity of any extreme weather events, help understand the conditions for effective counter-measures, and thus contribute to policy fine-tuning.

Does economic convergence challenge global climate goals?
With Gilbert Cette, Valérie Chouard, Rémy Lecat

We employ the ACCL model for climate policy simulation to investigate the feasibility of achieving climate targets under global economic convergence. Our findings indicate that, in a scenario with moderate economic convergence, the world does not reach these targets with ambitious, although realistic, energy price policies solely. Our estimates underscore the importance of combining global carbon taxation with the widespread deployment of green technologies to help reconcile economic convergence and climate objectives. Hence, international initiatives, such as the Just Energy Transition Partnerships, are crucial to achieve climate goals.

Modelling electricity demand scenarios for France on the road to net-zero
With Thomas Le Gallic, Julien Lefèvre

Facing the urgency of climate change, France defined its National Low-Carbon Strategy in 2020, committing to achieve carbon neutrality by 2050, notably through energy sobriety measures. Mitigating the rise in electricity demand is all the more complex as the evolution of this demand, which is bound to change with lifestyles in a society that is becoming electrified and digitalised, is uncertain. This paper develops new tools for modelling household electricity demand scenarios for France on the road to net zero by 2050. This forward-looking, multi-sector approach to electricity demand focuses on its socio-economic and demographic determinants, particularly the mobility-residential nexus. Thus, it enables us to explore the interplay between equity and the effectiveness of decarbonisation measures. Indeed, this paper incorporates the synthetic population method of multi-agent models into energy-economy scenario models like IMACLIM (IMpact Assessment of CLIMate policies). This approach enables us to study aggregate decarbonisation trajectories and their macroeconomic feedback effects, accounting for population heterogeneity in age, income, housing or transport conditions. This dynamic representation of the population distribution is more flexible and realistic than the usual

static assumption of representative household classes.

Teaching Experience

2024-2025 **Temporary Lecturer**, *University Paris 1 Panthéon-Sorbonne*, Graduate Tutorials, Statistics-Econometrics.

2022-2023 **Temporary Lecturer**, *Aix-Marseille University*, Undergraduate Tutorials, Statistical Techniques,
Macroeconomics.

2019-2022 **Teaching Assistant**, *Aix-Marseille University*, Undergraduate Tutorials, Statistical Techniques,
Macroeconomics,
Industrial Organisation,
Microeconomics.

Academic Responsibilities

2022-2023 **Seminar Co-Organiser**, *Aix-Marseille School of Economics (AMSE)*, Empirical & Econometric Methods Sessions,
Methodological seminar for PhD candidates.

2022-2023 **Reading Group Organiser**, *Aix-Marseille School of Economics (AMSE)*, Environmental Economic Meetings for PhD candidates.

Conferences, Workshops and Seminars

2024 **14th JT FAERE International Conference on Environment, Policies, and Risks,** French Association of Environmental and Resource Economists (scheduled)
SURED 2024, Monte Verità Conference on Sustainable Resource Use and Economic Dynamics
14th Toulouse Conference on the Economics of Energy and Climate Toulouse School of Economics (TSE).

2023 **71th AFSE Annual Congress,** Association Française de Science Économique
22nd LAGV (Journées Louis-André Gérard-Varet), Aix-Marseille School of Economics (AMSE)
AMSE PhD Seminar, Aix-Marseille School of Economics
CREST Firms and Markets Seminar, Center for Research in Economics and Statistics.

2022 **2022 FAERE Doctoral Workshop,** French Association of Environmental and Resource Economists, Solar Academy
AMSE PhD Seminar, Aix-Marseille School of Economics.

2021 **EcoMod2021** (International Conference on Economic Modeling and Data Science), Center for European Studies (CefES), University of Milano-Bicocca
69th AFSE Annual Congress, Association Française de Science Économique
AMSE PhD Seminar, Aix-Marseille School of Economics.

2020 **6th Conference Public Policy Evaluation,** Association Française de Science Économique (AFSE), Direction Générale du Trésor
2nd International Conference EENR (Environmental Economics: a focus on Natural Resources), University of Orléans
EEMS (Empirical & Econometric Methods Sessions), Aix-Marseille School of Economics (AMSE)
AMSE PhD Seminar, Aix-Marseille School of Economics.

2019 **Workshop GREEN-Econ,** Aix-Marseille School of Economics (AMSE), Center for Environmental Economics Montpellier.

Professional Experience

2019-2024 **PhD Candidate in Economics**, *Aix-Marseille School of Economics (AMSE)*, Title: Policy Impact Evaluation of Energy and Environmental Transitions, Advisors: Olivier Chanel, Sarah Flèche.

April-June 2019 **Research Assistant Internship**, *Banque de France*, Paris,
Study of the long-term economic impacts of climate change and carbon taxation, writing of a research paper, conception and realisation of a projection tool.

May-August 2018 **Research Assistant Internship**, *Banque de France*, Paris,
Study of the long-term economic impacts of carbon taxation, literature review, building of an original database, econometric estimates and calibration, seminars.

May-July 2017 **Research Assistant Internship**, *Aix-Marseille School of Economics (AMSE)*,
Study on the digital platforms of job search and hotel/restaurant booking, web scraping, data recovery and treatment algorithm, literature review, testing campaign.

Technical Skills

Computer & Programming LaTeX, Microsoft Office, R, R Shiny, Stata.

Languages French (native language), English (fluent), Italian (elementary).