

Activity Report 2023

Urban New Deal Chair

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PARTNERS

Enedis

Enedis is an independent subsidiary of EDF group. As a public company, Enedis manages the public electricity distribution network over 95% of mainland France, guaranteeing access to this network to electricity suppliers. Created in 2008 under the name ERDF, ENEDIS adopted its current name in 2016, as the contraction between "energy" and "distribution".

Enedis carries out customer connections, 24/7 troubleshooting, meter reading and all technical interventions. Working on behalf of local authorities, owners of the networks, it is independent of energy suppliers who are responsible for selling and managing the electricity supply contract.

The **Institut pour la recherche de la Caisse des Dépôts** supports research projects that fall within the scope of Caisse des Dépôts' missions and activities. Its role is to encourage research in fields linked to the activities of Caisse des Dépôts, on various issues such as saving, long-term finance, economic development of local and regional areas, energy and ecological transition, impact of ageing, etc.





PTV Group provides software solutions and consulting services to enhance mobility and transportation for a cleaner and smarter future. Its software for intelligent traffic management and transport optimization enables decision-makers in politics, cities, industry, and trade save time and money, make roads

safer, and protect the environment. The company was established in 1979 in Karlsruhe, Germany, as a spin-off from Karlsruhe University of Technology (KIT).

The **Paris School of Economics** is a Foundation for Scientific Cooperation founded by the National Centre for Scientific Research (CNRS), the School of Advanced Studies in the Social Sciences (EHESS), the École normale supérieure - PSL, the École des Ponts ParisTech, the National Research Institute for Agriculture, Food and the Environment (INRAE) and the Université Paris 1 Panthéon-Sorbonne.



It develops research and training in economics at the highest international level,

promotes exchanges between economic analysis and other social sciences, contributes to the debate on economic policy, and integrates academic research into society. PSE ranks among the best institutions in the world, among the top economics departments in Europe and in the top five in the world according to the RePEc rankings.

By Philippe Gagnepain and Carine Staropoli

The year 2023 has confirmed the dynamic that began with the creation of the Urban New Deal Chair in September 2021. The subjects central to our work have become increasingly relevant. Key areas of focus include the adaptation to the energy crisis, understanding consumer reactions to rising electricity prices, and examining the progressively ambitious decarbonization trajectories for electricity systems and mobility. It is crucial to comprehend the levers and obstacles affecting public policies and private initiatives addressing these issues. These topics are at the core of the research conducted within the Urban New Deal Chair. Beyond academic papers and conference participation, we have initiated a series of policy briefs to share our findings with a broader audience.

Our research on the conditions for deploying renewable energies across the country, on the effectiveness of policies to support the energy renovation of buildings, and on the determinants of modal shift and quality in transport enables us to make a significant contribution to the public debate. The chair's researchers have actively participated in academic conferences to present their work. We have also organised several events at PSE, such as the first conference of the Association Française d'Économie des Transports (AFET) and the French Association of Energy Economists (F-AEE), which were largely devoted to the decarbonisation of these sectors, and a workshop on energy sobriety with a historical perspective.

We have welcomed new PhD students, post-doctoral fellows and research assistants to work on new projects, while continuing and completing those already underway. The results of this work are currently being published, and we are already at work on other promising projects.

The year 2023 has been a period of consolidation and expansion for the Urban New Deal Chair, illustrating our commitment to making an active contribution to the energy and environmental issues of our time. Our constant exchanges with our partners, Enedis, PTV Group and the Institut pour la recherche de la Caisse des Dépôts, enrich and energise our work, and we would like to thank them warmly for their support.

The research agenda is already full for 2024 and the years to come, and we are determined to pursue the initiatives already underway with the support of our original partners.



THE URBAN NEW DEAL CHAIR

The Urban New Deal Chair was created in September 2021 as a partnership between the Paris School of Economics, ENEDIS, the Institut pour la recherche de la Caisse des Dépôts, PTV Group and TIER Mobility, with the ambition to apprehend the *New Deal* that cities and territories will have to face to get to Net-Zero by 2050. Three quarters of greenhouse gas emissions and two thirds of global energy consumption come from cities, which indicates that they do play a decisive role in decarbonizing society. Public services such as transportation or energy distribution undergo significant changes towards a more sustainable and inclusive offer with important impacts on spatial re-organization. A key issue is then to understand the dynamics of urban structures with respect to the location of households and businesses, in particular, whether these structures are naturally compatible with the desirable target in terms of environmental impact or, on the contrary, whether society will need to implement proactive public policies to reach these objectives in the areas of mobility, energy and housing.

The chair's research agenda aims at studying the effectiveness of various incentive mechanisms and regulation in the field of mobility and energy policies, in order to improve energy efficiency and the decarbonisation of cities and territories. It aims at contributing to the public debate in France and at an international level on the conditions that facilitate the implementation of the digital transformation of cities, as a vector of environmental transition and greater social inclusion and resilience, and providing decision-making support tools for the various stakeholders. The chair will offer at the same time an academic and practical expertise to help analysing and understanding the dynamics of cities (and peripheral territories), but also to design an optimal management of new services in the fields of mobility, energy, and housing. Different empirical approaches are considered. In particular, experiments in labs allow us to measure the perception and appropriation by transport users of different types of tariffs, information signals or equipment, which are supposed to promote and support changes in individual and collective behaviour. These tariffs are important tools to promote and facilitate energy and environmental transition. New sources of massive data on the use and consumption of urban services, the functioning of networks (smart grids), the interactions between actors, urban sprawl, service performance, at the crossroads of the industrial economy and urban economics (econometrics, statistics, socio-economic evaluation, or case studies), allow studying the conditions for the effectiveness of this new offer of urban services which aims at implementing the sustainable development of cities.

Led by Carine Staropoli and Philippe Gagnepain, the chair relies on a group of researchers, postdoctoral and doctoral students whose research addresses theoretically and empirically the various topics dealt with by the chair.



Carine Staropoli

(PSE, Université de Rouen Normandie)

Research topics: Experimental economy, energy transition, smart grids, smart cities



Philippe Gagnepain

(PSE, Université Paris 1 Panthéon-Sorbonne)

Research topics: Competition policy, industrial dynamics/ innovation, transport economics, theory of contracts and incentive mechanisms

MEMBERS

Associate researchers



Nicolas Astier (PSE, École des Ponts ParisTech) Research topics: Energy transition, transportation economics, smart grid and smart cities



Ariane Dupont-Kieffer (Université Paris 1 Panthéon-Sorbonne) Research topics: Social justice, transportation economics, history of econometrics



Miren Lafourcade (PSE, Université Paris-Saclay) Research topics: Geographical economics, urban economics, transport economics

Postdoctoral fellows, PhD students and research assistants



Claire Alestra (PSE) Postdoctoral fellow Research topics: Environmental, energy and climate economics, policy impact evaluation



Hélène Bénistand (PSE) Postdoctoral fellow Research topics: Social justice, transportation economics, history of economic thought



Nicolas Hatem (PSE, Université Paris 1 Panthéon-Sorbonne) Thesis title: "Contracts, governance and financing in large urban infrastructure systems" Supervisor: Carine Staropoli



Samy Zitouni (PSE, Université Paris 1 Panthéon-Sorbonne) Thesis title: "The contribution of behavioural economics to the analysis of the effectiveness of environmental policies" Supervisor: Carine Staropoli



Thibaut Lapeyre (Student in the Economics and Psychology Master, research assistant 2023-2024) Research project: "Impact of toll road on modal choice"



RESEARCH PROJECTS

Several research projects conducted under the Urban New Deal Chair aim to better understand the evolution of the energy system both on the supply and demand side. Among the issues addressed, some projects study the conditions for effective deployment of renewable energy sources (RES) as well as the impact of their integration into the energy system and the decarbonization and decentralization of energy system. These studies are applied and based on public data. They use a spatial econometrics approach and cost-benefit analysis. Nicolas Hatem has notably written three articles, that are part of his PhD thesis. One of them is going to be published and led to a policy brief and the other one (co-written with Nicolas Astier) is submitted. Claire Alestra, postdoctoral fellow at the Urban New Deal Chair, works on the modelling of energy demand on the road to net zero in France. Finally, Samy Zitouni, PhD student at the Urban New Deal Chair and at EDF R&D, works on evaluating public policies for energy efficiency in buildings from a theoretical and empirical perspective. He uses both field data and experimental data.

The other research projects of the Urban New Deal Chair focus on the transition of the transportation sector towards sustainable mobility by analyzing different aspects of this transition. Notably, one project is dedicated to the impact of tariffs on modal choice from a behavior approach perspective and another to the design of a quality indicator in transportation that can be used for implementing sustainable mobility policies.

Renewable energies

1. "How Climate Action Plans are modified by the energy crisis? A focus on residential heating in Bristol", 2023/4, *Revue d'économie industrielle*, 184, 21-73

In this paper, Nicolas Hatem studies the cost-effectiveness of different urban policies to decarbonize buildings' heating consumption in a context of high energy prices inflation. Policies to decarbonize heating might entail important economic benefits besides mitigating carbon emissions, such as reducing energy expenditures. Thus, they can become more socially profitable under high energy prices trends, as experienced after the recent surge across European countries that occurred in 2022.

This paper evaluates ex-ante the economic benefits of two policy options in the city of Bristol (UK), namely: investing in low carbon energy assets through the extension of district heating networks; or the roll-out of an energy efficiency retrofitting program for least efficient dwellings in the city. The paper finds that higher energy prices change the optimal choice of the city. Bristol would prioritize investments in low carbon energy assets since they provide more savings on consumers' expenditures than energy efficiency retrofits. The paper also finds that both types of policies would be complementary to achieve the city's carbon emission reduction targets, where low carbon energy assets are more cost-effective in collective buildings, while the latter display higher energy efficiency levels.





3. "Ground-mounted solar and the impact of land-use regulations: evidence from France", Working paper

In this paper, Nicolas Hatem studies how land-use regulations impact the deployment of solar farms in France. The allocation of land to renewables is becoming a major barrier to their deployment and could significantly increase the cost of the clean energy transition. Indeed, localities have to face more stringent tradeoffs when elaborating their land-use planning. They have to balance between biodiversity objectives, in particular to reduce new land takes, and objectives to increase the roll-out of renewables. Solar farms, which are ground-mounted PV installations, are particularly affected by local land-use planning. In contrast to wind power installations that are also framed by specific top-level policies (e.g. set back distances to dwellings).

This paper uncovers two key mechanisms steering the deployment of solar PV. First, top-level regulation to

2. "Dynamic (mis)allocation of investments in solar energy", co-authored with Nicolas Astier (PSE, École des Ponts ParisTech), Working paper

In this paper, Nicolas Astier and Nicolas Hatem study past investment choices that were made to roll-out solar energy given the variety of solar photovoltaic (PV) installations. Solar PV may indeed be deployed as very small units, such as residential PV installations of several kW, or as very large installations, such as a solar farm of several MW. Although the latter is twice to three times less costly (as measured by the levelized cost of electricity), public policies in pretty much every country provide higher subsidies (per unit of output) to smallest installations. Moreover, in the French context, smallest PV installations do not seem to display higher economic value per unit of output compared to larger installations (e.g. displaced emissions, savings on grid investments).

This paper studies the extent to which past public policies have been cost-efficient at allocating investments across different types of solar PV installations over the period 2005-2021. The paper finds that realized investments were cost inefficient. The main source of misallocation stems from the very early and large-scale investments in residential PV. In contrast, a cost-efficient trajectory would have started with medium-scale projects and delayed investments in very small units to the end of the time window in order to benefit from the dramatic decrease in their costs.



authorize the sitting of solar PV has to articulate with the variety of land-use planning frameworks in place at the municipality level. Some frameworks are less compatible with top-level criteria, which makes harder time for solar PV installations to obtain an authorization. Second, solar PV installations access larger plots of land in municipalities with land-use planning that has not been updated for a long time. Indeed, the latter have likely not yet internalized land conservation objectives, gradually passed in the legislation. This could raise adverse distributional impacts across municipalities and calls for more spatial planning interventions.

Modelling Electricity Demand Scenarios for France on the Road to Net-Zero

Project run by Claire Alestra, postdoctoral fellow at the Urban New Deal Chair, in collaboration with CIRED researchers and Enedis Team

In the current context of climate and energy crises, we face significant uncertainties on the evolution of electricity demand. The required energy sobriety, fossil fuel phase-out, electrification of transports and buildings, and digitalisation of society imply considerable changes in lifestyles and electricity uses. Yet, anticipating and comprehending this transformation is crucial to effectively mitigate electricity demand and reach carbon neutrality while adapting the supply infrastructure to guarantee fair access to energy for all. Hence, Claire Alestra, Marc Fleurbaey, Julien Lefèvre, Thomas Le Gallic and Carine Staropoli model scenarios of household electricity consumption in France by 2050, focusing on its socio-economic, behavioural and demographic determinants.



Building Energy Efficiency

1. Is it sensible to invest in home energy renovation?

Co-author: Corinne Chaton (EDF R&D), Sammy Zitouni (PSE, EDF R&D), submitted for publication

In order to expedite the energy refurbishment of residential and commercial buildings, a crucial step towards achieving carbon neutrality by 2050, the French government has initiated a building energy renovation plan. This plan involves the distribution of funds through various subsidy and assistance programs aimed at renovating housing. This study investigates the impact of investment subsidies for energy renovation on such endeavours, as well as on the consumption patterns and savings of homeowner households not experiencing fuel poverty. To address this inquiry, the authors construct a two-period, two-goods model incorporating "essential baskets" - sets of goods including a "minimum energy" level and a fundamental composite good, in a utility function. Their findings affirm that targeted investment subsidies for energy renovation prove effective, though targeting should not rely solely on income criteria. They emphasize the importance of non-monetary repercussions as significant determinants of policy efficacy. To illustrate their findings, they employ data from French households reliant solely on electricity for their energy needs to estimate and calibrate model parameters.





2. On the capitalization of energy labels on the French housing market

Paper written by Samy Zitouni (PSE, EDF R&D), submitted for publication

The building sector in France contributes to almost one-third of the nation's emissions and energy usage, prompting the need for energy retrofits and renovations to align with government targets for emission reduction. Energy Performance Certificates (EPCs) play a pivotal role in guiding this transition. This study investigates the market valuation of home energy labels across mainland France. Utilizing data on energy efficiency and property transactions, while considering spatial and temporal variations, the findings reveal that properties with higher EPC rankings command an average premium of 14% compared to those with middle rankings. Conversely, properties with lower rankings are priced approximately 6% lower than their middle-ranked counterparts. However, in the case of apartments, the findings regarding lowerranked properties are inconclusive and often nonsignificant. The magnitude of the premium appears to be greater in larger and more dynamic urban centers. Overall, the results suggest that achieving higher prediction accuracy, especially in capturing variations, may necessitate more granular data.

3. Relieving constraints for energy retrofits investments: a discrete choice experiment

Co-authors: Corinne Chaton (EDF R&D), Valérie Lesgards (EDF R&D), Carine Staropoli (PSE, Université de Rouen Normandie) and Samy Zitouni (PSE, EDF R&D), *on going*

The project consists in a discrete choice experiment to measure households' preferences in terms of energy renovation. Especially, the authors want to understand what attributes they may over or under value among classical ones such as the up-front costs, the increase in comfort, etc. A particularity in their approach is that they study the effect of proposing new policies for financing the energy renovation. They test two of them: first, an operator that would take care of all the administrative steps in the renovation process, and second, a third-party financing. Through main and interaction effects, they hope to analyze people's behaviour under these financing options, especially if it can change their valuation of certain attributes.



Quality Adjusted Sustainable and Equitable Mobility index

Project run by Ariane Dupont-Kieffer (Université Paris 1 Panthéon-Sorbonne) and Hélène Bénistand (PSE), in collaboration with PTV Team

Aiming to define a public tool that should help policymakers to characterize, implement, and assess transport and mobility policies that contribute to a fairer society, a Quality Adjusted Sustainable and Equitable Mobility index (QASEM) is developed.

The QASEM is inspired by a health economics tool: the Quality Adjusted Life Years index (QALY). The QALY allows ranking all the treatments regarding the gains in terms of quality or quantity of life. The QASEM relies on the same principle as the QALY: a trade-off between two dimensions, leading to a ranking of transportation and mobility policy propositions. The first dimension corresponds to a combination of human capital and economic growth, while the second one is the environmental effect.



Human capital and economic growth: A combination	Environment: A combination	
Economic and social inclusions	Pollutants (air, water) and noise emitted during the trip	
Safety risk associated to the trip and to		
the mode. Security to be included? Or in the quality of service	GHG emitted during the trip	
	Acceptability and inclusion of the transport	
Health gains and losses associated to the trip and the selected mode	infrastructure of the selected mode	

The reading of secondary literature concerning the QALY leads the authors to define and refine some steps regarding the functioning of the QASEM and the way it should be define: (i) What is the good to be shared?; (ii) How will it be shared?; (iii) Among whom?; (iv) By who?

Jointly with PTV Group, they chose to define the good to be shared as the access to a bundle of destinations that can be reached within a time budget. They defined the philosophical frameworks in which the QASEM will be implemented: utilitarianism, egalitarianism, prioritarianism, sufficientarism. The philosophical framework does not concern the good to be shared, but the way it will be shared.

The model developed will give priority to the environmental dimension and will be based on distance, in coherence with the spatial model tradition. This tool will first allow to propose a state of the situation of mobility according to the political objectives defined by the public actors, in particular to check its coherence with the needs of the users. They then hope that it will allow to advise public actors on their mobility policy and to propose an impact study.

At this stage, health and environmental data have been added to PTV Access, enabling them to visualize promising initial results. Implementation in the tool proposed by PTV is already making visible the potential need for arbitration between the different dimensions of QASEM. They are currently working on the weighting between the different dimensions, as well as on the definition of personae. These typical individuals, defined on the basis of descriptive data and a qualitative survey, should make it possible to take account of the priorities of local residents, and thus to move towards a sufficientarist framework. The questionnaires, and thus the first personae, will be tested in collaboration with the Conseil national des villes.

The article has been presented at an internal seminar of the PHARE (March 4, 2024) and CIRED (April 30, 2024) laboratories. The indicator white paper has been completed in March. Three papers have also been written and submitted in the spring:

- Benistand H., Dupont-Kieffer A. & Martin Gasulla M., 2024, "QASEM or advancing equity according different social justice framework".
- Armoogum J., Benistand H., Dupont-Kieffer A. & Michel B., "Equity in transportation: what data according to the distributive justice approach deployed?", presented at the conference TRB on Advancing Equity (Baltimore, July 15-18).
- Benistand H., Dupont-Kieffer A., Heidl U., Martin Gasulla M., Nikodem T., Noekel K. & Salek de Braun S., "The QASEM: an indicator for an inclusive and sustainable mobility".

The impact of public transport pricing policy. Experimental Evidence

Philippe Gagnepain (PSE, Université Paris 1 Panthéon-Sorbonne), Alexandre Mayol (Université de Lorraine), Sébastien Massoni (Université de Lorraine), Carine Staropoli (PSE, Université de Rouen Normandie), in collaboration with Jean Coldefy (Transdev)

The authors delve into the effects of different public transit pricing schemes on commuter habits. Psychological inertia, car stickiness, complexity aversion, or skewed perception of prices are expected to influence decisions. They build a controlled experiment, where participants make transport decisions and face various public transport tariffs.

Their findings indicate that players are quite rational as they reach the Nash predictions of their model, but cognitive biases inherent to users are also present. Peak/off-peak and two-part tariffs prove to be more successful in encouraging public transit use than flat fare subscriptions, possibly due to a preference for flexibility and the ability to take past experiences into account (congestion and incident) in future travel choices. They thus suggest that well designed pricing strategies are useful tools to promote public transit use.





Conference "For a "present-day" history of sobriety" (September 28, 2023)

This conference, organised jointly with the French Association of Energy Economists (F-AEE), was held at the Paris School of Economics on September 28, 2023.

Since 2022, the sobriety imperative has appeared as an unexpected injunction in a world where the intersecting notions of planetary limits and geopolitical hazards are taking on new importance for thermo-industrial civilisations. In France, the concept directly echoes President Emmanuel Macron's famous declaration of the "end of plenty" at the opening of the Council of Ministers on August 24, 2022. Long used by the 'Degrowth' movement, sobriety is now being revived as a forward-looking approach in the context of what is commonly referred to as the 'energy transition', and is finding a way to rationalise in a variety of ways at the heart of businesses, public authorities and organised civil society. This conference there-



fore offered a perspective on the object of sobriety in the historical regime(s) in which it manifests itself. The aim was to look at sobriety from its earliest traces in antiquity, before extending the discussion to its quantification in the 21st century, when changes in the energy system seem to be the cornerstone of the civilisational transformations to come.

Annual conference of the French Association of Energy Economists (F-AEE) (November 21, 2023)



On November 21, 2023, the chair co-organised the annual conference of the French Association of Energy Economists (F-AEE) at the Paris School of Economics.

A few months before the European elections, energy economists suggest reflecting on the lessons of the recent period, on the key issues for energy policy act of the European Union for the years to come and in the long term.

Energy crisis, climate crisis, economic crisis, the European parliamentary mandate which comes to an end in 2024 has been confronted with a set of shocks which call for action. Relaunch European industry to depend less on external suppliers and ensure the environmental performance of industrial production, change the energy mix, commit to sobriety energy, thinking about Europe in a competitive world are all challenges to be met to achieve the ambitions of the European Green Deal.

Inaugural conference of the Association Française d'Économie des Transports (AFET) (November 22-23, 2023)

The inaugural conference of the Association Française d'Économie des Transports (AFET) took place at the Paris School of Economics on November 22 and 23, 2023. This event was co-organized and financed by the Urban New Deal Chair.



AFET is the French association of transport economists. It is the largest association on this topic in the country. It organizes each year its annual conference and brings together economists who present their research on topics as varied as the impact of transport on climate change, the subsidy of public transport, road tolls, autonomous vehicles, automobile congestion, or intermodal competition between rail and public transport. The purpose of organizing this conference at the Paris School of Economics was primarily to promote transportation research within the French scientific community, but also to create and strengthen the links between our local research community and the institutional actors and public decision-makers who regulate and organize the use of public and private transport in France. Hosting this conference in Paris was particularly relevant because the city and the île-de-France region as a whole are currently the subject of much public debates and public decisions around the construction of the Grand Paris Express, which aims to rethink the transport network in Paris, and the issue of air quality, since the City of Paris has decided to make the fight against pollution from road sources one of its priorities and to eradicate motor vehicles by 2030.

The conference was organized with two sessions with six presented academic papers, two keynote sessions by Katheline Schubert (PSE, Université Paris 1 Panthéon-Sorbonne) and Stef Proost (KU Leuven, Transport & Mobility Leuven), a panel discussion on "Transport et environnement" with Jean Coldefy (Transdev), Jordan Cartier (Autorité de Régulation des Transports), Gilles Roucolle (Oliver Wyman), and Stephen Perkins (International Transport Forum). A total of 90 participants attended the conference.

PSE Summer School 2023

The Paris School of Economics proposed a Summer School in Industrial Organization that focused on platform economics in June 2023. Two-sided platforms, or networks, can be found in many industries, including urban transportation, search engines or communication networks such as the media and the internet.

The program familiarizes participants with the relevant methods that are required to analyse several important issues that are currently discussed in the economic literature, including policy. This is a purely academic program which aims at discussing theoretical and empirical tools that can be used by Master students and PhDs to develop their economic models in the course of their future scientific carrier.

Practitioners interested in antitrust laws and economics are also given the opportunity to discuss competition cases related to exclusionary strategies (abuses of dominant positions in Europe) and collusion. This course focuses on specific issues such as how dominant firms can use exclusivity clauses and market-share discounts in order to deter entry or evict competitors. A special keynote lecture was proposed by Marc Bourreau, Professor at Télécom Paris.







CAPSTONE PROJECTS WITH THE MSC SUSTAINABLE IMPACT ANALYSIS



The Capstone project carried out within the MSc Sustainable Impact Analysis (jointly accredited by the Paris School of Economics and the École des Ponts ParisTech) mainly consists of fulfilling a consulting mandate given by a company or any other organization interested in taking advantage of the training provided by the program in economic evaluation of all types of investment projects. SIA Students are supervised by academic's experts of the topic and deliver a written report and a policy brief on the project.

In 2023, a Capstone project for the MSc SIA was completed by three students - Baptiste Buis, Victor Kerjean and Mickael Kihlberg - under the supervision of Bassem Haidar from Avere-France for Enedis. This study, financially backed by the Urban New Deal Chair, aimed to assess Enedis's role in the future of smart charging for electric vehicles through an economic and strategic evaluation of B2B smart charging via value chain analysis.



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POLICY BRIEFS

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How does the energy crisis change cities' climate action plans? by Nicolas Hatem

Focusing at the urban scale, Nicolas Hatem examines the extend to which the social cost of a climate action plan is modified by energy inflation. He suggests that the recent shock on European energy prices implies sufficiently large windfall benefits to make investments in low-carbon energy assets more cost-efficient than in energy retrofits.

How do knowledge spillovers shape the activity of public transport operators? **by Philippe Gagnepain**

This research is an attempt to measure knowledge spillovers in the French urban transport sector where a few large industrial groups are in charge of operating several urban networks. Exerting an effort in a specific network allows a cost reduction in this network, but it also benefits other networks that are members of the same group. Results suggest that diversity of knowledge across operators of the same group increases the flow of spillovers. Simulation exercises provide evidence of significant reductions in total operating costs following the enlargement of industrial groups.

Analyzing the French fuel tax to better target polluters by Stéphane Gauthier

This policy brief discusses how the French government attempts to reconcile efficiency, equity, and environmental concerns in its taxation of fuel. It stresses the tension between imposing higher taxes on less price-sensitive goods, such as fuel, for efficiency reasons and the need to consider the impact on economically vulnerable populations. Addressing pollution from fuel consumption would require implementing personalized taxes that are higher for heavy polluters. The current uniform taxation system disproportionately would benefit urban drivers, who cause the highest environmental damages, though despite the French government's goal of favoring rural communities.

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Bike-Share Programs and Cleaner Air: Insights from New York City by Vincent Thorne

What are the environmental impacts of cycling infrastructure? This policy brief presents the results of a study on the implementation and gradual rollout of New York City's bike-share system and its impact on air quality. Using high-resolution air pollution maps and detailed records on the use of bikeshare, it shows that bike-share reduced the concentrations of air pollutants associated with car traffic. The estimated reduction in air pollutants is estimated to have saved up to \$327 million in social damages. By analysing detailed taxi trip records, the report also presents suggestive evidence that bike-share replaced taxi trips in highly congested, central areas of the city. These findings equip policymakers with valuable evidence to reduce the adverse effects of individual motor traffic.

Marcine J. S. Sectors and Sectors and

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Poland's solar power surge: a model or misleading success? by Jan Domagalski



This policy brief presents and evaluates the solar subsidy policy "Mój Prąd" (Eng. "My Electricity") in Poland. This is a popular subsidy programme that since its beginning in 2019 contributed greatly to the Polish photovoltaic prosumerism boom. During the policy's first five editions running from July 2019 to December 2023, more than three billion PLN (694 million EUR) of subsidies were allocated to almost 600,000 households, that installed 3.5 GW of solar capacities on their roofs. The programme is expected to continue into its sixth edition in 2024. Despite the apparent success of the policy, the careful analysis of installation-level data and subsidy's pass-through rate raises concerns about the Polish residential solar market and indicates it is likely imperfect.

PUBLICATIONS

In 2023, the chair's researchers published a large number of works, in the form of articles in peer-reviewed journals and working papers. The selection below provides an overview of the research carried out during the year.

Peer-reviewed journals

Hatem N., 2023, "How Climate Action Plans are modified by the energy crisis? A focus on residential heating in Bristol", *Revue d'économie industrielle*, 184, 21-73.

Working papers

Astier N. & Hatem N., 2023, *Dynamic (Mis)allocation of Investments in Solar Energy*, Working papers hal-04320497, HAL.

Chaton C. & Zitouni S., 2023, Is it sensible to invest in home energy renovation?, Working paper.

Zitouni S., 2024, *On the capitalization of energy labels on the Frenchhousing market*, Working papers hal-0438070, HAL.

Gagnepain P., Massoni S., Mayol A. & Staropoli C., 2024, *The Effect of Public Transport Pricing Policy: Experimental Evidence*, Working papers halshs-04610702, HAL.



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