

## EUGENIE DUGOUA

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### Education:

2012 – Present	PhD program in Sustainable Development	Columbia University
2010 – 2013	Graduate Diploma in Economics	University of London / LSE
2006 – 2007	Cycle in International Management	Ecole des Ponts ParisTech
2005 – 2008	Diplôme d'Ingénieur	Chimie-ParisTech

*Equivalent to MSc in Chemistry and Chemical Engineering*

**Field of Specialization:** Environmental Economics

**Research Interests:** Technological Change, Energy, Innovation

**Job Market Paper:** Directed Technological Change and International Environmental Agreements: Empirical Evidence from the Montreal Protocol

Can international environmental agreements help direct technological change? An extensive literature has shown that domestic environmental policies can incentivize the development of green technologies. But it is unclear whether international agreements can do the same. Rather, they might occur only when readily available technological solutions facilitate cooperation. I provide the first empirical evidence that the Montreal Protocol, and its following amendments to protect the ozone layer, triggered a large increase in research and innovation on alternatives to ozone-depleting molecules. To do this, I use the full text of patents and scientific articles to construct new panel data of the yearly number of published documents mentioning these molecules. I first implement a difference-in-differences strategy using hazardous air pollutants as control units. I then leverage a synthetic control method to obtain more appropriate comparison units. To construct synthetic controls, I measure the similarity between molecules by applying machine learning techniques to the documents' text. The latter method estimates that the post-Montreal regime caused a 170% increase in patents and a 190% increase in articles mentioning substitutes to ozone-depleting substances; the difference-in-differences strategy yields comparable estimates. These results challenge the view that agreements foster technological diffusion without affecting much of the dynamics of innovation. Agreements can thus encourage the development of green technologies, which importantly suggests they should be negotiated as early as possible if we hope to solve global environmental problems such as climate change.

### Publications:

- Dugoua, Eugenie, Ruinan Liu, and Johannes Urpelainen. "Geographic and socio-economic barriers to rural electrification: New evidence from Indian villages." *Energy Policy* 106 (2017): 278-287.
- Dugoua, Eugenie, and Johannes Urpelainen. "Relative Deprivation and Energy Poverty: When Does Unequal Access to Electricity Cause Dissatisfaction?." *International Journal of Energy Research* 38.13 (2014): 1727-1740.

### Working Papers:

- Satellite Data for the Social Sciences: Measuring Rural Electrification with Nighttime Luminosity, with Johannes Urpelainen (Columbia University) and Ryan Kennedy (University

of Houston). Revise and resubmit.

- Peer Effects and Technology Diffusion: Experimental Evidence with Solar Lanterns in India, with Yonas Alem (University of Gothenburg).
- A Theoretical Model of Technological Change in Industrial Networks and Implications for a Green Technological Transition, with Marion Dumas (Santa Fe Institute).

### **Research and Work Experience:**

2015-2016 Research assistant, Suresh Naidu, Columbia University

2008-2010 Technical brand manager, Research & Development, Procter and Gamble, Belgium

2008 Jan-Jul Research project on nuclear waste management, Tsinghua University, China

### **Teaching Experience:**

Spring 2017 Teaching assistant, Economic Development (Miguel Urquiola)

Fall 2016 Teaching assistant, Growth and Economic Development (Xavier Sala-i-Martin)

Summer 2015 Textbook companions for *The Age of Sustainable Development* (Jeffrey Sachs)

Spring 2015 Teaching assistant, Challenges of Sustainable Development (Jeffrey Sachs)

Fall 2014 Teaching assistant, State and Society (Victoria Murillo)

Spring 2014 Teaching assistant, Political Economy of Development (Chris Blattman)

Fall 2013 Teaching assistant, Energy Economics (Gernot Wagner)

### **Honors and Awards:**

2017-2018 Dissertation Fellowship, Columbia University

2016-2017 Mellon Interdisciplinary Graduate Fellowship, Columbia University

2015 Graduate Global Policy Research fellowship, Columbia University

2012-2017 Dean's Fellowship, Columbia University

### **Service**

2014-2015, President, Sustainable Development Doctoral Society, Columbia University

2015, Lead organizer, Interdisciplinary PhD Workshop on Sustainable Development, Columbia University

2013, Lead organizer, Science and Policy Summer School, Columbia University and Science Po Paris

### **References:**

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### **Personal:**

Citizenship: French

Languages: French (native), English (fluent), Spanish (intermediate), Chinese (beginner)

Solo one-year round-the-world trip in 2010-2011 (China, India, Kenya, Tanzania, South Africa, Brazil, Peru, Egypt, Thailand).

Volunteered with Attorney General in Trujillo, Peru in 2011. Worked on a national program aimed at empowering young people from poor areas.