ANNUAL REPORT

2017

TSE Energy and Climate Center

Toulouse School of Economics

CONTENTS

EDITOR'S MESSAGE ..... *page 3*
HIGHLIGHTS ..... *page 4*
TEAM ..... *page 8*
EVENTS ..... *page 9*
PUBLICATIONS ..... *page 10*
OUTREACH ..... *page 12*

EDITOR'S MESSAGE

The TSE Energy and Climate Center has completed its first full year of activity. We would like to thank our main industrial partners EDF, Engie and TOTAL for their enthusiasm and their continual support. Today, the center counts over 30 researchers working on the economics of climate change and the industrial organization of the energy sector.

Year 2017 marks a series of important events. We hosted in Toulouse about 50 of the best energy and environmental economists during our eleventh academic conference on the economics of energy and climate change. We also organized the Center's first annual Forum in Paris. It gathered TSE economists, international academics and decision makers to share insights on the future of energy. Concerned by today's major societal challenges around climate change and energy transition, the center's researchers are working on producing relevant research on such emerging issues.

This annual report provides an overview of the Center's activity and production during 2017. It also showcases the scientific work in progress to be followed closely during 2018 and 2019.

Stefan Ambec

Director, TSE Energy & Climate Center

HIGHLIGHTS

APPOINTMENTS AND POSITIONS

- ***Stefan Ambec***, TSE Researcher and Senior Researcher INRA has been appointed Chief Editor of Resource and Energy Economics. The journal publishes theoretical and empirical papers, firmly grounded in economic theory, that advance our understanding of and provide novel insights into environmental and natural resource problems and policies broadly defined, as well as analyses of energy use and markets that link resource and environmental issues to energy.

- ***Christian Gollier,*** TSE Director has been elected President of the European Association of Environmental and Resource Economist (EAERE). He will serve as President-Elect in 2018 and 2019.

- ***The EAERE***, is an international scientific association which aims are:
  - to contribute to the development and application of environmental and resource economics as a science in Europe;
  - to encourage and improve communication between teachers, researchers and students in environmental and resource economics in different European countries;
  - to develop and encourage the cooperation between university level teaching institutions and research institutions in Europe.

The 2013 EAERE Congress was organized by Toulouse School of Economics.

- ***A new ANR grant to TSE.*** Christian Gollier, TSE Director's project *"Valuation of extra-long investments - LONGTERMISM"* was accepted by the ANR.

This project aims to show how should the actions whose impacts will be mostly felt in many decades or centuries be valued. The main objective of the project is to provide operational tools associated to the problem of valuing the economic, financial, social and environmental impacts of our actions in favour of the distant future.

3 industrial partners

30 researchers

1 international forum

1 academic conference

12 working papers

16 academic papers

25 seminars

COLLABORATIONS

- ***Global Exchange in Modelling of Climate and Energy (GEMCLIME)*** is a European-funded research project that focuses on the economics of climate and energy. It follows an integrated approach to modelling the impacts of climate and energy policies.

To implement the research project, it coordinates the secondment of research staff to encourage scientific networking and the transfer of knowledge between the world's best research institutions.
The project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No 681228.

Two PhD students of TSE - **Nicolas Astier** and **Xavier Lambin** - enjoyed an academic stay at Berkeley thanks to this funding.

GEMCLIME
Global Exchange in Modelling of Climate and Energy

My visit to Berkeley was a very stimulating experience. During my stay, I notably developed a framework which allows consideration of a broad range of constraints, be they technical or political, that prevent us from fully differentiating traded commodities in an Arrow-Debreu model.

This problem is commonly encountered in sectors where simple tariffs are usually charged to consumers (e.g. electricity, natural gas, water, etc.).

Nicolas ASTIER

GEMCLIME enabled me to visit the Economics department at the University of California at Berkeley. Over these two months, I shared the life of the department and got the opportunity to discuss my papers with top researchers I would maybe not have met otherwise.

Importantly, I learnt how research is done on the other side of the Atlantic, thereby preparing me for the academic job market.

Xavier LAMBIN

11th ENERGY AND CLIMATE CHANGE CONFERENCE

On June 6th at the Toulouse School of Economics, the center organized the biennal energy and climate academic conference gathering over 50 internationally renowned economists in Toulouse. Over 35 academic presentations spread over two days were organized covering a vast spectrum of topics: Energy markets, environmental policy and regulation, nuclear technology, green technologies, market designs, climate policy etc.

http://bit.ly/TSEenergyandclimateplaylist

YouTube

http://bit.ly/Prog-energyconf

PDF

THE 1st TSE ENERGY FORUM – JUNE 2017

On June 8 at the Palais Brongniart in Paris, the TSE Forum gathered world- class economists and executives working at the forefront of the digital and energy sectors to offer their insights and debate the future of those industries.

Back-to-back debates featuring EDF chairman **Jean-Bernard Lévy**, MIT economist **Richard Schmalensee**, TOTAL executive **Philippe Sauquet**, and TSE researcher **Stéphane Straub**, Engie executive **Antoine de la Faire** and the Haas Energy Institute's **Catherine Wolfram** were organised on Energy transition and development and Energy and market organization.

EDF has been able to deliver to France a very low-carbon power system. France emits only 15g of CO^2 per kilowatt hour, whereas Germany emits 400g. It's doable, but it's due to good decisions about hydraulic and nuclear energy.

The EU-ETS system has failed. We support national initiatives for a carbon price floor, which can be effective very quickly as we've seen in the UK. The time is right for an initiative from France, with support from Germany, to use existing gas plants instead of coal plants. This could quickly reduce carbon emissions every year by 40 million tons.

> **« With continuous support to wind and solar power, we have overcapacity in Europe. The market is very sick**

Jean-Bernard Lévy
Chairman, EDF

It's time to start thinking about climate policy decades into the future. Policies last for decades and the problem is going to get harder. We talk about zero emissions by 2050 - that's not just putting up more windmills. That's not even decarbonizing electricity, which is less than half of global emissions. The harder it is to make those last reductions, the less likely that they will happen.

If we're serious, absent President Trump, about getting to zero emissions, it needs to be as cheaply as possible and that means letting the carbon price do what only it can do.

> **« Decisions we make about policy today are likely to be around in 2050**

Richard Schmalensee
MIT

The energy landscape has completely changed. Ten years ago, we were fearing peak oil and peak gas, with ever-growing costs, and dependence on oil-producing countries. Those limitations no longer exist. Coal is no longer needed; there is enough gas to replace it.

We need to support capital-intensive pilot projects such as CCS (carbon capture and storage) or second-generation biomass. Everybody is ready to support R&D, but the difficulty comes with industrialization, especially in Europe. Today 40% of the cost of electric vehicles is the battery; and we are on the verge of seeing all cells manufactured in the US or Asia.

> **« We feel very optimistic because solutions do exist**

Philippe Sauquet
President Gas, Renewables & Power and Executive Vice President, Strategy & Innovation Vice President - TOTAL

Energy has direct and indirect effects that can be positive and negative. About four million people are estimated to die prematurely because of using traditional biomass fuels for cooking. We've connected 2.3 billion people to electricity. How should we connect the rest? This has very different regulatory implications because on-grid generation tends to be mostly fossil fuel, while mini grids are mostly powered by renewables. It's very optimistic to look to private financing for solutions - it necessarily excludes people, and we're not that good at targeting corrective subsidies. We cannot address energy issues in isolation, we need to think about the complementarity between services, water, transport, poverty and infrastructure in general.

> **« You can have access to energy and still be considered energy poor**

Stéphane Straub
Toulouse School of Economics

Economic development and energy transition can go together. Recent negative announcements from President Trump will not be as dramatic as they may sound. Renewables are responsible for a massive job boom that employs about 10 million people. Even in the US there are roughly five more people working in renewables than in coal. Emerging countries have been become prominent supporters of renewable energy. For example, India expects all vehicles to be electric from 2030. It's getting really competitive and other green options will soon arise.

To speed up transition, we need stable regulation, financial support and fiscal schemes to set the right pricing to support investments.

> **« Energy transition is no longer just a nice thing to think about, it's become the best economic option**

Antoine de La Faire
Strategic Executive, Engie

Development is clearly correlated with energy consumption, but does energy drive development, or is it the other way around? There are up to 1.3 billion people who don't have energy in their homes. Our experiment in western Kenya found that bringing in electricity had zero impact on people's lives. Kids weren't studying more, incomes didn't go up, people weren't consuming better food. These people lack many things. And once connected, they couldn't afford many appliances.

So it's not clear that this is the way to solve poverty. Another option is to power local firms with reliable electricity so they can expand and employ people.

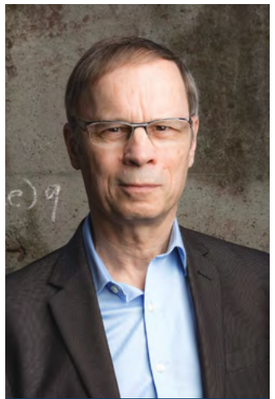
> **« If we had a dollar to invest in the energy sector, what would be the most profitable investment in terms of driving development?**

Catherine Wolfram
Energy Institute at Haas

Stefan
AMBEC

Claude
CRAMPES

Christian
GOLLIER



Jean
TIROLE

RESEARCHERS INVOLVED

- Jean-Pierre AMIGUES
- Henrik ANDERSSON
- Catherine BOBTCHEFF
- Estelle CANTILLON
- Hélia COSTA
- Philippe DE DONDER
- Bard HARSTAD
- Jim HAMMITT
- Norbert LADOUX
- Gilles LAFFORGUE
- Stefan LAMP
- Michel LEBRETON
- Yassine LEFOUILLI
- Nour MEDDAHI
- Michel MOREAUX
- Céline NAUGES
- Manh-Hung NGUYEN
- Giulia PAVAN
- Patrick REY
- Mathias REYNAERT
- Arnaud REYNAUD
- François SALANIE
- David SALANT
- Stéphane STRAUB
- Nicolas TREICH
- Stéphane VILLENEUVE
- Bert WILLEMS

SCIENTIFIC EVENTS

Seminars

- **Geoffrey Barrows** (Texas A&M), *"The Local Economic Benefits versus Environmental Costs of India's Coal-Fired Power Plants"*, Industrial Organization seminar, TSE, December 11, 2017.
- **Steven Puller** (École Polytechnique), *"Does Strategic Ability Affect Efficiency? Evidence from Electricity Markets"*, Industrial Organization seminar, TSE, December 4, 2017.
- **André Trindade** (FGV/EPGE - Escola Brasileira de Economia e Finanças), *"Measuring the Benefits and Costs of Intermediation in Vertical Relations"*, Industrial Organization seminar, TSE, November 13, 2017.
- **Mads Greaker** (Statistics Norway), *"Should environmental R&D be supported more than other R&D projects?"*, Environment Economics Seminar, TSE, November 13, 2017.
- **Phillip Haile** (Yale University), *"Common Values, Unobserved Heterogeneity, and Endogenous Entry in U.S. Offshore Oil Lease Auctions"*, Industrial Organization seminar, TSE, November 6, 2017.
- **B. Kelsey Jack** (Tufts University), *"Charging ahead: Prepaid metering, electricity use and utility revenue"*, Environment Economics Seminar, TSE, November 6, 2017.
- **Matthew Kotchen** (Yale School of Forestry), *"Which Social Cost of carbon? A Theoretical Perspective"*, Environment Economics Seminar, TSE, October 23, 2017.
- **Solomon Hsiang, (Joint with Tatyana Deryugina),** (Goldman School of Public Policy, University of California, Berkeley), *"The Marginal Product of Climate"*, Environment Economics Seminar, TSE, October 16, 2017.
- **Jessica Coria ,** (Gothenburg University), *"Fiscal Federalism and Interjurisdictional Externalities: The case of Air Quality Regulations in Sweden"*, Environment Economics Seminar, TSE, October 9, 2017.
- **Michael Grubb** (Boston College), *"Peaches, Lemons, and Cookies: Designing Auction Markets with Dispersed Information"*, Industrial Organization seminar, TSE, September 25, 2017.
- **Lauriane Mouysset** (CNRS), *"Land-use policy to deal with biodiversity: a bio-economic analysis"*, Environment Economics Seminar, TSE, September 25, 2017.
- **Otto Toivanen** (Aalto University), *"Welfare Effects of R&D Support Policies"*, Industrial Organization seminar, TSE, September 18, 2017.

➢ **Helia Costa** (Toulouse School of Economics), *"Policy Distortion as a Signaling Tool: The Case of US Environmental Expenditure"*, Environment Economics Seminar, TSE, September 18, 2017.

➢ **Philippe Aghion** (Harvard University - Collège de France - London School of Economics), *"Missing growth from creative destruction"*, Industrial Organization seminar, TSE, September 11, 2017.

➢ **Dan Phaneuf's** (University of Wisconsin), *"Valuation of Local Public Goods: Migration as Revealed Preference for Place"*, Environment Economics Seminar, TSE, September 11, 2017.

➢ **Olivier Deschenes** (University of California, Santa Barbara), *"Weather, Climate Change and Death in India"*, Environment Economics Seminar, TSE, September 4, 2017.

➢ **Lucas Davis** (University of California - Berkeley - Haas School of Business), *"Do Energy Efficiency Investments Deliver at the Right Time?"*, Environment Economics Seminar, TSE, June 12, 2017.

➢ **James M. Sallee** (University of California - Berkeley), *"Optimal Corrective Taxes with Untaxable Externalities: Evidence from Vehicle Pollution Standards"*, Environment Economics Seminar, TSE, June 2, 2017

➢ **Asa Lofgren** (University of Gothenburg), *"Prices versus Standards and Firm Behavior Evidence from an Artefactual Field Experiment"*, Environment Economics Seminar, TSE, May 15, 2017.

➢ **Subhrendu K. Pattanayak** (Duke University), *"Economics of household energy transitions: Evidence from the Indian Himalayas"*, Environment Economics Seminar, TSE, April 24, 2017.

➢ **Koichiro Ito** (The University of Chicago - Harris School of Public Policy), *"Information Frictions, Inertia, and Selection on Elasticity: A Field Experiment on Electricity Tariff Choice"*, Environment Economics Seminar, TSE, March 20, 2017.

➢ **Nicholas Ryan** (Yale University), *"Is There An Energy-Efficiency Gap? Experimental Evidence from Indian Manufacturing Plants"*, Development, Labor and Public Policy Seminar, TSE, March 16, 2017.

➢ **Fabian Herweg** (University of Bayreuth), *"Procurement with Unforeseen Contingencies"*, Industrial Organization seminar, TSE, March 6, 2017.

➢ **Maureen Cropper** (University of Maryland), *"Household Location Decisions and the Value of Climate Amenities"*, Environment Economics Seminar, TSE, March 6, 2017.

➢ **Konrad Stahl** (University of Mannheim), *"A Dynamic Model of Predation"*, Industrial Organization seminar, TSE, February 27, 2017.

SCIENTIFIC PUBLICATIONS

Working papers

➢ **Xavier D'Haultfeuille, Isis Durrmeyer and Philippe Février,** *"Automobile Prices in Market Equilibrium with Unobserved Price Discrimination"*, TSE Working Paper, n. 17-854, October 2017.

➢ **Laura Grigolon, Mathias Reynaert and Frank Verboven,** *"Consumer Valuation of Fuel Costs and the Effectiveness of Tax Policy - Evidence from the European Car Market"*, TSE Working Paper n° 17-836, August 2017.

➢ **Christian Gollier,** *"Variance stochastic orders"*, TSE Working Paper n° 17-828, July 2017.

➢ **Patrick Rey and David Salant,** *"Allocating essential inputs"*, TSE Working Paper, n. 17-820, June 2017, revised February 2018.

➢ **Philippe Bontems,** *"Refunding Emissions Taxes: The Case For A Three-Part Policy"*, TSE Working Paper, n. 17-832, June 2017.

➢ **Carole Bernard, Christoph Rheinberger and Nicolas Treich,** *"Catastrophe Aversion and Risk Equity in an Interdependent World"*, TSE Working Paper, n. 17-811, May 2017.

➢ **Christian Gollier,** *"Valuation of natural capital under uncertain substitutability"*, TSE Working Paper, n. 17-811, May 2017.

➢ **Philippe Bontems and Céline Nauges,** *"Production choices with water markets: The role of initial allocations and forward trading"*, TSE Working Paper, n. 17-812, May 2017.

➢ **Prosper Dovonon, Silvia Goncalves, Ulrich Hounyo and Nour Meddahi,** *"Bootstrapping high-frequency jump tests"*, TSE Working Paper, n. 17-810, May 2017.

➢ **Georgios Petropoulos and Bert Willems,** *"Providing efficient network access to green power generators: A long-term property rights perspective."*, TSE Working Paper, n. 17-770, February 2017.

➢ **Bruno Jullien, Markus Reisinger, and Patrick Rey** *"Vertical Foreclosure and Multi-Segment Competition"*, TSE Working Paper n. 17-876, December 15, 2017

➢ **Giulia Pavan,** *"Green Car Adoption and the Supply of Alternative Fuels"*, TSE Working Paper n. 17-875, December 2017

➢ **Stefan Ambec and Claude Crampes,** *"Decarbonizing electricity generation with intermittent sources of energy"*, TSE Working Paper n° 15-603, september 2015, revised july 2017.

Academic papers

➢ **Laure Jaunaux, Yassine Lefouili and Wilfried Sand-Zantman,** *"Entry and Merger Policy"*, Economic Letters, vol. 161, December 2017, pp. 124–129. WORKING PAPER VERSION

➢ **Céline Nauges and Sarah Ann Wheeler,** *"The complex relationship between households' climate change concerns and their water and energy mitigation behaviour"*, Ecological Economics, vol. 141, November 2017, pp. 87-94

➢ **Marion Robert, Alban Thomas, Muddu Sekhar, Shrinivas Badiger, Laurent Ruiz, Hélène Raynal and Jacques Eric Bergez,** *"Adaptive and dynamic decision-making processes: A conceptual model of production systems on Indian farms"*, Agricultural Systems vol. 157, October 2017, p. 279-291, © SCIENCEDIRECT

➢ **Alban Thomas and Vera Zaporozhets,** *"Bargaining over Environmental Budgets"*, Environmental and Resource Economics Springer Netherlands, vol. 68, n° 2, October2017, p. 227–248

➢ **Bruna Grizzetti, Denis Lanzanova, C. Liquete and Arnaud Reynaud,** *"Going Green? Ex-post Valuation of a Multipurpose Water Infrastructure in Northern Italy"*, Ecosystem Services vol. 27, October 2017, p. 70-81, © SCIENCEDIRECT

➢ **Jean-Daniel Guigou, Bruno Lovat and Nicolas Treich** *"Risky Rents"*, Economic Theory Bulletin vol. 5, n° 2, October 2017, p. 151-164, FULL TEX

➢ **Denis Lanzanova and Arnaud Reynaud,** *"A global meta-analysis of the value of ecosystem services provided by lakes"*, Ecological Economics vol. 137, July 2017, p. 184-194

➢ **Christoph Rheinberger and Nicolas Treich,** *"Attitudes Toward Catastrophe"*, Environmental and Resource Economics Springer Netherlands, vol. 67, n° 3, July 2017, p. 609-636, WORKING PAPER VERSION

➢ **Douadia Bougherara, Xavier Gassmann, Laurent Piet and Arnaud Reynaud,** *"Structural estimation of farmers' risk and ambiguity preferences: a field experiment"*, European Review of Agricultural Economics, July 2017, p. 1-27, FULL TEX

➢ **Ujjayant Chakravorty, Marie-Hélène Hubert, Michel Moreaux and Linda Nøstbakken,** *"Long-run impact of Biofuel on Food Prices"*, The Scandinavian Journal of Economics, vol. 119, n. 3, July 2017, pp. 733-767.

➢ **Yana Jin, Henrik Andersson and Shiqiu Zhang,** *"Chinas Cap on Coal and the Efficiency of Local Interventions: A Benefit-Cost Analysis of Phasing out Coal in Power Plants and in Households in Beijing"*, Journal of Benefit-Cost Analysis, vol. 8, July 2017, pp. 147-186.

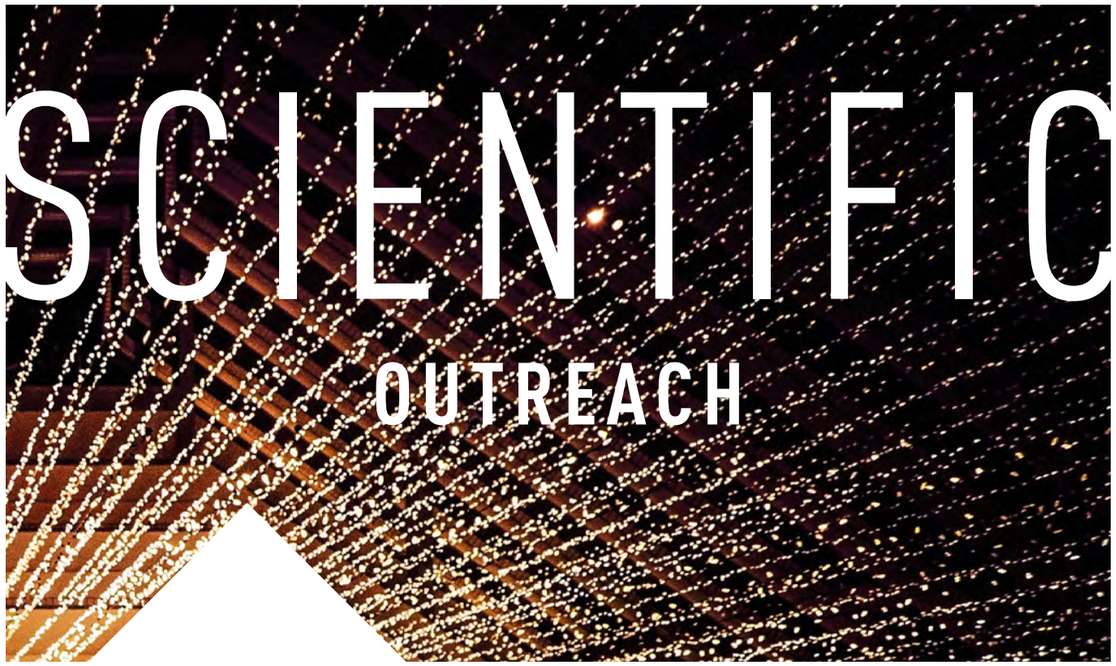
➢ **Matthew Adler, David Anthoff, Valentina Bosetti, Greg Garner, Klaus Keller and Nicolas Treich,** *"Priority for the worse-off and the social cost of carbon"*, Nature Climate Change, May 2017, p. 443-449

➢ **Matthew Adler and Nicolas Treich,** *"Utilitarianism, Prioritarianism, and Intergenerational Equity: A Cake Eating Model"*, Mathematical Social Sciences, vol. 87, May 2017, pp. 94-102. FULL TEXT© SCIENCE DIRECT

➢ **Bill Comanor and David Salant,** *"Resale price maintenance post leegin: a modle of RPM incentives"*, Review of Industrial Organization vol. 50, n° 2, March 2017, p. 169-179

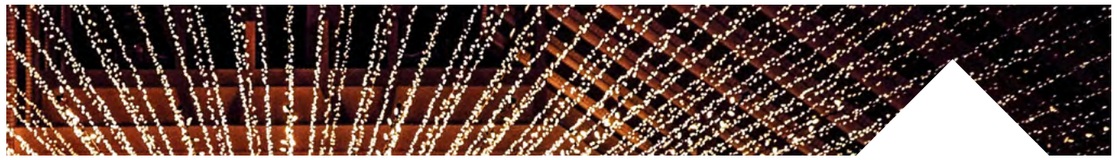
➢ **Stefan Ambec,** *"Gaining competitive advantage with green policy"*, dans Green Industrial Policy. Concept, Policies, Country Experiences, sous la direction de T. Altenburg and C. Assmann, Un Environment, chapitre 3, 2017.

➢ **Manh-Hung Nguyen and Phu Nguyen-Van,** *"Optimal endogenous growth with natural resources: Theory and evidence"*, Macroeconomic Dynamics, December 2016, pp. 2173-2209.



TSE Mag - Changing the balance of energy

The summer 2017 edition of our trimestrial magazine, TSE Mag, was dedicated to the issues of energy, bringing you the latest news, results and debates from our center. Participations from our experts Stefan Ambec, Claude Crampes, Estelle Cantillon, Stefan Lamp, Bert Williams, Giulia Pavan.



CONTRIBUTIONS TO PUBLIC DEBATE

Over 8 blogs posts this year by TSE researchers Stefan Ambec and Claude Crampes on TSE's official blog - TSE Debate. Un portal assembling opinions and analysis of TSE researchers on topics of high public interest (electric cars, European Carbon market, Integrating intermittent renewable energy…)

December 2017: **The collateral effects of electric cars,** Stefan Ambec and Claude Crampes

https://www.tse-fr.eu/collateral-effects-electric-cars

Electric cars consume clean energy, but this is generated using primary energy sources which are not necessarily clean themselves. The development of electric vehicles will therefore bring about a new geographic and social distribution of pollution produced by transport.

November 2017: **The European carbon market: Phase 4,** Stefan Ambec and Claude Crampes

https://www.tse-fr.eu/european-carbon-market-phase-4

On Thursday 9 November 2017, the European Parliament and the European Council reached a provisional agreement on preparations for Phase 4 of the highly controversial carbon market. While the compromise has yet to be made official, it is noteworthy because it marks the end of months of negotiations among EU member states, the Parliament and the Commission on the reform of the EU Emissions Trading System after 2020.

October 2017: **Negative prices for electricity,** Stefan Ambec and Claude Crampes

https://www.tse-fr.eu/negative-prices-electricity

When we witness producers paying consumers to offload their power, we can but wonder if the relationship between the electricity industry and the market economy is like mixing oil and water. Indeed, the negative prices occasionally seen in electricity exchanges in Europe and the USA are a clear sign to industry players that there is a significant production surplus. However repeated negative prices are mostly attributable to the priority treatment afforded to intermittent renewable energies.

September 2017: **The energy transition: Germany's turning point,** Stefan Ambec and Claude Crampes

https://www.tse-fr.eu/energy-transition-germanys-turning-point

On September 24, Germans will vote for the new members of the Bundestag. The leaders of the two main parties, chancellor Angela Merkel (CDU/CSU) and challenger Martin Schulz (SPD), have just a few days left to convince voters of their positions on issues like education and national security. When it comes to the topic of energy, however, both parties seem closely aligned. Germany has reached a turning point with its energy policy, known as "die Energiewende," [1] <*https://www.tse-fr.eu/energy-transition-germanys-turning-point#_ftn1*> which aims to make electricity production safer and cleaner. This policy is based on ramping up renewable energy sources, abandoning nuclear power, and reducing dependence on coal.

June 2017: **To rebate or not to rebate,** Isis Durrmeyer

https://www.tse-fr.eu/rebate-or-not-rebate

Isis Durrmeyer, Assistant professor, TSE, has tried to understand the impact of this 'feebate' policy: *"Our results show that people overreacted as French buyers massively bought energy-efficient cars following this new regulation. We believe this surprising effect is due to the rise of new technologies, making cars more efficient; the regulation and its effects on the market prices; and, finally, buyers' growing preference for greener cars. We measure the contribution of each of these factors."*

June 2017: **At the mercy of elements,** Stefan Ambec

https://www.tse-fr.eu/mercy-elements

Policymakers' efforts to clean up electricity production have often aimed to substitute fossil fuels with renewable sources. Unfortunately, electricity produced from wind turbines and solar panels is highly unpredictable. Stefan Ambec and Claude Crampes, have produced the first analytical assessment of energy policies that tackles the problem of intermittent production.

April 2017: **Integrating intermittent renewable energy,** Claude Crampes and Norbert Ladoux

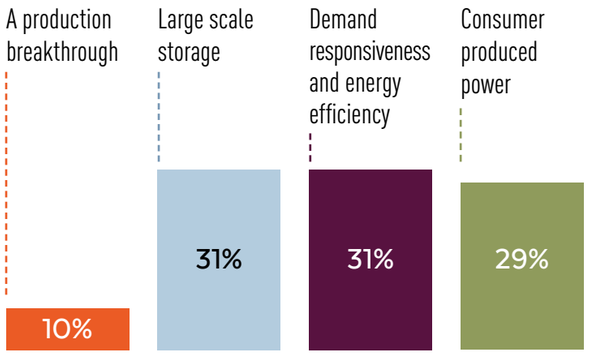
https://www.tse-fr.eu/article/integrating-intermittent-renewable-energy

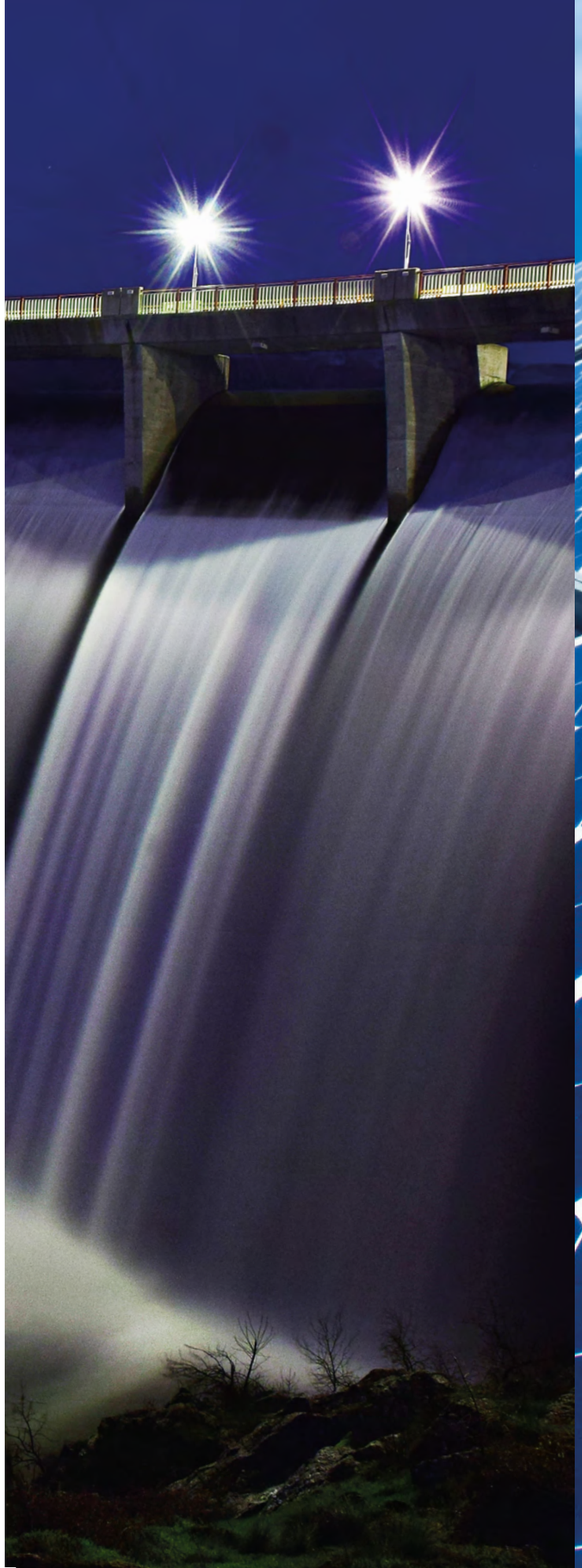
The increase in production of energy from intermittent renewable sources poses two problems for programmable energy plants: volume, because a reliable production capacity is needed to meet demands not covered by wind turbines and solar panels; and flexibility, because the need for additional energy can vary greatly over very short periods of time. In this article, Claude Crampes and Norbert Ladoux leave wind turbines aside to focus on the alternating day and night cycles of solar energy production.

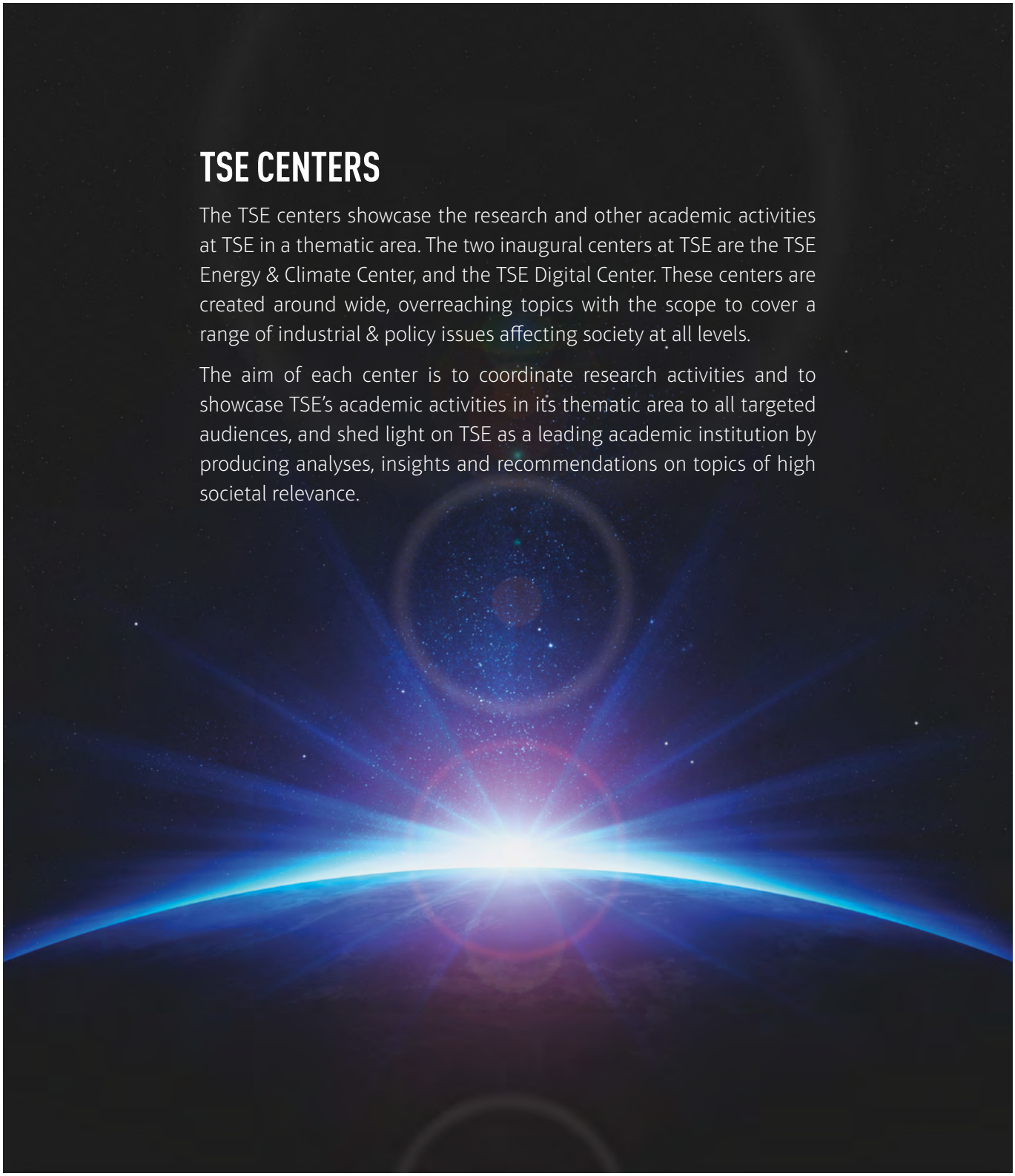
TSE POLLS

The TSE Debate portal hosts various thematic polls, where our readers share their opinions and take part in the on going discussions.

What is the next big evolution in the electricity industry?







TSE CENTERS

The TSE centers showcase the research and other academic activities at TSE in a thematic area. The two inaugural centers at TSE are the TSE Energy & Climate Center, and the TSE Digital Center. These centers are created around wide, overreaching topics with the scope to cover a range of industrial & policy issues affecting society at all levels.

The aim of each center is to coordinate research activities and to showcase TSE's academic activities in its thematic area to all targeted audiences, and shed light on TSE as a leading academic institution by producing analyses, insights and recommendations on topics of high societal relevance.

Priyanka TALIM

Project Manager - Research Partnerships

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