

18th Global Conference on Environmental Taxation

Innovation Addressing Climate Change Challenges: Local and Global Perspectives

Sept. 27–29, 2017
Tucson, Arizona

With Special Thanks to our Sponsors



The Pascua Yaqui Tribe (logo)

The Environmental and Natural Resources Law Center at the University of Oregon School of Law
William Andreen

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TABLE OF CONTENTS

About	p ii
Welcome Letter	p.1
Committee Members	p.2
Registration/Other Info/Social Events	p.3
Venue Map	p.4
Schedule at a Glance	p.5
Parallel Session Presenters' Instructions	p.8
Program.....	p.9
Plenary Speakers	p.15
Abstracts (<i>in alphabetical order by last name of first author</i>).....	p.27
Critical Issues in Environmental Taxation Publication	p.79
Index of Conference Attendees.....	p.80

ABOUT GCET

The Global Conference on Environmental Taxation (GCET) has been held every year since 2000 as an international meeting of specialists, and a forum for the exchange of ideas and research findings on environmental taxation and other market-based instruments designed to protect the environment and foster sustainability.

The main emphasis of GCET is to provide insights and analysis on how enlightened tax policy can promote sustainable environmental goals. By discussing environmental taxation issues that exist around the world, effective approaches used in one country can be considered and implemented by governmental authorities in other countries.

Recent GCET conferences have attracted delegates from more than 50 countries representing a wide range of disciplines (law, economics, accounting, environmental management, and public administration) and a variety of sectors (academic, government, the private sector, and non-governmental organizations).

This year the 18th GCET is hosted in Tucson, Arizona, U.S.A., by the University of Arizona James E. Rogers College of Law.

Annual GCET conferences have been held in:

Cleveland, Ohio, U.S.A. (2000)

Vancouver, Canada (2001)

Woodstock, Vermont, U.S.A. (2002)

Sydney, Australia (2003)

Pavia, Italy (2004)

Leuven, Belgium (2005)

Ottawa, Canada (2006)

Munich, Germany (2007)

Singapore (2008)

Lisbon, Portugal (2009)

Bangkok, Thailand (2010)

Madrid, Spain (2011)

Vancouver, Canada (2012)

Kyoto, Japan (2013)

Copenhagen, Denmark (2014)

Sydney, Australia (2015)

Groningen, Netherlands (2016)



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September 20, 2017

Welcome to GCET18!

Welcome to Tucson, Arizona! Your host is the University of Arizona James E. Rogers College of Law (College of Law), a dynamic and innovative U.S. law school. We are conveniently located in the heart of Tucson, within a few miles of the city's central business district.

Founded in 1915, the University of Arizona James E. Rogers College of Law is one of the world's leading law schools. We have a 100-year history of graduating successful lawyers, and now we are shaping the next century of legal education. The College of Law boasts a culturally diverse campus life, and vibrant international exchange study and research programs. Our graduates are prepared for the workplaces of today and the future.

The College of Law's success is assured given the backdrop of the University of Arizona, one of the country's top research universities whose faculty includes members of esteemed national academies, Pulitzer and Nobel Prize winners, and celebrated thought leaders who are changing how we see the world. The University of Arizona is home to more than 70 world-class research centers, institutes, laboratories, networks and programs, which serve as hubs of collaboration and expertise. They collectively advance our understanding of pressing issues such as water sustainability, climate change, ecosystem conservation, and energy and move solutions into society.

The members of the College of Law Organizing Committee appreciate the support provided for the conference organization contributed by the College of Law to bring to you the 18th Global Conference on Environmental Taxation (GCET18). The theme for this year's conference is ***Innovation Addressing Climate Change Challenges: Local and Global Perspectives***.

This is a crucial time for global discourse on public/private sector response at all levels of government (national, state, indigenous, provincial, municipal, city, and local), to the impacts of climate change. GCET18, in its role as the leading global forum for innovative exchanges on principles, practices, and policies with respect to environmental taxation and market-based instruments, can step forward using our collective voices to expand the reach of our work.

More than 70 abstracts will be presented/discussed during the two days of GCET18 parallel plenary sessions. Our distinguished keynote and plenary speakers are covering topics from biodiversity, carbon regulation and pricing, emissions trading and Indigenous carbon farming, renewable energy and innovation. As in past conferences, we have *planned the sessions to have time for questions and debate and encourage all participants, whether presenting or not, to react and engage in a spirit of openness, dialogue and mutual understanding*.

This year we have an important mission. The GCET18 discussions, as well as participant opinions and concerns need to be heard. Throughout the Conference, you will have opportunities to provide us with your thoughts on U.S. environmental policies – tax and otherwise. Comments will be collected, synthesized and put together in one document. The document could be in the form of an Editorial or perhaps a Press Release. We encourage all delegates to participate in this endeavor and hope that this concept of engagement will be continued in future GCET conferences.

We are delighted to host GCET18 in Tucson, Arizona. We wish you an enjoyable stay. We can all look forward to enlightened analysis of tax policy, participate in lively debate and discussion, catch up with old friends and meet new colleagues and friends.


Conference Chair
Professor Mona L. Hymel



INTERNATIONAL STEERING COMMITTEE

Professor Larry Kreiser, Cleveland State University, U.S.A.
Professor Janet Milne, Vermont Law School, U.S.A.
Associate Professor Hope Ashiabor, Macquarie University, AUSTRALIA
Susanne Åkerfelt, Swedish Finance Ministry, SWEDEN
Mikael Skou Andersen, Aarhus University, DENMARK
Nils Axel Braathen, OECD, FRANCE
Rowena Cantley-Smith, Monash University, AUSTRALIA
Jacqueline Cottrell, Senior Policy Advisor, Green Budget Europe, GERMANY
David M. Driesen, Syracuse University, U.S.A.
Shi-Ling Hsu, Florida State University, U.S.A.
Mona Hymel, University of Arizona, U.S.A.
Deborah Jarvie, University of Lethbridge, CANADA
Roberta Mann, University of Oregon, U.S.A.
Anna Mortimore, Griffith University, AUSTRALIA
Tracey Roberts, Cumberland School of Law, U.S.A.
Sven Rudolph, Kyoto University, JAPAN
Natalie Stoianoff, University of Technology Sydney, AUSTRALIA
Stefan Weishaar, University of Groningen, THE NETHERLANDS
Walter Wang, Avalara Corporation, U.S.A.

ADVISORY COMMITTEE

Mona L. Hymel, GCET18 Conference Chair, Arthur W. Andrews Professor of Law, University of Arizona College of Law
Katherine Barnes, Associate Dean for Programs & Innovation, University of Arizona College of Law
Lindy Brigham, Research Assistant Professor, Plant Sciences, University of Arizona College of Agriculture and Life Sciences
Cristina Castañeda, Senior Director of Global Programs, University of Arizona College of Law
Kirsten H. Engel, Charles E. Ares Professor of Law, University of Arizona College of Law
David A. Gantz, Samuel M. Flegley Professor of Law, University of Arizona College of Law
James C. Hopkins, Associate Clinical Professor, University of Arizona College of Law
Roberta Mann, Mr. and Mrs. L. L. Stewart Professor of Business Law, University of Oregon Law
Barak Y. Orbach, Professor of Law, Director of the Business Law Program, University of Arizona College of Law
Sergio Puig, Associate Professor of Law, Director, International Economic Law & Policy Program, University of Arizona College of Law
Melissa L. Tatum, Research Professor of Law, University of Arizona College of Law
Sheldon Trubatch, Professor of Practice, University of Arizona College of Law; Managing Member, The Regulatory Strategy Group, LLC
Robert A. Williams, E. Thomas Sullivan Professor of Law, Faculty Chair, Indigenous Peoples Law & Policy Program, University of Arizona College of Law

REGISTRATION/OTHER INFO/SOCIAL EVENTS

The registration desk will be open as follows in the Main Lobby:

Wednesday 16:00 to 18:00

Thursday 7:30 to 16:00

Friday. 8:00 to 17:30

Badges

The name badge is given to you when you register and ensures your admission to the conference. Please make sure you wear it at all times.

WIFI

- In the lobby and public areas, the wifi network is called “WestwardLook”
- In the meeting rooms, the wifi network is called “WestwardLookConference”
- The wifi network in the guestrooms is specific to which building they are in, i.e. “WestwardLook5.” Instructions for accessing these wifi networks will be on each guest’s key packet.

Breaks/Meals

Lunch and snacks will be provided in the Palm Room and Terrace during breaks. Additionally, Westward Look Wyndham Grand Resort and Spa also have a number of dining options for you to choose from- inquire in the front desk for more details.

Reception

GCET18 participants and their guests (excluding those who paid the reduced student fee) are invited to join us at the Arizona Sonora Desert Museum for an evening of local music, fine dining, and the chance to meet some local fauna on Thursday, September 28. Shuttles will leave from the Westward Look at 4:30 pm and will provide a tour of the Tucson area on the way to the Desert Museum.

Important Telephone Numbers

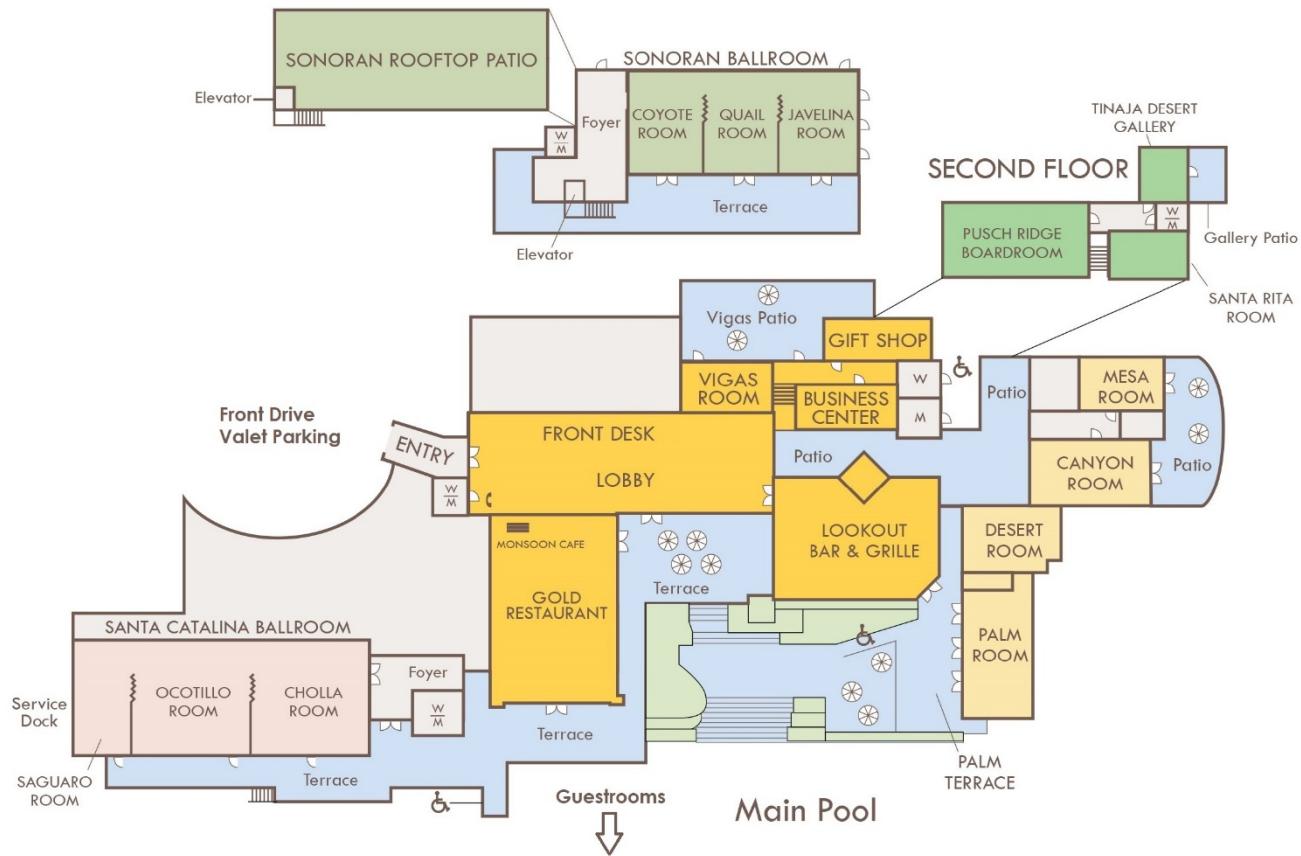
Emergency: 911

Front Desk: 520-297-1151 (country code +1)

Optional Saturday Excursion

After the conference, on Saturday, September 30, conference attendee and local expert André De Leon has graciously organized a narrated tour up Mount Lemmon, including a visit to the Mt. Lemmon Sky Center Observatory, a visit to mountaintop town Summerhaven and optional Sawmill Run restaurant lunch. Total price, including transportation, bottled water and admission to the Sky Center: \$50 to \$90 depending on total number of participants. For more information or to sign up, please contact André directly at adeleon@email.arizona.edu. *Not affiliated with GCET18, Arizona Law or the University of Arizona.*

VENUE MAP



SCHEDULE AT A GLANCE

All locations are at Westward Look Wyndham Grand Resort & Spa unless otherwise noted.

Wednesday, September 27, 2017

Event & Time	Location
Registration/Info Desk – 16:00 – 18:00	Main Lobby
GCET18 Welcome Reception – 18:00 – 19:30 Featuring Yoram Bauman, PhD, Stand-Up Economist and Founder of CarbonWA.org	Sonoran Rooftop Terrace (<i>In case of Rain: Palm Room & Terrace</i>)

Thursday, September 28, 2017

Event & Time	Location
Registration/Info Desk – 7:30 – 16:00	Main Lobby
Welcome & Opening Remarks – 8:00 – 8:30	Santa Catalina Ballroom
Welcome Mona L. Hymel, Arthur W. Andrews Professor of Law, University of Arizona, James E. Rogers College of Law and Chair, 18th Global Conference on Environmental Taxation	
Opening Remarks Brent White, Vice Provost for International Education; Professor of Law and Affiliated Professor of East Asian Studies Christopher Robertson, Associate Dean for Research & Innovation and Professor of Law at the James E. Rogers College of Law	
Plenary Session I – 8:30 – 10:00	Santa Catalina Ballroom
Moderator: David Driesen, Professor of Law, Syracuse University College of Law Speakers: William Andreen, Edgar L. Clarkson Professor of Law and Director, Alabama-ANU Exchange Program, The University of Alabama School of Law Bridging the Gap Between Aspiration and Accomplishment Under the Clean Water Act: Dealing with Nonpoint Source Pollution and Flow Impairment in the Face of Climate Change Doug Koplow, Founder, Earthtrack, Energy Subsidies: Scope, Scale, and Benefits of Reform Mark Mazur, Director, Urban Institute, Tax Policy Center, Tax Levers and Environmental Outcomes Janet Peace, Senior Vice President, Policy and Business Strategy, Center for Climate and Energy Solutions The Status of U.S. Climate Policy Efforts	
Coffee Break – 10:00 – 10:30	Palm Room & Terrace
Parallel Session I – 10:30 – 12:00	Breakout Rooms
A. Carbon Pricing	Desert Room
B. Instrument Choice	Mesa Room
C. Environmental Stewardship	Canyon Room
Lunch – 12:00 – 13:00	Palm Room and Terrace

Parallel Session II – 13:00 – 14:30	Breakout Rooms
A. Climate Change Policy	Desert Room
B. Pollution Control	Mesa Room
C. Land Water Issues	Canyon Room
<i>Coffee Break – 14:30 – 14:45</i>	<i>Palm Room and Terrace</i>
Plenary Session II – 14:45 – 16:15	Santa Catalina Ballroom
Moderator: Janet Milne, Professor of Law, Director, Environmental Tax Policy Institute, Vermont Law School Speakers: Chas Roy-Chowdbury, Head of Taxation-Professional Insight, ACCA UK & EU environmental taxes in general Susanne Åkerfeldt, Senior Adviser at Swedish Ministry of Finance Why Carbon Taxation is a Good Idea Nils Axel Braathen, Principal Administrator in the Environmental Performance and Information Division of the OECD, Health Impacts and Environmental Taxation	
Shuttle pick-up to go to Arizona Sonora Desert Museum with included tour of Tucson— 16:30	<i>In front of Main Lobby</i>
Conference Dinner – 18:00 – Featuring “Animal Experiences” and an Arizona-Sonora Desert Sunset, presented with thanks to the Pascua Yaqui Tribe	Arizona Sonora Desert Museum
Dinner Speaker Introduction: Kathie Barnes, Associate Dean for Programs & Innovation; Director of the Rogers Program on Law and Society, University of Arizona College of Law Dinner Speakers: Mayor Jonathan Rothschild, Mayor of Tucson, Arizona Kirsten Engel, Charles E. Ares Professor of Law at the University of Arizona College of Law Scott Saleska, Professor of Ecology and Evolutionary Biology, University of Arizona Addressing Climate Change Challenges in the Age of Trump	
Shuttles to return guests to the Westward Look Wyndham Grand Resort & Spa	

Friday, September 29, 2017

<i>Registration/Info Desk – 8:00 – 17:30</i>	<i>Main Lobby</i>
Keynote Speaker – 9:00 – 10:00	Santa Catalina Ballroom
Keynote Speaker Introduction Yoram Bauman, <i>Stand-Up Economist and Founder of CarbonWA.org</i>	
Keynote Speaker Robert Glennon, <i>Regents' Professor, Morris K. Udall Professor of Law & Public Policy at the University of Arizona College of Law</i> Our Future in a Warming, Water-Stressed World	
<i>Coffee Break – 10:00 – 10:30</i>	<i>Palm Room & Terrace</i>
Parallel Session III – 10:30 – 12:00	Location
A. Carbon Pricing	Desert Room
B. Pollution Control	Mesa Room
C. Climate Change Policy	Canyon Room
<i>Lunch – 12:00 – 13:30</i>	<i>Palm Room and Terrace</i>
Parallel Session IV – 13:30 – 15:00	Location
A. Renewable Energy	Desert Room
B. Subsidies	Mesa Room
C. Other Environmental Taxes	Canyon Room
<i>Coffee Break – 15:00 – 15:30</i>	<i>Palm Room and Terrace</i>
Plenary Session III – 15:30 – 17:00	Santa Catalina Ballroom
Moderator: Roberta Mann, <i>Mr. and Mrs. L. L. Stewart Professor of Business Law</i> Speakers: Natalie Stoianoff, <i>Professor, Faculty of Law</i> <i>Associate Member, AAI - Advanced Analytics Institute</i> Indigenous Engagement in Carbon Reduction – Just Good Natural Resource Management Ronald Trosper, <i>Professor, Graduate Interdisciplinary Programs Chair-Director of Graduate Studies</i> Taxation Assumes Financial Goals Dominate Ethel Branch, <i>Attorney General, Navajo Nation,</i> The Complex Intersection of Development and Environmental Stewardship in Navajo Indian Country	
Closing Remarks – 17:00– 17:30	Santa Catalina Ballroom
Kreiser Award GCET19 Conference Announcement	

PARALLEL SESSION PRESENTERS' INSTRUCTIONS

Presentation Technology

Computer and projector will be available in each room for presentations. Please use either PowerPoint (.ppt) or Portable Document Format (.pdf) as presentation formats- Prezi is also available if it is already fully downloaded. Presenters are requested to bring their presentations on a USB stick under all circumstances. Connecting personal laptops is discouraged to avoid excessive loss of time.

Presenters

Presenters are invited to come to the room 10 minutes prior to the start of the session to upload their presentation and check functionality- all parallel sessions have a break immediately preceding them for you to make use of. We recommend using your name in the file name and avoiding file names such as GCET18 or PRESENTATION to avoid confusion. If you need technical assistance and cannot spot an assistant, kindly call 520.982.0766 and request it indicating your conference room name. Presenters will introduce themselves. Please be aware of your duties as timekeeper, if applicable.

Duration

The time available for each parallel session is an hour and a half. Therefore, parallel sessions with 5 presenters will have 18 minutes for each to present and take questions, and parallel sessions with 4 presenters will have 22 minutes for each to present and take questions. The timekeepers will give you a gentle 5 minute warning when your time is almost up and then will inform you when your time is up. The presenter will be in charge of deciding when to transition from presenting to taking questions, and will themselves take questions from the audience.

Timekeeper

Timekeepers are indicated with an asterisk (*) in the full schedule, and are always the last presenters in the parallel sessions. Timekeepers, like the other presenters, are invited to come to the room 10 minutes prior to the start of the session. Their responsibilities include ensuring that the time is equally divided across all presentations, NOT to moderate the discussion. It is recommended that the timekeepers use a timer or a timer function on their phone to keep track of the time, and then to provide 5-minute and time's up reminders to the presenters preceding them. It will be in everyone's interest to start on time and remain respectful of others' time.

PROGRAM

Wednesday, September 27, 2017

*= The last presenter in every parallel session will act as a timekeeper for the other presenters of that session speaking before them

All locations are at Westward Look Wyndham Grand Resort & Spa unless otherwise noted.

Event & Time	Location
Registration/Info Desk – 16:00 – 18:00	Main Lobby
GCET18 Welcome Reception – 18:00 – 19:30	Sonoran Rooftop Terrace (<i>In case of Rain: Palm Room & Terrace</i>)
Reception <i>“Taste of the Southwest”</i>	
Featuring Yoram Bauman, PhD, <i>Stand-Up Economist and Founder of CarbonWA.org</i>	

Thursday, September 28, 2017

Event & Time	Location
Registration/Info Desk – 7:30 – 16:00	Main Lobby
Welcome & Opening Remarks – 8:00 – 8:30	Santa Catalina Ballroom
Welcome Mona L. Hymel, <i>Arthur W. Andrews Professor of Law, University of Arizona, James E. Rogers College of Law and Chair, 18th Global Conference on Environmental Taxation</i>	
Opening Remarks Brent White, <i>Vice Provost for International Education; Professor of Law and Affiliated Professor of East Asian Studies</i> Christopher Robertson, <i>Associate Dean for Research & Innovation and Professor of Law at the James E. Rogers College of Law</i>	
Plenary Session I – 8:30 – 10:00	Santa Catalina Ballroom
Moderator: David Driesen, <i>Professor of Law, Syracuse University College of Law</i> Speakers: William Andreen, <i>Edgar L. Clarkson Professor of Law and Director, Alabama-ANU Exchange Program, The University of Alabama School of Law</i> Bridging the Gap Between Aspiration and Accomplishment Under the Clean Water Act: Dealing with Nonpoint Source Pollution and Flow Impairment in the Face of Climate Change Doug Koplow, <i>Founder, Earthtrack</i> , Energy Subsidies: Scope, Scale, and Benefits of Reform Mark Mazur, <i>Director, Urban Institute, Tax Policy Center</i> , Tax Levers and Environmental Outcomes Janet Peace, <i>Senior Vice President, Policy and Business Strategy, Center for Climate and Energy Solutions</i> The Status of U.S. Climate Policy Efforts	

<i>Coffee Break – 10:00 – 10:30</i>	<i>Palm Room & Terrace</i>
Parallel Session I – 10:30 – 12:00	Breakout Rooms
D. Carbon Pricing <ol style="list-style-type: none"> 1. Michael Knoll, <i>State Carbon Taxes and the Dormant Commerce Clause</i> 2. Eiji Sawada, <i>Eliminating Instability Under Real-Time Pricing Utilizing Peer-Effect</i> 3. *Mathias Kirchner, <i>Assessing the Distributive, Economic, and Environmental Impacts of CO2 Taxes in Austria</i> 	Desert Room
E. Instrument Choice <ol style="list-style-type: none"> 1. Tracey Roberts, <i>Choice of Instrument, Efficiency and the WTO</i> 2. Stefan Weishaar, <i>With self-regulation towards energy market Transitions – or in search of smart instrument mixes for green bonds?</i> 3. Li Xiaoqiong, <i>A Study on Influences of Environmental Protection Tax on Enterprises Environmental Cost</i> 4. Victor Mylonas, <i>Policies for Implementing the Paris Agreement: An Assessment for G20 Countries</i> 5. *Edouard Civel, <i>The Fate of Inventions: What can we learn from Bayesian learning in strategic options model of adoption?</i> 	Mesa Room
F. Environmental Stewardship <ol style="list-style-type: none"> 1. Bishwa Raj Kandel and Eiji Sawada, <i>Environmental Investment in Developing Countries and Foreign Assistance: Exploring a Way to Eliminate Mismatch of Assistance Between Donor and Recipient Countries</i> 2. Heidi De La Paz Miranda, <i>The Green Economic Instruments into International Law and its Reception in Domestic Law in America: Globalization of Legal Systems in the Neopluralism</i> 3. Nicolas Kreibich, <i>Cooperative Climate Action under the Paris Agreement: Accounting for Diversity while Preserving Environmental Integrity</i> 4. Gao Ping and Wenjing Wang, <i>Environmental Tax Reform: Case Study of China</i> 5. *Erin Scharff, <i>Green Fees: State Law Limitations on Pricing Environmental Externalities</i> 	Canyon Room
<i>Lunch – 12:00 – 13:00</i>	<i>Palm Room and Terrace</i>
Parallel Session II – 13:00 – 14:30	Breakout Rooms
D. Climate Change Policy <ol style="list-style-type: none"> 1. Nathalie Chalifour and Laurel Besco, <i>Taking Flight – Aviation and Climate Change Policy in the Post-Paris World</i> 2. Mikael Skou Andersen, <i>The Missing Link in the International Framework for Climate Change Mitigation: Border Adjustment with Taxes or Allowances</i> 3. Kris Bachus and Gao Ping, <i>The use of the Effective Carbon Rate (ECR) as an Indicator for Climate Mitigation Policy</i> 4. *Sven Rudolph and Takeshi Kawakatsu, <i>Phoenix Rising? Towards Bottom-up Market-based Climate Policy in Canada</i> 	Desert Room
E. Pollution Control <ol style="list-style-type: none"> 1. Firman Tatariyanto, <i>Taxing Haze Pollution in Indonesia – A SWOT Analysis in Search Optimal Policy</i> 2. Carolina Schauffert Ávila da Silva, <i>Payment for environmental services in the context of the national waste policy: the</i> 	Mesa Room

<p><i>Florianópolis project</i></p> <p>3. Paul Lee and Heidi Meier, <i>The Tax Incentives for Pollution and the Solutions that have been Undertaken to Better the Environment of Seoul, South Korea</i></p> <p>4. Mona Hymel, <i>How Many Negawatts Are In Your Lightbulbs? Energy Efficiency And Federal Tax Incentives</i></p> <p>5. *Chen Qing, <i>From Pollution Fee to Environmental Protection Tax: The Potential and Limitations of New Environmental Tax in China</i></p>	
<p>F. Land Water Issues</p> <p>1. Marichu Melendez Obedencio and Rosalina Palanca-Tan, <i>The Total Economic Value of the Cagayan de Oro River Basin</i></p> <p>2. Nancy Shurtz, <i>Redesigning the American Lawn with Local Fiscal Incentives and a National Grass Tax</i></p> <p>3. Vanessa Johnston, <i>How Climate Change Mitigation Activities Restrict Decisions about Land Use and the Exercise of Private Property Rights in Australia</i></p> <p>4. *Kevin Morrison, <i>The tale of two contested resource taxes</i></p>	Canyon Room
<p><i>Coffee Break – 14:30 – 14:45</i></p>	<i>Palm Room and Terrace</i>
Plenary Session II – 14:45 – 16:15	Santa Catalina Ballroom
<p>Moderator: Janet Milne, Professor of Law, Director, Environmental Tax Policy Institute, Vermont Law School</p> <p>Speakers:</p> <p>Chas Roy-Chowdbury, Head of Taxation-Professional Insight, ACCA UK & EU environmental taxes in general</p> <p>Susanne Åkerfeldt, Senior Adviser at Swedish Ministry of Finance Why Carbon Taxation is a Good Idea</p> <p>Nils Axel Braathen, Principal Administrator in the Environmental Performance and Information Division of the OECD, Health Impacts and Environmental Taxation</p>	
<p><i>Shuttle pick-up to go to Arizona Sonora Desert Museum with included tour of Tucson – 4:30 pm</i></p>	<i>In front of Main Lobby</i>
<p>Conference Dinner – 18:00 – Featuring “Animal Experiences” and an Arizona-Sonora Desert Sunset, presented with thanks to the Pascua Yaqui Tribe</p> <p>Dinner Speaker Introduction:</p> <p>Kathie Barnes, Associate Dean for Programs & Innovation; Director of the Rogers Program on Law and Society, University of Arizona College of Law</p> <p>Dinner Speakers:</p> <p>Mayor Jonathan Rothschild, Mayor of Tucson, Arizona</p> <p>Kirsten Engel, Charles E. Ares Professor of Law at the University of Arizona College of Law</p> <p>Scott Saleska, Professor of Ecology and Evolutionary Biology, University of Arizona <i>Addressing Climate Change Challenges in the Age of Trump</i></p>	Arizona Sonora Desert Museum
<p><i>Shuttles to return guests to the Westward Look Wyndham Grand Resort & Spa</i></p>	

Friday, September 29, 2017

<i>Registration/Info Desk – 8:00 – 17:30</i>	<i>Main Lobby</i>
Keynote Speaker – 9:00 – 10:00	Santa Catalina Ballroom
Keynote Speaker Introduction Yoram Bauman, <i>Stand-Up Economist and Founder of CarbonWA.org</i> Keynote Speaker Robert Glennon, <i>Regents' Professor, Morris K. Udall Professor of Law & Public Policy at the University of Arizona College of Law</i> <i>Our Future in a Warming, Water-Stressed World</i>	
<i>Coffee Break – 10:00 – 10:30</i>	<i>Palm Room & Terrace</i>
Parallel Session III – 10:30 – 12:00	Location
D. Carbon Pricing 1. Janet Milne, <i>Climate Change Goals: Is there a sheriff in town? Are carbon taxes outlaws?</i> 2. Kenneth Richards, <i>Theory and Practice in Carbon Taxes</i> 3. Elena Aydos & Sven Rudolph, <i>Beyond Thunderdome? The Prospects of federal Carbon Pricing in Australia</i> 4. Susanne Åkerfeldt, <i>How to Design a Cost-Effective Carbon Tax on Motor Fuels ... and be in line with EU State Aid Rules</i> 5. *Stefan Weishaar, <i>Carbon Taxes – Implementation Issues and Barriers</i>	Desert Room
E. Pollution Control 1. Helle Ørsted Nielsen and Anders Branth Pedersen, <i>The Redesigned Danish Pesticide Tax: How are Farmers Responding?</i> 2. Tracy Snodden, <i>Environmental Shocks and Community Environmental Preferences in Canada</i> 3. Marta Villar Ezcurra, <i>Noise Pollution Taxes: A Possibility to Explore</i> 4. *Roberta Mann, <i>I Robot: U Tax? Considering the Environmental Costs of Automation</i>	Mesa Room
F. Climate Change Policy 1. Nathalie Chalifour, <i>Turning up the Heat – Key Issues and Latest Developments in Canadian Climate Policy</i> 2. David Driesen, <i>Toward a Populist Political Economy of Climate Disruption</i> 3. Maria Amparo Grau Ruiz, <i>Climate change-related action and non-productive investments in the European Union: the recent work carried out by the European Court of Auditors</i> 4. Ina Meyer, <i>CO2 Emissions Reduction by Reaping Energy Efficiency Potentials in Industry and Households</i> 5. *Wenjing Wang, <i>Environmental Tax Reform and Reconstruction of Local Tax System in China</i>	Canyon Room
<i>Lunch – 12:00pm – 13:30pm</i>	<i>Palm Room and Terrace</i>

Parallel Session IV – 13:30 – 15:00	Location
D. Renewable Energy <ol style="list-style-type: none"> 1. Rowena Cantley-Smith, <i>Mitigating the Environmental Consequences of Electricity Sector “Lock In”: Fiscal and Non-Fiscal Options for a Sustainable Energy Future</i> 2. Denise Lucena Cavalcante, <i>Trade, Tax and Environment: Possible Impacts of India – Solar Cells on the Brazilian Renewable Energy Laws and Regulations related to Taxation</i> 3. Dmitry Zelik, <i>Economic Effects of Renewable Energy Incentives</i> 4. Ross Astoria, <i>Renewable Energy Markets, Energy Democracy, and Low-and Moderate-Income Households in New York’s “Reforming the Energy Vision”</i> 5. *Paulo Caliendo da Silveira, <i>Promotion of Renewable Energy in Brazil</i> 	Desert Room
E. Subsidies <ol style="list-style-type: none"> 1. Larry Kreiser, <i>Keeping Nuclear Energy Power Generation Afloat with Zero Emission Credits</i> 2. Leah Worrall, <i>Cutting Europe’s lifelines to coal: tracking subsidies in 10 countries</i> 3. *Xiaoping Zhang, <i>Incentivizing Investment in Climate Adaptation via PPP-Key Elements of Contract Design to Development Sponge Cities in China</i> 	Mesa Room
F. Other Environmental Taxes <ol style="list-style-type: none"> 1. Claudia Kettner, <i>Vehicle Taxation in EU member states</i> 2. Clara Schultz, <i>Is Energy Taxation a Sustainable Source of Tax Revenue?</i> 3. Bernardo Mendona Nobrega, <i>Green ICMS – Brazil’s Tax Revenue Distribution bases on Environmental Criteria</i> 4. Natalie Stoianoff, <i>Tax and the Environment: Evaluation Framework for Tax Policy Reform</i> 5. *James Creech, <i>How should the Tax Code respond to Technological Changes in Mobility?</i> 	Canyon Room
<i>Coffee Break – 15:00 – 15:30</i>	<i>Palm Room and Terrace</i>
Plenary Session III – 15:30 – 17:00	Santa Catalina Ballroom
Moderator: Roberta Mann, <i>Mr. and Mrs. L. L. Stewart Professor of Business Law</i> Speakers: Natalie Stoianoff, <i>Professor, Faculty of Law Associate Member, AAI - Advanced Analytics Institute</i> Indigenous Engagement in Carbon Reduction – Just Good Natural Resource Management Ronald Troper, <i>Professor, Graduate Interdisciplinary Programs Chair-Director of Graduate Studies</i> Taxation Assumes Financial Goals Dominate Ethel Branch, <i>Attorney General, Navajo Nation,</i> The Complex Intersection of Development and Environmental Stewardship in Navajo Indian Country	
Closing Remarks – 17:00 – 17:30	Santa Catalina Ballroom
Kreiser Award GCET19 Conference Announcement	

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PLENARY SPEAKERS

SUSANNE ÅKERFELDT



Susanne Åkerfeldt has a solid background in senior policy making at the governmental level. As a Senior Adviser at the Swedish Ministry of Finance, she has more than 20 years' experience of managing projects on policy design in the area of energy and environment, seeking solutions and compromises in a politically sensitive environment nationally and at EU level. Her key focus is to ensure the use of cost-efficient policy measures on the road towards a sustainable, low-carbon and resource-efficient society. She has been instrumental in fine-tuning the design of the Swedish carbon tax since the 1990s and has been a team leader of energy and climate taxation projects within the Swedish Government Offices since 2001. Her work has included carrying out Green Tax Shift Reforms and developing economic instruments designed to achieve the EU's targets of reducing greenhouse gas emissions and increased shares of renewable energy.

She serves as Sweden's lead EU negotiator on energy and climate taxation issues and has worked extensively at EU-level to improve and coordinate the design of EU tax and state aid legislation to better reflect the Polluter Pays Principle and encouraging Member States to increasingly use environmental taxes. In a broader international context she has presented and debated carbon tax experiences before the UN Tax Committee and the COP conferences on climate under the UNFCCC, as well as participated in a number of international conferences. Her ability to build and maintain networks with a great number of colleagues among Government officials as well as representatives from academia and stakeholders has served her well in giving a broad understanding of how various issues and political agendas are interlinked.

Susanne received her law degree from the University of Uppsala and worked as a judge at different courts in Sweden before starting her career at the Ministry of Finance.

Plenary Session Title: *Why Carbon Taxation is a Good Idea*

WILLIAM L. ANDREEN



Bill Andreen is the Edgar L. Clarkson Professor of Law at the University of Alabama School of Law. He joined the Alabama faculty in 1983. He also serves as the Director of the school's Summer Exchange Program with the Australian National University (ANU) where he has been appointed as an Honorary Professor of Law. Bill has visited at a number of law schools including Washington & Lee University, Lewis & Clark, and Mekelle University (Ethiopia). He served as a Fulbright Senior Specialist in Law at the ANU's National Europe Center in 2005 and taught in a joint graduate law program at Addis Ababa University from 2009 through 2012. Bill teaches Environmental Law, Administrative Law, and International Environmental Law. His writing has largely concentrated on the Clean Water Act and Environmental Federalism, but he has also written on many other environmental and regulatory topics including Water Law and the ACT/ACF Dispute.

Bill graduated from the College of Wooster and received his law degree from Columbia. After practicing with an Atlanta law firm, he joined the U.S. Environmental Protection Agency, Region 4, in 1979 as Assistant Regional Counsel. He remained with EPA for four years and primarily worked on defensive litigation. Bill has served as a legal advisor to the National Environment Management Council of Tanzania; as chair of the Environmental Law Section of the American Association of Law Schools; and as President of the Alabama Rivers Alliance. He is currently a member of the Environmental Law Commission of the World Conservation Union (IUCN), a Scholar Member of the Center for Progressive Reform, and a board member of the Black Warrior Riverkeeper.

Plenary Session Title: *Bridging the Gap Between Aspiration and Accomplishment Under the Clean Water Act: Dealing with Nonpoint Source Pollution and Flow Impairment in the Face of Climate Change*

NILS AXEL BRAATHEN



Nils Axel Braathen is a Principal Administrator in the Environmental Performance and Information Division of OECD's Environment Directorate. He has been with the OECD since 1996, working i.a. on a database on instruments used for environmental policy, on estimating effective carbon prices in selected countries, on cost-benefit analyses, on economic valuation of environmental externalities, on macroeconomic modelling, on the economics of waste and on environmental impacts of transport and agriculture. Prior to joining OECD he was Deputy Director General in the Department for Long-term Planning and Policy Analysis in the Ministry of Finance, Norway. He holds a Master's Degree in Economics from the University of Oslo, Norway.

Plenary Session Title: *Health Impacts and Environmental Taxation*

ETHEL BRANCH



Ethel Branch is the Attorney General of the Navajo Nation. As such, she serves as the Chief Legal Officer for the Navajo Nation and oversees the six-unit Navajo Nation Department of Justice, the Navajo Nation Office of the Prosecutor, the Navajo Nation Office of Juvenile Justice and the Navajo-Hopi Legal Services Program. She formerly served as an attorney at Kanji & Katzen, PLLC, a law firm solely committed to advocacy on behalf of Native Nations. There Ethel advised and represented Native Nations on a variety of issues, with a focus on restoring tribal natural resources and shielding tribal revenues. Previously, Ethel was an indigenous human rights attorney in Washington, D.C., where she helped advance the implementation of the U.N. Declaration on the Rights of Indigenous Peoples in the United States and the Americas. Ethel also served as a tribal finance associate assisting tribes in gaining access to the capital markets and in leveraging tribal assets to fund the development of critical capital infrastructure in Indian country.

Ethel is a graduate of Harvard University, where she earned her B.A. cum laude in History, her Master's in Public Policy, and her J.D.

Plenary Session Title: *The Complex Intersection of Development and Environmental Stewardship in Navajo Indian Country*

KIRSTEN ENGEL



Kirsten Engel is the Charles E. Ares Professor of Law at the James E. Rogers College of Law where she teaches and researches in the areas of environmental and administrative law. The emphasis of her more recent scholarship is the response of state and local governments to climate change in the United States and especially the constitutional and economic impediments these governments face seeking to mitigate climate change in the absence of comprehensive federal climate change legislation.

Engel is the co-author of an environmental law textbook, book chapters and articles. Her work appears in journals such as the UCLA Law Review Discourse, the Minnesota Law Review, and the Ecology Law Quarterly.

Prior to joining the law faculty at the University of Arizona, she held numerous permanent and temporary appointments within academia and in the public and nonprofit sectors, including the U.S. Environmental Protection Agency, the Massachusetts' Attorney General's Office, and Harvard, Vanderbilt, and Tulane Law Schools.

Conference Dinner Speech Title: *Addressing Climate Change Challenges in the Age of Trump*

ROBERT GLENNON

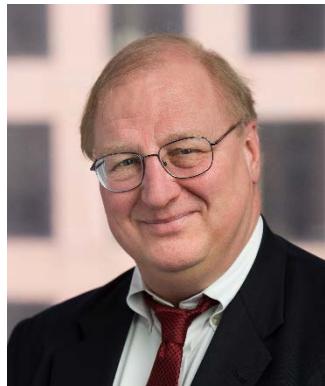


Robert Glennon is one of the nation's preeminent experts on water policy and law. The recipient of two National Science Foundation grants, Glennon is the author of *Unquenchable: America's Water Crisis and What To Do About It*, recipient of a Rachel Carson Book Award for Reporting on the Environment from the Society of Environmental Journalists, and *Water Follies: Groundwater Pumping and the Fate of America's Fresh Waters*. He co-authored the groundbreaking report, *Shopping for Water: How the Market Can Mitigate Water Shortages in the American West*, which is viewed by many as a game-changer for water policy moving forward.

Glennon contributes regularly to national print media including the New York Times and the Wall Street Journal. He has been a guest on The Daily Show with Jon Stewart, Talk of the Nation with Neal Conan, The Diane Rehm Show, C SPAN2's Book TV, and numerous National Public Radio shows. He has been a commentator for American Public Media's Marketplace, and he was featured in the 2011 feature-length documentary *Last Call at the Oasis*. Glennon is a Regents' Professor and Morris K. Udall Professor of Law and Public Policy in the Rogers College of Law at the University of Arizona. He received a J.D. from Boston College Law School and an M.A. and Ph.D. in American History from Brandeis University. He is a member of the bars of Arizona and Massachusetts.

Keynote Title: *Our Future in a Warming, Water-Stressed World*

MARK J. MAZUR



Mark J. Mazur is the Robert C. Pozen director of the Urban-Brookings Tax Policy Center. His research interests cover all aspects of tax policy. From 2012 until early 2017, he was the assistant secretary for tax policy at the US Department of the Treasury. Mazur served in the federal government for 27 years in various positions, including policy economist at the congressional Joint Committee on Taxation, senior economist at the President's Council of Economic Advisers; senior director at the National Economic Council; chief economist and senior policy adviser and director of policy at the US Department of Energy; acting administrator of the Energy Information Administration; director of research, analysis, and statistics at the Internal Revenue Service; and deputy assistant secretary for tax analysis in the Office of Tax Policy. Before entering public service, Mazur was an assistant professor in Heinz College at Carnegie-Mellon University. He has a bachelor's degree in financial administration from Michigan State University and a master's degree in economics and doctorate degree in business from Stanford University.

Plenary Session Title: *Tax Levers and Environmental Outcomes*

JANET PEACE



Janet Peace is the Senior Vice President of Policy and Business Strategy at the Center for Climate and Energy Solutions (C2ES). She manages much of the center's domestic policy work, science and resilience program and the Business Environmental Leadership Council (BELC), the largest U.S.-based association of companies devoted solely to climate-related policy and corporate strategies.

Dr. Peace brings more than 20 years and a wide spectrum of experience on environmental issues to her work at C2ES. As a recognized expert on climate policy, she is a member of the Program Advisory Board for American University's Center for Environmental Policy and Arizona State University's Urban Resilience to Extremes Sustainability Research Network Advisory Committee and a past member of both the National Research Council's Roundtable on Climate Change Education and the Council of Canadian Academies on oil sands environmental technologies.

She holds a Ph.D. and Master of Science in economics and an undergraduate degree in geology.

Plenary Session Title: *The Status of U.S. Climate Policy Efforts*

CHAS ROY-CHOWDHURY



Chas Roy-Chowdhury has been head of taxation at ACCA (the association of Certified Chartered Accountants) since 1991. Prior to that, he worked in private practice (large and small firms) and in industry. He represents ACCA at domestic and international expert groups such as the Business and Industry Advisory Committee to the OECD, the European Commission VAT Expert Group and the Accountancy Europe (formerly Federation of European Accountants') direct and indirect tax working parties. He is Chair of Tax Working Group of the European Association of Craft, Small and Medium-sized Enterprises (UEAPME), which he represents on the EU Commission VAT Forum. He gives evidence on a regular basis before parliamentary select committees and has presented extensively at conferences on issues such as BEPS, VAT and the GAAR

Plenary Session Title: *UK & EU Environmental Taxes*

SCOTT SALESKA



Scott Saleska, PhD, is an Associate Professor in the Department of Ecology and Evolutionary Biology at the University of Arizona. His research focuses on how climate interacts with plant physiology, demography, and ecological processes to influence or control biogeochemical cycling from local to global scales. Dr. Saleska uses multidisciplinary approaches that combine classical techniques of field ecology and forestry with advanced technological methods and modeling to integrate biogeochemical processes to ecosystem scales. Dr. Saleska also is interested in the effect of human activities on these processes and on the sustainable functioning of the biosphere in general. Two current projects include using new technologies to measure whole-ecosystem isotopic exchange and understanding Amazon forest carbon exchange. His work in the Amazon is designed to build upon ongoing investigations of how forest demography and disturbance dynamics control carbon cycling in old-growth Amazon forest.

Conference Dinner Speech Title: *Addressing Climate Change Challenges in the Age of Trump*



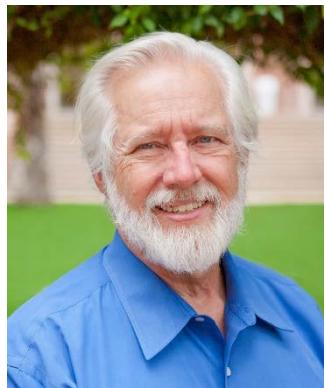
NATALIE P. STOIANOFF

Natalie P. Stoianoff is a Professor and Director of the Intellectual Property Program at the Faculty of Law, University of Technology Sydney, since 2008. She is Australia's first female Taxation Law Professor and is a regular participant in the annual Global Environmental Taxation conference series publishing on the evaluation and impact of taxation concessions for mine site rehabilitation, local government taxes and conservation covenants. She is the Chair of the Indigenous Knowledge Forum Committee, Convenor of the China Law Research Group, a member of the UTS Commercialisation Advisory Panel and is a Chartered Tax Adviser of The Taxation Institute. Natalie led an Indigenous Knowledge Forum project on Recognising and Protecting Indigenous Knowledge associated with Natural Resource Management (2013-14), funded by the Aboriginal Communities Fund of the North West Local Land Services. The White Paper produced by that project led to the award of an Australian Research Council Linkage Grant (2016-19) for the project - Garuwanga: Forming a Competent Authority to Protect Indigenous Knowledge – which is exploring the governance framework for an access and benefit-sharing regime.

She is the author of numerous publications in the fields of intellectual property, environmental law and taxation law. Her tax research has led to membership of the Critical Issues in Environmental Taxation Editorial Review Board and after hosting GCET16 in Sydney she is the Lead Editor of 2 publications from the series (August 2016): Volume XVII, Green Fiscal Reform for a Sustainable Future - Reform, Innovation and Renewable Energy, and Volume XVIII, Market Instruments and the Protection of Natural Resources.

Plenary Session Title: *Indigenous Engagement in Carbon Reduction – Just Good Natural Resource Management*

RONALD TROSPER



Ronald Trosper's latest work has been in the areas of Indigenous economic theory and traditional ecological knowledge. He examined the institutions that provided stability for the peoples of the Northwest Coast in his book, *Resilience, Reciprocity and Ecological Economics: Northwest Coast Sustainability* (Routledge, 2009). He co-edited a book on traditional forest-related knowledge, *Traditional Forest Knowledge: Sustaining Communities, Ecosystems and Bio-cultural Diversity*, edited by John Parrotta and Ronald Trosper (Springer, 2012). His current interest is applications of the lessons from the Northwest Coast to Indigenous Economic Theory, and he is working on a book tentatively titled *Principles of Indigenous Economics*. He began his career in the field of American Indian Economic Development, working on the economic development task force of the American Indian Policy Review Commission. He also worked on the idea of an American Indian Development Finance Institution, which led to legislation that Ronald Reagan vetoed.

After a period of working outside of academia for the Council of Energy Resource Tribes and the Confederated Salish and Kootenai Tribes, he returned to university work at the School of Forestry at Northern Arizona University, followed by work at the Faculty of Forestry at the University of British Columbia before joining the AIS Department in 2011. His Ph.D. degree is in Economics, from Harvard University (1974); but he has been a multidisciplinary scholar, publishing in American Indian Studies, Ecological Economics, Economics, Policy Studies, Forestry, and Anthropology. His administrative positions in academia have been as Acting Director of the National Indian Policy Center at George Washington University (1994), and at Northern Arizona University, as Interim Director of the Institute for Native Americans (1995-96) and Interim Chairman of the Department of Applied Indigenous Studies (2000-2001). He served as Head of American Indian Studies at the University of Arizona from July 2011 to June 2014. He is a member of the Confederated Salish and Kootenai Tribes of the Flathead Indian Reservation, Montana.

Plenary Session Title: *Taxation Assumes Financial Goals Dominate*

ABSTRACTS

HOW TO DESIGN A COST-EFFECTIVE CARBON TAX ON MOTOR FUELS... AND BE IN LINE WITH EU STATE AID RULES

Susanne Åkerfeldt

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Abstract

Sweden has a long and good experience of carbon taxation. However, the main challenge for the future is how to design cost-effective economic instruments to support a transition to a fossil-free vehicle fleet. Crucial parameters are the EU state aid rules and the way they interact with other EU legislation.

As of 1 July 2018 Sweden plans to introduce a new, forceful economic instrument, a so called reduction obligation system. It will promote biofuels with a high climate performance and ensure that such biofuels make up a certain, increasing, yearly percentage of gasoline and diesel. The system will replace the current tax reductions to biofuels blended into gasoline and diesel at low levels.

Excluding biofuels from carbon taxation is considered to be a state aid. The EU rules only allow aid if it is necessary. When certain volumes of biofuels are guaranteed by an obligation, an additional aid is not necessary. Therefore, a tax reduction can no longer be applied to the biofuel parts of gasoline and diesel.

General carbon tax rates will apply to gasoline and diesel, regardless of the actual content of fossil or biomass components. However these tax rates have been calculated in a somewhat different way than today. The estimated overall shares of biofuels in gasoline and diesel resulting from the obligation system have been taken into account. The inherent principle of a cost-effective carbon tax is maintained, namely only taxing the fossil carbon content of the fuel. The way this principle is applied, however, means that the tax system no longer contains any elements of selectivity. Sweden has therefore designed a system that maintains a cost-effective carbon tax and combines it with a reduction obligation for biofuels without being in conflict with the EU state aid rules.

The tax recalculations result in lower carbon tax rates per litre of gasoline and diesel. As the obligation levels of biofuels are planned to increase over time, the carbon tax rates may be further reduced. This is, however, still in line with the Polluters Pay Principle. Sweden will maintain its high carbon tax per ton fossil carbon, even if the tax rates per litre of gasoline and diesel will go down as each litre will contain an increasingly higher level of biofuels.

THE MISSING LINK IN THE INTERNATIONAL FRAMEWORK FOR CLIMATE CHANGE MITIGATION: BORDER ADJUSTMENT WITH TAXES OR ALLOWANCES

Mikael Skou Andersen

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Abstract

The Paris agreement signifies a watershed in climate mitigation efforts, but is based on a bottom-up approach leaving decisions on targets, measures and policy instruments to its signatories. Yet, in tandem with the Paris Agreement, a new international coalition on carbon pricing among the willing was created at the initiative of the World Bank and the International Monetary Fund. Over the past five years, the share of global CO₂ emissions subject to carbon pricing via either taxes or allowances have tripled, from four to twelve per cent, with countries such as Mexico, Chile and South Africa planning for further carbon pricing.

With a widening gap between countries taking action, and with a new US administration eager to dismiss the Paris agreement, the scope for border adjustments relative to carbon pricing deserves more attention and scrutiny. Border adjustments would involve imports being priced for their associated emissions to the same level as domestic goods, while exports to non-price countries may become eligible to refunds. Trade agreements under WTO presumably allow for such adjustment under its exemption mechanisms, provided that all other options have been exhausted. The European Parliament earlier this year was at the brink of introducing a border adjustment for carbon in the EU emissions trading system with respect to the cement industry. As a highly sensitive measure, not only the complex technical and legal questions deserve attention, but also how to make the best diplomacy of border adjustment within the arsenal of climate change mitigation policy tools.

RENEWABLE ENERGY MARKETS, ENERGY DEMOCRACY, AND LOW-AND MODERATE-INCOME HOUSEHOLDS IN NEW YORK'S "REFORMING THE ENERGY VISION"

Ross Astoria

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Abstract

The "Reforming the Energy Vision" (REV) comprises about a dozen dockets on the New York Public Service Commission' agenda. Issued over the past two years, REV aims to reconfigure the state's electrical utility regulatory framework so as to facilitate the transition away from centralized hydrocarbon generation and towards decentralized renewable generation. In this paper, I'm interested in the relationship between the nascent distributed energy resource (DER) markets and the emergence of "energy democracy".

In the first part of this paper, I show how the REV attempts to overcome the incumbency advantaged enjoyed by utilities under the presently existing regulatory framework. DERs (which includes e.g., solar, energy efficiency, and storage) have different technological profiles than hydrocarbon generation and consequently require a new regulatory framework which allows for the "monetization" of their valuable contributions to the grid. The REV reforms need to achieve this are extensive and involve, for instance, the creation of new energy commodities, new forms of measurement, and new types of markets and information management for those new energy commodities.

In the second part of this paper, I examine the various proceedings from the REV docket on low-and moderate-income (LMI) programs and their relationship to "energy democracy." Presently, LMI households are recipients of various direct and indirect money subsidies to pay their utility bill. These temporarily alleviate the need for heat, light, and power without addressing the cause of the need. The LMI docket aims to transition these to "forward subsidies" under which LMI households would own distributed energy resources whose contributions to the grid would be credited against their bill (such as a subscription to a solar garden). Ideally, such a "forward subsidy" would alleviate the condition which caused the need in the first place and enable the widespread ownership of energy generating resources

The widespread ownership of energy resources by the members of the community which uses them is one element of energy democracy, and in this presentation I will describe the progress made on the LMI docket and evaluate the barriers and solutions to transition to "forward subsidies" for DER.

This work is a part of an on-going sabbatical research project which is to result in a book on REV.

BEYOND THUNDERDOME?

Elena Aydos^{a*}, Sven Rudolph^b

^aUniversity of Newcastle Law School: The University of Newcastle (UoN) University Drive, Callaghan NSW 2308 Australia, Callaghan, Australia; ^bKyoto University: Yoshida-Honmachi, Sakyo-ku, Kyoto-shi, 6068501; *rudolph@econ.kyoto-u.ac.jp

Abstract

“All we want is life beyond the Thunderdome”, is a line made famous by Tina Turner in the title song to the correspondent Mad Max movie of 1985. In Thunderdome, a gladiatorial arena in a postapocalyptic world, conflicts are resolved by a duel to the death. Not as violently, but certainly as fiercely political battles have been fought in Australia over carbon pricing, while much of the informed public have increasingly craved for a “life beyond”.

This new life could be facilitated by the Paris Agreement, which calls for ambitious national climate action. Yet, the domestic political barriers to efficient and effective carbon pricing remain high, despite of promising developments e.g. in China, the pre-Trump US, and even Canada. Australia, one of the biggest per capita emitters of greenhouse gases and the world’s leading coal exporter has gone through several attempts of implementing carbon pricing. At least temporarily successful was only the Carbon Pricing Mechanism (CPM), which was in place for two years from 2012 to 2014 and eventually was repealed not due to policy or market failure, but due to political failure. Nowadays, Australia struggles with the legacy of this failure with political stakeholders still licking wounds while at the same time trying to find feasible pathways to fulfill Australia’s Paris commitment.

Against this background, we evaluate Australia’s former carbon pricing initiatives based on ambitious Sustainability Economics criteria. Using Public Choice theory and empirical data from a case study in spring 2017, we then analyze the reasons for the eventual political failure of earlier carbon pricing schemes in Australia, before exploring the current chances of reviving the idea.

We mainly argue that, despite of ongoing partisan feuding and mainly due to the growing openness of the business community and policy learning, “beyond the Thunderdome” there is a second life for market-based climate policy in Australia.

THE USE OF THE EFFECTIVE CARBON RATE (ECR) AS AN INDICATOR FOR CLIMATE MITIGATION POLICY

Kris Bachus^{a*}, Ping Gao^b

^a*University of Leuven, Belgium: Parkstraat 47, Leuven, Belgium, 3000;* ^b*Central University of Finance and Economics: 39 South College Road, Haidian District, Beijing; *kris.bachus@kuleuven.be*

Abstract

In 2016, the OECD introduced the new indicator Effective Carbon Rate (ECR). This innovative indicator measures the combined price put on carbon emissions by energy taxes (ET) and emissions trading schemes (ETS). Interestingly, the OECD found that countries with a high ECR tend to have a low overall carbon intensity, which suggests that recommending countries to increase their ECR may be a valuable climate mitigation strategy.

Calculation of the new indicator demonstrates that carbon pricing is still at a very low level considering the need to stay below the 2° warming target: 60% of CO2 emissions from energy use face a zero effective carbon rate, and only 10% are priced at € 30 (\$ 33) or higher.

The OECD provides calculations on a national and sector level in a relatively detailed manner. However, the creation of this new indicator leaves room for additional questions which this paper aims to answer. First, we will calculate the national weighted average ECR for a selection of case countries (a single figure per country in EUR/tonne CO2 emission, this is not provided by the OECD), including China, US, Japan, UK, France, Germany and Belgium. Second, a cross-country comparison will be executed for these case countries, focusing on the sectoral level, the ratio tax vs. ETS, and energy sources (coal vs. other). Third, specific country recommendations will be formulated focusing on the low-priced types of emissions that will come out of the previous analysis. Fourth, the link between ECR and other indicators will be discussed, such as the Implicit Tax Rate on Energy (ITE). Fifth, a number of specific questions for each case country will be addressed, such as 'What is the expected impact of the start of the nationwide ETS (scheduled for this fall) on China's ECR?', or 'What is the expected impact of recent environmental tax decisions in Belgium on its ECR?'

Finally, the paper will draw conclusions on two levels. First, lessons from the comparative analysis will be transformed into policy recommendations. And second, we will discuss the potential of the ECR as an indicator to measure both the use of economic instruments for the environment and the ambition level for countries with regard to climate mitigation policy.

THE FATE OF INVENTIONS: WHAT CAN WE LEARN FROM BAYESIAN LEARNING IN STRATEGIC OPTIONS MODEL OF ADOPTION?

Marc Baudry^a, Edouard Civel^{*b}

^aEconomiX, Paris-Nanterre University, France; ^bClimate Economics Chair, Paris-Dauphine University, 18 Place de la bourse Pairs, France, 75002; *edouard.civel@chaireeconomieduclimat.org

Abstract

What makes an invention blessed by nature or doomed to failure? We develop a game where heterogeneous agents have the option of adopting an invention of uncertain nature or postponing their decision to benefit from others' experience through Bayesian learning. Messages produced on the invention nature are noisy, representing the well-known "teething troubles" of innovation. We demonstrate that informational externality can induce strategic delay in agents' behavior, reducing the number of early adopters, and that among the narrowed set of information produced, noise could cover truth about invention value and nip in the bud the diffusion of a good invention. These results raise the question of optimal pricing and taxation of innovation, in order to prevent the "teething troubles" trap.

MITIGATING THE ENVIRONMENTAL CONSEQUENCES OF ELECTRICITY SECTOR “LOCK IN”: FISCAL AND NON-FISCAL OPTIONS FOR A SUSTAINABLE ENERGY

Rowena Cantley-Smith

^aMonash University: Information Needed; *Rowena.Cantleysmith@monash.edu

Abstract

Electricity generation is one of the quickest growing forms of final end use energy supply worldwide. With global electricity generation increasing almost fourfold during the last four decades, the stationary energy sector has expanded to meet the ever increasing demand for access to electricity. Such a development is, unsurprisingly, completely understandable: electricity has application across a diverse range of energy services, e.g., heat, light, power. In some cases, there is no other end use energy supply option, e.g., electronic appliances. Over the same period, the adverse environmental consequences of energy end use have also increased. Fossil fuels have continued to dominate the electricity generation fuel mix, with much of the increased electricity supply being produced through coal-fired generation. Consequently, the stationary energy sector is the single largest contributor to global greenhouse gas emissions (GGEs). That is not, however, the end of the problem. Carbon-intensive infrastructure continues to characterise developments in this sector. As a result, current and future GGEs are being locked in for the lifetime of the stationary energy infrastructure developments. The consequences of inadequate global response to this looming problem are significant. Not only does this problem threaten the likelihood of achieving adequate GGEs' mitigation in coming years; delaying action now also raises the prospect of considerably higher costs to do so in the future.

This paper examines the emerging issue of GGEs' lock in in the electricity sector. The main features of this problem are set out first, as part of the background of energy markets. (Section II). Energy policy and relevant legal and regulatory frameworks governing energy and climate change are then discussed. (Section III). In answer to the dearth of action directed towards overcoming the stationary energy sector's problem of lock in, the discussion turns to consider a range of legislative and other measures that can be employed to reverse, or at the very least, reduce the extend of GGEs lock-in. (Section IV). Examples from the Australia and the European Union are used to illustrate the extent of this problem, as well as the possible range of measures that may be introduced to prevent, or at the very least minimise the consequences of, this looming crisis. Recommendations and concluding comments complete this paper's discussions (Section V).

TURNING UP THE HEAT - KEY ISSUES AND LATEST DEVELOPMENTS IN CANADIAN CLIMATE POLICY

Nathalie Chalifour

University of Ottawa: 57 Louis Pasteur St., Ottawa, Ontario, K1K 0H8; natchali@uottawa.ca

Abstract

After years of slow progress, Canadian climate policy has taken off. The recent Pan-Canadian Framework on Clean Growth and Climate Change (2016) outlines what the federal and all but two provincial governments will do to reduce GHG emissions to meet the country's Paris target. One of the central features of the framework is a national carbon price rising to \$50 per tonne by 2022. This paper outlines the latest developments in Canadian climate law and policy, including the federal carbon price, key regulations, and action at the provincial, territorial and municipal levels. The paper focuses on mitigation, and flags two central issues for the development and implementation of the Canadian legal framework on climate.

First, the paper discusses the challenges of regulating GHG emissions nationally given shared legislative jurisdiction in the Canadian federation, and in light of threats from one province in particular to challenge the constitutional basis of a federal carbon price. Second, the paper examines how issues of fairness and equity have featured in Canadian climate policy to date, particularly with respect to the concerns of vulnerable communities, but also given regional differences and dynamics. The paper examines the extent to which factors such as the requirement to conduct gender-based analyses of policies, and constitutional rights, influence the design and implementation of Canadian climate policy.

While there are many more issues that are relevant to Canadian climate policy, such as trade-related issues in light of the Trump administration's approach to on climate change and policies that support the transition to clean energy, the focus is on the two central issues identified.

TAKING FLIGHT - AVIATION AND CLIMATE CHANGE POLICY IN THE POST-PARIS WORLD

Nathalie Chalifour^a, Laurel Besco^{b*}

^a*University of Ottawa: 57 Louis Pasteur St., Ottawa, Ontario, K1K 0H8;* ^b*University of Toronto: William G. Davis Building Room 3266, 3359 Mississauga Road, Mississauga, L5L 1C6;* * *laurel.besco@utoronto.ca*

Abstract

GHG emissions from aviation represent approximately 2% of global GHG emissions, a percentage that is predicted to grow rapidly over the next few decades. In spite of their importance, aviation emissions have been left out of the UNFCCC processes, including the 2015 Paris Agreement. Responsibility for negotiating a plan to mitigate global aviation emissions has been left to the UN International Civil Aviation Organization (ICAO).

After years of challenging negotiations, ICAO members recently agreed to establish a global offsetting mechanism known as the Carbon Offsetting and Reduction Scheme for International Aviation or CORSIA. Through offsets from forestry and other carbon-reduction initiatives, CORSIA will aim to reduce emissions from global aviation 80% by 2035 relative to 2020 goals. While this is an important first step, it is insufficient. First, CORSIA will only be fully operational in 2027, and grandfathered emissions growth before 2020. Second, CORSIA only covers emissions from international flights, which are approximately 60% of emissions. Third, CORSIA's effectiveness in contributing to emissions reductions will depend on the quality of the offsets.

Given the projected growth in this industry and recognition of the need to keep warming from crossing the 1.5 to 2 Celsius threshold, some jurisdictions are taking steps domestically to mitigate aviation emissions. For instance, the countries of the European Union (EU) included aviation in the EU Emissions Trading Program in 2012, though they offered international flights a hiatus while awaiting the outcome of ICAO negotiations on a market-based mechanism.

This paper examines Canada's approach to addressing aviation emissions in a post-Paris, post-CORSIA world. It reviews the existing approach to regulating GHG emissions from aviation in Canada, and considers how Canada might implement CORSIA. It also considers whether Canada could work with other jurisdictions, such as the EU, to go beyond CORSIA. The paper discusses a variety of ways in which Canada could approach GHG emissions from domestic aviation, and evaluates some of the issues that would arise if Canada were to go beyond CORSIA in addressing international aviation emissions.

HOW SHOULD THE TAX CODE RESPOND TO TECHNOLOGICAL CHANGES IN MOBILITY?

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Abstract

Technological changes next 5-15 years are going to dramatically remake the way we think about mobility. It is conceivable that by 2030 we treat private ownership of cars the way we treat private ownership of horses, and that public transit will be effectively privatized to ride hailing services that operate fleets of autonomous electric cars. How should the tax code respond to these changes? What can policy makers do now to smooth the transition? Topics will include options on how to fund infrastructure in the wake of collapsing gasoline tax revenue, opportunities and pitfalls for rethinking consumption taxes given the shift from individuals paying the majority of consumption based transportation taxes to companies paying the majority of consumption based transportation taxes, and how to use employee fringe benefits under Section 132(f) as a test bed for broader legislation.

THE GREEN ECONOMIC INSTRUMENTS INTO INTERNATIONAL LAW AND ITS RECEPTION IN DOMESTIC LAW IN AMERICA : GLOBALIZATION OF LEGAL SYSTEMS IN THE NEOPLURALISM

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Abstract

This abstract provides lines for the construction of an international constitutional theoretical basis for the solution to the problematic that faces our fragmented and pluralistic international law into domestic law, which becomes the green economic instrument in imperfect tool to protect the environment.

I am going to talk about distribution of competences, jurisdiction, elements of the international rule, international human rights related to environment and domestic law in the Vienna Convention as a mechanism to guarantee the effectiveness of green markets into the complex society facing globalization.

I propose to establish the appropriate methodology to measure or standardize certain universal values that make functional, convergent legal systems of different countries in a global world, in which there is a conflict of rules to operate efficiently the green instruments. I will propose a innovation on the creation of the rule which will help that policy makers can actually contribute with sustainable international agreement in regards to environment and commercial law.

To demonstrate: the American constitutional system has a domestic legal system ratifying international treaties such that certain norms of international law in reality are subordinate to its constitution or compliance is voluntary, creating differences or conflicts between countries consequently, the global legal system might be creating some externalities that override the protection of biodiversity.

Another example is in Latin American countries, or in those with Romano-Germanic traditions that in their execution are guided by the application of written rules, create loopholes or legal antinomies that make atrophic certain provisions of international law and non-existent regulation of environment that mitigate the effects of climate change.

TOWARD A POPULIST POLITICAL ECONOMY OF CLIMATE DISRUPTION

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Abstract

Most academic thinking about the political economy of climate disruption focuses on what one might call the political economy of compromise. This idea, grounded in public choice theory, posits that one must craft policy proposals sufficiently appealing to special interests to pass. This idea underlies academic support for emissions trading based on grandfathering, as it is thought to appeal to industry (because its inexpensive and flexible) and environmentalists (because it limits emissions). It also was once thought capable of satisfying pro-regulation Democrats as well as market-loving Republicans in the US.

This paper advancing an alternative vision of political economy: call it a populist political economy. Climate policies might be crafted to attract active support from people and entities not normally involved in climate policy debates, because it offers significant non-climate benefits chosen to generate votes in elections. This idea might be valuable in the United States, where ideological opposition to climate policy has defeated the political economy of compromise nationally but populism is on the rise. As it happens, the world's most successful climate policies, such as France's nuclear policy and Germany's feed-in tariff, deliver very significant nonenvironmental benefits. They are based on what one might call a political economy of multiple benefits, rather than a political economy of compromise. This paper will focus on the idea of a carbon tax with revenue devoted to popular priorities, (as opposed to environmental protection or deficit reduction) to illustrate the concept's potential.

ENVIRONMENTAL TAX REFORM: CASE STUDY CHINA

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Abstract

The paper of “the Introduction of Independent Environmental Protection Tax: Case Study of China” discusses the reasons why there is a fee-to-tax reform on pollution emissions, the main characteristics of environmental protection tax, and its advantages and challenges it brings about. This paper analyzes China's environmental tax policies which consist of specialized green taxes, environment-related tax policy in general taxes and environment-related import and export tax policy. This paper indicates that incentive-oriented environmental tax policy for the use of waste and environmentally friendly products becomes systematic and standardized in China, meanwhile the constraint-oriented environmental tax policy is still not sufficient, especially lack of tax on pollution emissions. Moreover, this paper compares advantages and disadvantages between pollution fee and pollution tax to discuss further about the transformation from pollution fee to tax under China's situation. Furthermore, the paper analyzes the main characteristics of newly passed environmental protection tax law. The main characteristics of environmental protection tax are as follows: First, it is an independent and comprehensive tax aimed at taxable pollutants, including air pollutants, water pollutants, solid waste and construction site noise. Second, it is a kind of direct discharge tax instead of indirect discharge tax. Third, a tax rate range is set for air pollutants and water pollutants. The specific applicable tax rate will be determined and adjusted by provincial government in the tax range considering the regional environmental capacity, the pollution status, economic and social development goals. Fourth, tax administration procedure will be completed in the way of coordinating between tax bureau and environmental protection agency. Lastly, this paper will make an appraisal on the introduction of environmental protection tax, including its advantages and challenges it brings about.

A STUDY ON ENVIRONMENTAL PROTECTION TAX AND THE ENTERPRISE ENVIRONMENTAL COST MANAGEMENT

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Abstract

The enterprise environment cost refers to the spending of performing environmental responsibility, also known as environmental compliance costs. It is the foundation of environmental management. In recent years, Many Environmental protection laws and regulations have been revised and issued, and pollutant discharge standards have been improved. Environmental economic means have been introduced. Enterprises face greater pressure of reducing pollution, and illegal cost of enterprises increase. Meanwhile, there is increased law-abiding cost for enterprises. Environmental protection tax is part of the enterprise environment cost, and is one of the environmental economic means. Environmental protection tax law will be formally implemented in 2018. In view of enterprise cost management, we choose typical enterprises, analysis factors of influencing the pollutants emissions, analysis corporate environmental compliance costs and its change after the implementation of environmental protection tax. We suggested that establish enterprise environment cost accounting system, strengthen the enterprise environment cost control. It will promote enterprise environment law-abiding and cost reducing at the same time. In the paper, enterprise environment cost includes subsidies, special funds, and preferential tax; excludes fines, external costs, etc.

TAXES VERSUS SUBSIDIES: THE EFFECT ON VEHICLE ENERGY CONSERVATION AND POLLUTANT EMISSIONS REDUCTION

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Abstract

Vehicle is an important source of atmospheric pollutants and carbon dioxide emissions. Taxes related to vehicle, such as vehicle purchase tax, car excise tax, petrol and diesel consumption tax, cover the whole process of the auto purchase ownership and usage, even though there is no vehicle tax based on CO₂ and other pollutant emissions in China. Taxes played a significant role in reducing carbon dioxide emissions and pollutants emission for vehicle. Meanwhile, new energy vehicles are encouraged in China. Old vehicle is required to be obsolete more rapidly. There are some subsidies and preferential tax policies for it. In this paper, we analyze the effect of taxation and subsidies on vehicle pollution control, and provide reform proposals about the policy reform.

CLIMATE CHANGE-RELATED ACTION AND NON-PRODUCTIVE INVESTMENTS IN THE EUROPEAN UNION: THE RECENT WORK CARRIED OUT BY THE EUROPEAN COURT OF AUDITORS

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Abstract

The European Court of Auditors (ECA) publishes special reports presenting the results of selected audits of specific European Union (EU) budgetary areas or management topics. Its audits usually examine whether the public authorities achieve value for money with the funds allocated.

Some of these audits have recently dealt with climate change-related action and non-productive investments. Most of the recommendations made by the auditors could be useful as a comparative experience, particularly when trying to 'mainstream' climate action within different funding instruments instead of creating a dedicated one.

At the end of 2016, the auditors warned that more effort was needed to ensure the EU's target of spending at least one euro in every five of the EU budget on climate-related action between 2014 and 2020. In spite of the approach to incorporate climate action into the various policy areas and funds in the EU budget, there has been no significant shift towards climate action in several areas (i.e. agriculture or rural development).

Regarding the Common Agricultural Policy -under shared management between the Commission and the Member States, the ECA has examined the framework set up to enable national Certification Bodies to form their opinions in line with EU regulations and international audit standards. It has made a number of recommendations to be included in new Commission guidelines due into force from 2018.

The EU also co-finances investments in rural infrastructure to improve competitiveness of the agricultural and forestry sectors and increase the quality of life in rural areas. Non-productive investments do not generate significant return, income, or revenue, or increase significantly the value of the beneficiary's holding, but have a positive environmental impact. The European Agricultural Fund for Rural Development and national co-financing provide public support to promote the sustainable use of agricultural land. The Court in 2017 has concluded that it has been done in a way that was not cost effective. There is a need to pay greater attention to synergies with other environmental schemes, the supporting documentation for cost claims, the results indicators and the monitoring of the implementation reports. It is important to modulate the levels of support and the aid rates, to fix clear selection criteria and ensure a proper contribution to agri-environment objectives. The ECA has also assessed whether rural development financial support for the improvement of the economic value of forests of private owners or municipalities is managed efficiently and effectively. All these issues deserve a deeper exploration.

HOW MANY NEGAWATTS ARE IN YOUR LIGHTBULBS? ENERGY EFFICIENCY AND FEDERAL TAX INCENTIVES

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The cheapest energy source is the “negawatt,” the unit of energy that is NOT used. Low cost, high carbon sources of energy encourage wasteful use. The developed world has an increasingly energy intensive life style, and the developing world seeks to emulate that life style. Discouraging wasteful behavior could be as simple as increasing the cost of energy, but energy efficiency can also be encouraged by tax incentives. This talk examines U.S. tax incentives like the new energy efficient home credit, the energy efficient appliance credit, electric and plug in electric vehicle credits, the energy efficient commercial buildings deduction and the nonbusiness energy property credit, and considers whether such incentives are themselves efficient and effective. The talk further considers appropriate design for incentives for energy efficiency.

HOW CLIMATE CHANGE MITIGATION ACTIVITIES RESTRICT DECISIONS ABOUT LAND USE AND THE EXERCISE OF PRIVATE PROPERTY RIGHTS IN AUSTRALIA

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Abstract

In recent years, Australia's Federal and State Governments have established numerous policies that directly or indirectly deal with climate change. These policies not only include Australia's national climate change policy, the Direct Action Plan, but, given the nature of climate change and the variety of activities that lead to greenhouse gas emissions, policies in sectors including stationary energy, agriculture, forestry, urban planning, commercial buildings, and transport. Together, these policies support numerous laws and measures that establish both command-and-control and market mechanisms that directly or indirectly encourage entities to, or discourage entities from, undertaking certain activities that mitigate greenhouse gas emissions or adapt to the adverse consequences of climate change.

In Australia, it is well-recognized that adapting to climate change includes changing the way that land is used, particularly coastal and low-lying land that is vulnerable to sea-level rise, flood, or inundation. It is less well-recognized that climate change mitigation activities, irrespective of adaptation requirements, is also changing the way that land is used. In this later context, climate change mitigation activities undertaken by entities with encouragement (or discouragement) from command-and-control or market mechanisms, require entities to make decisions about land use between competing environmental or commercial priorities, and affects future land use options. These mechanisms also affect the extent to which entities are able to exercise rights associated with proprietary interests in land now and in the future.

This paper considers how command-and-control and market based mechanisms that encourage climate change mitigation activities impact land use in these two ways. Changes to land use are explained by reference to examples across agriculture, forestry, urban planning, and stationary energy sectors. This paper will explore and articulate preliminary issues about the impacts of climate change mitigation activities, forming the basis for future research and options for policy and legal reform.

ENVIRONMENTAL INVESTMENT IN DEVELOPING COUNTRIES AND FOREIGN ASSISTANCE: EXPLORING A WAY TO ELIMINATE MISMATCH OF ASSISTANCE BETWEEN DONOR AND RECIPIENT COUNTRIES

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Abstract

Many developed countries are undergoing transition to the green economy that can balance economic development and environmental protection. In the hope that a trend toward the green economy spread to developing countries, international development cooperation projects provide continuing assistance to the economic development and environmental protection of developing countries. However, such attempts often result in mismatches between donor and recipient countries. This is partly because of the type of assistance and partly because of the country-specific matters. In reality, these two possible causes are intimately intertwined and make the elimination of mismatch difficult.

In this paper, we examined how to provide assistance to the developing countries to establish environment-friendly technologies. As we denoted above, considering country specific matters are inevitable to clear the relationship. Therefore, we focus on the development cooperation in Nepal and India as a candidate of the least developing countries. As a preliminary analysis, we firstly classified the foreign assistance depending on a wide range of characteristics such as financial assistance or technical assistance and tied assistance or non-tied assistance. After that, we investigated the per-project basis magnitude of environment-friendly technology established by the field studies in Nepal and India. Finally, we propose some possible solutions to eliminate above mismatch.

PHOENIX RISING? TOWARDS BOTTOM-UP MARKET-BASED CLIMATE POLICY IN CANADA

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Abstract

The phoenix, a mythical bird that rises from its own ashes. But can Canada rise from its own Kyoto Protocol ashes by fostering market-based climate policy?

The Paris Agreement urgently needs underpinning by ambitious domestic policies. Greenhouse gas (GHG) pricing is still promising and has been spreading to different countries and governance levels. However, political implementation barriers are still high on the national level. The US and Canada, both top 10 emitters, have shown that sub-national GHG pricing is a viable alternative in cases where national schemes fail. However, with US climate policy remaining at best unpredictable for the time being, Canada might rise to be the new leader in market-based climate policy from the bottom-up. Against this background we analyze Canadian provinces' approaches to GHG pricing. We use Sustainability Economics, Public Choice, New Environmental Federalism, and Polycentrism arguments as a basis for theoretically justifying sub-national market-based climate action. We then study the cases of the British Columbia Carbon Tax and the Québec and Ontario Cap-and-Trade Programs with a special focus on inter-province influences and the provincial-federal-government nexus. Why has GHG pricing been politically more successful on the provincial than on the national level? Does climate action in some provinces stimulate other sub-national or even the federal government to follow suit? Why do some provinces prefer a tax, while others prefer cap-and-trade? And what role does the new 2016 Trudeau-Initiative on GHG pricing play?

We show that tailor-made sub-national GHG pricing is a viable strategy and that province programs are comparatively well designed. We indicate that sub-national schemes have better political chances than national level programs, but that the former might also trigger the latter. We underscore that, depending on the circumstance, both cap-and-trade and taxes have their own justification.

VEHICLE TAXATION IN EU MEMBER STATES

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Abstract

A broad range of instruments is available for promoting GHG emission reductions. Instruments specific to the transport sector include fuel taxes, vehicle registration taxes and ownership taxes, which can each be based on CO₂ emissions, as well as performance standards and road pricing schemes. Economic theory advocates for taxes related to the actual use of the vehicle as these are based on the intensity of use and thus the resulting negative environmental effects instead of mere ownership.

Upfront taxes such as registration taxes might nevertheless be a useful complement to fuel-based taxes by counterbalancing consumer myopia regarding purchase decisions: Instead of considering the purchase price and the expected usage costs over the whole lifetime of the vehicle, consumers tend to consider only the first years of usage for their decision.

In this paper we analyze the development of vehicle taxation – i.e. of acquisition and ownership taxes – in the EU Member States (MS) in 2005 and in the period 2010–2016. First, taxes are examined with respect to the basis for taxation (e.g. specific CO₂ emissions of the vehicle, weight, power, cylinder capacity or price). In a second step, the level of acquisition and ownership taxes for an average diesel and petrol car is calculated.

Our analysis shows that in 2016 carbon aspects have been taken up in vehicle taxation in 20 MS: 14 EU MS considered the CO₂ emissions of a vehicle for determining registration taxes and recurring ownership taxes. In some countries, specific CO₂ emissions are the only criteria for taxation (acquisition taxes: Cyprus, France, Ireland, Latvia and Spain; ownership taxes: Cyprus, Croatia and Ireland); in the other countries CO₂ criteria are combined with other factors (such as purchase prices or cylinder capacity). In eight countries no acquisition taxes (except for VAT) and in six countries no ownership taxes apply. Not only the structure of vehicle taxation differs among the MS, but also the level of taxation. For the average diesel car, acquisition taxes e.g. range between 0 EUR (France) and 27,000 EUR (Denmark).

Empirical studies generally confirm a reduction in the direct CO₂ emissions of cars due to the introduction of CO₂ based registration taxes. Improvements in CO₂ intensity, however, partly reflect an increase in the share of diesel driven cars which might entail other negative environmental effects, i.e. increasing NO_x and particulate matter emissions.

ASSESSING THE DISTRIBUTIVE, ECONOMIC, AND ENVIRONMENTAL IMPACTS OF CO₂ TAXES IN AUSTRIA

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Abstract

In Austria GHG emissions that are not covered by the EU Emissions Trading System (ETS) may have to be cut by -36% until 2030 compared to 2005. CO₂ taxes could provide economic incentives to decrease consumption of fossil fuels. However, increasing attention is put to negative side effects of CO₂ taxes such as (1) potential regressive impacts on household income groups as well (2) impacts on the competitiveness of domestic industries. The introduction of tax rebate schemes, such as lump-sum payments for households or reduction of employers' contributions for industries may be ways to lower or neutralize these effects. We therefore aim to analyze the distributive, economic, and environmental impacts of different CO₂ tax and rebate schemes in Austria.

The analysis is conducted with the econometric Input-Output DYNK (Dynamic New Keynesian) model of the Austrian economy. The model describes the inter-linkages between industries, government, end users as well as the consumption of five household income groups. DYNK simulates (i) changes in factor inputs for industry production, (ii) wage bargaining, and (iii) household demand reactions. Energy demand is modelled specifically in sub-modules for both industry and households and thus allows for a detailed assessment of policy instruments such as CO₂ taxes and rebate schemes. A comparative scenario (i.e. short-term) with a €120/CO₂t tax shows a substantial reduction in GHG emission by non-ETS industries (e.g. -16% in the land transport sector), but only small impacts for households (e.g. -3% for mobility and -1% for housing). The simulations further indicate a substantially higher tax burden for low income households (i.e. the lowest income group spends 1.6% of its household income on CO₂ taxes; the highest only 0.8%). Lump-sum transfers can eliminate most of the burden and increase, c.p., real income and consumption. The aggregate effects are more positive if lower income groups are specifically targeted. The economic impact of a CO₂ tax for non-ETS industries is negative but small and a reduction of employers' contribution can increase the competitiveness of domestic non-ETS industries. The overall short-term macro-economic impacts on GDP are slightly positive (< 1%). A CO₂ tax for non-ETS sectors may thus be a viable policy option to contribute to Austria's 2030 climate targets with neutral to positive macro-economic impacts. Rebate schemes can potentially mitigate regressive impacts and the competitive disadvantage of domestic industries. Long-term impacts (including higher CO₂ taxes on car purchases) are yet still to be investigated.

STATE CARBON TAXES AND THE DORMANT COMMERCE CLAUSE

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Abstract

With Donald Trump's 2016 election and his campaign promise to withdraw the United States from the Paris climate accords, the federal government is unlikely to take strong action to reduce U.S. greenhouse gas emissions until at least 2021. Accordingly, several states are considering adopting their own carbon taxes now in an attempt to reduce U.S. greenhouse gas emissions. The challenge for those states is that state taxes on local industries' greenhouse gas emissions will encourage carbon-intensive industries to move into states that do not have carbon taxes. Such movement threatens to harm the economies of taxing states without significantly reducing U.S. carbon production. As is now widely recognized, the solution to this problem is for states to enact carbon taxes that are border adjusted. With a border adjustment, the taxing state will refund to the producer the carbon tax when the carbon-intensive item is exported; conversely, the state will impose a tax on items imported into the state based upon the carbon that was emitted in producing and transporting that item into the state user. In effect, the border adjustment turns the carbon tax from a tax on production into a tax on consumption. However, the border tax adjustment most notably, but other elements of proposed carbon taxes as well, raise the question would a state carbon tax violate the dormant Commerce Clause, which prohibits states from enacting taxes and other policies that discriminate against cross-border commerce. Carbon taxes and the border adjustment also raise the question would the tax violate the World Trade Organization (WTO) agreement. Drawing on a range of authorities and sources, including our recent scholarship on tax discrimination in the European Union and the United States, we examine both the policy and doctrinal arguments that a state carbon tax would or would not be constitutional and WTO-compatible. In addition, we describe how states might design carbon taxes in order to strengthen their case that their carbon taxes are both constitutional and WTO-compliant while doing as much as they can to reduce U.S. greenhouse gas emissions.

COOPERATIVE CLIMATE ACTION UNDER THE PARIS AGREEMENT: ACCOUNTING FOR DIVERSITY WHILE PRESERVING ENVIRONMENTAL INTEGRITY

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Abstract

With the entry into force of the Paris Agreement in 2016 the world formalised a paradigm shift in international climate negotiations which gives countries significant leeway in defining their individual mitigation targets, the so called nationally determined contributions (NDCs). With this new bottom-up structure national climate plans and domestic policies can be expected to receive more attention than in the past. At the same time, the Paris Agreement provides countries with new possibilities for cooperating internationally when developing and implementing domestic climate policies. Under Article 6.2 of the Paris Agreement, for instance, an investor country can provide financial and technical assistance to another country to support the implementation of a climate change mitigation policy and receive (a share of) the climate change mitigation outcomes generated by the policy in return, which can then be used for achieving its own emission reduction target. These new forms of cooperation may lead to a stronger convergence of national and international climate policy with the potential for raising global climate ambition.

Implementing these cooperative approaches does however yield significant risks to environmental integrity, in particular given the bottom-up structure on which the Paris Agreement is build. One of these risks is double counting: if a mitigation outcome is used by the investor country for pledge attainment while also contributing to achieving the host country's mitigation target, the environmental integrity of the Agreement would be undermined. While the definition of robust accounting provisions has been identified as a means to address this and other environmental integrity risks, the application of such rules is challenged by the diversity of countries' NDCs and the different levels of technical detail provided by countries when communicating them.

Against this backdrop, this paper explores possible solutions in dealing with the diversity of NDCs in the context of robust accounting by analysing different forms of cooperation. For this purpose, the authors develop different cooperation scenarios, look at the NDCs of countries involved and identify potential accounting challenges. On this basis, potential solutions are developed which are to contribute to safeguarding the environmental integrity of the Paris Agreement when using these new forms of international climate cooperation.

THE TAX INCENTIVES FOR POLLUTION AND THE SOLUTIONS THAT HAVE BEEN UNDERTAKEN TO BETTER THE ENVIRONMENT OF SEOUL, SOUTH KOREA

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Abstract

Many metropolises are suffering from different kinds of pollution. Although it may not seem to be harmful, pollution is a huge detriment to the planet, as well as its inhabitants, some more detrimental than others. The two biggest factors of environmental problems of South Korea's capital, Seoul, are population and transportation. With over 25.6 million people, the Seoul Capital Area is considered the second largest metropolitan in the world, home for half of all the residents in South Korea. At the end of 2013, the registered vehicles in South Korea amounted to over 19 million, with numbers predicted to exceed 20 million by 2015. Many of the known factors that have been increasing the pollution and global warming in South Korea have been decreased to lessen the pollution, but Seoul and South Korea as a whole are far from avoiding the serious detriments of the pollution it has already created. This paper will discuss the different factors to the increasing pollution and waste in South Korea, along with solutions to alleviate the harm done on the environment.

I ROBOT: U TAX?

CONSIDERING THE ENVIRONMENTAL COSTS OF AUTOMATION

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Abstract

In a recent interview, Microsoft founder Bill Gates recommended taxing robots to slow the pace of automation. Funds raised could be used to retrain and financially support displaced workers. Up to 47 percent of U.S. jobs are at risk by advancements in artificial intelligence. Low-wage workers currently hold a majority of those at-risk jobs. Increased automation is likely to exacerbate income inequality. Income inequality is linked to environmental degradation.

On the other hand, automation can have environmental benefits. Automation is already having an impact on the overall efficiency of the goods-movement system, cutting both costs and energy demands. Autonomous taxis could reduce greenhouse gas emissions. Automation could deliver 15 percent in fuel savings by maintaining optimal speed and avoiding excessive stop-and-go or idling. However, self-driving cars dramatically reduce the cost of driving. The increased travel due to the ease and convenience of self-driving cars may more than offset the reduction in fuel use. One researcher noted that “road vehicle automation could plausibly reduce transportation energy demand in the U.S. by 40% - but could also more than double it.”

Moreover, autonomous vehicles (AVs) may require infrastructure changes. It is unclear whether AVs can safely share the road with driver-operated vehicles. Even if driverless cars can share the road with driver-operated cars, increased vehicular travel could increase wear and tear on the roads. A report prepared for The California Air Resources Board noted that AVs are most likely to realize climate benefits in the context of shared vehicles, where the vehicle fleet shrinks and there are fewer single-occupancy trips, mitigating the convenience benefits of AVs that push towards greater travel.

Tax can play a role in designing environmentally conscious AV use, by incentivizing car-sharing. Tax can also mitigate the income inequality caused by automation. This paper will explore both of those elements.

PROMOTION OF RENEWABLE ENERGY IN BRAZIL

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Abstract

This article aims to make an analysis about the Brazilian laws that regulates the taxation upon renewable energy, especially regarding the analysis of the use of tax mechanisms for the promotion of sustainable measures, looking forward the promotion of the distribution and use of the renewable energy. In a particular way, the paper will analyze the measures already adopted in Brazil, and, in a perspective way, the future measures that this country have to adopt to guarantee the constitutional rights of the people and the environment. At last, it is intended to verify the appropriateness of the tax regime to the goal of encouraging the use of renewable energy avoiding the impacts of the use of fossil energy.

CO2 EMISSIONS REDUCTION BY REAPING ENERGY EFFICIENCY POTENTIALS IN INDUSTRY AND HOUSEHOLDS

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Abstract

The present study presents a model analysis of alternative energy efficiency scenarios for Austria and their impacts on economic growth, energy demand and CO2-emissions. The objective is to analyze measures that incentivize the realization of technologically viable energy efficiency potentials in the manufacturing and household sectors. The scenario analysis serves the estimation of CO2-emissions reductions potentials and their compliance with the EU climate and energy targets (2030) and the targets of the Paris agreement (-80-95% in CO2-emissions by 2050 w.r.t. 1990).

Two efficiency scenarios and their measures are translated into the model language of the WIFO.DYNK model which is a Dynamic New Keynesian econometric model that integrates the Austrian energy balance and depicts interlinkages of 74 industrial sectors. The DYNK model is based on macroeconomic relationships capturing economy-wide repercussions that are driven by CO2 or energy prices, changes in the energy efficiency of capital stocks (dwellings or car fleets) or other policy measures (regulations, standards) that incentivize reaping the energy efficiency potentials.

CLIMATE CHANGE GOALS: IS THERE A SHERIFF IN TOWN? ARE CARBON TAXES OUTLAWS?

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Abstract

International negotiations over climate change have struggled mightily for years with the challenge of setting goals for reducing greenhouse gas emissions. The Paris Agreement in 2015 brokered the path forward. It set a global goal linked to temperature rise and then relied on signatory nations to establish their own nationally determined contributions to emissions reductions, allowing countries to select their own goals and implementing instruments. Quite apart from international agreements, subnational governments also may choose to establish their own climate change targets. Goal setting is becoming part of the DNA of climate policy.

Yet with the proliferation of climate change goals comes the question whether the goals are aspirational or binding. The answer to that question has significant legal and policy implications. If the goals are binding, are they actually enforceable and by whom—is there a sheriff? And if they are binding, do they limit the policy instruments used to achieve the goals—for example, do carbon taxes become outlaws if they cannot guarantee a given outcome?

This paper explores these issues at the national and subnational level. To analyze the questions in a concrete context, it focuses on a recent judicial decision in the United States in the state of Massachusetts. That case put a spotlight on whether a court can enforce a statutory emissions-reduction goal and whether as a matter of law the government can rely on carbon pricing mechanisms to achieve the goal. With that case in mind, as well as several other examples of goals in the US and elsewhere, the paper considers whether lessons emerge about the legal role of climate change goals and the implications for carbon pricing instruments as countries strive to achieve their nationally determined contributions.

THE TALE OF TWO CONTESTED RESOURCE TAXES

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Abstract

The attempt by the Australian federal government to impose a new Resource Super Profits Tax (RSPT) in 2010 in the midst of the largest commodities boom the country had ever experienced was met by resistance by the multinational mining industry. The RSPT was revised into two separate taxes the Mineral Resource Rent Tax (MRRT) was to apply to Australia's two largest export commodities – iron ore and coal, and the onshore extension of the existing Petroleum Resource Rent Tax (PRRT). The MRRT was repealed after a short legislative life, while the PRRT extension remained.

This paper answers the question – why was there a different outcome to these two taxes, which are both based on similar economic theory? The answer is explained through an agenda building framework that examines the development of the RSPT policy by the then federal government and how the mining industry countered the RSPT with its framing of the tax and won a very public debate. The MRRT and the onshore extension of the PRRT sees the tax debate move to private negotiations away from public attention. This phase of the tax policy process is explained through the regulatory capture theory. A case-study approach was used to gather, for the first time, research data from interviews with senior people involved in resource tax policy over the past 40 years together with statistical and documents analysis.

The findings of the research show that in a historical perspective, the RSPT was another episode in the contentious history of governments attempting to impose taxes on economic rent in Australia. The government lost the RSPT debate as its political leaders ignored repeated warnings by government agencies against an RSPT type tax. The resources sector achieved their objectives, the miners had no new federal tax and the onshore PRRT allowed oil firms to book against the market value of its assets that created more deductions against tax payments. Similar deductions were included in the MRRT generating a little revenue.

The failure of the MRRT and weak revenue from the PRRT resulted in little savings from the boom and has prompted Australian governments since late 2016 to revisit resource taxation in order to raise more revenue to bridge widening budget deficits. Each move has again been met by opposition by the resources industry and echoing the RSPT debate again. The paper concludes with implications for global resource taxation policy and transparency, based on lessons from Australia.

THE REDESIGNED DANISH PESTICIDE TAX: HOW ARE FARMERS RESPONDING? ENVIRONMENTAL TAXATION TARGETING DRINKING WATER QUALITY, BIODIVERSITY AND HEALTH

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Abstract

In 2013, Denmark's comparatively high, but not every effective tax on pesticides was overhauled and reintroduced with a new design. In line with environmental tax theory, the redesigned tax targeted the harmful effects of the products, differentiating the tax rate on pesticides according to their score on an environmental and health load index. The objective was to incentivize farmers to substitute less harmful products for more harmful ones. Additionally, the average tax rate was doubled (Hansen 2017) in order to encourage a general reduction in pesticide usage.

This paper examines whether Danish farmers have responded to the redesigned tax as anticipated. Studies of the previous tax, which was a simple value tax, suggested that its failure to achieve policy objectives was due partly to unrealistic assumptions about farmer responses to the economic incentives of the tax (Pedersen et. al 2012). While it was assumed that farmers would adjust their pesticide consumption fully rationally, a survey-based study found that only half of the farmers paid much attention to prices in their decisions on pesticide use (Pedersen et al. 2012). Many farmers were more motivated by producing a large crop, without much consideration of costs. However, since the new tax offers stronger and differentiated price incentives, and since Danish farmers are under greater financial pressure now, more farmers might respond to the economic incentives of the new tax. The paper therefore also examines whether responses to the redesigned tax differ across groups of farmers, based on their decision rationales as well as based on structural variables such as size and farm type.

The paper builds on a unique data set that combines survey data from 650 farmers with time series data on their use of pesticides. Each year farmers submit detailed pesticide journals to the Ministry of Environment and Food, allowing us to examine changes in pesticide consumption and composition before and after the tax. We link this data with survey data, collected in the winter of 2016-2017, asking farmers general questions about pesticide decision-making as well as about their knowledge about, attitude towards and attention to the redesigned tax.

The paper contributes to the development of environmental tax theory by providing a behavioral and empirically grounded perspective on tax design. The effects of this tax design, directly targeting impact such as water quality, are also policy relevant, e.g. for implementation of the EU directive 2009/128/EC on sustainable use of pesticides.

GREEN ICMS – BRAZIL'S TAX REVENUE DISTRIBUTION BASED ON ENVIRONMENTAL CRITERIA

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Abstract

The primary tax legislation including the stipulation of the different taxes of permitted use by Brazil's Federal, State and Counties governments are all established in the Constitution. The State's main tax is called, in portuguese, *Imposto de Circulação de Mercadorias e Serviços (ICMS)* which translates to Service and Merchandise Circulation Tax. It is, in resume, a sales tax.

Fiscal federalism in Brazil's Constitution determines that of all the revenue the State collects from ICMS, 25% must be passed to the Counties being 18.75% based on the amount of ICMS generated in the County and 6.25% determined by State law. That means that the State can decide how the Counties are going to receive the 6.25% of all sales tax revenue.

Considering that almost all the distribution of revenue is according to service and merchandise circulation in the Counties, it favors the more developed cities, since they are the most capable of generating tax revenue from the circulation of goods. Those who have environmental conservation areas, water reservoirs and indigenous lands revindicate to change it, because they were submitted to double penalties: on the one hand, they were confronted with restrictions on the economically productive use of part of their territory due to the environmental allocation. On the other hand, this restriction had economically disastrous consequences, which implied a reduction in the level of budgetary revenues. In fact, the logic of distribution of ICMS revenues was detrimental to Counties that produced positive environmental externalities for all others.

In order to insert more justice between the Counties, some States decided condition the distribution of part of the ICMS revenue on environmental criteria, a system now called Green ICMS. Nowadays, 18 of the 26 Brazilian States adopt this system. It created a real ecological fiscal federalism in Brazil.

The compensatory intention marking the beginning of this policy was subsequently replaced by an incentive effect. The policy aimed, initially, compensate cities whose development in the traditional economic logic was naturally restrained. However, an increasing number of cities have begun to implement environmental policies through the creation of natural parks, for example, eager to receive part of the financial resources granted on ecological criteria.

Despite the success of the environmental fiscal federalism policy in Brazil, there is not yet a defined consensus of what are the best criteria and if the institute is being effective in environmental protection.

THE TOTAL ECONOMIC VALUE OF THE CAGAYAN DE ORO RIVER BASIN

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Abstract

The study measures the total economic value (TEV) of the flow of ecosystem services from the Cagayan de Oro River Basin (CDORB) in Mindanao, Philippines. Estimates of the various components of the TEV of the CDO River Basin ecosystem can serve as the basis and justification for the contributions that may be potentially collected from different economic sectors and social groups benefiting from the ecosystem's services. The resulting estimates can therefore provide the rationale for the adaptation of the river basin-wide payment for environmental services (PES) scheme which Xavier University-McKleough Marine Center (XU-MMC) is currently undertaking in collaboration with the Cagayan de Oro River Basin Management Council (CDORBMC). Through PES, financial resources can be generated and used to reward local initiatives that restore and preserve the ecosystem. This approach has been identified as one strategic way to safeguard and enhance the continuing flow of environmental services from the CDORB.

The study looks at all potential groups of buyers or sources of rewards/payments for the providers of services to rehabilitate and preserve the CDO River Basin. As a well-protected watershed can provide security of water supply, fish supply, recreation, biodiversity, flood control and increased resilience to extreme weather events, the general public, especially those in the downstream communities, stand to benefit substantially. The research focuses on the following more massive, long-term and sustainable buyers or sources of rewards for protectors of the CDORB: (1) Households in the downstream communities, (2) Industries and institutional establishments, and the (3) Fishing and Tourism sectors.

The total value of the benefits (stable supply of good quality water, flood control, fishing and recreational value, biodiversity) that can be derived from the rehabilitation and preservation of the CDO River Basin is estimated to be about US\$5.0-6.1 million per year.

POLICIES FOR IMPLEMENTING THE PARIS AGREEMENT: AN ASSESSMENT FOR G20 COUNTRIES

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Abstract

This paper uses a spreadsheet tool, incorporating fuel projections for energy sectors and assumptions about fuel price responsiveness, to evaluate, for G20 member countries, a range of alternative carbon mitigation instruments against a range of key metrics.

Under a carbon tax (applied to the carbon content of fuel supply) reaching US \$70 per ton of CO2 by 2030, seven countries meet or exceed their Paris mitigation pledges (Argentina, China, India, Indonesia, Russia, South Africa, and Turkey), four countries come close to meeting their pledges (Brazil, Germany, Japan, United States), and eight countries fall well short (Australia, Canada, France, Italy, Korea, Mexico, and United Kingdom). Coal taxes can be reasonably effective, achieving over 60 percent of the CO2 reductions under the carbon tax in nine cases, and about 80 percent or more in Australia, China, Germany, India, Korea, and South Africa. A downstream trading system (excluding small scale emissions sources) is significantly less effective than the carbon tax, reducing emissions by between 40 and 75 percent of the reductions under the carbon tax in 16 cases. The effectiveness of electricity taxes, road fuel taxes, and energy efficiency policies is typically 15 percent or less compared with the carbon tax.

Revenues from carbon taxes are substantial, typically 1-2.5 percent of GDP in 2030 under the \$70 carbon tax and substantially more than that in a few cases. The percent reduction in local air pollution deaths under carbon taxes are similar to the percent reductions in CO2 emissions, though there are dramatic differences in the average deaths avoided per 1 million tons of CO2 reduced (between around 5 and 20 in the majority of cases, but about 80 or more in India and China). The economic welfare costs of the \$70 carbon tax are less 0.8 percent of GDP in 2030 in all but three cases (China, India, and South Africa). However, when account is taken of domestic environmental benefits the net welfare losses are generally much smaller (less than 0.17 percent of GDP) in five cases, and in 13 cases there is a net welfare gain (before even counting global climate benefits).

THEORY AND PRACTICE IN CARBON TAXES

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Abstract

While the basic concept of a carbon tax - setting a government-determined price on emissions of carbon dioxide - is simple, implementation requires policymakers to address many different design features. As a normative matter, economists have several clear conclusions regarding the "best" carbon tax design, using economic efficiency as an evaluation criterion. Although the theory of carbon taxes is well developed and estimated impacts are widely modeled, relatively less has been reported on actual practice, particularly with a focus on the details of design.

Drawing on a recently developed, nearly exhaustive, set of case studies of 17 different jurisdictions that have adopted carbon taxes, this paper compares theory and practice in carbon tax design. The case studies, developed in conjunction with the recent World Bank *Carbon Tax Guide*, are based on a combination of published reports, questionnaires and interviews with public officials familiar with the design process.

It is perhaps not surprising to observe that in practice carbon taxes have varied dramatically from the theoretical optimal. It is, however, instructive to observe the patterns and causes of deviations, particularly the political considerations that led to specific, often unique, design decisions. Understanding those patterns provides insight regarding additional research needs as well as guidance for jurisdictions preparing to develop new carbon taxes.

CHOICE OF INSTRUMENT, EFFICIENCY AND THE WTO

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Abstract

In coming to terms with the challenges posed by climate change, governments have taken a variety approaches in initiating a transition away from fossil fuels and toward renewable energy resources. This article surveys the different approaches countries have employed to support the development of solar and wind power for electricity generation and the use of biofuels for transportation. First, the article describes the different instruments used in the US and Europe, including renewable energy mandates, feed-in-tariffs, tax credit financing, fuel taxes, and fuel tax exemptions, and considers the broader regulatory contexts in which they have been employed.

Second, the article examines the interaction of each of the instruments with global trade law and the impacts of WTO decisions on carbon subsidies, carbon regulation, and choice of instrument. The article argues that global trade law steers nations toward command and control regulation and away from more efficient regulatory measures, such as taxes and subsidies. Third, the article examines the political economy associated with the WTO dispute process. While global fossil fuel subsidies and supports are many times greater than those for renewable energy and there is strong evidence of trade distortion, fossil fuel subsidies have never been challenged before the World Trade Organization. In contrast, over one dozen actions have been initiated to dispute renewable energy subsidies and supports since 1995. The article argues that this disparity is driven by the structure of the WTO dispute process and outlines possible modifications that would render the process more effective, efficient and fair.

TRADE, TAX AND ENVIRONMENT: POSSIBLE IMPACTS OF INDIA – SOLAR CELLS ON THE BRAZILIAN RENEWABLE ENERGY LAWS AND REGULATIONS RELATED TO TAXATION

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Abstract

In 2013, the U.S. filed a complaint against India before the World Trade Organization arguing the inconsistency of certain measures of India relating to domestic content requirements under the Jawaharlal Nehru National Solar Mission ("NSM") for solar cells and solar modules with the rules of the GATT, the SCM and the TRIMS (WTO/DS456).

The India-Solar Cells (DS456) is unique because India defense under the GATT General Exception Article XX(d) identified international agreements - the preamble of the WTO Agreement, the United Nations Framework Convention on Climate Change, the Rio Declaration on Environment and Development (1992), and UN Resolution A/RES/66/288 (2012) (Rio+20 Document: "The Future We Want"—as "laws and regulations" that the measures at issued were necessary to secure compliance with. Nonetheless, both the Panel and the Appellate Body rejected the defense and considered that India failed to demonstrate that the identified international provisions fell within the scope of "laws and regulations".

When two international systems clash, their strengths and weaknesses become evident. In this dispute, the fragility of the International Environment system glowed and could jeopardize environmental policies and rules enacted by Developing Countries that rely on the renewable energy market to secure high skilled jobs, transfer of technology and green development policies, i.e. Brazil.

The first part of the proposed paper will provide a comprehensive analysis of the Reports issued by the WTO Dispute Settlement Body issued in the India-Solar Cells dispute, mainly the reasons for the India's failure to demonstrate that the international environment provisions would be "laws and regulations" for the purposes of interpreting and applying Article XX(d) of the GATT. The second section will be devoted to the identification of Brazilian tax measures enacted to incentive the renewable energy sector like tax credits, i.e. The final part will demonstrate how the India-Solar Cells decisions could jeopardize the identified tax measures and the development of the renewable energy sector in Brazil.

ELIMINATING INSTABILITY UNDER REAL-TIME PRICING UTILIZING PEER-EFFECT

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Abstract

The diffusion of renewable energy can help reduce CO₂ emissions and dependence on energy supplied by nuclear power. However, the diffusion of renewable energy sources presents several major issues (e.g., unstable electricity supplies). One remarkable means of controlling electricity demand involves demand-side control based on the dynamic pricing of electricity. However, consumer behaviors regarding electricity use are complex. One typical factor pertains to the peer effect. In this paper, we evaluate how the peer effect affects adjustments made to the demand gap between each time period. To evaluate the effects of the peer effect, we establish a theoretical model that describes decision-making on electricity usage under the real-time pricing rule. In addition, we simulate the extent to which the peer effect affects the demand change in electricity between two time periods. We obtained the interesting findings such that the peer effect can decrease the demand gap between each time period and several type of consumers need to participate in the dynamic pricing rule for the stable dynamic price change.

GREEN FEES: STATE LAW LIMITATIONS ON PRICING ENVIRONMENTAL EXTERNALITIES

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Abstract

As the environmental policymaking focus shifts to the states, scholars and policymakers alike will need to pay increased attention to the ways state law defines state and local taxing authority and restricts such authority. In the coming years it seems likely that states, rather than the federal government, will take the lead on carbon pricing policy. Scholars, advocates, and state officials alike have expressed interest in state adoption of carbon taxes and cap-and-trade systems. California's cap-and-trade program is already up and running, and while a state-level carbon tax was defeated on the Washington ballot this past election, it seems likely more states will debate and ultimately enact such policies (though it remains to be seen how such policies will fare under federal preemption claims).

To the extent carbon pricing is considered a tax, state law will often govern state and local governments' ability to enact these policies. In most states, there would be fewer restrictions if such levies were classified as user fees or regulatory policies. Courts and policymakers have both struggled with the appropriate ways to categorize Pigouvian policies under existing state law frameworks.

Recent litigation in California challenging the state's auction of emissions permits as an unlawful tax shows the potential risks of ignoring these state law distinctions. Efforts in Massachusetts to craft a carbon pricing policy under the state's fee authority suggest there may be political benefits to proposing carbon fees rather than carbon taxes at the state level.

Enacting climate change policy at the state and local level will require state courts to confront new questions about the definition of a tax under state law. This paper will provide guidance as these issues are raised. The first part will provide a brief overview of state law distinctions between taxes and user fees. The second part will use the ongoing legal challenge in California as well as Massachusetts policy to illustrate the ways these distinctions play out in climate change policy. The third part will offer some suggestions for framing climate change policies under state law.

IS ENERGY TAXATION A SUSTAINABLE SOURCE OF TAX REVENUE?

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Abstract

Energy sources have been taxed in Sweden since the 1920s and the system today also includes a carbon tax, instituted in 1991. Over time, the carbon tax has increased in relative importance and has contributed to a broad range of environmental objectives. It has been crucial in the expansion of biomass use in the district heating system, and has contributed to improved vehicle fuel efficiency as well as an increased use of sustainable biofuels in the transport sector. This development has been enabled by the adoption of gradually increasing tax rates, which has given households and firms the time to adjust. At the same time, energy taxation has provided a significant and stable long-term source of tax revenue; the combined annual revenue from energy taxation on fuels has increased from around SEK 30 billion (US\$ 3.4 billion) in 1993 to around 48 billion SEK (US\$ 5.5 billion) in 2016, in terms of nominal prices.

The upward trend in revenues is, however, bound to reach a turning point. This is because the energy tax system is designed to curb the increase in energy consumption and steer the production and use of energy towards alternatives causing less emissions. Necessarily, therefore, a successful steering effect means a shrinking tax base. As tax rates near the upper limit of what is justified by associated environmental costs, this translates into falling tax revenues. So far, there has been no sign that aggregate energy tax revenue in Sweden is levelling off and the forecast is pointing towards further increases during 2018 through 2019. But distinguishing between carbon tax revenues and revenues generated by the energy tax provides further insight. In fact, revenues generated by the carbon tax in real terms show a falling trend since 2004.

A closer look at Swedish data reveals interesting insights on the sustainability of tax revenues generated from energy taxation. In my presentation at the GCET, I would like to explore this topic further and share the Swedish experience of energy taxation as a source of long-term revenue, and also provide an outlook on the future in the context of a changing policy environment.

REDESIGNING THE AMERICAN LAWN WITH LOCAL FISCAL INCENTIVES AND A NATIONAL GRASS TAX

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Abstract

A lush green lawn in the front yard has long been part of the image of the idealized American lifestyle. We spend over 30 billion dollars a year maintaining our 40.5 million acres of cultivated grass, but these direct expenditures do not reflect the high social costs associated with the "green, green grass of home." It is estimated that in some parts of the country, up to 60% of residential water use is dedicated to lawn care. Over 3 million tons of fertilizers and 30-thousand tons of pesticides are consumed annually—a rate 10 times that of the average farmer. Some 800 million gallons of gasoline are burned, with some 17 million gallons are spilled annually (compare this to the 10.8 million gallons dumped by the Exxon Valdez). Residual effects include elevated levels of noise and air pollution, along with release of greenhouse gases. The federal government has long provided de facto subsidies to large grass growers, such as golf course operators, by granting generous income tax deductions for "donation" of conservation easements (witness King Dunes Conservation, LLC vs. Commissioner). Issues of qualification and valuation have intensified recently because of President Trump's designation of large tracts of his commercial properties (Trump National Golf Clubs in Los Angeles, Bedminster, New Jersey and Mar-a-Lago, Florida respectively)—and over 70% of his personal Westchester County estate, as conservation easements. Many cities and municipalities have taken the lead in attempting to stem environmentally-damaging and resource-depleting practices. Incentives have been installed in many localities to replace large tracts of grass with xeriscaping, native flora and other gardens, and artificial-turf athletic fields. My paper will examine these "grassless alternatives" and compare them on environmental, geographic and other factors. Policy options—direct regulation and market mechanisms—will be explored as to their effectiveness. Cash rebates, property tax exemptions, and income tax credits will be among the policy vehicles examined. Local policy incentives have met with varying levels of success, but have displayed the tendency to favor wealthier taxpayers. A broader-based approach involving federal action promises a more equitable fiscal platform. I will examine the employment and efficacy of a national "grass tax," to be levied on a per-square-foot basis. A combination of national and locally-tailored policy measures can begin the long overdue task of redesigning the American lawn along more responsible comprehensive contours.

PAYMENT FOR ENVIRONMENTAL SERVICES IN THE CONTEXT OF THE NATIONAL WASTE POLICY: THE FLORIANÓPOLIS PROJECT

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Abstract

The current world scenario reflects a worrying reality regarding the sustainability of a healthy and balanced environment for present and future generations. In spite of the fact that it deals with a constitutional right, in Brazil, unfortunately, the conjuncture is not different. Guarantee provided in Article 225 of the Federal Constitution of 1988, the right to an ecologically balanced environment, of common use by the people and essential to a healthy quality of life, has been increasingly subjected to degradation which causes the imposition made by Magna Carta to the Public Power and the collectivity regarding the duty to defend and preserve it for present and future generations to become more and more indispensable, and pushing us to rethink ways to make such preservation safer and more effective. Thus, a possible solution to the Public Power is the use of taxes collected from citizens as a way of conducting desired behaviors of their taxpayers, applying rules that act as a guide to the practice of procedures beneficial to the preservation of the environment. Fritjof Capra, a theoretical physicist and writer who works in promoting ecological education, addresses the theme in his book entitled "The Hidden Connections: Science for a Sustainable Life", proposing the so-called "tax remanagement", where, through the grant of incentives, The taxpayers will adopt ecological project strategies, and the beneficial effects of these strategies will have direct consequences in obtaining tax benefits. In view of this, this paper aims to address the tax reassignment proposed by Capra, analyzing the internalization of externalities in the ambit of the Environmental Economy and its application, more precisely in the legislation related to solid waste, for the search, through application of the extra-fiscal function Of tributes, of effective ways to fulfill the duty imposed by the Federal Constitution to the Public Power of defense of the environment, through the accomplishment of ecological projects that have the desired effects and which guarantee a greater effectiveness in the intended results.

ENVIRONMENTAL SHOCKS AND COMMUNITY ENVIRONMENTAL PREFERENCES IN CANADA

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Abstract

Environmental preferences - how much we care about, and are willing to pay for, environmental improvements - play a central role in government decision-making and are an important factor in explaining individual behaviour. Key questions in the literature include how best to measure environmental preferences, whether environmental preferences have changed over time and why, and how environmental preferences influence the demand for environmental policy (Boyd and Kousky, 2015) Preferences are difficult to measure and there is limited research pertaining to Canada. Researchers have considered a variety of proxies including public opinion polls, contributions to environmentally-oriented organizations and political parties, and shares of hybrid cars, or the prevalence of green buildings, in a community (see, for example, Barrage, Chyn and Hastings , 2014 and Wang and Xu, 2016).

This paper contributes to this literature by examining the effects of local environmental conditions and proximity to negative environmental "shocks" on community environmental preferences or awareness in Canada. Different measures of community preferences are constructed using detailed data on individual financial contributions to the Green Party of Canada available at the postal code level for the period from 2004 to 2015. Communities are defined based on two different geographies: (i) forward sortation area (FSA) communities and (ii) Census Division (CD) communities. An FSA is a specific geographic area within a province or territory, defined by the first three characters of each six character postal code. Census Divisions are larger than FSAs, typically covering groups of neighbouring municipalities. There are roughly 1600 FSAs and 238 CDs in Canada. In addition to local environmental conditions and the proximity to negative environmental shocks, the empirical analysis considers a number of control variables including average income, education, and demographics.

The results will deepen our understanding of the determinants of environmental preferences in Canada. The results can also shed light on why some municipalities or provinces have moved faster or more aggressively than others on particular environmental problems, including the introduction of broad-based carbon pricing measures to address climate change in some but not all provinces in Canada.

KEEPING NUCLEAR ENERGY POWER GENERATION AFLOAT WITH ZERO EMISSION CREDITS

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Abstract

The advantages and disadvantages of nuclear energy power generation are well known. The main advantage of nuclear energy power generation is zero carbon emissions in the power generation process. It should be noted, however, that over the entire life cycle of nuclear power facilities, they do emit greenhouse gases. The main disadvantages of nuclear energy power generation are safety and security issues, nuclear energy waste disposal issues, and nuclear reactor decommissioning concerns.

In recent years, a new disadvantage of nuclear energy power generation has come into existence which is the uneconomic operation of nuclear power facilities caused by the current fossil fuel cost environment. Quite simply, nuclear power plants in the United States have become too costly to operate due to increasing supplies of reasonably priced natural gas. Many nuclear power facilities will close in the next ten years unless their operations are subsidized by customers or taxpayers of various governmental jurisdictions.

A new type of tax credit, called the Zero Emission Credit (ZEC), has been used in the State of Illinois to subsidize the operations of nuclear power facilities in order to keep them in operation as opposed to shutting them down due to uneconomic operations. Other states are reviewing the advantages and disadvantages of ZEC tax credits.

The logic behind the ZEC tax credit is that, if nuclear power facilities are forced to shut down due to uneconomic operations, there will be a net increase in carbon emissions due to the use of other energy generation facilities using fossil fuels. Thus, a ZEC tax credit will keep the nuclear energy facilities in operation with the advantage of zero carbon emissions as compared to fossil fuel power facilities. The disadvantage of a ZEC tax credit is it is a subsidy to the nuclear power industry in order to keep uneconomic facilities in operation.

This paper looks at the justifications for ZEC tax credits in keeping nuclear power facilities in operation. The paper also looks at the arguments against ZEC tax credits and how they could distort the cost of energy and be harmful to future energy power generation in the United States.

TAX AND THE ENVIRONMENT: AN EVALUATION FRAMEWORK FOR TAX POLICY REFORM - GROUP DELPHI STUDY PART II

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Abstract

This paper reports in greater depth on the Second Round of the Delphi Study undertaken by Stoianoff & Walpole in the development of a tax policy analysis framework that can be utilised to evaluate the effectiveness of Environmental Tax Measures (ETMs). It then reports on the follow-on investigations carried out jointly with the Department of Treasury to identify appropriate case studies to test the criteria ranked by the Delphi Study.

The Delphi Study Round One was undertaken by bringing together an international group of expert environmental taxation scholars (the Reference Group) to participate in a Roundtable held during the 16th Global Conference on Environmental Taxation at UTS in September 2015. It proposed to build the tax policy analysis framework from a critical assessment of the menu of factors advanced as possibilities in the prior literature. The outcomes of Round One were reported at the 17th Global Conference on Environmental Taxation in Groningen in 2016 as well as the final rankings of the pre-selected criteria in Round Two which was conducted as a Group Delphi study. However, what the Delphi study revealed was a multitude of alternative suggestions for evaluative criteria. The indication of this result is that the criteria provided by the literature are poorly expressed, mix concepts together that ought to be separated, separate concepts that ought to go together, or miss the point of being evaluative criteria. In this paper we analyse these alternative suggestions for evaluative criteria with a view to formulating the next set of pre-selected criteria to be tested in relation to three case studies identified in research conducted by Stoianoff, Walpole and Tran-Nam with Burston representing the Australian Federal Department of Treasury.

TAXING HAZE POLLUTION IN INDONESIA – A SWOT ANALYSIS IN SEARCH OPTIMAL TAX POLICY

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Abstract

The subject of the research is motivated by necessity to enforce comprehensive regulation in environmental management due to more than a decade haze pollution chapter in Indonesia especially in Sumatra and Kalimantan Island. The haze pollution source from fire that are used by people to clear and convert the land into other agricultural purposes mainly for palm oil plantation (Anderson and Bowen 2000, Heil and Goldammer 2001, Jones 2006, Miettinen and Liew 2009, Miettinen et al 2011, Gaveau et al 2014, Lestari et al 2014, Vadrevu et al 2014). Moreover, Glover and Jessup also define the pollution source are deliberately setting fires for clearing land, combined with extreme drought, consequently resulted in uncontrollable fires and spreading massive haze. Almost 80% of Indonesia's current emissions come from deforestation and the drying, decomposing and burning of its massive peat deposits (Adam, 2010). The absence of strong and comprehensive law enforcement in environmental management, the social cost resulting from the action of industries will exceed the private cost as result environmental quality will be poor. There is no short-term solution to Indonesia's fire and haze problem. Taxes on haze pollution provide clear incentives to economic agent especially firm to reduce haze pollution and find cleaner alternatives. By placing a direct cost on environmental damage, profit maximizing firms have increased incentives to economize on its use.

After briefly describing the current environmental instrument, economic instrument, and other arrangement in tackling the haze pollution, we do a SWOT analysis on economic sustainability for small holder farmers and environment sustainability. Our analysis shows that lack of interlinks policy instrument in the area environmental and economic especially in taxation. As results, Palm Oil Plantation Firm or other economic agent that rationale in term of making an economic decision resists to change their behavior in adopting sustainable palm oil model. Furthermore, lack of consistency and fail to find the root problem of policy implementation creates prolonged haze pollution episode in Indonesia. Closing the gap, this study would be as push factors in draw policy measures especially in tax area, as the last fortress, to tackling transboundary haze pollution and environmental management. Moreover, improving policy design is based on a 'forward looking' approach for improvement and not mere pollution amounts.

NOISE POLLUTION TAXES: A POSSIBILITY TO EXPLORE

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Abstract

Noise pollution has wide-ranging adverse health, social and economic effects. It is more severe and widespread than ever before, and it will continue to increase worldwide because of mechanization, urbanization and population growth. Successful noise management should be based on the fundamental environmental principles of precaution, the polluter pays and prevention.

Legal measures at different levels include effect-oriented and source-oriented instruments and involve, among others, the control of noise emissions through emission standards for road and off-road vehicles; emission standards for construction equipment; emission standards for plants; national regulations; or EU Directives. Noise control requirements in European countries are typically determined from the effects of noise on health and the environment (effect oriented). Other countries base their noise management policies on the requirement for best available technology or techniques that do not entail excessive cost (source-oriented) (e.g. for aircraft noise).

One of the possible ways for addressing noise pollution is the use of environmental taxes as a complement to CO₂ taxes. In that regard, the Mirless Report (2013) proposes to focus in two priorities: GHG emissions greenhouse and road congestion. A good design of environmental taxes to address the problem of noise pollution is also required. To that aim, it is essential to measure the environmental damage caused by noise; to define the scope and sectors (e.g. industrial, transportation or airport); to calculate the associated health costs or damage to biological diversity, and the relationship of acoustic emissions of CO₂ emissions in the case of engines; as well as seeking solutions in the sources of noise (promoting silent or insulating devices) and in the means of transmission (engines) or receivers.

Currently, in Europe, the maps resulting from Directive 2002/49/EC make it possible to better assess the impact on public noise policy and design priorities in noise management but only some States use taxes on air transport for noise pollution to mitigate sound levels or to finance compensatory measures (e.g. the French TNSA, payable by all aircraft operators whatever are their nationality, failing or their owners) and most of the countries act on taxes on the road traffic. China has adopted an important environmental tax regulation as well as in the United States (tax incentives introduced by Kentucky and Ohio).

The paper aims to analyse the state of the art of taxation on noise pollution to identify what role it can or should play within the framework of environmental taxation.

ENVIRONMENTAL TAX REFORM AND RECONSTRUCTION OF LOCAL TAX SYSTEM IN CHINA

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Abstract

In 2016, there were two significant tax reforms in China. One reform was that the business tax was totally replaced by value-added tax, which indicated the establishment of a full-coverage value-added tax system. The other was that China's environmental protection tax law was formally adopted, which indicated the establishment of the environmental tax in China. Business tax was the main local tax and provides primary revenues for local government before 2016. When the tax was repealed, local governments have to confront the challenges of reductions of local fiscal revenues. On the other side, although China's environmental protection fee system was implemented well during 1979 to 2016, there existed problems that cannot be neglected. For example, the legislation of environmental protection fees was imperfect, so that the collection procedure was inefficient and the fee management was informal. Besides, the fee rates were relatively low, so that effects of these policies were limited. Under the new environmental protection tax law, tax rates are decided by each provinces which have to solve the fiscal issues above. Therefore, this paper discusses the interaction between these two tax reforms and provides suggestions for further tax reforms in China. Firstly, this paper briefly introduces the process of China's environmental tax reforms, analyzes the effects of pollution fees, and predicts the effects of the new environmental protection tax. Secondly, this paper briefly introduces the tax sharing system and value-added tax reforms in China, analyzes the challenges of local fiscal issues under these reforms, and discusses the selection of new main local taxes. Finally, this paper discusses the construction of local environmental taxes and the reconstruction of local tax system in China, and provides suggestions for future integrations of these two reforms.

WITH SELF REGULATION TOWARDS ENERGY MARKET TRANSITIONS - OR IN SEARCH OF SMART INSTRUMENT MIXES FOR GREEN BONDS?

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Abstract

Green bonds are rapidly growing and more and more self-regulatory accreditation systems are emerging. The paper addresses the question if 'self-regulation' is efficient and effective in incentivizing clean energy investments or if a combination of other instruments should be used in addition to attract and guide investment flows. The decentralized accreditation processes of green bonds often focuses on transparency and environmental impact. Institutional investors – the key players to be engaged in green bonds – require, however, a conducive investment climate. Moreover large scale investments will have to be undertaken that are not profitable but a precondition for the success of the energy transition. The paper applies a Law and Economics methodology and also draws from the instrument choice and smart instrument mixes literature to address the research question.

CARBON TAXES – IMPLEMENTATION ISSUES AND BARRIERS

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Abstract

This paper examines the implementation issues and barriers for introducing a carbon tax at EU Member State level. Important success determinants are related to the political economy of introducing taxes (negotiations with stakeholders, concessions, changes in proposed legislation, compromises etc.) which translate inter alia into competitiveness issues, and fairness/equity/distribution issues. For these the design of the carbon tax exemptions, and safeguards to prevent progressivity and the use of the tax proceeds are important. From a legal perspective the division of competences between the various institutions and actors can determine the legal form of the tax measure and its scope. The analysis will focus on the 'frontrunner' countries in the EU which have been very successful in terms of the introduction of carbon taxes (Sweden, Denmark and Finland).

CUTTING EUROPE'S LIFELINES TO COAL: TRACKING SUBSIDIES IN 10 COUNTRIES

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Abstract

To achieve Paris Agreement climate targets, fight air pollution and protect health, as well as support a just transition to low-carbon energy systems, European countries will need to rapidly phase out coal. Driven by sharp reductions in the cost of renewable energy technologies, effective campaigns and legal action by civil society groups, governments are implementing various measures to make this happen. However, at same time, they are offering new subsidies that provide a lifeline to coal.

Although there are significant commitments by European countries to move away from coal, along with parallel pledges to end fossil fuel subsidies per se, there are limited mechanisms for holding governments to account in achieving those pledges. This report reviews subsidies to coal in 10 countries that produce 84% of Europe's energy-related greenhouse gas emissions: France, the Czech Republic, Germany, Greece, Italy, Hungary, the Netherlands, Poland, Spain and the United Kingdom (UK).

Despite significant commitments to address climate change, fossil fuel subsidies and air pollution, all 10 European countries reviewed still provided some form of subsidy to coal in 2016. In aggregate, these ten countries have provided €6.3 billion per year in continuing and new subsidies to coal (on average 2005 to 2016), across a total of 65 subsidy measures identified. Six of the 10 countries reviewed have introduced eight new coal subsidies, worth €875 million per year, since the Paris climate agreement in 2015. Although the value of several continuing and new subsidies (16 out of 65) could not be quantified, the highest level of average annual subsidies is provided by this year's G20 host, Germany. This includes over €2 billion in subsidies to coal mining, which Germany has committed to ending by 2018.

There are three key areas that European governments must focus on to achieve a complete phasing out of subsidies to coal: 1) increasing tracking and transparency, 2) ensuring all instruments to support the energy transition – such as capacity mechanisms and the EU ETS – do not subsidise coal, and 3) guaranteeing that any remaining subsidies are focused on supporting workers and communities affected by the coal phase-out.

FROM POLLUTION FEE TO ENVIRONMENTAL PROTECTION TAX: THE POTENTIAL AND LIMITATIONS OF NEW ENVIRONMENTAL TAX IN CHINA

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Abstract

Environmental Protection Tax Law of the People's Republic of China is newly promulgated, aggressively on the way to better green incentives. The proposed policy is evaluated as part of the country's layering orientation, where the gradual reform is considered an effective and durable strategy. The new law expands and upgrades the application of the polluter pays principle embedded in China's present pollution fee system, so that this "fee to tax" reform is expected to significantly improve environmental performance. With "income neutrality", the new law may also contribute to a broader tax green reform. The "Fee to tax" reform reflect the gradualism nature of this policy evolvement, which successfully complete the reform relatively quickly. "Fee to tax" enhance the legal basis and guarantee, which may strengthen the enforcement and improve the collection rate of pollution tax. However, it is the most important for a layering process to evaluate and learn so as to remedy defects in existing regulations. China's existing pollution fee system suffers from low collection rate and inappropriate pricing levels, but these fundamental problems of pollution tax have not been solved. The exemption of major pollution sources from agriculture and wastewater treatment substantially reduced regulating range of the new law. The neglect of VOCs as a whole, results in complicated contract to VOCs charge policy. Inefficient tax rate might offer little incentive for pollution reduction. The interagency interface between the tax and environmental authorities is inexplicit. The attribution and utilization mechanism of tax revenue is still unknown. An effective tax on a full range of polluting activities is a critical layer in China's steady efforts to eliminate the adverse environmental effect related to rapid economic growth. Additional improvements are obviously important before the new law is enacted.

ECONOMIC EFFECTS OF RENEWABLE ENERGY INCENTIVES

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Abstract

Due to the large environmental impact of the electric energy sector, evaluating the policy instruments employed in this arena is a particularly pressing issue. Both federal-and state-level policies play a major role in driving renewable energy development in the United States. To boost the competitiveness of renewable energy projects, the United States offers economic incentives, such as tax incentives, and imposes command-and-control regulations, which generally include legislation that directs a specific activity and determines what is and what is not permitted. The variety and complexity of policy instruments employed in the domestic renewable energy market raise questions about the policies' effectiveness. This paper argues that an increase in governmental support for renewables does not necessarily result in a corresponding increase in the deployment or generation rate of renewables. In some cases, infusing additional economic incentives into the renewable energy market might have limited to no effect on the production rate of renewable energy. Almost exclusively focusing on economic/regulatory incentives and renewable energy growth does not take into account a basic concept of "prices" that could offset or even eliminate the intended renewable energy growth. The author developed a model to describe the effects of economic and regulatory incentives on the renewable energy market. Development of the model was mainly prompted by the following question: if the government increases economic incentives for the renewable energy market, to what extent will that increase effectuate growth in the deployment of new renewable energy projects and to what extent will that increase be reflected as an increase in price for renewables? This paper presents the mechanics of the model and applies the model to the real world using data on the U.S. renewable energy market. The findings may assist policymakers in bridging the gap between conceiving of policies in theory and implementing them successfully on the ground.

INCENTIVIZING INVESTMENT IN CLIMATE ADAPTATION VIA PPP—KEY ELEMENTS OF CONTRACT DESIGN TO DEVELOPMENT SPONGE CITIES IN CHINA

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Abstract

Many Chinese cities have exposed to greater risks of flood and draught due to their outdated municipal infrastructures. As part of the effort to enhance the capacity of address extreme weather, China has embarked on the “sponge city” initiative since 2014.

Sponge city is a city that acts as a sponge with an urban environment planned and constructed to soak up almost every raindrop and capture that water for reuse. Instead of funneling rainwater away, a sponge city retains it for use within its own boundaries.

Considering the nature and scope of sponge city, the financial resources which cities need to mobilize are huge. In order to stimulate sponge cities around China, the central government give earmarked subsidiaries to pilot cities. Since the average investment of sponge city is 0.1-0.15 billion sq.km, the subsidiaries are far from enough.

To fill the gap of capital, public private partnership (ppp) has naturally been an attractive option. While the idea of ppp is easy to understand, the devils are in the details. The design of ppp contracts are crucial to mobilize and leverage private capital. Three key elements are discussed:

—Risk allocation clause. Under the general principle that specific risk should normally allocated to the party best able to assess, control and manage the risk, the author will list, based on the empirical study of ppp project contracts, item by item the allocation of risks in the context of sponge city and give suggestion on how to optimize the mix.

—Performance-based payment clause. For most sponge cities, a small part revenue comes from user charges, and most from government payment. For both part, a performance evaluation is the prerequisite to decide the payment. Relating clause must be designed carefully so that to consider the technical index, accuracy of data, and confirmation of the performance in an efficient way. Since this part of contract often contains many technical details, the general practice is to embed a framework clause in the contract and remain main part of it as the annex to the contract.

—Adjustment clause. PPP contract, as long-term contract with uncertainties, needs some adjustment clauses. Unfortunately, most ppp contracts lack of such mechanisms due to optimistic bias or some other reasons. The choice between ex ante adjustment clause and ex post negotiation depends on economic analysis of transaction cost.

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