





Year in Review July 2019-June 2020



Building sustainable prosperity in a changing global environment through rigorous, policyrelevant, interdisciplinary research and training of the next generation of leaders.

THE FLETCHER SCHOOL OF LAW AND DIPLOMACY TUFTS UNIVERSITY

Note from the Directors

Dear Friends of CIERP,

As you might expect, our reflections on the past year are overshadowed by the global disruption created by the COVID-19 pandemic. It has upended lives,

underscored societal inequalities, and cast into stark relief the urgency of combating climate change and its effects. All while making it nearly impossible to continue the field-based research core to our mission and, as with all aspects of life in the pandemic, difficult to plan for the future. We sincerely hope this report finds you and your families healthy and safe.

While in-person research quickly ramped down in mid-March, our researchers continued drafting papers, planning new studies, and collaborating remotely, whether across town or across the globe. Our faculty and students moved their courses online, and students grappled with what the pandemic would mean for internship and job opportunities. Our CIERP Advisory Board stepped in, led by co-chairs Barbara Kates-Garnick and John Harper, reaching out to their network of professionals in the environment and energy fields. Together with our staff and cooperating Fletcher offices, they organized a series of four conversations for students to ask questions of, and network with, these industry and non-profit leaders. It has been a challenging time for all of our students, but we have also had the chance to celebrate their successes: job offers, publications, and of course, graduation. Check out our section on "CIERP Students in Action" to learn more.

This year, Kelly's team, the Climate Policy Lab, focused its research mainly in China, India, and Ethiopia (page 4), while Jenny's work on the adoption of technologies for agricultural and educational outcomes has been based primarily in Niger (page 6). These and other research initiatives by our affiliated faculty have been supported by 3 Postdoctoral Scholars, 5 Research Fellows, and 39 Research and Teaching Assistants. The work has resulted in numerous publications (page 13), media inquiries (page 12), and signs of progress towards policy outcomes.

We hope you will take the opportunity to learn more about our work in the following pages. It is an honor to have your support in amplifying our research outputs, supporting our students on their career paths, and continuing to make generous gifts and grants. Thanks to your support, our annual budget crossed the \$1.5 million mark this past year (page 23) and we are excited to continue our growth with new projects and researchers in the coming year.

Please stay safe and stay in touch.

Sincerely,

Jenny C. aker

Jenny C. Aker CIERP Co-Director Professor of Development Economics

Kelly Sims Gallagher CIERP Co-Director Director of the Climate Policy Lab Professor of Energy & Environmental Policy

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By the Numbers 2019-2020



Outreach



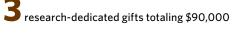
Students More on page 20 "CIERP students in action"



Research More on page 23 "finances in review"

active grants funding research expenditures of \$1,300,252

newly awarded or renewed grants totaling \$1,636,500



8 Pre- and Postdoctoral Research Fellows



Climate Policy Lab: China, India, and Ethiopia



World Sustainable Development Summit, New Delhi

Studying the solar conversion of diesel-powered water supply pumps in Ethiopia

Presentations and Committees

- Kelly Sims Gallagher was invited to become a member of the National Committee on United States-China Relations.
- In August 2019, Predoctoral Research Fellow Easwaran Narassimhan presented on "Drivers of Chinese Overseas Investments in Coal-Fired Power" at the Chinese Academy of Social Sciences.
- Kelly Sims Gallagher briefed the International Energy Agency on China's energy innovation landscape in Paris in December 2019 and gave a book talk on *Titans of the Climate*.
- In February 2020, Kelly Sims Gallagher participated in the World Sustainable Development Summit 2020, organized by The Energy and Resources Institute (TERI) in New Delhi, where she gave remarks in the session on climate

finance alongside Secretary of New and Renewable Energy Anand Kumar.

- Kelly Sims Gallagher gave a presentation at an Economist Dialogue between the United States and China on Green Stimulus Policy in April 2020.
- Over the past year, Kelly Sims Gallagher has been involved in five different Track II dialogues — and invited to participate in more this summer and fall — between the United States and China or India, organized by the Energy Foundation, Aspen Institute, Asia Society, and WRI.
- Over the past academic year, Kelly Sims Gallagher has served on the Harvard China Working Group on Managing the U.S.-China Rivalry, co-chaired by Graham Allison and Ezra Vogel. Other members include Tony Saich, Joe Dunford, Eric Schmidt, Joe Nye, and Larry Summers.

Completed Projects

- Last academic year, we completed case studies in four recipient countries (Bangladesh, Vietnam, Indonesia, and India) of China's overseas finance in South and Southeast Asia. This year, we submitted the final manuscript on "Drivers of Chinese Overseas Investments in Coal-Fired Power" for peerreviewed publication.
- We submitted a version of our paper
 "Climate Finance Policy in Practice: A Review of the Evidence," which was initially published as a CPL discussion paper, for peer-reviewed publication (see page 13).
- Qi Qi and Kelly Sims Gallagher have updated the paper comparing China's overseas investment policies with its domestic investment policies and submitted it to a peer-reviewed journal for publication. This paper was previously published as a CPL discussion paper.



Accelerating Clean Energy Technology Innovation: workshop hosted by the International Energy Agency in Paris



Ongoing Projects

- In current Belt and Road Initiative (BRI) research, we are carrying out a study on the determinants of overseas Chinese financing for renewable energy. The cases we are investigating include: Argentina, Bulgaria, Chile, Ethiopia, Kenya, Pakistan, and Romania.
- Junior Research Fellow Hengrui Liu and Kelly Sims Gallagher are working on a perspective paper titled "Why a carbon tax is better for China than cap-and-trade."
- Postdoctoral Scholar Fang Zhang and Kelly Sims Gallagher, together with partners at Harvard, are collaborating with a Tsinghua University team led by Minister Xie Zhenhua on a project entitled "Technological Systems and Innovation Policy for Climate Neutrality."
- Predoctoral Research Fellow Easwaran Narassimhan is doing a comparative study looking at the green industrial policy pathways of China and India. He is also examining how Ethiopia is addressing environmental and socio-economic objectives through its green industrialization strategies.
- Kelly Sims Gallagher and Jenny Aker are leading the CIERP team in collaborating with Professor Timothy Griffin (Friedman School of Nutrition Science and Policy), Woods Hole Research Center, and the Council on Energy, Environment and Water (CEEW) in New Delhi, to study the impacts of Community-Based Natural Farming (CBNF) on income, productivity, and resilience in India.
- Kelly Sims Gallagher will lead the CIERP team to collaborate with the Council on Energy, Environment and Water (CEEW) on green manufacturing in India.
- CPL is collaborating with the Observer Research Foundation (ORF) in New Delhi to study India's climate policy gap to achieve net-zero greenhouse gas emissions by mid-century.
- A trip to Ethiopia in November 2019 by Predoctoral Research Fellow Easwaran Narassimhan focused on how CPL can



Clockwise from top left: Papaya tree in India, Easwaran Narassimhan's research seminar on green industrialization, Climate Policy Lab retreat in January 2020, restaurant exterior in Beijing

provide research support for an initiative to convert existing diesel water supply and irrigation pumps across Ethiopia to solar-powered pumps. The trip included site visits and interviews. In collaboration with Winrock International, CPL is further researching the feasibility of quickly and efficiently scaling up solar pumping irrigation and water supply systems in Ethiopia using commercial business models. The team is preparing a policy brief on blended finance models based on this research.

- Kelly Sims Gallagher and the CPL team are collaborating with Professor of Biology Colin Orians, Northeastern University faculty affiliate Laura Kuhl, and Professor Sean Cash (Friedman School of Nutrition Science and Policy) on a project exploring the intersection of people, energy, forestry, and agriculture in Ethiopia to build resilience to climate impacts.
- Together with affiliated faculty member Abay Ezra Yimere (Addis Ababa University), we are working with the Ethiopian Ministry of Foreign Affairs on a

program proposal for Curriculum Development, Training and Capacity Building. The proposal consists of a series of training opportunities for Ethiopian diplomats and civil servants at Fletcher and in Ethiopia designed to enhance cooperation between the United States and Ethiopia.

- The Climate Policy Lab is in the process of developing a Climate Policy Performance Index to help guide climate investments, identify gaps in climate policy, assist in identification of best practices, and aid with comparative research. The index is composed of data already compiled for China and the U.S. and new policy research in India and Ethiopia and will be made publicly accessible.
- Kelly Sims Gallagher, Fang Zhang, and Rishikesh Bhandary are contributing to the work of the Thinktank2020 (T20), a research and policy advice network for the G20, by writing a policy brief about energy efficiency financing policies in practice with other experts from around the world, to be released in summer 2020.

Professor Aker's Team: Sub-Saharan Africa





Demi-Lunes in Niger

Approximately 50 percent of farmland in West Africa suffers from nutrient depletion and poor soil fertility (Scherr 1999). Since extensification is no longer a feasible strategy for most small-scale farmers, sustained yield improvements in the Sahel require intensive agricultural practices, namely, techniques that both increase the level and duration of water stored within the soil and replenish soil nutrients, such as rainwater harvesting techniques. Despite decades of investment by governments and NGOs to promote these techniques in the Sahel, the sustained adoption of such techniques remains low, estimated at 10 percent in Niger (WOCAT 2009, authors' calculations). In an effort to better understand the barriers to the adoption of these techniques in Niger, we collaborated with the Ministry of Environment and Sahel Consulting to implement several interventions in 2018, each of which were designed to encourage the adoption of these techniques. In 2019 and 2020, we collected data on the impact of these interventions on adoption and well-being. The initial results of the program are promising: Based upon field observations during the two years, the training alone had a substantial impact on adoption, with 90% of farm households adopting at least one demi-lune on their land. This translated into improvements in soil quality, agricultural production and food security. Funding from the Standing Panel on Impact Assessment (SPIA)/Bioversity and an anonymous donor in 2020 will allow us to better understand why training is so effective, and if these initial results are sustainable.

Primary School Monitoring

In remote rural areas of developing countries, teacher absenteeism is a widespread problem: In Niger, it is estimated that 30% of primary school teachers are voluntarily absent at least once per month. This not only affects students' learning outcomes, but also the motivation of other teachers, students and parents within the educational system. While numerous systems have been put in place to monitor teachers - including community teachers and parent-based monitoring systems oversight remains a significant challenge in the context of limited budgets, long distances, and weak institutions. The introduction of mobile phone technology throughout sub-Saharan Africa has the potential to affect the processes through which both teachers and education service providers are accountable to students and communities in remote rural areas. With funding from DFID-ESRC, and in collaboration with the Ministry of Education in Niger and Sahel Consulting, this research has set up a series of simple phone calls to monitor teachers' attendance, as well as provide motivational messages for teachers,

between 2018 and 2020. The initial results suggest that the phone calls improved teachers' attendance, but that it did not have an impact upon student learning in the short-term. Further work in 2020 will be to understand whether learning outcomes will occur after the second year, or if additional pedagogical support is required to assist in improved teaching.

PICS Crop Storage Bags

Cowpeas are an important cash crop for farmers in West Africa, and particularly in Niger, the second largest cowpea producer in the world. During storage, cowpeas are highly susceptible to degradation by the cowpea weevil. Despite the importance of this issue for millions of farmers and traders, adoption of a proven technology to minimize storage losses — hermetically



sealed bags, or PICS — remains low in most areas of West Africa, and Niger in particular. In 2016, and with ATAI funding, we conducted a pilot study across 63 villages and 31 markets in Niger designed to understand the barriers to adoption of this technology. Based on the insights from that study, we are working with partners in Niger to better understand the supply and demand-side constraints to the usage of these bags. In 2020, we conducted a baseline survey with traders across 180 markets. Other research activities in 2020 were disrupted due to COVID-19 measures in Niger.

COVID-19 Market Disruptions

Jenny Aker is part of a team of researchers seeking to document the effect of market disruptions due to COVID-19 on market activity, livelihoods, and prices in approximately 300 rural markets in Liberia, Malawi, and Rwanda. They will also evaluate the effect of unconditional cash transfers being provided by GiveDirectly in rural Liberia and Malawi.

Clean Energy Pathways: New England and the United States





An Energy Roadmap for the MBTA

Under the leadership of Professor of Practice Barbara Kates-Garnick, two Fletcher students worked this spring on drafting an energy roadmap for the Massachusetts Bay Transportation Authority (MBTA), which requested recommendations for its procurement and system design decisions over the coming decades. Michael Semeraro, MIB '20 and Austin Shiner, MALD '20 were part of the team working with Professor Kates-Garnick to provide recommendations to the MBTA, including ways to optimize energy procurement with respect to cost and carbon, as well as ways to support and benefit from the continued expansion of offshore wind energy. The climate change-mitigation potential of each recommendation was assessed in conjunction with the likely effect on the MBTA's financial sustainability, service reliability, and operational flexibility.

Decarbonization Policy Research

- Kelly Sims Gallagher is conducting research on accelerating deep decarbonization in the United States as part of her appointment as a member of the Committee on Accelerating Decarbonization in the United States: Technology, Policy, and Societal Dimensions for the National Academies of Sciences, Engineering, and Medicine. The research focuses primarily on social and policy transitions, and the resulting study will make recommendations to American policymakers.
- Kelly Sims Gallagher served on the Advisory Committee for the Massachusetts 80X50 Decarbonization initiative. The governor has since committed to a net zero target for 2050.
- Barbara Kates-Garnick was invited to participate as an advisory group member in a study on Electricity Reliability under Deep Decarbonization Pathways in New England convened by the Energy Futures Initiative.

Rising Power Alliances

Under the leadership of Professor Mihaela Papa, CIERP is engaged in a multi-year, federal grant-funded project studying the changing nature of alliances/coalitions in global governance, with a focus on rising power alignments and the BRICS (Brazil, Russia, India, China and South Africa) countries. The Rising Power Alliances Project examines theoretical and empirical aspects of rising power alliances/coalitions, systematically analyzes rising powers' policies across various issue areas, and studies U.S. diplomacy with respect to rising powers.

Over the past year, Professor Papa has led two postdoctoral scholars and over 20 research assistants in completing and

submitting four papers to peer-reviewed journals, setting up a case study database in wiki format to allow for regular updates, preparing for field research, and organizing a major international conference, which had to be postponed due to COVID-19. A major focus of research this past year has been to identify the drivers of policy convergence, examine BRICS cohesion, and measure policy convergence. The team has focused on analyzing BRICS behavior in three key collaboration areas: political economy (new institutions); security; and sustainable development, drawing on the empirical data gathered for the case study database. Additional data from interviews will complete the data gathering needed for the index



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RESEARCH



Beginning in 2018, the Climate Policy Lab took the lead on running a university-wide

COP25

Tufts CREATE Solutions

climate research initiative, as part of Tufts University's Research and Scholarship Strategic Plan. Over the course of the past year, the research group gained its formal title: CREATE (Climate, Renewable Energy, Agriculture, Technology, and Ecology) Solutions, with faculty from policy, engineering, economics, biology, agriculture, and nutrition joining the team to build on existing research and collaborate in new ways on emerging projects and sponsored research proposals. As of October 2019, CREATE Solutions received an additional 3 years of Tufts funding and is currently working to foster transdisciplinary research collaboration and create new research funding streams. Visit createsolutions.tufts. edu to learn more.



CIERP Founder Professor William Moomaw and climate activists Greta Thunberg and Luisa Neubauer collaborated at the "Unite Behind the Science" event at COP25



Climate Policy Lab research presentation at COP25



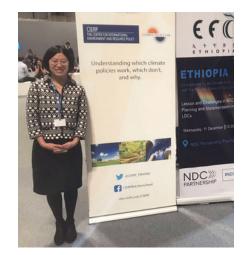
A group of Tufts delegates



Fletcher alumnus Jorge De Vincente with students Carolyn House, Ifeanyi Mbah, and Dana Thomas

In December 2019, members of the Climate Policy Lab team attended COP25 in Madrid, where they participated in conversations on global climate change policy at side events and on panels. Three new publications were released at the COP (more on page 13): (1) The CPL discussion paper "Climate Finance Policy in Practice: A Review of the Evidence." Fang Zhang and Rishikesh Bhandary hosted a side event on renewable energy financing, where they launched this paper. (2) A guidebook produced in cooperation with the United Nations Development Programme (UNDP) "Designing Fit-for-Purpose National Climate Funds: A Guidebook for Decision-Makers." (3) A policy brief on "Implementing

Paris Pledges: Highlights from African LDCs," which reviews how Least Developed Countries (LDCs) are revising their Nationally Determined Contributions (NDCs). Rishikesh Bhandary presented the policy brief at an event that CPL co-hosted with our partner, the Environment, Forest, and Climate Change Commission (EFCCC) of Ethiopia. Several Fletcher Master's students attended the COP as well, with support from CIERP's Experiential Learning Fund (see page 21). Another highlight for CIERP was that Professor Emeritus William Moomaw spoke on a panel alongside climate activist Greta Thunberg.



Fang Zhang, CIERP Postdoctoral Scholar, at the Climate Policy Lab display booth at COP25

Completed Dissertation Research





Fang Zhang and Rishi Bhandary as Tufts delegates at the United Nations Climate Change Conference, COP25, in Madrid, Spain

Fang Zhang

Formerly a Predoctoral Research Fellow, and now a Postdoctoral Scholar, Dr. Fang Zhang graduated from Tufts University in August 2019, gaining her second PhD degree (her first being in public administration from Tsinghua University in 2016) with a dissertation on how governments mobilize domestic finance for climate change by focusing on renewable energy deployment in four country cases: the United States, Germany, India, and China. Her dissertation identifies the main actors in the financing of renewable energy, particularly clarifying who are typically the first movers, followers, and laggards. Her research explains how national development banks can effectively advance the mobilization of climate finance by working as policy coordinators to increase effectiveness of national climate change policies. Her dissertation also illuminates the major barriers that hinder renewable energy financing in the four countries and analyzes how government policies best mitigate these barriers and which policies fail to do so.

Since her graduation, Fang Zhang has served as a joint postdoctoral research fellow between the Climate Policy Lab and the Belfer Center for Science and International Affairs at Harvard Kennedy School. Her main focus there is on technology and innovation policy pathways for climate neutrality. A key part of her work involves bringing experts from China and the United States together for two workshops to continue discussions on climate change and potential pathways towards carbon neutrality in 2050. Minister Xie Zhenhua is leading the expert team on the China side. Given the current challenges around climate change and the tensions between the United States and China, her work is particularly important as it can help to maintain and expand the conversation between scientists from the two largest emitters in the world. Fang Zhang is also working on a research project to explore the innovation modes of industry energy efficient technologies in China.

In early 2021, Fang Zhang will join the School of Public Policy and Management at Tsinghua University in Beijing as an assistant professor. She will continue to work on climate policy, green finance and technology innovation and technology transfer in the new position and she will also remain connected with CIERP as an affiliated faculty member.

Rishikesh Bhandary

Predoctoral Research Fellow and incoming Postdoctoral Scholar Rishikesh Bhandary received his PhD in May 2020 with a dissertation exploring the role national climate funds play in mobilizing climate finance from international sources. His dissertation analyzed the evolution of national climate funds, their design features, and their impact. He studied national climate funds in Bangladesh (Bangladesh Climate Change Resilience Fund), Brazil (Amazon Fund), Ethiopia (Climate Resilient Green Economy Facility), and Indonesia. By conducting interviews with officials and stakeholders in all four of these countries, he was able to gain firsthand accounts of these funds, which provided invaluable data.

One of his dissertation's primary findings is that national climate funds are best able to demonstrate credible commitment (of the host country) when they are anchored in national policy plans. Host country commitments are also more credible when policy implementation is already underway and when data is available to track implementation. His dissertation also highlights the fluidity of design features — policymakers continue to make adjustments as conditions evolve.

Some of the results from his research were captured in a guidebook on national climate funds for policymakers that he co-authored with Cassie Flynn from UNDP. This guidebook was launched at a side event at the annual climate change summit in Madrid in December 2019 (see page 13).

Additional Highlights



Kelly Sims Gallagher gave an address upon receiving the Faculty Research Award at The Fletcher School's 2019 Convocation

- Kelly Sims Gallagher received Fletcher's Faculty Research Award and delivered the Convocation Address in September 2019.
- Jenny Aker continued to serve as the Director of the Fletcher Leadership Program in Financial Inclusion (FLPFI).
 FLPFI is a nine-month executive education program that targets "rising star" policymakers from a variety of public institutions in developing and emerging markets, with the goal of providing



Kelly Sims Gallagher addressed delegates at the Harvard National Model United Nations conference

policymakers with the necessary skills to design, implement, and evaluate sound and innovative financial inclusion policies.

- Jenny Aker also continued to serve as the Deputy Director of the Hitachi Center for Technology and International Affairs.
- Predoctoral Research Fellow Zdenka Myslikova served as one of 5 evaluators in Brussels in October 2019 evaluating proposals to the European Commission in the area of energy innovation.

- Kelly Sims Gallagher chaired a Council on Foreign Relations salon dinner on International Climate Policy Post Paris and made opening remarks in October 2019.
- Barbara Kates-Garnick taught an invited lecture for the course Introduction to Environmental Studies at Bryn Mawr College in November 2019.
- Kelly Sims Gallagher gave a keynote address at the International Energy Agency conference on energy technology perspectives on the role of policy in energy innovation in December 2019.
- In February 2020, Kelly Sims Gallagher spoke to delegates of the "Futuristic General Assembly on Climate Change" at the Harvard National Model United Nations conference in Boston.
- Kelly Sims Gallagher briefed the JetBlue Ventures team on how to think about clean energy innovation in a net zero world in April 2020.



Events

28 total events including ...

- 4 CIERP or co-sponsored guest speakers
- 8 CIERP research seminars
- 16 Student-led or student-focused events, made possible by gifts

Event Spotlights



Students attended the first Climate Puzzles for Diplomats event, where moderators and attendees discussed climate change and international relations theory and practice.

This academic year, Predoctoral Research Fellow Zdenka Myslikova launched a series called "Climate Puzzles for Diplomats." Each event featured a guest or panel of guests who spoke on a particular topic and engaged the audience in conversation. Topics included the relevance of climate to security studies, the business world, advocacy, gender studies, and consulting. Attendees included Master's and PhD students from Fletcher and the broader Tufts community.



CIERP founder, William Moomaw, discussed with a group of over 80 members of the Fletcher and Tufts community about how to address climate change with "proforestation."

CIERP Founder and Fletcher School Professor Emeritus, William Moomaw, discussed how letting our trees grow, or "proforestation," can effectively combat the climate emergency. Professor Moomaw spoke to an audience of over 80 people — students, faculty, community members — on January 29, 2020. Prof. Moomaw also delved into the various technological approaches that companies and policy makers have considered to combat the emergency, and briefly informed the crowd about his time at COP25 in Madrid.



Fletcher student John Foster greets U.S. Senator Ed Markey while Dana Thomas and Bethany Tietjen look on. CREATE Solutions co-sponsored the Tisch College Distinguished Speaker Series October 7, 2019.



Members of the Tufts community came together to discuss how to address the climate crisis.

CIERP and The Fletcher School hosted Tufts Table: Climate Emergency for the entire Tufts community on February 13, 2020. Community members were seated randomly in breakout groups where they discussed the unprecedented rate of global warming, which is melting polar ice caps, raising sea levels, and undermining food and water security for many of the world's peoples. Questions that were raised ranged from, "How can we unlock this logjam?" to "How do we think about the need for systemic shifts along with individual responsibility?"



Students attended a CIERP networking event where they met with professionals in energy and environmental fields.

Fletcher students are navigating radically changed summer and permanent job markets due to the pandemic. In order to offer some direction to students, CIERP's Board co-chairs reached out to their networks of professionals in the energy and environmental space to hear how their organizations are managing these uncertain times. We had a total of 9 guests at 3 different sessions this spring, where we heard how they are adapting to these times and how they are planning for the next 6-12 months. They talked about what's on hold and what's being enabled, and offered advice for students entering the job market. The series concluded with a fourth wrap-up session.

In the Media

The CIERP team has frequently been invited to give expert commentary on energy and environmental policy and was quoted or published 34 times this year.

Media Highlight



In March, Kelly Sims Gallagher wrote two op-eds for The Hill. Her first piece considered how the effects of coronavirus are impacting global climate action: "Will coronavirus slow action on climate?" Subsequently, as the U.S. Congress considered necessary legislation to avert an economic depression, Gallagher urged long-term considerations for global stimulus and economic rebuilding. Some of those ideas are described in "A much-needed stimulus for today — and tomorrow," and a larger repository of policy ideas for the U.S. stimulus can be found on the CIERP website and will be continually updated.



Publications

CIERP researchers released 22 new publications this year. Links to these and all past publications are available at sites.tufts.edu/cierp/publications



Academic Journal Articles

Kuhl, L. (2019). Technology Transfer and Adoption for Smallholder Climate Change Adaptation: Opportunities and Challenges. *Climate and Development* 12, 353–368.

Hudiburg, T. W., Law, B.E., Moomaw, W.R., Harmon, M. E., and Stenzel, J.E. (2019). Meeting GHG Reduction Targets Requires Accounting for All Forest Sector Emissions. *Environmental Research Letters* 14.

Moomaw, W. R., Masino, S. A., and Faison, E. K. (2019). Intact Forests in the United States: Proforestation Mitigates Climate Change and Serves the Greatest Good. *Frontiers in Forests and Global Change*.

Quattrochi, J., Aker, J., van der Windt, P., Voors, M. (2020). Contributions of Experimental Approaches to Development and Poverty Alleviation: Field Experiments and Humanitarian Assistance. *World Development* 127.

Aker, J., Sawyer, M., Goldstein, M., O'Sullivan, M., McConnell, M. (2020). Just a Bit of Cushion: The Role of a Simple Savings Device in Meeting Planned and Unplanned Expenses in Rural Niger. *World Development* 128. Aker, J., Ksoll, C. (2020). Can ABC Lead to Sustained 123? The Medium-Term Effects of a Technology-Enhanced Adult Education Program. *Economic Development and Cultural Change* 68: 1081–1102.

Mackey, B., Kormos, C.F., Keith, H., Moomaw, W., et. al. (2020). Understanding the Importance of Primary Tropical Forest Protection as a Mitigation Strategy. *Mitigation and Adaptation Strategies for Global Change*.

Ripple, W.J., Wolf, C., Newsome, T.M., Barnard, P., Moomaw, W.R. (2020). World Scientists' Warning of a Climate Emergency. *BioScience* 70: 8–12.

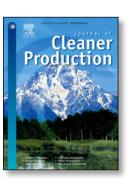
Zhang, F., Tang, T., Su, J., Huang, K. (2020). Inter-sector Network and Clean Energy Innovation: Evidence from the Wind Power Sector. *Journal of Cleaner Production*.

Aker, J., Prina, S., Welch, J. (2020). Migration, Money Transfers, and Mobile Money: Evidence from Niger. *AEA Papers and Proceedings* 110: 589-593.







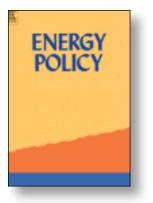


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Featured Publications







Bhandary, R.R., Gallagher, K.S., Zhang, F. (2019). Climate Finance Policy in Practice: A Review of the Evidence. Climate Policy Lab Discussion Paper.

 Building on previous research, we studied the effectiveness of different policies to mobilize finance for climate-related objectives, examining the empirical performance of seven types of green finance policies through country case studies. The results were compiled into a discussion paper, which was released as part of the CPL discussion paper series at COP25 in Madrid. One of the paper's key findings is that establishing criteria to measure the success or failure of climate finance policy should be something that all governments routinely do when designing new or reforming old climate finance policies. The discussion paper has since been submitted to a peer-reviewed journal.

Flynn, C., Bhandary, R. R., (2019). Designing Fit-for-Purpose National Climate Funds: A Guidebook for Decision-Makers. Climate Policy Lab and UNDP.

A product of multiple years of work and experience at the global, regional, national, and subnational levels, this guidebook was released at COP25 in December 2019. Authors Cassie Flynn, UNDP Strategic Advisor on Climate Change, and Predoctoral Research Fellow Rishikesh Bhandary aim to assist decision-makers at national levels in designing, establishing, operationalizing, or reforming a National Climate Fund (NCF) in a flexible and non-prescriptive manner. The guidebook illustrates how NCFs can support national policies on climate change, serve as a key interface to access and channel climate finance, and be a hub of expertise and stakeholder engagement. Apart from drawing out the links between national climate funds and the Paris Agreement, this guidebook also captures how national climate funds can support the 2030 Agenda for Sustainable Development.

Gallagher, K.S., Anadon, L.D. (2019). DOE Budget Authority for Energy Research, Development, and Demonstration Database. The Fletcher School, Tufts University; Department of Land Economy, University of Cambridge; and Belfer Center for Science and International Affairs, Harvard Kennedy School.

 We learned that this database on US energy RD&D investments, which Kelly Sims Gallagher produces annually with Laura Diaz Anadon, has been used by the International Energy Agency (IEA) in reporting on U.S. data, since the United States has not been submitting its data to the IEA for the past three years.

Zhang, F., Gallagher, K.S. (2016) Innovation and Technology Transfer Through Global Value Chains: Evidence from China's PV Industry. *Energy Policy* 94, 191-203.

A long-term success story, this publication, released in 2016, continues to be well cited. China's success as a rapid innovation follower in the infant Photovoltaic (PV) industry surprised many observers. In this paper, Fang Zhang and Kelly Sims Gallagher integrate global value chain and technology transfer theories to explore how China inserted itself into global solar PV innovation systems. This research provides valuable implications for understanding the interactions between the global value chain and clean energy innovation. The paper also offers potential insight into how the ongoing global supply chain restructuring in the context of U.S.-China decoupling will influence global clean energy innovation. The research platform Web of Science has designated it a "Highly Cited Paper," with 56 citations, including multiple recent citations in 2020. Google Scholar has tracked 130 citations.

Continued from previous page

Working Papers

Knittel, Christopher R., Tanaka, S. (2019). Driving Behavior and the Price of Gasoline: Evidence from Fueling-Level Micro Data. National Bureau of Economic Research.

Aker, J. (2019). Information and Communication Technologies and Rural Youth. IFAD Research Series 52.

Aker, J., Blumenstock, J., Dillon, B. (2020). How Important is the Yellow Pages? Experimental Evidence from Tanzania. Centre for Economic Policy Research.

Hidrobo, M., Palloni, G., Aker, J., Gilligan, D.O., Ledlie, N. (2020). Paying for Digital Information: Assessing Farmers' Willingness to Pay for a Digital Agriculture and Nutrition Service in Ghana. IFPRI Discussion Paper.

Student Series

Ramanan, A., Russell, P., Smith, K. (2020). Emerging Technologies Poised to Decarbonize Energy Markets: Affordable and Reliable Solutions for a Low-Carbon Future. *Innovation in Energy* 002.

Dockser, J., Tenney, AI, Willians, E. (2020). Meeting Energy Demand with Off-Grid Solar: Three Firms Poised to Catalyze Change. *Innovation in Energy* 003.

Book Chapter

Gallagher, K.S., Lewis, Joanna (2019). How China's Domestic Energy and Environmental Challenges Shape Its Global Engagement. *The Global Environment: Institutions, Law, and Policy.* Chapter 8: 220–245. CQ Press.

Policy Brief

Bhandary, R., van der Wansem, M. (2019). Implementing Paris Pledges: Highlights from African LDCs. CIERP Climate Policy Lab Policy Brief.

Workshop Proceedings

National Academies of Sciences, Engineering, and Medicine (2019). Deployment of Deep Decarbonization Technologies: Proceedings of a Workshop. National Academies Press.





Executive Education

We taught in 4 training programs for policymakers and other professionals this year:

- International Climate Policy, a session taught by Kelly Sims Gallagher as part of The Fletcher School's Leadership Program in Advanced Diplomacy (LPAD), for 40 senior-level diplomats from the Indian Ministry of External Affairs, through the Indian Foreign Service Institute (September 2019).
- Negotiation Skills for Participatory and Integrated Management of Wetland Resources, a 4.5-day training in Tunisia for which Mieke van der Wansem served as head of faculty. The program was organized by the Sustainability Challenge Foundation and supported by Wetlands International for their partner organizations in Tunisia and Morocco working on wetlands and river basin conservation (October 2019).
- Negotiation Skills for Development, a 6-day training in the Netherlands organized by the Sustainability Challenge Foundation and supported by the Dutch Foundation DOB Ecology for their grantees working on nature conservation in parts of Latin America and Africa, with Mieke van der Wansem as head of faculty (November 2019).
- Center for Strategic and International Studies (CSIS) executive education program on China's Belt and Road Initiative, for which Kelly Sims Gallagher was a faculty member (March 2020).



Mieke van der Wansem, head of faculty at the "Negotiation Skills for Participatory and Integrated Management of Wetland Resources" training in Tunisia, with co-faculty



Attendees at the negotiation training in Tunisia

Faculty News



Dean Rachel Kyte participated in the Q&A session at the CREATE Solutions and CIERP co-sponsored event, "Geopolitical Implications of a Rapidly Accelerating Energy Transition" with Adnan Amin

Rachel Kyte appointed Fletcher Dean

A 2002 graduate of Fletcher's Global Master of Arts Program (GMAP) and a professor of practice affiliated with CIERP since 2012, Rachel Kyte stepped into her new role as Fletcher School Dean in October 2019. Prior to becoming Dean, Kyte served as special representative of the UN secretary-general and chief executive officer of Sustainable Energy for All (SEforALL), and served previously as the World Bank Group vice president and special envoy for climate change. On New Year's Day 2020, Dean Kyte was recognized for her critical work combating climate change and her service in the field of sustainable energy, and named a Companion of the Order of Saint Michael and Saint George by Queen Elizabeth.

Melissa McCracken joins CIERP faculty

CIERP is pleased to welcome a new faculty member this fall. Professor Melissa McCracken comes to Fletcher from a position as Postdoctoral Scholar for the Program in Water Conflict Management and Transformation at Oregon State University. Recent projects include determining how to evaluate and define effective transboundary water cooperation over internationally shared waters. She has a PhD in Geography from Oregon State University, and prior to her PhD, she was a researcher at Marstel-Day and completed her MSc in Water Security and International Development at the University of East Anglia.





Amy Myers Jaffe joins Climate Policy Lab

An expert in energy policy, Amy Myers Jaffe will step in to the new role of Managing Director of the Climate Policy Lab, as well as Research Professor at The Fletcher School, starting in August 2020. She was founding director of the energy and climate policy program at Rice University's Baker Institute for Public Policy and her broad research and publication record encompasses both academia and industry.

Kelly Sims Gallagher steps into role of Academic Dean Appointed as Academic Dean starting in August 2020, Kelly Sims Gallagher has already been an integral force in helping to prepare Fletcher to be fully remote for the fall 2020 semester. Gallagher will continue to co-direct CIERP and direct the Climate Policy Lab.



Advisory Board



Andrew Darrell, Chief of Strategy, Global Energy & Finance, **Environmental Defense** Fund



John Harper, Principal and Founder, **Birch Tree Capital**



Tom Haslett, Co-Founder, Partner, TILT



John Holdren, Teresa and John Heinz Professor of **Environmental Policy**, Harvard Kennedy School



President and Co-Founder, Volta Industries



Ed Hoyt, Former director of Morgan Guaranty Trust in Central and South America and Singapore



Barbara Kates-Garnick, Professor of Practice and Senior Research Fellow, The Fletcher School



Christopher Wendel,

Faculty: Appointments are at The Fletcher School unless otherwise noted (continued on next page)



Jenny Aker, CIERP Co-Director; Professor of Development Economics



Steven Block, Academic Dean; Professor of International Economics; Director of the Program on International Development



Ujjayant Chakravorty, Professor, Department of Economics, Tufts University



Abay Ezra Yimere, Lecturer and Researcher, Addis Ababa University; Country Manager, Program for the Biosafety Systems



Kelly Sims Gallagher, CIERP Co-Director; **Director, Climate Policy** Lab; Professor of Energy and Environmental Policy

Jonathan Greenacre, **CIERP** Research Associate; Hitachi **Center Faculty Fellow**

Faculty: Appointments are at The Fletcher School unless otherwise noted (continued from previous page)



Timothy Griffin,

Associate Professor, Friedman School of Nutrition Science and Policy; Division Chair, Agriculture, Food and the Environment



Eric Hines, Professor of the Practice, Civil and Environmental Engineering; Kentaro Tsutsumi Faculty Fellow



Barbara Kates-Garnick, Professor of Practice and Senior Research Fellow



Sulmaan Khan, Associate Professor of International History and **Chinese Foreign** Relations; Denison Chair of History and Diplomacy



Laura Kuhl. Assistant Professor of Public Policy and Urban Affairs and International Affairs, Northeastern University

Gilbert E. Metcalf, Professor, Department

William Moomaw, Professor Emeritus & Founder of CIERP

Rachel Kyte,

School

Dean, The Fletcher



Andrew Light, Distinguished Senior Fellow, Global Climate Program,

World Resources Institute; University Professor of Public Policy, Philosophy, and Atmospheric Sciences, George Mason University



of Economics, Tufts University

Colin Orians, Biology, Tufts University



Miquel Muñoz Cabré, William R. Moomaw Visiting Assistant Professor of International Energy and Resource Policy



Professor, Department of



Mihaela Papa, Adjunct Assistant Professor of Sustainable Development and Global Governance



Ann Rappaport, Senior Lecturer, Department of Urban and Environmental Policy, **Tufts University**



Shinsuke Tanaka, Assistant Professor of Economics





Rocky Weitz, Professor of Practice; Entrepreneur Coach; **Director**, Fletcher **Maritime Studies** Program



David Wirth, Visiting Professor of International Law

Joel Trachtman,

the LL.M. Program

Professor of International

Law; Executive Director of



Non-Resident Professor of Practice of Sustainable Development Diplomacy; CEO, Global Center on Adaptation

Predoctoral Research Fellows



Rishikesh Bhandary, Predoctoral Research Fellow (Postdoctoral Scholar from August 2020)



Hengrui (Henry) Liu, Junior Research Fellow



Zdenka Myslikova, Predoctoral Research Fellow

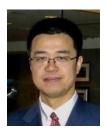


Easwaran Narassimhan, Predoctoral Research Fellow



Qi Qi, Junior Research Fellow

Postdoctoral Scholars



Zhen (Arc) Han, Postdoctoral Scholar, Rising Power Alliances project (through June 2020)



Frank O'Donnell, Postdoctoral Scholar, Rising Power Alliances project (since April 2020)



Fang Zhang, Postdoctoral Scholar and China Research Coordinator (since November 2019)

Administrators



Mieke van der Wansem, Associate Director, Educational Programs



Jillian DeStone, Assistant Director, Research Administration



Sara Rosales, Program Coordinator

CIERP Students in Action



Environmental Problem Solving visual projects display



Paris Climate Agreement simulation

Internships

CIERP is able to support a number of student interns each summer, thanks to generous gifts from friends and alums of CIERP.



Summer 2018 Result

Danny Tobin, MALD '19, who was featured in last year's spotlight for his internship in Uganda, subsequently completed his Master's thesis based on his research, and was invited to share it with the National Planning Authority in Uganda. He was told it contained key insights to guide Uganda's ongoing planning process for their third National Development Plan and the integration of climate change therein.

Coursework Highlights

Students in Professor Miquel Muñoz Cabré's course, Environmental Problem Solving, displayed their final visual projects to their peers and other members of the Fletcher community at an exhibit in December 2019. Professor Muñoz Cabré encouraged students to avail themselves of the assistance of the Tisch Digital Design Studio to create data visualizations of their final projects. These covered a range of environmental topics within the course framework.

Every year, Professor Kelly Sims Gallagher's Climate Change and Energy Policy class conducts a simulation where students take on the roles of various nations and negotiate the Paris Climate Agreement. Students work incredibly hard by vigorously debating tough questions and working to find negotiated, principled solutions.

In spring 2020, Professor Barbara Kates-Garnick joined forces with engineering professors Eric Hines and Alex Stanković to teach and mentor students studying offshore wind energy in the special topics class Power Systems and Markets. The students, from both Fletcher and the School of Engineering, combined their expertise into real-world application when the Massachusetts Department of Energy Resources (DOER) requested public comment on an independent offshore wind transmission solicitation. The team submitted two responses to the DOER that are on public record, and also attended the associated technical conference.



Summer 2019 Spotlight

Sujay Ravikumar worked at the Tropical Landscapes Finance Facility (TLFF) in Jakarta, Indonesia.

TLFF mobilizes private sector financing for sustainability projects and companies in renewable energy, technology, and fast-moving consumer goods sectors. TLFF was looking to understand the emerging electric mobility space in Indonesia for potential investment. In his role, Sujay explored the technology requirements, policy environment, and business models in this industry, with a focus on Jakarta's electric bus pilot. He examined the strategy and operations of stakeholders across the mobility value chain, engaging EV manufacturers, private fleet operators, regional government, NGOs, and ride-hailing networks. This involved coordinating partnerships and providing technical support to local partners. He prepared reports on the financial and non-financial barriers, with research on business models and financing mechanisms, which can support the electric mobility sector in Indonesia.

Summer 2020 CIERP-Funded Internships

Timothy Hu - Greentown Labs Intern Lucia Lombardo - CDP North America, Sustainable Infrastructure Fellow Seth Owusu-Mante - CPL Intern, Policy gap analysis of Ethiopia's climate policies Nik Westfield - CPL Intern, Climate Policy Performance Index



Summer 2019 intern Carolyn House in Cajon del Maipo, a source of water for Santiago, during her internship with Adapt Chile/Natural Resources Defense Council

Travel and Experiential Learning Fund

CIERP's travel and experiential learning awards went to 15 students this year. This fund is made possible by generous gifts from our donors. Read each student's reflection at sites.tufts.edu/cierp/education/travel-grants.

Mark Benedetti reflected on the interconnected needs of investors and municipalities in achieving sustainability at CDP's Green Infrastructure Investment Workshops (July 2019).

Alex Tenney gained insight into solar energy solutions for refugee camps, a topic for his capstone research, while attending the Humanitarian Energy Conference in Addis Ababa, Ethiopia (August 2019).

Huiling (Haylee) Piao wrote an open letter to the young people at the UN Youth Climate Summit in New York (September 2019)

Connor Hudson, Aesclinn Donohue, Mikalyn Rush, Farah Momen, and **Ravi Janjwadia** competed to design a solution that increases plant-based diets on the Dickinson College campus (October 2019).

Asgeir Barlaup, **Maria Elena Sandalli**, **Dana Thomas**, **Bethany Tietjen**, and **Emelia Williams** each delved into their career and research interests at the UNFCCC Conference of the Parties (COP25) in Madrid (December 2019).

Achintya Saurabh helped set up a panel on education at the Annual World Economic Forum held in Davos (January 2020).

K.C. McConnell traveled to Jaipur, India, studying biogas production within government-sponsored cow sanctuaries (January 2020).



Connor Hudson, Aesclinn Donohue, Mikalyn Rush, Farah Momen, and Ravi Janjwadia represented The Fletcher School at a design challenge at Dickinson College



A packed house in a meeting room at COP25 - the first of many several hour negotiations



Achintya Saurabh (second from right) at the Annual World Economic Forum held in Davos with Dean Rachel Kyte



K.C. McConnell traveled to Jaipur, India, studying biogas production within government-sponsored cow sanctuaries

Career Updates from CIERP Alums



Kelly Sims Gallagher is joined by Fletcher alums for dinner during her visit to Delhi, India this past January.



Ana Orians, MALD '19: Senior Associate, Ceres, Boston, Mass.

"After graduating from Fletcher, I started working as the Senior Associate for Monitoring & Evaluation on the Food and Forest team at Ceres, a sustainability non-profit headquartered in Boston. My team's work focuses on halting global deforestation resulting from

agricultural supply chains and supporting the integration of sustainability within global companies.

My primary responsibilities pertain to maintaining and expanding Ceres' internal databases, which I use to prepare findings for our teams for use in dialogues with external stakeholders. This role requires that I keep learning — currently, I'm becoming quite proficient in Excel and am gaining fluency in business finance — however, I have found that the strong foundation I built while at Fletcher has facilitated my work on many occasions. Fletcher allowed me to build upon my background in Latin American studies, and during many final projects exploring the policies and politics of land use, I became well versed in the intricate nature of global supply chains originating in the Amazon. I enjoyed the dynamic process of learning through CIERP coursework, peer collaboration, internships, events and talks."



Mathew Lee, MALD '19: Analyst, Cadmus Group, Boston, Mass.

"I now work as an Analyst on the International Climate and Energy team at the Cadmus Group. My team provides technical assistance to governments in developing countries and emerging

markets as they navigate issues like renewable energy market development and climate resilience planning. A majority of my work is currently focused on Small Island Developing States in the Caribbean and the Pacific. Often times our work has to benchmark to various international standards and best practices, so having the foundation of CIERP coursework has given me a good intuition of where to identify these requirements and what methodologies might have informed them. CIERP courses also pushed me to write concisely and feel comfortable preparing back-of-the-envelope calculations on short notice, both skills that I call on often now. It's also been a pleasant surprise to come across various Fletcher alumni along the way while interfacing with various international organizations and like-minded environmental consultancy groups."



Finances in Review

CIERP's operating budget continued to grow this year, as we recorded over \$1.5 million in total expenditures. That growth was made possible by renewed and additional grant funding, an increased level of giving, and earned income for executive education. Expenditures designated as Fletcher School Contributions include Fletcher's co-funding of staff salaries and faculty allowance funds used to support CIERP's work. University Contributions represent partial support for staffing costs from the Office of the Vice Provost for Research for the CREATE Solutions initiative (page 8).



Annual Center Growth

Total Expenditure by Source of Income FY20

Grants • \$1,300,252 • 84% Fletcher School Contributions • \$130,198 • 8% Gifts • \$69,980 • 5% University Contributions • \$26,282 • 2% Earned Income • \$19,159 • 1%

Thank you to our funders in 2019-2020:

Grant funders: Agricultural Technology Adoption Initiative (ATAI), Bill & Melinda Gates Foundation, BP International Ltd., Casey & Family Foundation, ClimateWorks Foundation, ESRC-DFID Raising Learning Outcomes in Education Systems Programme, Office of Naval Research, Rockefeller Brothers Fund, Standing Panel on Impact Assessment (SPIA)/Bioversity, William & Flora Hewlett Foundation.

Research-dedicated individual gifts: Andrew Darrell, Emily B. Haslett and Tom Haslett, Chris Kaneb

Unrestricted gifts: Michael S. Baskin, Ph.D.; Sean M. Becker and Melisa Lai-Becker, M.D.; Aaron W. Delano-Johnson; Stephen J. DeVincent D.V.M., M.A. and Ambassador Rufus Gifford; Peter M. Freudenstein; Kelly Sims Gallagher, Ph.D. and Kevin P. Gallagher, Ph.D.; John P. Harper; Barbara A. Kates-Garnick, Ph.D. and Marc B. Garnick, M.D.; Xiaoyue Hou; John P. Harper; Eric B. Katz; Min Soo Kim; Allen B. Macomber and Geraldine Macomber; Lynn E. Massengill; Zdenka Myslikova; Julia P. Radice; Jonathan Schwartz and Kirsten Schwartz; Jonathan R. Siegel and Allison R. Siegel; Brandon Smithwood; Bryan A. Stewart; Shinsuke Tanaka, Ph.D.; Mieke J. van der Wansem; Rockford Weitz, Ph.D.; Christopher S. Wendel and Hilary Wendel.

If you would like to discuss directing your gift to support a particular research or student initiative, please contact Cory Diamond, Senior Director, Development and Alumni Relations, at +1 617-627-2720 or cory.diamond@tufts.edu or Jillian DeStone, CIERP Associate Director, at +1 617-627-2778 or jillian.destone@tufts.edu.



Staying Connected

Thank you to the many supporters of CIERP and the Climate Policy Lab who make our work possible. Please connect with us to hear about our latest work and send us your own updates!

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