AISE GLOBAL

University of Economics

MASSEY UNIVERSITY
TE KUNENGA KI PŪREHUROA
UNIVERSITY OF NEW ZEALAND

2023

14-15 DECEMBER
DANANG, VIETNAM

VIETNAM SYMPOSIUM
IN CLIMATE TRANSITION

https://vsct2023.sciencesconf.org/

Summary

Welcoming note

We are very pleased to welcome you to the first edition of the **Vietnam Symposium in Climate Transition** (VSCT-2023, 14-15 December 2023), which is jointly organized by the **Association of Vietnamese Scientists and Experts (AVSE Global)**, the **University of Danang – University of Economics**, and **Massey University**.

The Symposium aims to provide a leading forum for academics, practitioners, and policymakers to present their research findings and discuss current and challenging issues in climate transition, environment, and energy change mitigation and adaptation. The Symposium is also ideal for Vietnamese scholars to exchange research experiences and develop research projects with their international colleagues.

This year, we have the great privilege to welcome two outstanding Guest Keynote Speakers, **Professor Charles Mason**, *H.A. "Dave" True, Jr. Chair; Professor of Economics, University of Wyoming, United States & Co-Editor of Economics of Energy and Environmental Policy,* and **Professor Perry Sadorsky**, *Professor of Sustainability and Economics, Schulich School of Business, York University, Canada & Co-Editor of Energy Economics.* We also have the great pleasure to welcome **Professor Viet Anh Dang,** *Professor of Finance, Alliance Manchester Business School, UK & Editor of Journal of Business Finance and Accounting,* **Dr. Lilas Demmou,** *Deputy Head of Structural Policy Analysis Division, OECD, France*, **Professor Charles Mason,** *H.A. "Dave" True, Jr. Chair; Professor of Economics, University of Wyoming, United States & Co-Editor of Economics of Energy and Environmental Policy,* and **Dr. Toan Phan,** *Senior Economist, Federal Reserve Bank of Richmond, USA* to join us in the policy discussion panel session. They are among the world's leading scholars and practitioners in climate transition. We are grateful to them for their presence and kind support.

We also thank all the submitted authors, scientific committee members, attendees, and particularly conference participants who serve as presenters, session chairs, and discussants. Our special thanks go to Professors Alessandra Guariglia, Qiang Ji, and Dayong Yang (Co-Editors-in-Chief of *Journal of Climate Finance),* Professors Raf Dewil, Jason Evans and Lixiao Zhang (Co-Editors-in-Chief of *Journal of Environmental Management)* for agreeing to consider our best conference papers for publication opportunities at their journals. Our gratitude also goes to Prof. Sabri Boubaker, Assoc. Prof. Hung Do, Dr. Linh Pham, and Dr. Vu Trinh (Co-Guest Editors of *International Review of Economics and Finance*), Professor Younes Ben Zaied and Dr Nidhaledine Ben Cheikh (Co-Guest Editors of the *Environmental Economics and Policy Studies*), Prof. Shunsuke Managi, Dr. Moinul Islam, Prof. Dayong Zhang, Prof. Younes Ben Zaied, and Dr. Osamu Saito (Co-Guest Editors of *Sustainability Science*), Prof. Duc Khuong Nguyen and Assoc. Prof. Muhammad Ali Nasir (Co-Guest Editors of *Economics of Energy & Environmental Policy*), and Prof. Younes Ben Zaied and Prof. Shunsuke Managi (Co-Guest Editors of *Journal of Cleaner Production*), who have kindly agreed to attach their special issues with our conference.

Finally, we would like to thank Professors Man Huu Dang and Thuy Anh Vo (*University of Da Nang – University of Economics, Viet Nam)*, for their outstanding support to make this event a great success. Also, our special thanks go to the members of our organizing committee and supporters for their great contributions to the preparations of this scientific event.

We wish you all an intellectually stimulating and productive conference as well as a chance to meet new colleagues and establish collaborations. We hope that you will have the occasion to exchange ideas and enjoy the environment of the conference!

On behalf of the Organizing and Scientific Committees

The Conference Co-Chairs

Hung Xuan Do, Muhammad Ali Nasir and Linh Pham

Conference Scope

The Viet Nam Symposium in Climate Transition aims to provide a leading forum for academics, practitioners, and policymakers to present their research findings and discuss current and challenging issues in climate transition, environment, and energy change mitigation and adaptation. The Symposium is also ideal for Vietnamese scholars to exchange research experiences and develop research projects with their international colleagues.

The scientific and organizing committees welcome submissions in all areas which represent the crossroads of energy, environmental, and climate finance. The topics of the conference include, but are not limited to:

- Behavioral finance/economics and its implications to climate transition
- Climate change: mitigation and adaptation
- Climate change: policy and regulations
- Climate finance
- Climate risks: assessment and management
- Climate transition and COVID-19 recovery
- Climate transition and portfolio management
- Energy and environmental issues
- Energy markets and energy transition
- Financial markets and climate transition
- Geopolitical risk and climate change mitigation
- Just climate transition
- Low carbon technologies and innovation
- Management of extractive industries
- Sustainable infrastructure investment

Keynote Speakers

Professor Charles Mason

H.A. "Dave" True, Jr. Chair; Professor of Economics, University of Wyoming, United States & Co-Editor of Economics of Energy and Environmental Policy

Charles Mason is the H. A. "Dave" True, Jr. Chair in Petroleum and Natural Gas Economics in the Department of Economics at the University of Wyoming. He is an internationally known scholar who specializes in Environmental and Resource Economics with over 80 publications in peer-reviewed journals and book chapters. He testified in the case against BP related to the Deepwater Horizon oil spill. He served as the managing editor of the top international journal in the field of Environmental and Resource Economics (the Journal of Environmental Economics and Management), from 2006 to 2011. He is currently an associate editor of the European Economic Review, co-editor of Economic Inquiry, and joint editor-in-chief of Strategic Behavior in the Environment. He earned a double B.A. in Economics and Mathematics in 1977 and a Ph.D. in Economics in 1983, all at the University of California at Berkeley. He is a non-resident fellow at Resources for the Future and has been a visiting academic at the University of Cambridge (2003); the London School of Economics (2014, 2015); the University of Oxford (2008, 2009, 2010, 2011, 2012); the Venice International University, Ca' Foscari (2013); and the Toulouse School of Economics (2013). He has been on the faculty at the University of Wyoming since 1982.

Professor Perry Sadorsky

Professor of Sustainability and Economics, Schulich School of Business, York University, Canada & Co-Editor of Energy Economics

Perry Sadorsky is a Professor of Sustainability and Economics at the Schulich School of Business at York University, Toronto, Canada. He studies business issues related to energy, the natural environment, and financial markets. He has published widely in these areas. He is also interested in technology, innovation, digital currency, and machine learning. He is a 2019, 2020, and 2021 Web of Science Highly Cited Researcher in Economics and Business. According to the Web of Science, this award recognizes "the world's most influential researchers of the past decade, demonstrated by the production of multiple highly-cited papers that rank in the top 1% by citations for field and year in Web of Science." He is a Co-Editor for Energy Economics.

Committees

ADVISORS

Ted Loch-Temzelides

George & Cynthia Mitchell Professor in Sustainable Development
Rice Scholar in Energy Studies, Baker Institute
Rice University, USA

Lutz Kilian

Senior Economic Policy Advisor, Research Department
Federal Reserve Bank of Dallas, USA

Duc Khuong Nguyen

Professor of Finance, *EMLV Business School, France*
President, *AVSE Global*

CONFERENCE CO-CHAIRS

Hung Xuan Do
Associate Professor of Finance
Massey University, New Zealand
Director of Finance and Banking Network, *AVSE Global*

Muhammad Ali Nasir
Associate Professor of Economics
University of Leeds, UK

Linh Pham
Assistant Professor of Economics
Lake Forest College, USA

SCIENTIFIC COMMITTEE

- Jonathan Batten, *RMIT University, Australia*
- Sabri Boubaker, *EM Normandie Business School, France & Swansea University, UK*
- Karel Bruna, *Prague University of Economics and Business, Czech Republic*
- Julien Chevallier, *Paris 8 University, France*
- Long Chu, *Australian National University, Australia*
- Hisham Farag, *Birmingham Business School, UK*
- Arman Eshraghi, *Cardiff University, UK*
- Stephane Goutte, *Paris Saclay University, France*
- Alessandra Guariglia, *University of Birmingham, UK*
- Lutz Kilian, *Federal Reserve Bank of Dallas, USA*
- Tom Kompass, *University of Melbourne, Australia*
- Qiang Ji, *Chinese Academy of Sciences Institutes of Science and Development, China*
- Brian Lucey, *University of Dublin Trinity College, Ireland*
- Ted Loch-Temzelides, *Rice University, USA*
- Duc Khuong Nguyen, *IPAG Business School, France*
- Toan Phan, *Federal Reserve Bank of Richmond, USA*
- Perry Sadorsky, *York University, Canada*
- Russell Smyth, *Monash Business School, Australia*
- Stefan Trueck, *Macquarie University, Australia*
- Dayong Zhang, *Southwestern University of Finance and Economics, China*

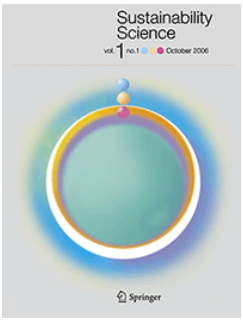
ORGANIZING COMMITTEE

- Thuy Dao (**Organizing Coordinator**), *IPAG Business School, France & AVSE Global*
- Man Dang, *The University of Danang - University of Economics, Vietnam*
- Hung Do (**Scientific Coordinator**), *Massey University, New Zealand &AVSE Global*
- Vu Trinh, *Newcastle University, UK & AVSE Global*
- Linh Pham (**Scientific Coordinator**), *Lake Forest College, USA & AVSE Global*
- Oanh Ha*, RMIT Vietnam & AVSE Global*
- Thuy Anh Vo, *The University of Danang - University of Economics, Vietnam*

Associated Journals

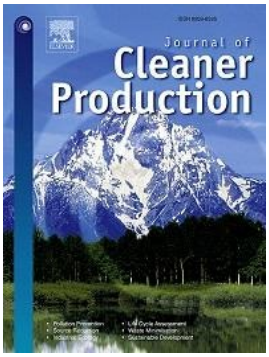
Special issue of International Review of Economics and Finance, titled “Climate Governance, Green Innovation, and Investment Policies” under the Guest-editorship of Prof. Sabri Boubaker, Assoc. Prof. Hung Do, Dr. Linh Pham, and Dr. Vu Trinh. See Call for papers for more details.

Special issue of Environmental Economics and Policy Studies, titled “Green Finance, responsible investments, and ethics in the era of post-COVID-19 and Russian-Ukrainian conflict” under the Guest-editorship of Professor Younes Ben Zaied and Dr Nidhaledine Ben Cheikh. See Call for papers for more details.



Special issue of Sustainability Science, titled "Natural capital accounting for sustainable cities" under the Guest-editorship of Prof. Shunsuke Managi, Dr. Moinul Islam, Prof. Dayong Zhang, Prof. Younes Ben Zaied, and Dr. Osamu Saito. See Call for papers for more details.

Special issue of Economics of Energy & Environmental Policy, titled "Energy Transition & De-carbonization: Optimal Coordination between Energy & Environmental Policy" under the Guest-editorship of Prof. Duc Khuong Nguyen and Assoc. Prof. Muhammad Ali Nasir. See Call for Papers for more details.



Special issue of Journal of Cleaner Production, titled "Natural capital accounting for sustainable society: Do natural resources matter?" under the Guest-editorship of Prof. Younes Ben Zaied and Prof. Shunsuke Managi. See Call for Papers for more details.

In consultation with the Editors-in-Chief of the Journal of Climate Finance and Journal of Environment Management, authors of best conference papers will be invited to submit their papers to a regular issue of the Journal.

Conference Venue

University of Economics – University of Danang

71 Ngu Hanh Son Street, Ngu Hanh Son District, Danang, Vietnam

Logistic Details

Notes for ONLINE Participants

Zoom link for ALL sessions:

https://zoom.us/j/7685278656?pwd=bUpJemUrdTNOMFUvOVFaRE1CL0F5Zz09

Meeting ID: 768 527 8656
Passcode: 20231214

Breakout rooms will be available for parallel sessions.

To join a breakout room: Click **Breakout Rooms**  in your meeting controls. This will display the list of open breakout rooms created by the host.

The Rooms are named after the parallel sessions.

(Optional) Click **Expand All** to expand all available rooms and see which participants are in that particular room. **Note:** The **Expand All** and **Collapse All** options require version **5.9.6** or higher.

Hover your pointer over the number to the right of breakout room you wish to join, click **Join,** then confirm by clicking **Join.**

Repeat as necessary to join other breakout rooms or click **Leave Room** to return to the main session.

Notes for ONSITE Participants

ALL Keynote sessions and Policy discussion sessions: E101

ALL Parallel sessions:

Onsite Rooms are noted in the **Program At a Glance** section for each session

ALL Coffee breaks: E101

ALL Lunch breaks: H304

Program At a Glance

Links to the session's papers are embedded in the session name.
Onsite locations are available in the table below.
Please refer to the "Logistic Details" session for the Zoom link of the entire conference.

THURSDAY, DECEMBER 14, 2023

		Onsite & Online Presenters	Only Online Presenters	Only Online Presenters	Only Online Presenters
		1	2	3	4
8:00 - 8:30		**Registration & Coffee** Room E101			
8:30- 9:00		**Welcome and Opening Remarks** Room E101			
9:00 - 10:00	**A1**	**Keynote speech 1** **Professor Charles Mason** *H.A. "Dave" True, Jr. Chair; Professor of Economics, University of Wyoming, United States & Co-Editor of Economics of Energy and Environmental Policy* Room E101			
10:00 - 10:30		**Coffee break** Room E101			
10:30 - 12:00	**A2**	**Policy Discussion Panel Session** **Panelists (ordered alphabetically by last names):** **Professor Viet Anh Dang** *(Professor of Finance, Alliance Manchester Business School, UK & Editor of Journal of Business Finance and Accounting)* **Dr. Lilas Demmou** *(Deputy Head of Structural Policy Analysis Division, OECD, France)* **Professor Charles Mason** *(H.A. "Dave" True, Jr. Chair; Professor of Economics, University of Wyoming, United States & Co-Editor of Economics of Energy and Environmental Policy)* **Dr. Toan Phan** *(Senior Economist, Federal Reserve Bank of Richmond, USA)* Room E101			
12:00 - 13:00		**Lunch Break** Room H304			

13:00 - 14:30	**B1**	Forestry, Agriculture, and Pollution Room E304	Economic growth-Sustainability Nexus Room E204	Climate policy and regulation Room E301	Macroeconomic modeling Room E302
14:30 - 15:00		**Coffee break** Room E101			
15:00 - 16:30	**B2**	Energy transition I Room E304	Energy and financial markets Room E204	Risk and uncertainty Room E301	Climate change and firm dynamics I Room E302
19:00 - 22:00		**Gala Dinner** Dao Ngoc Seafood Restaurant 231 Nguyen Van Thoai Street, Son Tra District, Da Nang			

FRIDAY, DECEMBER 15, 2023

		Onsite & Online Presenters	Only Online Presenters	Only Online Presenters	Only Online Presenters
		1	2	3	4
8:30 - 9:00		**Registration & Coffee** Room E101			
9:00 – 10:00	**A1**	**Keynote speech 2** **Professor Perry Sadorsky** Professor of Sustainability and Economics, Schulich School of Business, York University, Canada & Co-Editor of Energy Economics Room E101			
10:00 - 10:30		**Coffee break** Room E101			
10:30 - 12:00	**A2**	Climate change and firm dynamics II Room E304	Climate mitigation and adaptation Room E204	Energy transition II Room E301	
12:00 - 13:00		**Lunch break** Room H304			
13:00 - 15:00		**Field trip to Green Lab (To be confirmed)**			
		END OF CONFERENCE			

Program Overview

Please refer to the "Logistic Details" session for the Zoom link of the entire conference.

Thursday, 14 December 2023

08:00 – 08:30	**Registration & Coffee**	**Room E101**

08:30 – 09:00	**Welcome and Opening Remarks**	**Room E101**
	Duc Khuong Nguyen, *EMLV Business School, France & AVSE Global* Hung Do, *Massey University, New Zealand, Conference Co-Chair* Muhammad Ali Nasir, *University of Leeds, UK, Conference Co-Chair* Linh Pham, *Lake Forest College, USA, Conference Co-Chair* Thuy Anh Vo, *Vice-Rector of the University of Danang - University of Economics*	

09:00 – 10:00 Keynote Address (A1)

09:00 – 10:00		**Room E101**
	**Professor Charles Mason**, *H.A. "Dave" True, Jr. Chair; Professor of Economics, University of Wyoming, United States & Co-Editor of Economics of Energy and Environmental Policy* ***Topic:*** *Fat tails in commodity markets: Implications for investment under uncertainty*	

10:00 – 10:30	**Coffee Break**	**Room E101**

10:30 – 12:00 Policy Discussion Panel Session (A2)

10:30-12:00		**Room E101**
	Topic: *Pathways to Net-Zero Carbon Emissions: From Political Agenda to Actions* **Panelists (ordered alphabetically by last names):** **Professor Viet Anh Dang** *(Professor of Finance, Alliance Manchester Business School, UK & Editor of Journal of Business Finance and Accounting)* **Dr. Lilas Demmou** *(Deputy Head of Structural Policy Analysis Division, OECD, France)* **Professor Charles Mason** *(H.A. "Dave" True, Jr. Chair; Professor of Economics, University of Wyoming, United States & Co-Editor of Economics of Energy and Environmental Policy)* **Dr. Toan Phan** *(Senior Economist, Federal Reserve Bank of Richmond, USA)*	
12:00 – 13:00	**Lunch Break**	**Room H304**

13:00 – 14:30 Afternoon Parallel Sessions (B1)

13:00 – 14:30	**B1.1: Forestry, Agriculture and Pollution**	Room E304
	Chair: Arnaud Dragicevic, *CIRANO — Centre Interuniversitaire de Recherche en Analyse des Organisations, Canada and Chulalongkorn University, Thailand*	
13:00 – 14:30	**B1.2: Economic Growth-Sustainability Nexus**	Room E204
	Chair: Chong Guan, *Singapore University of Social Sciences, Singapore*	
13:00 – 14:30	**B1.3: Climate Policy and Regulation**	Room E301
	Chair: Minh Ha Duong, *CNRS, France*	
13:00 – 14:30	**B1.4: Macroeconomic Modelling**	Room E302
	Chair: Julien Chevallier, *IPAG, France*	
14:30 – 15:00	**Coffee Break**	**Room E101**

15:00 – 16:30 Afternoon Parallel Sessions (B2)

15:00 – 16:30	**B2.1: Energy Transition I**	Room E304
	Chair: Yuan Xu, *The Chinese University of Hong Kong, Hong Kong*	
15:00 – 16:30	**B2.2: Energy and Financial Markets**	Room E204
	Chair: Raphael Heffron, *Université de Pau et des Pays de lÁdour, France*	
15:00 – 16:30	**B2.3: Risk and Uncertainty**	Room E301
	Chair: Ruediger Kiesel, *University Duisburg-Essen, Germany*	
15:00 – 16:30	**B2.4: Climate Change and Firm Dynamics I**	Room E302
	Chair: Guido Franco, *OECD, France*	

19:00 – 22:00 GALA DINNER

Dao Ngoc Seafood Restaurant

231 Nguyen Van Thoai Street, Son Tra District, Da Nang

Free transportation from conference venue

END OF THURSDAY

Friday, 15 December 2023

08:00 – 08:30	**Registration & Coffee**	**Room E101**

08:30 – 9:30 Keynote Address (A1)

08:30 – 9:30		**Room E101**

Professor Perry Sadorsky, *Professor of Sustainability and Economics, Schulich School of Business, York University, Canada & Co-Editor of Energy Economics*

Topic: *Clean energy, electric vehicles, and rare earths: Connectedness and portfolio implications.*

10:00 – 10:30	**Coffee Break**	**Room E101**

10:30 – 12:00 Morning Parallel Session (A2)

10:30 – 12:00	**A2.1: Climate Change and Firm Dynamics II**	Room E304
	Chair: Tianle Yang, *Zhejiang University of Technology, China*	

10:30 – 12:00	**A2.2: Climate mitigation and Adaptation**	Room E204
	Chair: Viet Anh Dang, *University of Manchester, UK*	

10:30 – 12:00	**A2.3: Energy Transition II**	Room E301
	Chair: Tong Wu, *Beijing Normal University - Hong Kong Baptist University United International College, China*	

12:00 – 13:00	**Lunch Break and Concluding Remarks**	**Room H304**

END OF CONFERENCE

13:00 – 15:00 FIELD TRIP TO GREEN LAB

Logistic details TBA

Program in Details

Please refer to the "Logistic Details" session for the Zoom link of the entire conference.

Thursday, 14 December 2023

08:00 – 08:30	**Registration & Coffee**	**Room E101**

08:30 – 09:00	**Welcome and Opening Remarks**	**Room E101**
	Duc Khuong Nguyen, *EMLV Business School, France & AVSE Global* Hung Do, *Massey University, New Zealand, Conference Co-Chair* Muhammad Ali Nasir, *University of Leeds, UK, Conference Co-Chair* Linh Pham, *Lake Forest College, USA, Conference Co-Chair* Thuy Anh Vo, *Vice-Rector of the University of Danang - University of Economics*	

09:00 – 10:00 Keynote Address (A1)

09:00 – 10:00		**Room E101**
	**Professor Charles Mason**, *H.A. "Dave" True, Jr. Chair; Professor of Economics, University of Wyoming, United States & Co-Editor of Economics of Energy and Environmental Policy*	

10:00 – 10:30	**Coffee Break**	**Room E101**

10:30 – 12:00 Policy Discussion Panel Session (A2)

10:30-12:00		**Room E101**
	Topic: *Pathways to Net-Zero Carbon Emissions: From Political Agenda to Actions* **Panelists (ordered alphabetically by last names):** **Professor Viet Anh Dang** *(Professor of Finance, Alliance Manchester Business School, UK & Editor of Journal of Business Finance and Accounting)* **Dr. Lilas Demmou** *(Deputy Head of Structural Policy Analysis Division, OECD, France)* **Professor Charles Mason** *(H.A. "Dave" True, Jr. Chair; Professor of Economics, University of Wyoming, United States & Co-Editor of Economics of Energy and Environmental Policy)* **Dr. Toan Phan** *(Senior Economist, Federal Reserve Bank of Richmond, USA)*	

12:00 – 13:00	**Lunch Break**	**Room H304**

13:00 – 14:30 Afternoon Parallel Sessions (B1)

13:00 – 14:30	B1.1: Forestry, Agriculture and Pollution	Room E304
	Chair: Arnaud Dragicevic, *CIRANO — Centre Interuniversitaire de Recherche en Analyse des Organisations, Canada and Chulalongkorn University, Thailand*	**Discussant**
	Assessing the Impact of Payments for Environmental Services on a Bioeconomic Supply Chain Equilibrium **Arnaud Dragicevic,** *CIRANO and Chulalong University* Jean-Christophe Pereau, *University of Bordeaux* Serge Garcia, *INRAE*	**Thao Pham,** *University of Reims Champagne-Ardenne*
	Inequality in Exposure to Air Pollution by nationality and occupation: Predicting for France in a data-rich context Jean-Sauveur Ay, *UMR Cesaer* **Thao Pham,** *University of Reims Champagne-Ardenne* Marine de Talance, *Univ Paris Est Creteil and Université Paris-Dauphine*	**Shuyi Wang**, *Swedish University of Agricultural Sciences*
	Shadow Pricing Ecosystem Services in Boreal Forests: Theory and an Exploratory Application **Shuyi Wang**, *Swedish University of Agricultural Sciences* Tommy Lundgren, *Swedish University of Agricultural Sciences*	**Arnaud Dragicevic,** *CIRANO and Chulalong University*

13:00 – 14:30	B1.2: Economic Growth-Sustainability Nexus	Room E204
	Chair: Chong Guan, *Singapore University of Social Sciences, Singapore*	
	Does Rural Financial Development Reshape the Environmental Kuznets curve hypothesis? Empirical Evidence from Rural China **Die Hu,** *Lincoln University* Christoper Gan, *Lincoln University* Dao Le Trang Anh, *Lincoln University* Wei Yang, *Lincoln University*	**Abdul Saqib,** *Universiti Sains Malaysia*
	Attaining environmental sustainability amidst economic policy uncertainty in BRIC Ihtisham Hussain, *Capital University of Science and Technology* **Abdul Saqib,** *Universiti Sains Malaysia* Hooi Hooi Lean, *Universiti Sains Malaysia*	**Chong Guan,** *Singapore University of Social Sciences*
	150 Years of the Energy-Growth Nexus: Exploring the Shifting Tides of the Energy-Growth Relationship in Australia and New Zealand via Time-Varying and Quantile Granger Causality Analysis Fang Zheng, *Singapore University of Social Sciences* **Chong Guan,** *Singapore University of Social Sciences*	**Die Hu,** *Lincoln University*

13:00 – 14:30	B1.3: Climate Policy and Regulation	Room E301
	Chair: Minh Ha Duong, *CNRS, France*	
	Changes in Sustainability Reporting Dynamics Observed from ESG Measures Provided by Real Estate Companies in 2020 and 2021: Evidence from Germany, Austria and Switzerland **Dominika Galkiewicz,** *University of Applied Sciences Kufstein* Bernd Wollmann**,** *University of Applied Sciences Kufstein*	**Giacomo Di Foggia,** *University Milan Bicocca*
	European Member States' Performance in Achieving 2030 Renewable Energy Targets **Giacomo Di Foggia,** *University Milan Bicocca* Massimo Beccarello, *University Milan Bicocca*	**Minh Ha Duong,** *CNRS*
	Energy transition: promises and challenges of JETP **Minh Ha Duong,** *CNRS* Christophe Cassen, *CNRS*	**Dominika Galkiewicz,** *University of Applied Sciences Kufstein*

13:00 – 14:30	B1.4: Macroeconomic Modelling	Room E302
	Chair: Julien Chevallier, *IPAG, France*	
	Efficient semiparametric estimation of European climate policy effects **Alexandra Soberon,** *Universidad de Cantabria* Juan M. Rodriguez-Poo**,** *Universidad de Cantabria* Antonio Musolesi**,** *University of Ferrara* Massimiliano Mazzanti, *University of Ferrara*	**Julien Chevallier,** *IPAG*
	Energy transition scenarios in Russia: effects in the DSGE model **Mikhail Andreev,** *Bank of Russia* Alena Nelyubina, *Moscow Institute of Physics and Technology*	**Alexandra Soberon,** *Universidad de Cantabria*
	The efficiency of China's carbon trading schemes: A tale of seven pilot markets Yigang Wei, *Beihang University* **Julien Chevallier,** *IPAG*	**Mikhail Andreev,** *Bank of Russia*
	Towards an extended carbon accounting system: Tracing carbon at product level **François Meunier,** *ENSAE - Institut Polytechnique de Paris*	**Linh Pham,** *Lake Forest College*

14:30 – 15:00	Coffee Break	Room E101

15:00 – 16:30 Afternoon Parallel Sessions (B2)

15:00 – 16:30	B2.1: Energy Transition I	Room E304

	Chair: Yuan Xu**,** *The Chinese University of Hong Kong, Hong Kong*	
	Reducing Solar PV Curtailment through Demand-Side Management and Economic Dispatch in Karnataka, India Balasubramanian Sambasivam, *University of Texas-Austin* **Yuan Xu,** *The Chinese University of Hong Kong*	**Varsha Singh Dadia,** *Indian Institute of Technology (IIT) Roorkee*
	Compensating for the Fiscal Loss in India's Energy Transition Laveesh Bhandari**,** *Centre for Social and Economic Progress* **Rajat Verma,** *Centre for Social and Economic Progress* Dhruva Nandipati, *University of Leicester*	**Yuan Xu,** *The Chinese University of Hong Kong*
	How efficient are Indian coal-fired power plants in achieving net zero emissions? A metafrontier-based non-radial DDF approach **Varsha Singh Dadia,** *Indian Institute of Technology (IIT) Roorkee* Rachita Gulati**,** *Indian Institute of Technology (IIT) Roorkee*	**Rajat Verma,** *Centre for Social and Economic Progress*

15:00 – 16:30	**B2.2: Energy and Financial Markets**	Room E204
	Chair: Raphael Heffron**,** *Université de Pau et des Pays de lÁdour, France*	
	Defining a 'Just Energy Investment' for the ASEAN Energy Sector **Raphael Heffron,** *Université de Pau et des Pays de lÁdour* Monica Merdekawati, *ASEAN Centre for Energy* Beni Suryadi, *ASEAN Centre for Energy* Zulfikar Yurnaidi, *ASEAN Centre for Energy*	**Guanghao Wang,** *University of Auckland*
	Global insight on the nexus between FinTech and energy efficiency: evidence from the Internet perspective **Guanghao Wang,** *University of Auckland* Miaomiao Tao**,** *University of Auckland* Erwann Sbai**,** *University of Auckland*	**Ha Chi Le,** *Monash Univeristy*
	Does economic growth cause energy intensity of well-being in the very long run? Semi-parametric evidence for selected OECD countries. **Ha Chi Le,** *Monash Univeristy* Mita Bhattacharya**,** *Monash Univeristy* Russell Smyth**,** *Monash Univeristy* Xibin Zhang**,** *Monash Univeristy*	**Youngchan Joo,** *Shanghai University*
	Effect of the Temperature Anomaly on Agricultural Commodity Returns **Youngchan Joo,** *Shanghai University* Sung Y. Park, *Chung-Ang University*	**Raphael Heffron,** *Université de Pau et des Pays de lÁdour*

15:00 – 16:30	**B2.3: Risk and Uncertainty**	Room E301
	Chair: Ruediger Kiesel, *University Duisburg-Essen, Germany*	
	Economic policy uncertainty exposure and corporate green investment: does firm size matter? **Shuai Yue,** *Massey University* Hamish Anderson**,** *Massey University* Jing Liao**,** *Massey University*	**Ruediger Kiesel,** *University Duisburg-Essen*
	An Uncertainty-based Risk Management Framework for Climate-Change Risk **Ruediger Kiesel,** *University Duisburg-Essen*	**Henry Penikas,** *Bank of Russia*
	U-shaped climate-credit risk dependency at the loan portfolio level **Henry Penikas,** *Bank of Russia*	**Shuai Yue,** *Massey University*

15:00 – 16:30	**B2.4: Climate Change and Firm Dynamics I**	Room E302
	Chair: Guido Franco, *OECD, France*	
	Voluntary carbon disclosure, carbon performance, and cost of debt: empirical evidence from Asia-Pacific non-financial firms **Shan Jin,** *Lincoln University* Christopher Gan**,** *Lincoln University* Zhaohua Li**,** *Lincoln University*	**Guido Franco,** *OECD*
	Making the grass greener: the role of firm financial and managerial capacity in paving the green transition Lilas Demmou, *OECD* Costa Helia, *OECD* **Guido Franco**, *OECD* Stefan Lamp, *OECD*	**Shan Jin,** *Lincoln University*
	Rising energy prices and productivity: short-run pain, long-term gain? Lilas Demmou, *OECD* Christophe André*, OECD* **Helia Costa,** *OECD* Franco Guido, *OECD*	**Zhen Qi,** *University of Manitoba*

19:00 – 22:00 GALA DINNER
Dao Ngoc Seafood Restaurant
231 Nguyen Van Thoai Street, Son Tra District, Da Nang

Free transportation from conference venue

END OF THURSDAY

Friday, 15 December 2023

08:00 – 08:30	**Registration & Coffee**	**Room E101**

08:30 – 9:30 Keynote Address (A1)

08:30 – 9:30		**Room E101**

Professor Perry Sadorsky, *Professor of Sustainability and Economics, Schulich School of Business, York University, Canada & Co-Editor of Energy Economics*

Topic: *Clean energy, electric vehicles, and rare earths: Connectedness and portfolio implications.*

10:00 – 10:30	**Coffee Break**	**Room E101**

10:30 – 12:00 Morning Parallel Session (A2)

10:30 – 12:00	**A2.1: Climate Change and Firm Dynamics II**	Room E304
	Chair: Tianle Yang**,** *Zhejiang University of Technology, China*	
	Modeling Ecological Risk and Corporate Sustainability: An Examination of ESG Performance, Risk Management, and Productivity **Tianle Yang,** *Zhejiang University of Technology* Sun Zhennan**,** *Zhejiang University of Technology* Du Anna Min, *Edinburgh Napier University* Du Qunyang**,** *Zhejiang University of Technology*	**Oana-Ramona Lobont,** *West University of Timisoara* **Sorana Vatavu,** *West University of Timisoara*
	Climate policy uncertainty and green finance: evidence from time varying aspect Kai-Hua Wang*, Qingdao University and West University of Timisoara* Chi-Wei Su*, Qingdao University and West University of Timisoara* **Oana-Ramona Lobont,** *West University of Timisoara* **Sorana Vatavu,** *West University of Timisoara* Ran Tao, *West University of Timisoara*	**Oanh Kieu Ha,** *Vietnam National University of Economics*
	Firm-level climate change risk exposure and firm efficiency **Oanh Kieu Ha,** *Vietnam National University of Economics* Khanh Hoang, *Lincoln University* Linh Pham, *Lake Forest College* Hoa Xuan Nguyen, *Viet Nam National University*	**Tianle Yang,** *Zhejiang University of Technology*

	Are climate risk disclosures in earnings conference calls relevant to analysts? Walid Ben Amar, *University of Manitoba* Wenxia Ge, *University of Manitoba* Lei Lu, *University of Manitoba* **Zhen Qi,** *University of Manitoba*	**Helia Costa,** *OECD*

10:30 – 12:00	**A2.2: Climate mitigation and Adaptation**	Room E204
	Chair: Viet Anh Dang, *University of Manchester, UK*	
	Energy transitions across household distributions in Northern India **Rohan Best,** *Macquarie University* Barsha Nibedita, *Indian Institute of Technology Kanpur* Rabindra Nepal, *University of Wollongong*	**Zhenshu Wu,** *Tilburg University*
	Charting the Course: How Does Information about Sea Level Rise Affect the Willingness to Migrate? Laura Bakkensen, *University of Arizona* Quynh Nguyen, *University of Berne* **Toan Phan,** *Federal Reserve Bank of Richmond* Paul Schuler, *University of Arizona*	**Rohan Best,** *Macquarie University*
	The Effects of Decarbonization on Corporate Cash Holdings **Zhenshu Wu,** *Tilburg University* Yi-Cheng Shih, *National Taipei University* Yao Wang, *Central University of Finance and Economics* Rui Zhong, *University of Western Australia*	**Toan Phan,** *Federal Reserve Bank of Richmond*

10:30 – 12:00	**A2.3: Energy Transition II**	Room E301
	Chair: Tong Wu, *Beijing Normal University - Hong Kong Baptist University United International College, China*	
	The Early Transformation of China's Energy Companies towards Being Green **Tong Wu,** *Beijing Normal University - Hong Kong Baptist University United International College* Alex Ng, *Thompson Rivers University* Xiaoyue Zhou, *University of Bristol*	**Xiaohan Wu,** *BNU-HKBU United International College*
	Transition Process in the Introduction of Offshore Wind Power Generation Projects in Akita Prefecture, Japan **Kensuke Yamaguchi,** *The University of Tokyo* Tomotaka Katsuno, *The University of Tokyo* Satoshi Tajima, *The University of Tokyo* Hideaki Shiroyama, *The University of Tokyo*	**Tong Wu,** *Beijing Normal University - Hong Kong Baptist University United International College*

	President Xi's Pledge for Carbon Neutrality In Transforming China's Energy Industry Towards an Ecological Civilization Alex Ng, *Thompson Rivers University* Zheng Chang**,** *BNU-HKBU United International College* **Xiaohan Wu,** *BNU-HKBU United International College* Aiyun Gao**,** *BNU-HKBU United International College*	**Kensuke Yamaguchi,** *The University of Tokyo*
12:00 – 13:00	**Lunch Break and Concluding Remarks**	**Room H304**

END OF CONFERENCE
13:00 – 15:00 FIELD TRIP TO GREEN LAB **(Logistic details TBA)**

List of Abstracts

Thursday, 14 December, 2023

B1.1: Forestry, Agriculture and Pollution

Shadow Pricing Ecosystem Services in Boreal Forests: Theory and an Exploratory Application
Presenting author: Shuyi Wang *(Swedish University of Agriculture Science)*
All authors: Wang Shuyi (1), Lundgren Tommy (1)
1 - Swedish University of Agricultural Sciences (Sweden)

Abstract
Boreal forests, encompassing a vast expanse of the Earth's northern latitudes, hold immense potential for marketed wood production while simultaneously providing an array of non-marketed ecosystem services (ESs). We broadly classified boreal forests into four categories: (i) production and provisioning, (ii) Regulation and regulating, (iii) Habitat and supporting and (iv) Recreational and cultural. In Sweden, 70% of the land area are forested and 80% of the forested lands are under some form of active management. In addition to timber production, Swedish forests provide valuable but non-marketed ESs that contribute to environment and climate change. However, the trade-off between boreal forest production and ESs are rarely studied. We define a forest production technology, with forest stocks, forest lands and working hours as inputs and timber (sawlogs, pulpwoods and fuelwoods) production, bio-energies, a net carbon sequestration (measured by forest annual growth subtracting carbon emission) and biodiversity (proxied by dead woods) as outputs, and estimate shadow prices for ESs using a quadratic form of directional distance function (DDF). We propose to evaluate the trade-offs or the opportunity cost in term of timber production for ecosystem services and, given the availability of price information, provide a monetary value for the trade-offs. Based on Swedish county-level forest data from 2008-2014, we show that forest technical inefficiency (measured by distance) is higher in Southern than in Northern regions of Sweden. We find that trade-offs between forest production, including multiple timber goods and bio-energies, and ecosystem services vary substantially across counties. We show that Stockholm faces highest shadow price for carbon and biodiversity.

Inequality in Exposure to Air Pollution by nationality and occupation: Predicting for France in a data-rich context
Presenting author: Thao Pham *(University of Reims Champagne-Ardenne)*
All authors: Pham Thao (1), Ay Jean-Sauveur, De Talance Marine
1 - Université de Reims champagne ardenne (France)

Abstract
The magnitude of actual ecological crises puts public policies in the face of a double requirement of efficiency and justice. In this project, we aims to contribute to this challenge from the angle of environmental inequality, by identifying the spatial correlation between the localisation of disadvantaged social groups and the exposure to air pollution. A number of air pollution indicators are considered in this study; thus, the traditional regression analysis (OLS regression) may not be practical when the number of predictors is large, and multicollinearity exists. We suggest using LASSO regression to deal with these limitations of the OLS method. Our results show that the measures of both shocks and baseline exposure of Nitrogen dioxide (NO2) contribute significantly to explain the relative share of foreign and blue-collar groups in France.

Assessing the Impact of Payments for Environmental Services on a Bioeconomic Supply Chain Equilibrium
Presenting author: Arnaud Dragicevic *(Chulalongkorn University)*
All authors: Dragicevic Arnaud (1), Pereau Jean-Christophe (2), Garcia Serge (3)
1 - Chulalongkorn University (Thailand), 2 - University of Bordeaux (Bordeaux School of Economics) (France), 3 - INRAE (France)

Abstract
This study explores the effectiveness of Payments for Environmental Services (PES) in addressing both climate change and biodiversity loss within the framework of bioeconomic supply chain management. Leveraging variational inequality methods within a multi-criteria decision-making framework, we substantiate our theoretical claims through numerical simulations executed via an optimized machine learning algorithm. Our findings indicate that reductions

exceeding 50% in both greenhouse gas emissions and biodiversity loss are achievable. While PES are integral to this success, they are insufficient on their own. A synergistic approach that combines a moderate decrease in production levels due to the economic decoupling effect, heightened environmental awareness among stakeholders, and targeted monetary incentives is essential to realize such substantial reductions. Thus, PES are necessary but not sufficient to achieve a meaningful reduction in ecological footprint. The adoption of sustainable practices and the improvement of resource efficiency are equally crucial.

B1.2: Economic Growth-Sustainability Nexus

Does Rural Financial Development Reshape the Environmental Kuznets curve hypothesis? Empirical Evidence from Rural China

Presenting author: Die Hu *(Lincoln University)*
All authors: Hu Die (1), Gan Christoper, Anh Dao Le Trang, Yang Wei
1 - Lincoln University (New Zealand)

Abstract
This study tests the environmental Kuznets curve(EKC) hypothesis and investigates the impact of financial development on rural EKC in the context of climate change.Utilizing data from a sample of China's 31 provinces from 2001 to 2019, this study employs fixed effects (FE) and generalized method of moments (GMM)methods to validate the EKC hypothesis and examine the effects of rural financial developmenton the EKC hypothesis.In addition, a heterogeneity analysis was conducted to understand variations across regions.This study found an inverserelationship between agricultural economic growth and agricultural carbon emissions in rural China, challenging the environmental Kuznets curve hypothesis. It also reveals that the scale of rural financial development affects carbon emissions, with efficiency playing a role. Regional variation highlights the importance of understanding the relationship between rural financial development and environmental outcomes. Utilizing provincial-level panel data on China, this study represents the first comprehensive attempt to examine the impact of rural financial development on the rural EKC hypothesis.This study contributes to the literature by filling this research gap and enhancing our understanding of the relationship between financial development and environmental sustainability in rural areas. These findings highlight the need to expand rural financial development, improve the rural financial structure, and encourage the adoption of green finance and technologies in China's agricultural sector. Thus, policymakers and stakeholders can effectively address the challenges posed by agricultural carbon emissions and promote sustainable agricultural practices.

Attaining environmental sustainability amidst economic policy uncertainty in BRIC

Presenting author: Abdul Saqib *(Universiti Sains Malaysia)*
All authors: Hussain Ihtisham (1), Saqib Abdul (2), Lean Hooi Hooi (3)
1 - Capital University of Science and Technology (Pakistan), 2 - Universiti Sains Malaysia (Malaysia), 3 - Universiti Sains Malaysia (Malaysia)

Abstract
Alleviating environmental damage has become a significant challenge for BRICS countries, where economic progress amidst urbanization and fossil fuel consumption pollutes the environment. In this context, BRICS countries must transition from fossil fuel to green energy to sustain economic progress and protect the environment. However, economic policy uncertainty may affect their fight against climate change and their actions towards environmental sustainability. Therefore, this study examines the roles of economic policy uncertainty and green energy in the environmental sustainability of BRIC countries (excluding South Africa). Under the STIRPAT framework, we employ a novel augmented autoregressive distributed lag model. Our results show that green energy has a negative and significant impact on carbon emissions and temperature. Moreover, economic policy uncertainty aggravates carbon emissions and temperatures in India and Russia. But it was found to reduce carbon emissions and temperature in Brazil and China. The finding is time varying and differs across countries, suggesting countries-specific policies to ensure environmental sustainability.

150 Years of the Energy-Growth Nexus: Exploring the Shifting Tides of the Energy-Growth Relationship in Australia and New Zealand via Time-Varying and Quantile Granger Causality Analysis

Presenting author: Chong Guan *(Singapore University of Social Sciences)*
All authors: Zheng Fang (1), Guan Chong (1)
1 - Singapore University of Social Sciences (Singapore)

Abstract

Utilizing historical energy data sourced from Malanima (2020) and Gross Domestic Product (GDP) statistics obtained from the Maddison Project Database, this research delves into the intricacies of the energy-growth relationship within a relatively underexplored geographical context, primarily focusing on the regions of Australia and New Zealand, spanning from the year 1870 to the present. The utilization of extensive annual data series facilitates the application of recently developed techniques in time-varying and quantile Granger causality analysis, enabling a comprehensive examination of this dynamic relationship. The empirical findings reveal a robust bi-directional Granger causality between economic growth and energy, specifically coal and oil consumption, manifesting at both extremes of the distribution and across various time periods spanning 150 years. Conversely, limited evidence is discerned regarding the Granger causality from gas consumption to economic growth, although some indications suggest the direction from economic growth to gas consumption. Notably, the Granger causality dynamics between electricity consumption and GDP exhibit temporal variability, with results indicating increasingly intertwined connections between the two in recent decades. Additionally, substantial fluctuations in electricity consumption, encompassing both positive and negative changes, significantly demonstrate Granger causality effects on economic growth. These intricate insights shed light on the evolving energy-growth nexus in the context of Australia and New Zealand over the course of 150 years.

B1.3: Climate Policy and Regulation

Changes in Sustainability Reporting Dynamics Observed from ESG Measures Provided by Real Estate Companies in 2020 and 2021: Evidence from Germany, Austria and Switzerland

Presenting author: Dominika Galkiewicz *(University of Applied Sciences Kufstein)*
All authors: Galkiewicz Dominika (1), Wollmann Bernd (2)
1 - University of Applied Sciences Kufstein (Andreas Hofer-Str. 7, 6330 Kufstein Austria), 2 - University of Applied Sciences Kufstein (UASK) (Austria)

Abstract
Environment, Social and Governance (ESG) related regulations such as the Non-Financial Reporting Directive (NFRD) or the upcoming Taxonomy Regulation of the European Union (EU) had and will have a lasting impact on the real estate (RE) industry and other market participants. This study, therefore, compares the current European regulation with common sustainability reporting practices in the RE industry in Germany, Austria and Switzerland. The aim is to investigate what type of information related to employees, social and governance besides environmental issues is being regularly provided and by how many of the 55 largest RE firms in the years 2020 and 2021. In general, most of the measures are only reported by 20-40% of the firms on a mandatory or/and voluntary basis, but the majority of the sustainability measures is more often being reported in 2021 than in 2020. Irrespective of the positive development, however, there is still a lot of room for improving reporting quality to increase reader usability as small reporting frequencies are identifiable for the following ‚ÄúESG‚Äù measures: violations of the code of conduct (mentioned by 1 time in 2020 and 2 firms in 2021), safety inspections of buildings (5 in 2020 and 8 in 2021), total number of suppliers (4 in 2020 and 6 in 2021), share of expenses for local suppliers in % (2 in 2020 and 3 in 2021), and obtained well-being certificates (5 in 2020 and 4 in 2021), energy consumption BOP MWh (6 in 2020 and 4 in 2021), emissions intensity of BOP kg CO2e/m2 (8 in 2020 and 7 in 2021) and Scope 3 t CO2e (7 in 2020 and 11 in 2021). The provided evidence highlights that it is key for individuals, organizations and politicians introducing new sustainability reporting rules in Europe to understand that too complex rules may not be fully complied with and keep uniform EU taxonomy reporting requirements besides CSRD easy to apply in the future.

European Member States' Performance in Achieving 2030 Renewable Energy Targets

Presenting author: Giacomo Di Foggia *(University Milan Bicocca)*
All authors: Di Foggia Giacomo (1), Beccarello Massimo (1)
1 - Università degli Studi di Milano-Bicocca = University of Milano-Bicocca (Italy)

Abstract
As part of national decarbonization paths, increasing electricity generation from renewable energy sources plays a key role. According to Regulation 2018/1999, EU Member States are responsible for setting specific renewable generation targets agreed upon at the European level. This study delves into the positioning of EU countries in renewable generation by projecting scenarios for 2030, the base year of these plans, to understand the feasibility of achieving the targets. We incorporated geographic, technological and market determinants to identify factors that reduce the distance to these goals. The analysis includes three steps: a regression model, a positional analysis, and a simulation based on a scenario analysis. The results suggest that emulating the best-performing states could achieve a 1.65 percent reduction in the distance to the target by 2030 at the European level, net of introducing

additional policies. These insights have essential implications for policymakers and energy utilities since they can support refining energy policies and strategies.

Energy transition: promises and challenges of JETP

Presenting author: Minh Ha Duong *(CNRS)*
All authors: Ha-Duong Minh (1), Cassen Christophe (2)
1 - Centre International de Recherche sur l√âânvironnement et le Développement (45 bis, avenue de la Belle Gabrielle - 94736 Nogent-sur-Marne Cedex France), 2 - Centre International de Recherche sur l√âânvironnement et le Développement (France)

Abstract
Since COP26, four Just Energy Transition Partnerships (JETP) promised to mobilize billions of dollars to stimulate the energy transition in emerging markets. It is too early to judge the success of these four pilot partnerships. Implementation of the political declarations revealed many challenges, including the risk of being used for geopolitical purposes, hidden conditions, loss of confidence and excessive debt. To avoid these risks, it is necessary to articulate JETPs with Paris Agreement transparency mechanisms, to adopt widely accepted social and environmental standards, and to reduce the share of sovereign debt in the package of measures while increasing the share of private finance.

B1.4: Macroeconomic Modelling

Efficient semiparametric estimation of european climate policy effects

Presenting author: Alexandra Soberon *(Universidad de Cantabria)*
All authors: Soberon Alexandra (1), Rodriguez-Poo Juan M. (1), Musolesi Antonio (2), Mazzanti Massimiliano (2)
1 - Universidad de Cantabria (Spain), 2 - University of Ferrara (Italy)

Abstract
The European Union Emissions Trading System (EU ETS) has become the cornerstone of the European Union's strategy to decarbonize the economy and mitigate climate change. Following these objectives, the aim of this paper is to assess the impact of the price of carbon, which is linked to the European market of allowances, on carbon dioxide emissions. To do so, we propose an econometric model that extends the Environmental Kuznets Curve (EKC) model in several directions. First, the price of carbon, which is the policy variable, is introduced in the model in a nonparametric fashion; Second, we propose to use an interactive fixed effects approach to control for latent heterogeneities in both dimensions of panel data; Third, to allow for spatial dependence, we introduced spatially correlated errors. The extended EKC model presents several challenges from the estimation point of view. To cope with them, using a profile likelihood approach, we propose a Feasible Generalized Least Squares estimator of the parameters of interest. Furthermore, the policy effects curve is also efficiently estimated. The asymptotic properties of the estimators are shown and, based on these outcomes, we empirically evaluate the policy effects. It turns out that our approach provides results that differ significantly and are more meaningful with respect to those obtained using standard estimation techniques.

Energy transition scenarios in Russia: effects in the DSGE model

Presenting author: Mikhail Andreev *(Bank of Russia)*
All authors: Andreyev Mikhail (1) (2), Nelyubina Alena
1 - Bank of Russia (Russia), 2 - Moscow Institute of Physics and Technology [Moscow] (Russia)

Abstract
We have built a DSGE model for a small open economy rich of fossil fuels. We consider simple economic policies that encourage such economy to move toward an energy transition , a significant shift from ‚Äúbrown, to ‚Äúgreen, energy sources. Among the economic policies under consideration are (1) taxes on brown energy by fossil fuel importers, leading to a drop in exporter revenue; (2) increasing domestic taxes on brown production; (3) stimulating productivity in the domestic green sector. It is shown that a drop in export revenue from the sale of brown energy is the least preferable policy for the energy transition in the sense that, firstly, it leads to the greatest drop in welfare, and secondly, if brown exports are redirected to the domestic market, this completely prevents the energy transition. The policy of increasing domestic taxes on brown production leads to a much smaller drop in welfare. A tax incentive option in which taxes collected from brown production are redistributed in favor of green production (consistent with established practice within the Unified Energy System of Russia) leads to a smaller decrease in welfare and a faster energy transition than in the case of simply taxing brown production. Finally, stimulating productivity in the green energy production sector leads to the least welfare loss and long-term (steady state) growth in output and consumption. The paper establishes the role of some economic mechanisms in relation to the

energy transition. It is shown that the inflation targeting MP persistence has little effect on energy transition. The same is for adjustment costs for cross-border financial flows (capital control). At the same time, the energy transition fundamentally depends on the technological possibility of replacing brown energy with green energy. If technological substitution is difficult, for example due to uneven production of green energy and the inability to store it, then all policies under consideration fail to achieve the energy transition. Impulse response functions indicate that economic agents' beliefs in the future implementation of energy transition policies alone cannot launch the energy transition process: the economy begins to respond significantly to the policy only at the moment of policy implementation. As in Fried et al. (2022), when expectations for climate policy implementation arise, investments become cleaner. Agents increase green production capital in advance, but do not increase green production in advance.

The efficiency of China's carbon trading schemes: A tale of seven pilot markets
Presenting author: Julien Chevallier *(ipag)*
All authors: Wei Yigang (1), Chevallier Julien (2) (3)
1 - Beihang University (China), 2 - LED (France), 3 - Université Paris 8 Vincennes-Saint-Denis (France)

Abstract
This study evaluates the efficiency of China's seven emission trading schemes (ETS) piloted in 2013. We evaluate seven pilots' overall technical and scale efficiencies and temporal dynamics during 2014-2018. We use a bootstrap correction data envelopment analysis (bootstrap-DEA), which guarantees a more accurate efficiency estimation than the traditional DEA model. The results show that the average overall (pure technical) efficiency of the seven pilot markets increased from 0.612 (0.844) in 2014 to 0.718 (0.921) in 2018. Furthermore, we document that seven ETS pilots differ remarkably in efficiency and transaction price, whilst all have shortages. Specifically, the small-scale market transaction is the main constraint effect on the average scale efficiency of the ETS. This study provides concrete recommendations for policymakers to consummate institutional designs to improve ETS efficiency.

Towards an extended carbon accounting system
Presenting author: Francois Meunier *(ENSAE Institut Polytechnique de Paris)*
All authors: Meunier Francois (1)
1 - École Nationale de la Statistique et de lÁdministration Économique (France)

Abstract
Today, direct and indirect carbon emissions are estimated by each large corporate working their way up the value chain to assess the carbon content of their inputs. This paper presents a footprint measurement system that reverses this logic: it is the supplier who calculates the carbon emissions of the products he sells and provide them downstream. The result is a decentralized emissions calculation system similar to that used for VAT. And the calculation of carbon emissions become a proper carbon accounting, done at product rather than entity level. This allows carbon accounting to be fully integrated into the accounting, management control and auditing system of the company. Carbon emissions are thus calculated accurately, reliably and at a lower cost than today. The paper describes how to set up the system. An appendix develops the theoretical framework that justifies the validity and generality of the system.

B2.1: Energy Transition I

Reducing Solar PV Curtailment through Demand-Side Management and Economic Dispatch in Karnataka, India
Presenting author: Yuan Xu *(The Chinese University of Hong Kong)*
All authors: Sambasivam Balasubramanian, Xu Yuan (1)
1 - Department of Geography and Resource Management, The Chinese University of Hong Kong (Hong Kong SAR China)

Abstract
India has set 2070 as the target year to achieve carbon neutrality, while carbon-intensive fossil fuels are still dominating its energy system. In the next five decades, economically optimized energy transition towards renewables is crucial for India to reduce CO2 emissions in an affordable manner. India has installed a large fleet of solar PV, and thus, maximizing their capacity factors plays an influential role in energy transition. This study examines how the state of Karnataka managed to enhance solar PV capacity factor by two-thirds with substantially reduced curtailment from 2017 to 2019. We built, calibrated, and validated a mixed-integer linear programming (MILP) model with detailed hourly data to quantify the impacts of two major policy changes, being shifting electricity consumption of irrigation from night-time to daytime (load shift) and dispatching electricity generation units by their merit order (economic dispatch). Our results indicate that these two measures could explain about 20% and 70% of

the capacity factor increase, respectively, which is equivalent to reducing the cost of solar electricity by about 40%. India and other countries may further expand these policies for accelerating and optimizing energy transition.

Compensating for the Fiscal Loss in India's Energy Transition

Presenting author: Rajat Verma *(Centre for Social and Economic Progress)*
All authors: Bhandari Laveesh (1), Verma Rajat (2), Nandipati Dhruva (3)
1 - President and Senior Fellow, Centre for Social and Economic Progress (CSEP) (India), 2 - Associate Fellow, Centre for Social and Economic Progress (CSEP) (India), 3 - Graduate Research Assistant, University of Leicester (United Kingdom)

Abstract
The ongoing global transition from fossil fuel-based systems to renewable sources is reshaping the energy landscape. As countries strive to address climate change and reduce greenhouse gas (GHG) emissions, this transformative process has gained momentum. India, aligning with this trend, has set ambitious goals to achieve net-zero emissions by 2070. However, this transition poses significant fiscal and institutional challenges that require careful analysis. This study focuses on the dynamics of tax revenues and the fiscal implications of this transition in India. It discusses the institutional challenges in strengthening the existing taxes and explores carbon tax as possible alternative revenue source for replacing fossil fuel taxes. The proportion of fossil fuel revenues to GDP, while significant currently, is expected to become relatively small over two decades, emphasizing the need for medium-term solutions, and finds that Carbon taxes could be such a medium-term solution. It also finds that an active engagement of institutions such as the Finance Commission and GST Council is critical, as states level fiscal autonomy may be impacted in the movement away from fossil fuels. The study identifies some possible instruments through which greater revenues could be collected to meet the gap due to a reduction in fossil fuel use. While some options are analysed and discarded, others are identified for further, more in-depth, analysis and these have been discussed in the appendix of this study. It recognizes that whatever path India chooses will need to be based on many factors, including those of efficiency, equity, sustainability, institutions and political economy and this motivates its call for further work.

How efficient are Indian coal-fired power plants in achieving 'net zero' emissions? A metafrontier-based non-radial DDF approach

Presenting author: Varsha Singh Dadia *(Indian Institute of Technology (IIT) Roorkee)*
All authors: Dadia Varsha Singh (1), Gulati Rachita (1)
1 - Indian Institute of Technology Roorkee (India)

Abstract
This study delves into the emission-adjusted performance of 131 Indian coal-fired power plants from 2001-02 to 2017-18. Employing the non-radial directional distance function within a meta-frontier analysis framework, the research investigates ownership distinctions among power plants in India. The findings highlight a notable contrast in efficiency between private and public power plants, with private entities demonstrating higher levels of efficiency in power generation. The industry's average efficiency stands at 65 percent, but both public and private plants appear to grapple with inefficiency issues, primarily stemming from management inefficiencies. Furthermore, the study underscores that if both public and private power plants had operated at the meta-frontier level, emissions could have been reduced by a significant 5.181 billion tonnes and 1.006 billion tonnes, respectively. The fractional regression model unveils plants located in the eastern and western regions along with plants using domestic coal, plant age square, and a number of power plant units, negatively impacting efficiency. On the other hand, power plants in the western region, BHEL-equipped power plants, plant age, and plant load factor positively affect the efficiency of power plants. The study recommends that power plants implement regular maintenance programs, optimise operational procedures, enforce stringent emissions standards, invest in advanced technologies, and consider implementing a carbon tax as strategies to enhance efficiency and "net-zero" emissions in the Indian coal-fired power sector.

Defining a 'Just Energy Investment' for the ASEAN Energy Sector

Presenting author: Raphael Heffron *(Université de Pau et des Pays de lÁdour)*
All authors: Raphael Heffron, Monica Merdekawati, Beni Suryadi, Zulfikar Yurnaidi
Université de Pau et des Pays de lÁdour

Abstract
Governments across the world have been updating their energy and climate policies since the 2015 Paris Agreement. One common feature now is the advent of long-term plans such as a variety of net-zero plans ranging in the years from 2045, 2050 and to 2060. In considering these time horizons it is clear that significant investment in energy infrastructure is needed. This research focuses on how to ensure that this required energy investment happens

in a 'just' way, i.e., it contributes to fairness, equity, equality and inclusiveness. Recently, countries such as the United States and Colombia have incorporated justice principles into their energy and climate policies. The research is the first to assess justice in consideration of these time horizons along with its focus on the 10 South-East Asian nations, known as ASEAN countries. The data analysed covers key issues that provide insight into how energy investments are developing in these countries and also how much justice is involved. Ensuring the energy sector delivers more and more justice is vital for society as it aims to ensure lower carbon dioxide emissions, and while achieving economic growth. The analysis here focuses on countries of the Global South where exists little research that look at the performance over time of the combined issue of energy investments and justice. This research marks a first step in delivering justice in new energy development as these economies build towards their 2050 and 2060 energy and climate targets.

B2.2: Energy and Financial Markets

Global insight on the nexus between FinTech and energy efficiency: evidence from the Internet perspective

Presenting author: Guanghao Wang *(Energy Center, Economic department)*
All authors: Wang Guanghao (1), Tao Miaomiao (1), Sbai Erwann (1)
1 - University of Auckland Business School [New Zealand] (New Zealand)

Abstract
The objective of this study is to investigate the effect of Financial Technology (FinTech), Internet development, and energy efficiency. To explore this issue, we collected data from 2013 to 2019 for 72 countries worldwide, including most major OECD countries and significant non-OECD countries, using the World Bank database and Fintech database. Subsequently, we employed Panel Smooth Transition Regression (PSTR) to delve deeply into the relationship between FinTech, Internet development, and energy efficiency. The empirical results indicate a strong nonlinear relationship between FinTech, Internet development, and energy efficiency, with distinct manifestations in OECD and non-OECD countries. In conclusion, this research sheds light on the nuanced interplay between FinTech, Internet development, and energy efficiency across different economies. The findings underscore the pivotal role of technological advancements in shaping energy efficiency, with notable variations between developed and developing nations. The study's insights are instrumental for policymakers and stakeholders in leveraging FinTech and Internet technologies to foster sustainable energy practices and address the diverse energy challenges faced by countries at different stages of economic development.

Does economic growth cause energy intensity of well-being in the very long run? Semi-parametric evidence for selected OECD countries.

Presenting author: Ha Chi Le *(Monash Univeristy)*
All authors: Le Ha Chi (1), Bhattacharya Mita (1), Smyth Russell (1), Zhang Xibin (1)
1 - Monash university (Australia)

Abstract
We examine the effect of economic growth on the energy intensity of well-being (EIWB) for a panel of ten high-income OECD countries during the period 1870,2020.To do so, we employ two semi-parametric panel data models; namely, the local linear
dummy variable estimation (LLDVE) model and the time-varying structural equationmodel. Our estimates suggest that the relationship between economic growth and EIWBis time-varying. The estimated coefficient function of economic growth was negative inthe nineteenth century, positive throughout the twentieth century, but negative since2000. We also present the trends for EIWB for each country in the sample. The findingssuggest that technological advancement and the adoption and employment of renewableenergy sources may facilitate sustainable development. This is achievable throughimproving energy efficiency and easing the pressure of energy consumption on humanwell-being, particularly when human well-being is measured in terms of average lifeexpectancy at birth, average life expectancy at age 10 and child mortality.

Effect of the Temperature Anomaly on Agricultural Commodity Returns

Presenting author: Youngchan Joo *(Shanghai University)*
All authors: Joo Young C. (1), Park Sung Y. (2)
1 - Shanghai University (China), 2 - Chung-Ang University (South Korea)

Abstract
This study investigates the effects of temperature anomalies on agricultural commodity returns. We consider the ten major commodity markets: cocoa, coffee, corn, cotton, rapeseed oil, rice, soybean, soybean oil, sunflower oil, and wheat, from January 1990 to October 2022. We use both quantile and time-varying quantile regression

approaches to investigate how the temperature anomaly affects agricultural commodity returns over time and under various market states. Our empirical results show that the impact of the temperature anomaly increases when commodity returns deviate from normal market conditions. We also find that temperature anomalies have heterogeneous effects on commodity returns. When cocoa, cotton, soybean oil, sunflower oil, and wheat markets are bearish, the temperature anomaly has a statistically significant negative. However, when coffee, rapeseed oil, rice, and soybean markets are bearish, the temperature anomaly has a positive effect. These positive effects become stronger over time. During the bullish market states of cocoa, coffee, rapeseed oil, and rice, the temperature anomaly has a negative effect. On the other hand, when the corn, cotton, soybean oil, sunflower oil, and wheat markets are bullish, the effect of the temperature anomaly is positive. In particular, the impact has been stronger since 2020.

B2.3: Risk and Uncertainty

Economic policy uncertainty exposure and corporate green investment: does firm size matter?

Presenting author: Shuai Yue *(Massey University)*
All authors: Yue Shuai (1), Anderson Hamish (1), Liao Jing (1)
1 - Massey University (New Zealand)

Abstract
This study examines the impact of firms' heterogenous exposure to economic policy uncertainty (EPU) on corporate environmental investment. We find that small firms are associated with lower levels of environmental investment in general compared to large firms. However, small firms are more likely to increase their environmental investment when facing higher EPU exposure. Our finding remains robust after constructing a series of robustness checks, including adopting alternative measures of EPU exposure and firm size, employing industry-adjusted investment, and using the Propensity score matching (PSM) approach. In cross-sectional analyses, we find that the effect of EPU exposure on environmental investment is more pronounced for small firms associated with lower financial constraints, located in regions with low levels of marketisation, owned by the state, and operating in non-heavily polluting industries. In addition, we investigate the reason for increasing environmental investment and find a positive relationship between environmental investment and the acquisition of new bank loans by small firms. Overall, this study provides implications of considering environmental engagement as a strategic action for small firms in times of uncertainty.

An Uncertainty-based Risk Management Framework for Climate-Change Risk

Presenting author: Ruediger Kiesel *(University Duisburg-Essen)*
All authors: Kiesel Ruediger (1)
1 - University Duisburg-Essen (Germany)

Abstract
Climate risks are systemic risks and may be clustered according to so-called volatilities, uncertainties, complexities and ambiguities (VUCA) criteria. We analyse climate risk in the VUCA concept and provide a framework that allows to interpret systemic risks as model risk. As climate risks are characterised by deep uncertainties (unknown unknowns) we argue that precautionary and resilient principles should be applied instead of capital-based risk measures (reasonable for known unknows). A prominent example of the proposed principles is the precommitment approach (PCA). Within the PCA subjective probabilities allow to discriminate between tolerable risks and acceptable ones. The amount of determined solvency capital for acceptable risks and estimations of model risk may be aggregated by means of a multiplier approach. This framework is in line with the three Pillar approach of Solvency II, especially with the recovery and resolution plan. Furthermore, it fits smoothly to a hybrid approach of micro- and macroprudential supervision.

U-shaped climate-credit risk dependency at the loan portfolio level

Presenting author: Henry Penikas *(Bank of Russia)*
All authors: Penikas Henry (1)
1 - Bank of Russia (Russia, Moscow, Neglinnaya street, 12 Russia)

Abstract
The climate change agenda stimulated banks to promote green finance initiatives. Such initiatives share in common high default correlation. Then increasing exposure to green loans gives rise to the second mode of the default rate distribution. We use a non-parametric (genetic) algorithm to simulate portfolios with high default correlation within brown and green sectors separately and material negative default correlation between the brown and green sectors. We find a U-shaped dependency of credit-climate risks. Initially, risk in green lending promotes

diversification and reduces credit risk, but further rise of green lending and its domination within the loan book leads to concentration and henceforth to exorbitant credit risk evaluation given the modern banking regulation paradigm.

B2.4: Climate Change and Firm Dynamics I

Voluntary carbon disclosure, carbon performance, and cost of debt: empirical evidence from Asia-Pacific non-financial firms

Presenting author: Shan Jin *(Lincoln University)*
All authors: Jin Shan (1), Gan Christopher (1), Li Zhaohua (1)
1 - Faculty of Agribusiness and Commerce, Lincoln University (New Zealand)

Abstract
Mitigating climate change concerns and reducing a company's carbon footprint through voluntary carbon disclosure is a growing trend. This study investigates the nexus between the extent of carbon disclosure, carbon performance, and financial outcomes in Asia Pacific non-financial firms during the period of 2016-2021. Using a three‚Äêstage least squares approach, we find there is a negative relationship between voluntary carbon disclosure and the cost of debt, suggesting that Asian-Pacific non-financial companies can signal their environmental commitment through carbon disclosure, subsequently reducing climate risk and lowering their cost of debt. In line with voluntary disclosure theory, we observe a negative link between carbon performance and voluntary carbon disclosure, as firms with superior carbon performance tend to disclose more carbon-related information and benefit from reduced capital costs.

Rising energy prices and productivity: short-run pain, long-term gain?

Presenting author: Costa Helia *(OECD)*
All authors: Demmou Lilas (1), André Christophe, Costa Helia, Franco Guido
1 - OECD (France)

Abstract
Soaring energy prices have raised concerns about the risks energy price shocks pose for firms' performance and the green transition. This paper estimates the impacts of energy price changes on firms' productivity as well as their dynamics, distinguishing between the short and medium-to-long term, using historical data. The analysis shows that following an energy price shock, firms adjust down their capacity utilisation, and their productivity declines. The estimates suggest that a 5% increase in energy prices reduces productivity by approximately 0.4% one year later. However, firms may display positive productivity gains in the medium term. Specifically, a shock corresponding to a 10% increase in energy prices is associated with an increase in productivity growth of around 0.9 p.p four years after the shock. These gains are more likely in less energy-intensive sectors, but tend not to materialise for larger shocks. There is some evidence that investment may be the channel behind productivity gains, the latter being larger for firms that had made investments in capital just before the shock.

Making the grass greener: the role of firm financial and managerial capacity in paving the green transition

Presenting author: Franco Guido *(OECD)*
All authors: Demmou Lilas (1), Costa Helia, Franco Guido, Lamp Stefan
1 - OECD (France)

Abstract
The ambitious targets set by many OECD countries to become carbon neutral by 2050 require substantial investment from the private sector. However, efforts so far fall well short of the zero-emission scenario. This paper analyses the factors holding back corporate green investment, with a particular focus on the role of firm capacity , specifically financing constraints and weak green management practices , and its interaction with environmental policy.We explore these issues through two parallel and complementary avenues, combining a rich set of data sources and econometric techniques, including panel data models, difference-in-differences settings and instrumental variable approaches. First, we analyse the environmental response of large companies which are more strictly regulated with respect to their emissions and for which cross-country data on green investment and financials are available. The analysis shows that: i) both financing constraints and a lack of green managerial capacity reduces firms' probability of investing in green technologies, leading to higher emission intensity; ii) well-designed environmental policies can mitigate these impacts. Second, we conduct a case study of green investment in Portugal where access to granular data allows us to analyse further different types of investment and the impact of firm size, for which cross-country data are not easily available, providing the following additional insights: i) green investment is more elastic to financing conditions than other types of investment; ii) investment in integrated technologies is more sensitive to

financing conditions and to managerial capacity compared to end-of-pipe solutions; iii) large firms which are responsible for the largest share of green investment are more sensitive to capacity constraints.

Friday, 15 December, 2023

A2.1: Climate Change and Firm Dynamics II

Modeling Ecological Risk and Corporate Sustainability: An Examination of ESG Performance, Risk Management, and Productivity

Presenting author: Tianle Yang *(Zhejiang University of Technology)*
All authors: Yang Tianle (1), Zhennan Sun (1), Anna Min Du (2), Qunyang Du (1)
1 - Zhejiang Unviersity of Technology (China), 2 - Edinburgh Napier University (United Kingdom)

Abstract
Environmental, Social, and Governance (ESG) performance is an essential indicator of sustainable corporate behavior that optimally balances short-term gains with long-term societal growth and ecological preservation. This study scrutinizes the influence of ESG performance on corporate risk-taking behavior and the resulting impacts on productivity. Using data from Chinese listed firms from 2009 to 2020, our analysis indicates a significant inverse relationship between corporate ESG performance and risk-taking, yet with a resultant net increase in total factor productivity. Further, regional green innovation and environmental regulatory frameworks significantly augment the effects of ESG performance on risk management. The research extends understanding of the intricate role of ESG commitments in risk management, offering constructive insights for corporate decision-making and policy development aimed at confronting environmental challenges of the 21st century.

Firm-level climate change risk exposure and firm efficiency

Presenting author: Oanh Kieu Ha *(Viet Nam National Economics University)*
All authors: Oanh Kieu Ha (1), Khanh Hoang (2), Linh Pham (3), Nghiem Xuan Hoa (4)
1- National Economics Unversity (Viet Nam), 2-Lincoln University (New Zealand), 3-Lake Forest College (USA), 4-Viet Nam National University (Viet Nam)

Abstract
This paper investigates the nexus between firm-level climate change risk exposure and firm efficiency (e.g., the ability to generate revenues from existing resources) using a sample of firms from the United States during 2001-2018. We use a wide range of measurements from financial data, textual data, and secondary measures generated from Data Envelopment Analysis to measure firm-level climate risk exposure and efficiency. We find that exposure to climate change risk hurts firm efficiency, regardless of the firms' emission nature. Our empirical evidence shows that such a detrimental effect does not come from physical climate change risks but rather from transition risks, thus corroborating the significant impact of the transition from a "grey" economy to a lower-carbon one on corporate outcomes. Moreover, financial constraints worsen this effect, while asset redeployment, vertical integration via acquisitions, and higher market concentration mitigate the negative impact of climate change risk on firm-level efficiency.

Climate policy uncertainty and green finance: evidence from time varying aspect

Presenting author: Oana Ramona Lobont *(West University of Timisoara);* Vatavu Sorana *(West University of Timisoara)*
All authors: Wang Kai-Hua (1) (2), Su Chi-Wei (1) (2), Lobont Oana-Ramona (2), Vatavu Sorana (2), Tao Ran (2)
1 - Qingdao University (China), 2 - West University of Timioara [Roumanie] (Romania)

Abstract
Climate policy is attracting widely attention, and its influence has spread to financial market. Under this background, this study tries to examine the causalities between climate policy uncertainty (CPU) and green bond index (GBI). Through rolling-window technique, we find that CPU is related to GBI positively and negatively, respectively, in certain time intervals, which are not completely consistent with theoretical basis. Oppositely, the inconsistent influences from GBI to CPU are also discovered in different causal periods. That means the complex function exists in green finance for reducing climate changes. These disputes can be explained from the following aspects, such as such as an early-stage and immature green bond market, climate policy shifts, the impact of COVID-19, and underlying macroeconomic fundamentals. The study captures different causalities in different time periods, and the bidirectional influence under specific circumstances, offering new insights for existing theoretical basis. We also offer

some policies, such as incentive mechanisms, financial product innovations, and climate governance mechanism, which help green finance in achieve harmonious development.

Are climate risk disclosures in earnings conference calls relevant to analysts?

Presenting author: Zhen Qi *(University of Manitoba)*
All authors: Ben Amar Walid (1), Ge Wenxia (1), Lu Lei (2), Qi Zhen (2)
1 - University of Ottawa (Canada), 2 - University of Manitoba (Canada)

Abstract
We examine whether climate risk disclosures in earnings conference calls affect analyst forecast errors and dispersion. Using a sample of U.S. firms from 2002 to 2019, we find that the disclosure of physical risk related to climate change is associated with smaller analyst forecast errors, while the disclosures of regulatory and opportunity shocks related to climate change have no significant effect on analyst forecast errors or dispersion. Subsample analyses reveal that the physical climate risk disclosures reduce analyst forecast errors and dispersion after the SEC provided guidance on disclosures of climate risk and opportunities, for firms in industries more sensitive to climate change, for firms located in regions that are more affected by extreme weather events and have higher disaster costs, and for firms located in states where people have stronger beliefs in climate change. Our findings suggest that physical climate risk disclosures in earnings conference calls help analysts make more accurate earnings forecasts.

A2.2: Climate mitigation and Adaptation

Charting the Course: How Does Information about Sea Level Rise Affect the Willingness to Migrate?

Presenting author: Toan Phan *(Federal Reserve Bank of Richmond)*
All authors: Phan Toan (1)
1 - Federal Reserve Bank of Richmond (United States)

Abstract
An important yet less studied factor in determining the extent of adaptation to climate change is information: are people adequately informed about their vulnerability to future climate-related risks, and does their willingness to adapt depend on this knowledge? Focusing on how communication about projected sea level rise (SLR) affects the willingness to migrate, we implemented a large, randomized control survey experiment with a nationally representative sample of more than 7,000 respondents across all provinces in Vietnam. We randomly assign respondents to different information treatments. We find that providing a simple text-based information treatment about the general extent of Vietnam's exposure to projected SLR increases all respondents' willingness to migrate (including respondents living in areas not vulnerable to SLR). However, a more spatially precise map information treatment, providing the general text along with a map showing Vietnam's projected SLR exposure, leads to a more targeted effect: it only significantly increases the willingness to migrate of respondents currently residing in vulnerable areas. Finally, adding doubt to the information treatments, mentioning an official repudiation of the scientific projection of SLR, does not reduce the treatments' impact. Our findings are inconsistent with the commonly used perfect information benchmark, which assumes that people are fully informed about future climate-related risks. They also highlight the importance of providing spatially precise information in facilitating climate adaptation.

The Effects of Decarbonization on Corporate Cash Holdings

Presenting author: Zhenshu Wu *(Tilburg University)*
All authors: Wu Zhenshu (1)
1 - Tilburg University (Netherlands)

Abstract
We use the implementation of the Paris Agreement and regional carbon emission trading scheme (ETS) pilot programs in China to examine the effects of decarbonization on corporate cash holdings. Economically, we document that high-carbon emitters increase cash holdings by about 2.6% (7.9%) on average compared with low-carbon emitters after the implementation of the Paris Agreement (the initiation of the regional ETS). Further analysis shows that high-carbon emitters with stronger external financial constraints and more volatile cash flows prefer to hold more cash for precautionary motives. Additionally, high-carbon emitters conduct a green transition to reduce carbon emissions.

Energy transitions across household distributions in northern India

Presenting author: Rohan Best *(Macquarie University)*
All authors: Rohan Best (1), Nibedita Barsha, Nepal Rabindra
1 - Macquarie University [Sydney] (Australia)

Abstract
This paper investigates sustainable household energy transitions including a reduction in kerosene lamp use and increases in solar home systems and solar lanterns. We use a large and detailed survey of around 9,000 households in northern India in 2015 and 2018. Our key analytical insights focus on inequality across economic and wealth distributions, including the lack of major distributional changes between the two survey waves. We find that a positive relationship between economic resources and solar home system use is driven by the top part of economic distributions. Kerosene use is also substantially lower for the top of the economic distribution, especially in the 2018 survey. In contrast, economic resources have a weak relationship with solar lantern use. Future policies can be devised with reference to our results showing a more robust relationship between assets, rather than income, and household energy transitions. The stronger influence of assets is evident for a range of asset variables and for a composite wealth index which we construct. Detailed analysis of socio-economic distributions has value for informing policy attempts to target support to constrained households.

A2.3: Energy Transition II

The Early Transformation of China's Energy Companies towards Being Green

Presenting author: Tong Wu *(Beijing Normal University - Hong Kong Baptist University United International College)*
All authors: Wu Tong (1), Ng Alex (2), Zhou Xiaoyue (3)
1 - The University of Sydney (Australia), 2 - Thompson Rivers University (Canada), 3 - University of Bristol [Bristol] (United Kingdom)

Abstract
Under the dual carbon declaration released in 2020, the energy industry in China has entered a period of transformation. The objective of this paper is to explore the initial transformation paths of energy companies and the regulation effects on the non-green energy companies' carbon emissions. Our findings show the actions that energy companies take for green transformation. Moreover, the paper conducts a Difference-in-Difference analysis to examine how the carbon emissions of non-green energy companies change toward the dual carbon declaration. The main results show that energy companies are significant in debt and equity financing, innovation, and equity investment. Regarding the policy effects on non-green energy companies, the result indicates that the dual carbon declaration significantly reduces the total carbon emissions of non-green energy companies. However, the firm value of non-green energy companies is not affected.

Transition Process in the Introduction of Offshore Wind Power Generation Projects in Akita Prefecture, Japan

Presenting author: Kensuke Yamaguchi *(The University of Tokyo)*
All authors: Yamaguchi Kensuke (1), Katsuno Tomotaka (1), Tajima Satoshi (1), Shiroyama Hideaki (1)
1 - The University of Tokyo (Japan)

Abstract
This study analyzes the impact of offshore wind projects on local society by focusing on the socio-technical regime in Akita Prefecture, Japan, where offshore wind farms have been constructed under the Act on Promoting the Utilization of Sea Areas for the Development of Marine Renewable Energy Power Generation Facilities. To achieve a radical transformation (or "transition") of the socio-technical regime beyond existing social and authority relations, co-evolution is required between different subsystems, triggered by strengthened cooperation in the transition arena. In Akita Prefecture, the industry and polity subsystems have individually improved, whereas inter-subsystem co-evolution is not evident. We envisage that encouraging co-evolution among subsystems, founded on a mature transition arena, can facilitate a future transition desirable for local society.

President Xi's Pledge for Carbon Neutrality In Transforming China's Energy Industry Towards an Ecological Civilization

Presenting author: Xiaohan Wu *(BNU-HKBU United International College)*
All authors: Ng Alex (1), Chang Zheng, Wu Xiaohan, Gao Aiyun
1 - Thompson Rivers University (Canada)

Abstract
Since 2014, President Xi Jinping has made fifty speeches about China's carbon policy, which evolved progressively in impact and scope. Among these speeches, the most important was on September 22, 2020, when President Xi Jinping declared his "dual carbon policy." For the first time in the history of the United Nations, a leader pledged that his country would achieve peak carbon before 2030 and carbon neutrality by 2060. Therefore, we used an event study to evaluate the impact of Xi's dual carbon announcement on stock prices and trading volume of green

and non-green energy firms. We discover unique simultaneous effects, giving positive abnormal return and trading volume in green energy firms and the opposite negative effect on fossil fuel firms. Further, we robustly show that these events caused significant differences in returns between these energy firms using DID (Difference-in-Difference) tests. We also examine the corporate responses of energy firms. Green firms are twice as active in expanding their business by M&A, asset restructuring, and financing their growth than non-green ones. President Xi's leadership with "words are responded with deeds" by energy firms to transform China's energy industry towards an "ecological civilization."

List of Participants

Name	Mode	Affiliation	Country
Mikhail Andreev	ONLINE	Bank of Russia	Russia
Rohan Best	ONLINE	Macquarie University	Australia
Zheng Chang	ONLINE	BNU-HKBU United International College	China
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Varsha Singh Dadia	ONLINE	Indian Institute of Technology (IIT) Roorkee	India
Viet Anh Dang	ONSITE	University of Manchester	UK
Man Dang	ONSITE	University of Danang - University of Economics	Viet Nam
Thi Thu Thuy Dao	ONSITE	IPAG	France
Lilas Demmou	ONLINE	OECD	France
Hung Xuan Do	ONSITE	Massey University	New Zealand
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Dominika Galkiewicz	ONLINE	University of Applied Sciences Kufstein	Austria
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Kensuke Yamaguchi	ONSITE	The University of Tokyo	Japan
Tianle Yang	ONSITE	Zhejiang University of Technology	China
Shuai Yue	ONLINE	Massey University	New Zealand

Organizers

The **Association of Vietnamese Scientists and Experts (AVSE Global)** was founded in May 2011 with the main purpose of connecting intellectual sources in a systematic way to identify ideas, strategies, and implementation in all fields of sciences and techniques in foreign countries and, at the same time, to make contributions to the development of Vietnam.

The **University of Economics** is a University member of the **University of Danang**, which is one of the top ten leading universities in Vietnam. The University has had so far 44 years of experience in providing human resources in the area of economics and business. It offers a wide range of undergraduate and post-graduate degree programs in 27 majors. The teaching staffs including experienced lecturers and professors from 13 different faculties have focused enactment of our mission to foster a learner-centered curriculum throughout the university. At the moment, the University admits 14,000 students attending both full-time and part-time courses.

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Guideline For Participants

Session Participation Instruction

Conference dates: 08:00 – 22:00 (Vietnam time, GMT+7), Thursday, December 14, 2023
08:00 – 13:00 (Vietnam time, GMT+7), Friday, December 15, 2023

Conference venue (In-person participants): University of Danang – University of Economics, 71 Ngu Hanh Son Street Ngu Hanh Son District, Danang, Viet Nam

Platform (Online participants**):** Virtual meeting via Zoom Webinar

Please follow the links summarized at the end of the booklet or those embedded in the Program at A Glance's tables to access various sessions of VSCT2023. **Note** that **passcode** to attend the sessions was sent to you privately via email. If you cannot find your passcode, please **contact** Hung Do (h.do@massey.ac.nz) or Man Dang (man.dang@due.edu.vn).

Note for presenters:

1. Make sure you have the following: a laptop or desktop with a microphone and webcam, a recent version of Chrome or Firefox and Zoom app and a strong internet connection. We recommend wearing earbuds or headphones to prevent audio echoes.

2. Please send your presentation slides to us (h.do@massey.ac.nz and vsct2023@sciencesconf.org) before the presentation day as a backup plan. Please name your file as <Day>_<Session number>_<Name of Presenter>, e.g., Thu_A2.1_Hung Do

3. Please control your own presentation material which should be loaded on your desktop/ laptop in advance. When it is your turn to present, you will need to share your file or your screen.

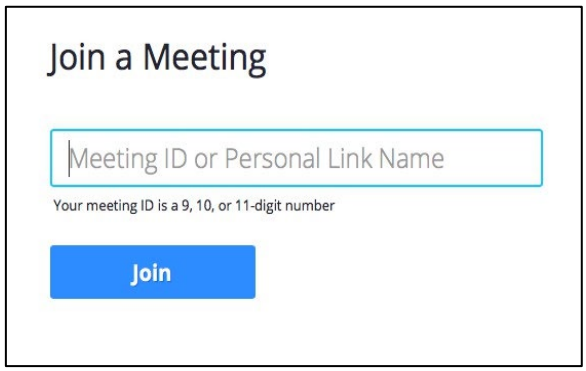
4. If you have any technical issues whilst you are presenting, please don't panic. We have a copy of your presentation as a backup, so we can load it up for you in the event of any technical difficulties.

5. Keep the presentation to time. Each presentation is generally allowed 20 minutes. Each Q&A discussion is allowed up to 10 minutes. For sessions of four papers, each presentation is allowed 15 minutes and discussion is allowed up to 7 minutes.

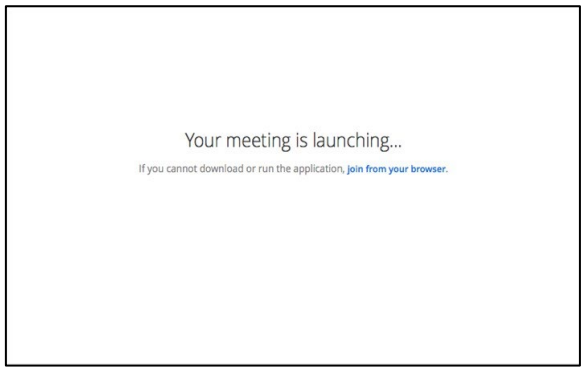
ZOOM: Instruction Manual for Program Participants

Welcome! This support document provides step-by-step instructions for participants on how to use ZOOM.

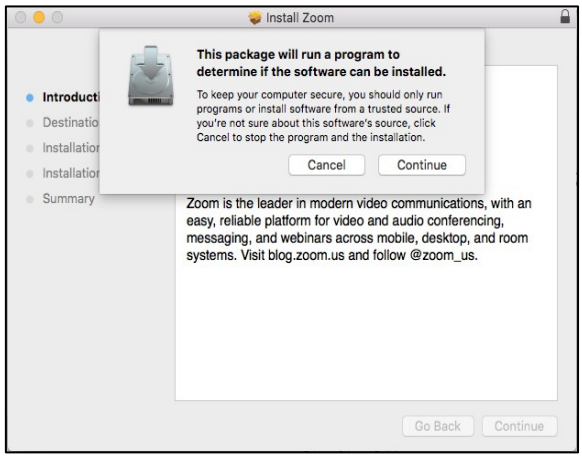
Joining a ZOOM Meeting & Download



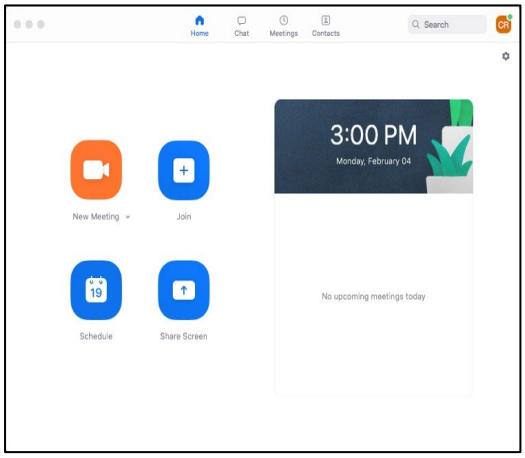
1. Go to https://zoom.us/join.
2. In the top right-hand corner, click "JOIN A MEETING".
3. The webpage will prompt you for your **Meeting ID or Personal Link Name**; type in the 9-11digit number that your instructor provided you with, and click "Join".



4. You will see this screen – the application may automatically download to your desktop or device.

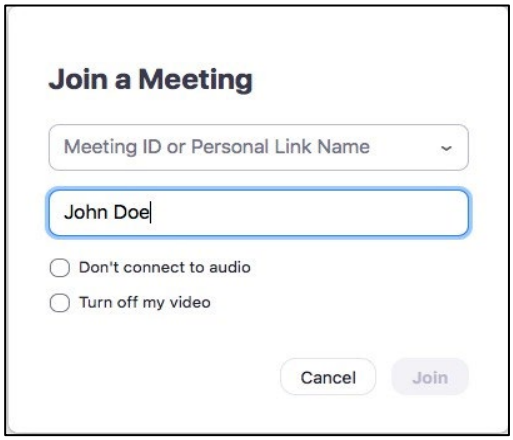


5. Depending on what browser you are using, you may have to install the program on your computer; find where this installation package went on your computer; It should be downloaded as "Zoom.pkg" or something similar.
6. Begin the download process (it will take a moment).



7. Once downloaded successfully, the application will pop-up on your screen;
a. Click the orange “New Meeting” button if you wish to start a meeting with your own personal Meeting ID (you will be the host).
b. Click the blue “Join” button if you are attending a meeting hosted by someone else (If you are a student, this will be the option you will choose the most).

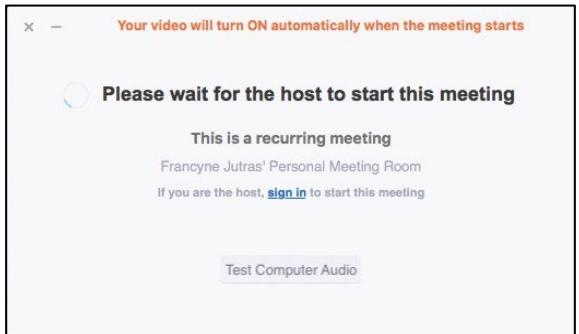
8. If you need to change the **language** of your application, find the application on your desktop, open it, then right-click the application; there should be an option to change the language in this drop-down menu.



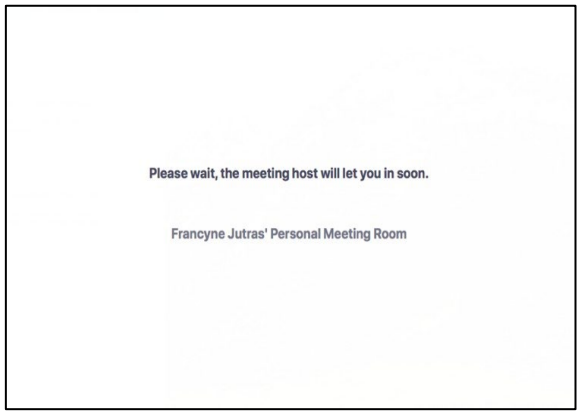
9. If you clicked the blue “Join” button, type in your instructor’s Meeting ID again.
10. Provide a screen name for yourself (Please use
your first and last name so your instructor knows who you are).
11. If you do not want to join with audio or video, check those options before joining (you can add your video and audio again after you’ve joined the meeting).

12. Once you have been added to the meeting, you will be left in the “waiting room”.

13. You will see either one of two messages:



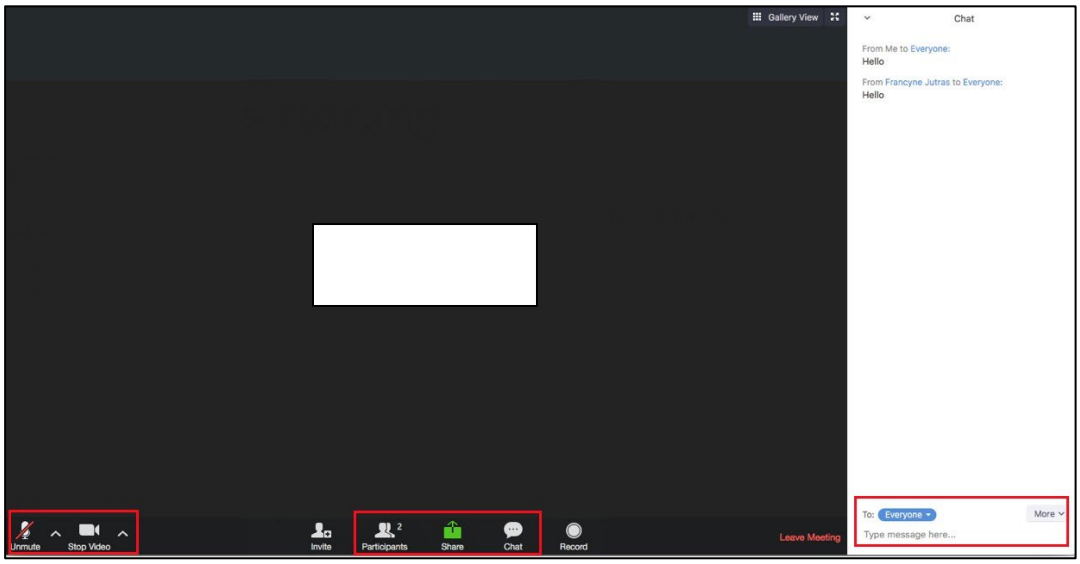
a) The first one you will see if you log in to your Host’s meeting with the Meeting ID before the Host has started;



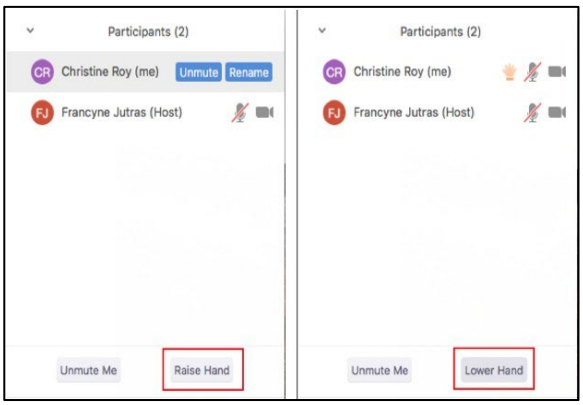
b) The second being the one you will see if you log in after the Host has arrived, but before they have provided you access.

Navigating ZOOM

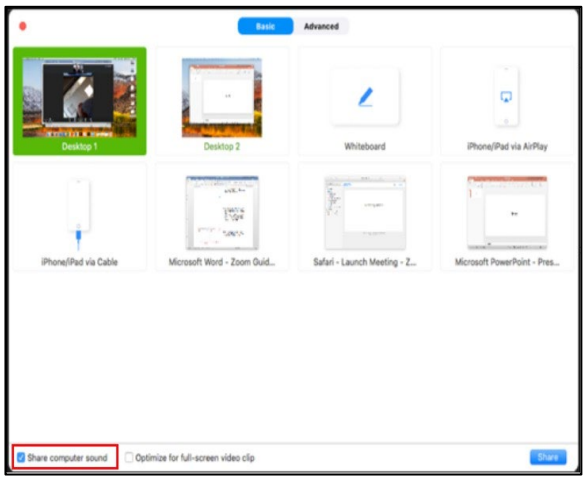
1. After joining a meeting, if you selected "Join with Computer Audio", your speakers and microphone should now be working.
2. You can mute or unmute your microphone or start your video connection using the icons in the bottom left (highlighted in RED in the bottom left-hand corner).
3. To see a list of other people in your program, you can click the Participants icon, or engage in a text chat by clicking CHAT.



4. You can leave the meeting by clicking the red "Leave Meeting" link near the chat bar.

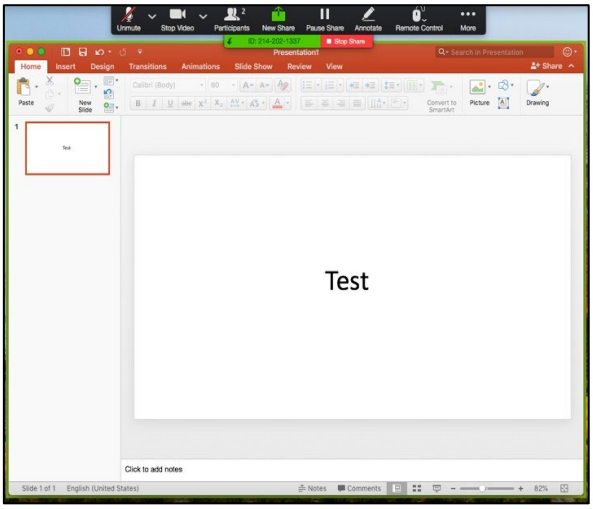


5. If you go to the participants icon, you can "raise your hand," and the Host will see this indicated on their screen, and will answer your question.



6. Share anything (Word Documents, PowerPoints, YouTube videos, etc.) by clicking the SHARE button at the bottom of the screen, and choosing an already opened document/internet browser on your desktop.
7. You can choose to share your entire desktop screen, or individually opened applications/documents.
8. When sharing things with audio, be sure to check the checkbox for "Share Computer Sound"

in the bottom left of the window that opens when you click SHARE (highlighted in RED).



9. Once selected, the document that is being shared will be highlighted in green on your desktop; your settings for the shared document are at the top.
10. Your audience will be able to see your curser, and everything you do, within the highlighted green section (you can only work on the selected document – you cannot drag other documents into the selected document area).
11. If you wish to share a different document, exit, then click SHARE, and select a new document.

12. To join a breakout room: Click **Breakout Rooms** in your meeting controls. This will display the list of open breakout rooms created by the host.

The Rooms are named after the parallel sessions.

(Optional) Click **Expand All** to expand all available rooms and see which participants are in that particular room. **Note:** The **Expand All** and **Collapse All** options require version **5.9.6** or higher.

Hover your pointer over the number to the right of breakout room you wish to join, click **Join**, then confirm by clicking **Join**.

Repeat as necessary to join other breakout rooms, or click **Leave Room** to return to the main session.

Please visit https://support.zoom.us/hc/en-us for more information about ZOOM.