Marion Leroutier

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Research Interests

- **Primary field:** Environmental Economics
- **Other academic interests:** Applied microeconomics, Health, Inequality

Current Position

Post-doctoral researcher, Stockholm School of Economics since 2021
Affiliated to the Mistra Center for Sustainable Markets (Misum) and the Department of Economics

References

Prof. Katheline Schubert
PhD Advisor
Paris School of Economics, Université Paris 1
48 boulevard Jourdan, 75014 Paris, France
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Prof. Philippe Quirion
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Prof. Martina Björkman-Nyqvist
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Prof. Hélène Ollivier
Paris School of Economics, CNRS
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Doctoral studies

Ph.D. in Economics, Paris School of Economics and Cired 2018–2021
Title: *Three essays on climate and air pollution mitigation policies*

- Advisors: Katheline Schubert (Paris 1, PSE) and Philippe Quirion (CNRS, CIRED)
- Examiners: Olivier Chanel (Aix-Marseille School of Economics), Laure de Preux (Imperial College London), Mouez Fodha (Paris 1, PSE), Ulrich Wagner (University of Mannheim)

Publications

- **Carbon Pricing and Power Sector Decarbonisation: Evidence from the UK**. *Journal of Environmental Economics and Management, Volume 111, January 2022, 102580*
- **Air Pollution and CO_2 from Daily Mobility: Who Emits and Why? Evidence from Paris**, with Philippe Quirion (CNRS, CIRED), *Energy Economics, Volume 109, May 2022*

Working papers

- **JOB MARKET PAPER: The Cost of Air Pollution for Workers and Firms**, with Hélène Ollivier (CNRS, PSE)
- **Tackling transport emissions in urban areas: Shift, Avoid, Improve**, with Philippe Quirion (CNRS, CIRED) *(submitted)*
- **Estimating the Local Air Pollution Impacts of Maritime Traffic: A Principled Approach for Observational Data**, with Léo Zabrocki (EIEE) and Marie-Abèle Bind (Massachussets General Hospital) *(submitted)*

Work in Progress

- **The Long-term and Cumulative Effects of Air Pollution**, with Aurélien Saussay (LSE), Julia Mink (University of Bonn), and Hélène Ollivier (CNRS, PSE)
- **Gender, Carbon Footprint and Environmental Attitudes**, with Julius Andersson (SSE), Maria Berlin (SSE), Pamela Campa (SSE) and Caroline Coly (Bocconi, PSE)
- **Peer Effects in Pro-Environmental Behaviours**, with Vincent Bagilet (Columbia University) and Théo Konc (TU Berlin)
- **Cycling Infrastructures and Voting**, with Léa Bou-Sleiman (CREST)
- **The Health Co-Benefits of Carbon Pricing**
- **The Health and Economic Benefits from Cycling**, with Emilie Schwarz (CNAM), Kevin Jean (CNAM), Philippe Quirion (CNRS, CIRED) and Audrey de Nazelle (Imperial College London)

Policy writing

- **The Energy and Climate Crisis Facing Europe: How to Strike the Right Balance**, with Julius Andersson, 2022, *FREE Policy Brief*
- **Connaître et réduire les émissions polluantes dues au transport routier en Ile-de-France**, with Philippe Quirion, 2021, *Dossiers Mobilités Décarbonées: Enjeux et Solutions, Cerema & Construction 21*

Teaching

- **Undergraduate tutorials in Econometrics**, Stockholm School of Economics 2022-2023
- **MSc thesis supervision**, Stockholm School of Economics 2021-2022
- **Graduate tutorials in Resources and Climate Change**, University Paris 1 2019-2021

Scientific activities

- **Referee** : *Journal of the Association of Environmental and Resource Economists*, *Journal of Environmental Economics and Management*, *Energy Economics*, *The Energy Journal*, *Environmental and Resource Economics*, *Climate Policy*, *Environment and Development Economics*, *Economie et Statistiques*
- **Invited discussant** :FAEE seminar (French Association of Energy Economists), French statistical institute (INSEE) internal seminar
- **Elected representative** for PhD students and postdocs at CIRED 2019-2021

Work Experience

- **Kimso, Paris**: Senior consultant in social impact evaluation 2017-2018
- **Frontier Economics, London**: Analyst, economic consulting 2015-2017
- **Grade, Lima, and IRD-DIAL, Paris**: Research Assistant 2013-2014
- **Ministry of Economy and Finance, Paris**: Junior Analyst 2013
- **French Embassy in Vienna**: Intern Summer 2010

Prior education

- **Master in Economics**, Paris School of Economics 2012-2015
- **Master in Public Policy and Management**, Free University of Berlin 2011-2013
- **Master in Management and Public Affairs**, HEC Paris 2009-2013
- **Bachelor in History**, University Paris IV-Sorbonne 2009-2010
- **Preparatory Class**, Lycée Louis-Le-Grand 2007-2009
  (An intensive two-year program in Maths and Humanities to prepare competitive entrance to top French business schools)

Grants and Awards

- LSE's Research and Impact Support Fund grant (€10,000, co-PI) 2022
- Research grant ANR "Productivity, Trade and Air Pollution" (€103,000, PI: Geoffrey Barrows) 2022
- Best Doctoral Dissertation Award from the European Association of Environmental and Resource Economists 2022
- Travel grant, Stifelsen Siamon (€1,000) 2022
- Postdoctoral fellowship, Mistra Center for Sustainable Markets 2021-2023
- Research grant, PSE-EUR (€2,000, co-PI) 2020
- Young economist best paper award from the French Association of Environmental and Resource Economists 2019
- 3-year doctoral fellowship, University Paris 1 Pantheon-Sorbonne 2018-2020
- Mobility grant, French-German university 2011-2012
- HEC Paris Dean's List 2010

Languages

French (native), English (fluent), German (advanced), Spanish (advanced), Swedish (beginner)

Conferences and Seminar presentations

**: invited seminar*

- **2022**: SSE Site brownbag seminar, Online Agricultural and Resource Economics Seminar*, Copenhagen Business School Workshop on Health and Inequality, Nantes University*, LAGV, 9th IZA Workshop on Environment, Health and Labor Markets, 13th Toulouse Conference on The Economics of Energy and Climate, Berlin Research Seminar on Environmental, Resource and Climate Economics*, EAERE annual confeence, Montpellier University*, Helsinki GSE*, Grenoble University*

- **2021**: AgroParisTech Public economics seminar*, Misum*, Ninth Mannheim Energy conference, EAERE annual conference, AFSE annual conference, LAGV, Misum Forum

- **2020**: ICTA-UAB International Conference on Low-Carbon Lifestyle Changes, EAERE annual conference, FAERE annual conference, PSE Regulation and Environment Seminar, CIRED PhD students seminar, AFSE-DG Tresor conference on public policy evaluation

- **2019**: EAERE annual conference, LSE Policy Design and Evaluation seminar*, Eighth Mannheim Energy Conference, Mercator Institute on Global Commons and Climate Change (MCC)*, Potsdam Institute for Climate Impact research (PIK)*, Cired Summer School, AMSE GreenEcon Spring school, FAERE annual conference, PSE Regulation and Environment Seminar

Publications and Working Paper Abstracts

Job Market Paper: The Cost of Air Pollution for Workers and Firms

Poor air quality has been found to negatively affect workers' physical health and cognitive functions, but we know little about the economy-wide consequences for firms. This paper assembles a unique dataset combining daily observations of sickness leave incidence for 400,000 French workers between 2009 and 2015, the monthly sales of firms employing them, and fine-grained pollution and weather data. Exploiting local variations in wind direction as an instrument for exposure to particulate matter ($PM_{2.5}$) pollution, we find that a 10% increase in monthly $PM_{2.5}$ increases workers' risk of sickness leave that month by 1%, an effect generally larger for lower-wage workers. While we fail to detect an impact of pollution on firms' monthly sales on average, sectoral analyses reveal a negative effect in manufacturing, construction and professional services. The associated cost is economically significant: respecting the WHO's air quality recommendations would have avoided, on an average year, 2 million days of sick leave and at least €6 billion of sales losses (0.3% of French GDP). Our analysis has three main implications: first, air pollution negatively affects firms via other channels than sickness-related absenteeism; second, only focusing on health costs underestimates the total cost of air pollution to society. Third, even in a high-income, low-pollution context, the benefits of additional pollution reductions seem to largely compensate the costs.

Carbon Pricing and Power Sector Decarbonisation: Evidence from the UK.
(published in *Journal of Environmental Economics and Management*)

Decreasing greenhouse gas emissions from electricity generation is crucial to tackle climate change. Empirically, however, little is known about the effectiveness of existing economic instruments in the power sector. This paper examines the impact of the UK Carbon Price Support (CPS), a carbon tax implemented in the UK power sector in 2013. Relative to a synthetic control unit built from other European countries, I find that emissions from the UK power sector declined by 20 to 26 percent per year on average between 2013 and 2017. The tax operated via three mechanisms: a decrease in emissions at the intensive margin; the closure of some high-emission plants at the extensive margin; and a higher probability of closure for plants already at risk due to European air quality regulations.

Air Pollution and CO2 from Daily Mobility: Who Emits and Why? Evidence from Paris .
(published in *Energy Economics*)

Urban road transport is an important source of local pollution and carbon emissions. Designing effective and fair policies tackling these externalities requires understanding who contributes to emissions today. We estimate individual transport-induced pollution footprints combining a travel demand survey from the Paris area with NOx, $PM_{2.5}$ and CO_2 emission factors. We find that the top 20% emitters contribute 75-85% of emissions on a representative weekday. They combine longer distances travelled, a high car modal share and, especially for local pollutants, a higher emission intensity of car trips. Living in the suburbs, being a man and being employed are the most important characteristics associated with top emissions. Among the employed, those commuting from suburbs to suburbs, working at a factory, with atypical working hours or with a manual, shopkeeping or top executive occupation are more likely to be top emitters. Finally, policies targeting local pollution may be more regressive than those targeting CO_2 emissions, due to the different correlation between income and the local pollutant vs. CO_2 emission intensity of car trips.

Tackling car emissions in urban areas: Shift, Avoid, Improve.
(Submitted)

The environmental externalities associated with car use represent a signi cant cost to society. Using a representative transport survey from the Paris area, we investigate to what extent car use could be i)shifted to low-emission modes, ii)avoided via teleworking, or iii)improved via a transition to electric vehicles. According to our scenario analysis based on counterfactual travel time data for 45,000 observed car trips, 40% of car users could realistically shift to e-bike - mostly - or public transit - in a few cases - with an increase in travel time of one minute per day on average. Such modal shift would reduce CO_2 and local pollutant emissions from daily mobility by around 15%, generating climate and health benefits worth around €140 million per year. Inability to undertake a modal shift is associated with living in the outer suburbs, being retired, being a man and having a high income. Another 5% of total emissions could be avoided if all the "car-dependent" individuals able to work from home did so for two days a week. Holding demand for mobility and public transport infrastructure fixed, achieving greater emission reductions would require improving car use via a transition to electric vehicles.

Estimating the Local Air Pollution Impacts of Maritime Traffic: A Principled Approach for Observational Data (Submitted)

We propose a new approach to estimate the causal effects of maritime traffic when natural or policy experiments are not available. We apply this method to the case of Marseille, a large Mediterranean port city, where air pollution emitted by cruise vessels is a growing concern. Using a recent matching algorithm designed for time series data, we create hypothetical randomized experiments to estimate the change in local air pollution caused by a short-term increase in cruise traffic. We then rely on randomization inference to compute nonparametric 95% uncertainty intervals. We find that cruise vessels' arrivals have large impacts on city-level hourly concentrations of nitrogen dioxide, particulate matter, and sulfur dioxide. At the daily level, road traffic seems however to have a much larger impact than cruise traffic. Our procedure also helps assess in a transparent manner the identification challenges specific to this type of high-frequency time series data.