

# Accepted Manuscript

## From Fossil Fuels to Renewables: The Role of Electricity Storage

Itziar Lazkano, Linda Nøstbakken, Martino Pelli

PII: S0014-2921(17)30069-7  
DOI: [10.1016/j.euroecorev.2017.03.013](https://doi.org/10.1016/j.euroecorev.2017.03.013)  
Reference: EER 2981

To appear in: *European Economic Review*

Received date: 1 June 2016  
Accepted date: 23 March 2017

Please cite this article as: Itziar Lazkano, Linda Nøstbakken, Martino Pelli, From Fossil Fuels to Renewables: The Role of Electricity Storage, *European Economic Review* (2017), doi: [10.1016/j.euroecorev.2017.03.013](https://doi.org/10.1016/j.euroecorev.2017.03.013)

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



# From Fossil Fuels to Renewables: The Role of Electricity Storage\*

Itziar Lazkano <sup>†</sup>      Linda Nøstbakken <sup>‡</sup>      Martino Pelli <sup>§</sup>

April 5, 2017

## Abstract

Electricity storage represents a solution to curb emissions by enabling more use of intermittent renewable energy. Our goal is to empirically analyze the determinants of innovation in electricity storage and its role in fostering technological innovations in renewable and conventional electricity generation. Using a global firm-level data set of electricity patents from 1963 to 2011, we find that better electricity storage promotes innovation not only in renewable energy but also in conventional technologies. Specifically, our estimates show that an additional storage patent increases the probability to apply for patents in renewable energy and efficiency-improving fossil fuel technologies two years from now by 1.09% and 0.65%, respectively. This implies that improved electricity storage technologies can boost the energy efficiency of conventional, fossil fuel-fired power plants as well as increase the use of renewable electricity. Thus, the ability of electricity storage to curb carbon emissions depends on: the competitiveness of renewable energy against conventional electricity generation, and conventional power generation mix as storage increases fossil-fuel efficiency and reduces ramping costs.

**Keywords:** Electricity storage; Innovation; Electricity; Directed technical change.

**JEL Classification Codes:** O3, O4, O5, Q2, Q3, Q4, Q5

---

\*We are grateful to four anonymous referees and the journal's editors, Branko Bošković, Antoine Dechezleprêtre, Mads Greaker, Gilles Lafforgue, Linh Pham, Stephen Polasky, Aude Pommeret, Joseph Swierzbinski, and seminar and conference participants at the Montreal Natural Resources and Environmental Economics Workshop, Kiel University, the Norwegian School of Economics, Ryerson University, Université Laval, University of Aberdeen, University of Alberta, University of Leicester, University of Minnesota, University of Sherbrooke, University of Wisconsin–Madison, University of Wisconsin–Milwaukee, Tinbergen-European Research Council Conference 2016, Association of Environmental and Resource Economists Conference 2015, BEEER 2015, the CU Environmental and Resource Economics Workshop 2015, Société Canadienne de Science Économique 2015, the CESifo Area Conference on Energy and Climate Economics 2014, and the World Congress of Environmental and Resource Economists 2014 for helpful comments on earlier versions. We also thank Andreas Bjelland Eriksen, Sahar Milani, Valerie Rubalcava, Alyssa Willert, and Kelli Zeleski for excellent research assistance constructing the data set. Finally, the majority of the research was conducted during Lazkano's visit at the Department of Economics of the Norwegian School of Economics. Lazkano is indebted to the department for their hospitality and financial support.

<sup>†</sup>Assistant Professor, Department of Economics, University of Wisconsin-Milwaukee. (lazkano@uwm.edu).

<sup>‡</sup>Professor, Department of Economics, Norwegian School of Economics. (linda.nostbakken@nhh.no).

<sup>§</sup>Assistant Professor, Department of Economics, Université de Sherbrooke. (martino.pelli@usherbrooke.ca).

متن کامل مقاله

دریافت فوری ←

**ISI**Articles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات