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Vincent VIGUIÉ

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I am a senior researcher at CIRED (International Research Center on Environment and Development). I use economic modelling, GIS, data science and interdisciplinary integrated assessment models to address research questions on **urban sustainability and urban economics**, such as:

- The effectiveness, costs and co-benefits of climate change adaptation strategies
- The interactions between climate change mitigation and adaptation policies in cities
- The social and ecological trade-offs in adaptation and mitigation policies

I have a strong interest in **developing models aiming at creating policy-relevant scenarios**, and in **understanding how various environmental concerns interact with each other, and interact with social and economic issues**.

My scientific publication record comprises more than 60 publications, including more than 35 peer-reviewed journal papers.

Professional Experience

Since 2012	International Research Center on Environment and Development (CIRED) – Ecole Nationale des Ponts et Chaussées, Paritech Senior Researcher	Paris, France
2008-2012	International Research Center on Environment and Development (CIRED) – Ecole Nationale des Ponts et Chaussées, Paritech PhD candidate	Paris, France
Oct 2007-Sep 2008	The World Bank – Africa Transport Unit Analyst	Washington, USA West Africa

Education

2023	'Habilitation à diriger des recherches' (HDR) in Environmental economics Université Paris Est "Assessments of cities' climate strategies: Modeling complex interactions between environmental issues and urban economic dynamics"	Paris, France
2008-2011	International Research Center on Environment and Development (CIRED) PhD in Economics "Urban dynamics modelling: towards an application for the economic assessment of climate change" - Directors: Stéphane HALLEGATTE and Jean-Charles HOURCADE	Paris, France
2006-2008	Ecole Nationale des Ponts et Chaussées, Paritech - Master of engineering Major: Economics and Finance Minor: Urbanism, Transport and Environment	Paris, France
2002-2006	Studies in Physics at the Ecole Normale Supérieure, Lyon one of the best French selective "grande école" Degrees: <ul style="list-style-type: none">• Master of Science in Theoretical Physics in 2006, cum Laude• Physics « Agrégation » (prestigious competitive teaching examination) in 2005• Erasmus exchange student at Imperial College, London in 2004	Lyon, France London, UK

Main publications per research topic (peer reviewed articles)

Synergies and tradeoffs between adaptation and mitigation in cities

Vincent V., A. Lemonsu, S. Hallegatte, A. Beaulant, C. Marchadier, V. Masson, G. Pigeon, J. Salagnac (2020). *Early Adaptation to Heat Waves and Future Reduction of Air-Conditioning Energy Use in Paris*. **Environmental Research Letters**. <https://doi.org/10.1088/1748-9326/ab6a24>

S. Grafakos, ..., V. Vigié et al. (2020). *Integration of Mitigation and Adaptation in Urban Climate Change Action Plans in Europe: A Systematic Assessment*. **Renewable and Sustainable Energy Reviews**. <https://doi.org/10.1016/j.rser.2019.109623>

Vigié Vincent and Stéphane Hallegatte. 2012. *Trade-offs and Synergies in Urban Climate Policies*. **Nature Climate Change** 2 (3) <https://doi.org/10.1038/nclimate1434>

Economic and Social impacts of strategies to reduce urban transport GHG emissions

Liotta, Charlotte, Vincent Vigié, et Felix Creutzig. 2023. « *Environmental and Welfare Gains via Urban Transport Policy Portfolios across 120 Cities* ». **Nature Sustainability**, mai, 1-10. <https://doi.org/10.1038/s41893-023-01138-0>

Vigié, V., C. Liotta, B. Pfeiffer, et N. Coulombel. 2023. « *Can Public Transport Improve Accessibility for the Poor over the Long Term? Empirical Evidence in Paris, 1968–2010* ». **Journal of Transport Geography** 106:103473. <https://doi.org/10.1016/j.jtrangeo.2022.103473>.

Effectiveness, costs and co-benefits of urban climate change adaptation strategies

Hamel, P. ... V. Vigié et al. 2021. « *Mapping the Benefits of Nature in Cities with the InVEST Software* ». **Npj Urban Sustainability** 1 (1): 1-9. <https://doi.org/10.1038/s42949-021-00027-9>.

M Daniel, A Lemonsu, V Vigié. 2018. "Role of watering practices in large-scale urban planning strategies to face heat-wave risk in future climate" **Urban Climate**, 23, 287-308 <https://doi.org/10.1016/j.uclim.2016.11.001>

A Lemonsu, V Vigié, M Daniel, V Masson. 2015. "Vulnerability to heat waves: Impact of urban expansion scenarios on urban heat island and heat stress in Paris (France)" **Urban Climate** 14, 586-605 <https://doi.org/10.1016/j.uclim.2015.10.007>

Urban economics and climate policies

Avner, Paolo, Vincent Vigié, Bramka Arga Jafino, et Stephane Hallegatte. 2022. « *Flood Protection and Land Value Creation – Not All Resilience Investments Are Created Equal* ». **Economics of Disasters and Climate Change**. <https://doi.org/10.1007/s41885-022-00117-7>.

Vigié, Vincent, Stéphane Hallegatte, et Julie Rozenberg. 2014. « *Downscaling long term socio-economic scenarios at city scale: A case study on Paris* ». **Technological Forecasting and Social Change** 87 : 305-24. <https://doi.org/10.1016/j.techfore.2013.12.028>

Policy analysis

Reckien, Diana, ..., V. Vigié et al. 2023. « *Quality of Urban Climate Adaptation Plans over Time* ». **Npj Urban Sustainability** 3 (1): 1-14. <https://doi.org/10.1038/s42949-023-00085-1>

Salvia, M., ... V. Vigié, et al. 2021. « *Will Climate Mitigation Ambitions Lead to Carbon Neutrality? An Analysis of the Local-Level Plans of 327 Cities in the EU* ». **Renewable and Sustainable Energy Reviews** 135 : 110253. <https://doi.org/10.1016/j.rser.2020.110253>

Mi, Zhifu, Dabo Guan, Zhu Liu, Jingru Liu, Vincent Vigié, Neil Fromer, et Yutao Wang. 2019. « *Cities: The core of climate change mitigation* ». **Journal of Cleaner Production** 207:582-89. <https://doi.org/10.1016/j.jclepro.2018.10.034>.

Other Selected Publications (peer reviewed articles)

Liotta, Charlotte, Paolo Avner, Vincent Vigié, Harris Selod, et Stephane Hallegatte. 2024. « *Climate policy and inequality in urban areas: Beyond incomes* ». **Urban Climate** 53 (janvier):101722. <https://doi.org/10.1016/j.uclim.2023.101722>.

Elessa Etuman, A., I. Coll, V. Vigié, N. Coulombel, et C. Gallez. 2024. « *Exploring urban planning as a lever for emission and exposure control: Analysis of master plan actions over greater Paris* ». **Atmospheric Environment: X**, 100250. <https://doi.org/10.1016/j.aeaoa.2024.100250>.

Hamel, Perrine, ..., Vincent Vigié, et al.. 2024. « *Calibrating and Validating the Integrated Valuation of Ecosystem Services and Tradeoffs (InVEST) Urban Cooling Model: Case Studies in France and the United States* ». **Geoscientific Model Development** 17 (12): 4755-71. <https://doi.org/10.5194/gmd-17-4755-2024>.

Lepetit, Quentin, Vincent Vigié, et Charlotte Liotta. 2023. « *A Gridded Dataset on Densities, Real Estate Prices, Transport, and Land Use inside 192 Worldwide Urban Areas* ». **Data in Brief**, février, 108962. <https://doi.org/10.1016/j.dib.2023.108962>.

Pietrapertosa, Filomena, Marta Olazabal, Sofia G. Simoes, Monica Salvia, Paris A. Fokaides, Byron I. Ioannou, Vincent Vigié, et al. 2023. « *Adaptation to Climate Change in Cities of Mediterranean Europe* ». **Cities** 140 :104452. <https://doi.org/10.1016/j.cities.2023.104452>.

Liotta, Charlotte, Vincent Vigié, et Quentin Lepetit. 2022. « *Testing the monocentric standard urban model in a global sample of cities* ». **Regional Science and Urban Economics** 97: 103832. <https://doi.org/10.1016/j.regsciurbeco.2022.103832>.

Salvia, Monica, ... Vincent Vigié, et al. 2021. « *Climate Mitigation in the Mediterranean Europe: An Assessment of Regional and City-Level Plans* ». **Journal of Environmental Management** 295 : 113146. <https://doi.org/10.1016/j.jenvman.2021.113146>.

Tardieu, L., P. Hamel, V. Vigié, L. Coste, et H. Levrel. 2021. « *Are soil sealing indicators sufficient to guide urban planning? Insights from an ecosystem services assessment in the Paris metropolitan area* ». **Environmental Research Letters**. <https://doi.org/10.1088/1748-9326/ac24d0>.

Sudmant, A., V. Vigié, Q. Lepetit, L. Oates, A. Datey, A. Gouldson, et D. Watling. 2021. « *Fair Weather Forecasting? The Shortcomings of Big Data for Sustainable Development, a Case Study from Hubballi-Dharwad, India* ». **Sustainable Development** 29 (6): 1237-48. <https://doi.org/10.1002/sd.2221>.

Vigié, V., S. Juhel, T. Ben-Ari, M. Colombert, J. D. Ford, L. G. Giraudet, et D. Reckien. 2021. « *When Adaptation Increases Energy Demand: A Systematic Map of the Literature* ». **Environmental Research Letters** 16 (3): 033004. <https://doi.org/10.1088/1748-9326/abc044>.

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- Felix Creutzig, Xuemei Bai, Radhika Khosla, Vincent Vigié, Yoshiki Yamagata (2020). *Systematizing and Upscaling Urban Climate Change Mitigation*. **Environmental Research Letters**. <https://doi.org/10.1088%2F1748-9326%2Fabb0b2>
- Coulombel, N., Boutueil, V., Liu, L., Vigié, V., Yin, B., 2019. *Substantial rebound effects in urban ridesharing: Simulating travel decisions in Paris, France*. **Transportation Research Part D: Transport and Environment**, 71, 110–126. <https://doi.org/10.1016/j.trd.2018.12.006>
- T Houet, ..., V Vigié et al. 2016. "Combining narratives and modelling approaches to simulate fine scale and long-term urban growth scenarios for climate adaptation" **Environmental Modelling & Software** 86, 1-13 <https://doi.org/10.1016/j.envsoft.2016.09.010>
- Masson, V.,..., V. Vigié, et al. 2014. "Adapting Cities to Climate Change : A Systemic Modelling Approach." **Urban Climate** 10: 407-29. <https://doi.org/10.1016/j.uclim.2014.03.004>
- Avner, Vigié and Hallegatte. 2013 "Modélisation de l'effet d'une taxe sur la construction : le Versement pour Sous Densité" [Modelling the effect of a tax on construction on Paris urban sprawl]. **Débats et politiques, revue de l'OFCE**, n°128. <https://doi.org/10.3917/reof.128.0341>

Selected non-peer reviewed articles, policy notes and essays

- Pfeiffer, B. F., Rabe, C., Selod, H., & Vigié, V. (2019). *Assessing Urban Policies Using a Simulation Model with Formal and Informal Housing: Application to Cape Town, South Africa* (No. WPS8921; pp. 1–44). **World Bank Policy Research Working Paper**.
- P Avner, SR Mehndiratta, V Vigié, S Hallegatte 2017 « *Buses, houses or cash? socio-economic, spatial and environmental consequences of reforming public transport subsidies in Buenos Aires* » **World Bank Policy Research Working Paper**
- Vigié, Vincent, and Charlotte Liotta. 2023. « Guest Post: How 120 of the World's Major Cities Could Cut Transport CO2 by 22% ». **Carbon Brief**. 6 november 2023. <https://www.carbonbrief.org/guest-post-how-120-of-the-worlds-major-cities-could-cut-transport-co2-by-22/>.
- Pfeiffer, Basile, Charlotte Liotta, Nicolas Coulombel, et Vincent Vigié. 2023. « Développer Le Réseau de Transports En Commun Bénéficie-t-il Vraiment Aux plus Pauvres ? » [Does developing public transport networks benefit the poor ?] **The Conversation**. 5 february 2023. <http://theconversation.com/developper-le-reseau-de-transports-en-commun-beneficie-t-il-vraiment-aux-plus-pauvres-198261>.
- Liotta, Charlotte, Harris Selod, Stéphane Hallegatte, Paolo Avner, et Vincent Vigié. 2022. « Inequalities from Urban Climate Policies: A Spatial Perspective ». **CEPR** (blog). 22 décembre 2022. <https://cepr.org/voxeu/columns/inequalities-urban-climate-policies-spatial-perspective>.
- Liotta, Charlotte, et Vincent Vigié. 2021. « Pourquoi les villes continuent-elles à s'étendre ? » [Why does urban sprawl keep continuing ?] **Regards croisés sur l'économie** 28 (1): 178-88. <https://www.cairn.info/revue-regards-croises-sur-l-economie-2021-1-page-178.htm>
- Vigié, Vincent. 2022. « Les liens entre adaptation et atténuation : quand s'adapter aggrave le changement climatique » [The links between adaptation and mitigation : when adaptation worsens climate change] **Annales des Mines - Responsabilité et environnement** 106 (2022/2). <http://www.annales.org/re/2022/resumes/avril/16-re-resum-FR-AN-avril-2022.html#16FR>.
- Vigié, Vincent. 2021. « La climatisation, une maladaptation au changement climatique ? » [Air conditioning: an example of maladaptation to climate change?] **Construction** 21, 14 décembre 2021.
- Vincent Vigié (2020). *Les Villes et Le Climat : Bâtiments et Urbanisme [Cities and climate: buildings and urban planning]*. **Comptes Rendus de l'Académie des sciences. Géoscience**. <https://comptes-rendus.academie-sciences.fr/geoscience/articles/10.5802/crgeos.19/#article-div>
- Vigié, Vincent. 2015. « Cross-commuting and housing prices in a polycentric modeling of cities ». 2015.09. **FAERE working paper**. <http://ideas.repec.org/p/fae/wpaper/2015.09.html>.
- Vigié, Vincent, Stéphane Hallegatte, 2014 "Urban infrastructure investment and rent-capture potentials". **World Bank Policy Research Working Paper**

Selected reports and book chapters

- Drobinski, Philippe, Jordi Badosa, Isabelle Bilger, Benjamin Brigaud, Patricia Crifo, Antoine Esnos, Louis-Gaëtan Giraudet, et al. 2022. « Carnet « Changement climatique et transition énergétique en région ÎdF » » [A note on climate change and energy transition in Paris Urban Area]. Paris, France: GREC francilien. <https://grec-idf.eu/changement-climatique-et-transition-energetique-en-region-ile-de-france/>.
- Book chapter: Lemonsu, A., C. de Munck, R. Kounkou-Arnaud, V. Masson, et V. Vigié. 2021. « What Alternatives Does Paris Have to Adapt to Future Heat Waves ? » In **Urban Climate Science for Planning Healthy Cities**, edited by Chao Ren and Glenn R. McGregor. Biometeorology. Springer International Publishing. <https://doi.org/10.1007/978-3-030-87598-5>.
- Engström, Rebecka Ericsson, Francesco Fusco-Nerini, Christophe Cassen, Sandro Luh, Vincent Vigié, Tom Kober, Paul Deane, et Meriem Hamdi-Chérif. 2020. « Research and Innovation Needs to Decarbonise European Cities : DEEDS Policy Brief Number 4 ».
- Léa Tardieu, Lana Coste, Harold Levrel, Vincent Vigié (2019). *Les services rendus par la nature peuvent-ils devenir un levier d'action dans les décisions d'aménagement ?* [Could ecosystem services appraisal become a tool in urban planning?]. **Report for the French ministry of environment**.
- Les Territoires En Route Pour La COP 21. Les Notions Indispensables Sur Les Impacts Du Changement Climatique, Les Politiques Climatiques et Les Outils Economiques* [Cities towards COP21: basic notions on economic tools for climate change mitigation and adaptation]. Joint publication of DC Climat Recherche, Météo France, ONERC, AFD and ADEME.(2015). <https://www.i4ce.org/wp-core/wp-content/uploads/2015/11/I4CE-Livret-des-territoires-en-route-vers-la-COP212.pdf>
- Köhler, Ristimäki, Vigié, Felieu et al., chapter "A review and analysis of quantitative integrated environmental assessment methods for urban areas" in the book coordinated by Dawson et al. 2014. "Understanding Cities : Advances in Integrated Assessment of Urban Sustainability". Centre For Earth Systems Engineering Research. <https://core.ac.uk/reader/33586330#page=33>
- Vigié and Hallegatte. 2013. "Les territoires français face au défi climatique : atténuation et adaptation." [French regions and climate change: between mitigation and adaptation] In "Vers l'égalité des territoires", **Report for the French minister of territory development** (ministre de l'Egalité des territoires). https://medias.vie-publique.fr/data_storage_s3/rapport/pdf/134000131.pdf#page=246
- Vigié, and Hallegatte. 2010. *Les villes aujourd'hui, quelle vulnérabilité au changement climatique ?* [what is the current vulnerability of cities to climate change?] In *Villes et adaptation au changement climatique*. **Report presented by the French observatory of climate change impacts to the Prime Minister and the parliament** https://www.ecologie.gouv.fr/sites/default/files/ONERC_Rapport_2010_villes_et_adaptation.pdf

Editorial work

Guest editor of « Journal of Cleaner Production » (2019) and « Environmental Research Letters » (2020)
Reviewer for Nature Climate Change, Nature Communications, One Earth, Environmental Research Letters, Climate Policy, Climatic Change, Journal of Cleaner Production, Urban Climate...

Academic Teaching

Courses on climate change adaptation and sustainable city development, master level : Ponts ParisTech and Ecole Polytechnique (Institut Polytechnique de Paris), Sciences Po Paris, Ecole Nationale de la Météorologie (Institut national polytechnique de Toulouse), AgroParisTech (Université Paris-Saclay)

Expertise and consulting

<i>Research networks</i>	Member of several academic networks and associations, including the Urban Climate Change Research Network (UCCRN) , the Euro-LCP Initiative , the French Association of Environmental and Resources Economists
<i>Scientific councils</i>	Member (appointed) of scientific councils of a number of institutions : INERIS (French National Institute for Industrial Environment and Risks), research program « Villes, Logement, Immobilier » (“cities and housing”) of Sciences Po , research program PUCA-«Biodiversité, Aménagement Urbain et Morphologie» (“biodiversity and urban planning”) of the French ministry of environment, research program «bioéconomie pour les territoires urbains» (bio-economy for cities) of INRAE (French National Institute of Agricultural Research)
<i>Expert committees</i>	Participation to the expert committees of several French national and local plans, including the 1 st and 2 nd French National climate change adaptation plans, and the National French low-carbon strategy
<i>Consulting about urban sustainability</i>	International organizations: World Bank, OECD, European Environment Agency... French national institutions: French Ministry of sustainable development, ONERC (French government’s observatory for climate change impacts and adaptation), ADEME (French agency for energy and environment), FFEM (French Global Environment Facility)... Municipalities and local authorities: Paris municipality, Cape Town municipality, Ile de France Region, Ile de France Urbanism Institute (IPR), Grand Lyon urbanism institute (UrbaLyon), Toulouse Urbanism Institute (AUAT), Provence-Alpes-Côte d'Azur prefecture, Seine Saint Denis Department, Wallonie Region (Belgium)... Private companies and NGOs: Allianz, Centre Interprofessionnel du Vin de Bordeaux, Fédération française des assurances, Groupe Vinci, WWF, GRET...

Outreach and media

<i>Media</i>	Frequent interviews and articles in French media, in average two per month in 2023 and 2024: Le Monde, France Inter, France Culture, France 3, Ouest France, Libération, La Croix...
<i>Outreach</i>	Numerous conferences in museums, libraries, professional associations etc. (in average: one every two months in 2023 and 2024). Participation to the “climate train” which traveled across France with researchers on board to inform people about climate change issues. (EMS Outreach & Communication Award 2017). Member of the scientific council of the Office for Climate Education (from 2017 to 2020)

Other information

<i>Language skills</i>	French: Mother tongue English: Fluent German: Conversant
<i>Sports and Hobbies</i>	Rock climbing, improvisational theater, sailing, diving, official food taster in several French cuisine contests I have been volunteering for seven years in the social support and the first responder services of the French Red Cross , and was during 5 years a member of the executive board of one of its Paris district divisions