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Accelerating Low-Carbon Innovation through Policy

Press Release for AAAS 2017
For Immediate Release



Adaptive Solar Facade (Photo: Chair for Architecture and Building Systems, Institute of Technology in Architecture, ETH Zurich)

Will innovative technologies contribute to mitigating climate change? Learn about the successes and failures of low-carbon technology innovation and how policy instruments help and hinder technological progress. Professors from ETH Zurich, MIT, and City University of Hong Kong speak on photovoltaics, wind, and lithium-ion battery storage technologies and the interplay between technological innovation and policy formulation. They will make recommendations on how to design policy portfolios to accelerate innovation in clean energy and implement low-carbon energy technologies within the context of smart cities.

Global climate change is affecting our planet and mankind; climate science is thus instrumental in informing policy makers about its dangers, and in suggesting emission limits. Science also shows that staying within limits, while meeting the aspirations of a growing global population requires fundamental changes in energy conversion and storage. The majority of low-carbon technology innovation observed in the last decades, such as the 85% cost reduction in photovoltaic cell production since 2000, was driven by largely uncoordinated national policies. These included research incentives in Japan and the U.S., feed-in tariffs in Germany, and tax breaks in the U.S.

During the [AAAS 2017 Annual Meeting in Boston](#), Tobias Schmidt, ETH Zurich – The Swiss Federal Institute of Technology in Zurich, Switzerland, Jessika Trancik, Massachusetts Institute of Technology, Cambridge, U.S.A., and Masaru Yarime, City University of Hong Kong, will review the successes and failures of policies for low-carbon technology innovation and show how characteristics of both the technologies and the policy instruments themselves helped and, in some ways, hindered technological progress. In addition, they will demonstrate how research by the innovative science community can inform policy decisions in the future to accelerate low-carbon innovation and affect the livelihood of our planet in the long-term, despite limited resources.

Modelling Technology Innovation to Accelerate Clean Energy Development

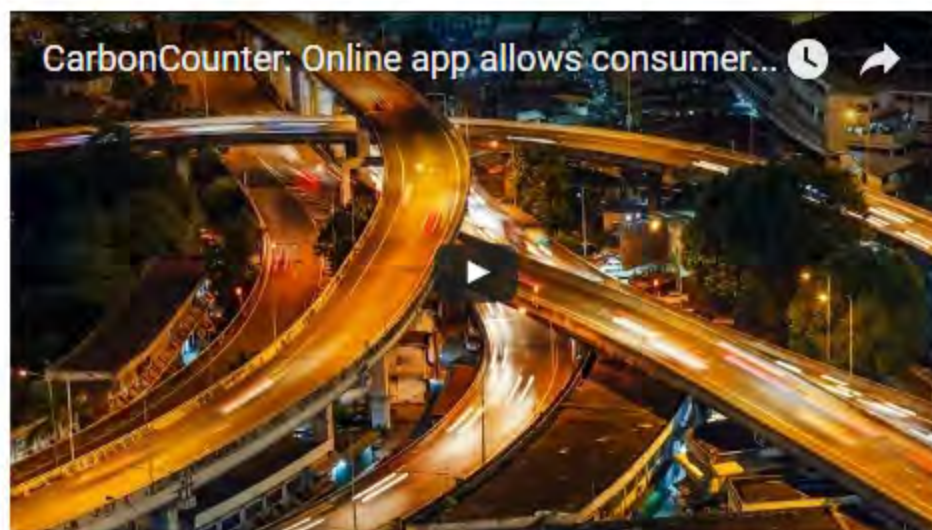
Wind and solar energy installations have grown rapidly in recent decades as their costs have fallen. It remains unclear, however, whether these trends will continue, allowing the technologies to measurably contribute to climate change mitigation. [Jessika Trancik](#), Assistant Professor of [Energy Studies](#) at the Massachusetts Institute of Technology (MIT) in Cambridge, USA, uses the case example of photovoltaic technology to uncover the key determinants of innovation from the formulation of policy to the design of technologies. She explains the feedback of emission reduction and the practical lessons that emerge for engineers and policy makers alike.

Considering Different Types of Learning in Low-Carbon Innovation Policy

Recent empirical studies demonstrate that innovation patterns and technological learning can differ strongly between energy technologies. Fostering low-carbon innovation may thus require technology-specific policy interventions. [Tobias Schmidt](#), Associate Professor of [Energy Politics](#) at ETH Zurich, Switzerland compares photovoltaics (PV), wind and lithium-ion battery storage technologies in relation to the locus of innovation in the industry value chain, learning feedback, and type of innovation. He relates his observations to technology architecture and production processes deriving implications for other energy technologies. Based on these analyses, Schmidt makes recommendations for the design of policy portfolios to accelerate innovation in clean energy.

Encouraging Stakeholder Collaboration for Smart City Innovation

[Masaru Yarime](#), Associate Professor at the School of Energy and Environment, City University in Hong Kong presents case studies from Japan and the U.S. on how low-carbon energy technologies can be implemented within the larger systems of smart cities. Their implementation calls for the promotion and integration of a variety of innovations in the electronic, housing, automotive, and infrastructure sectors. This requires collaboration and coordination with relevant stakeholders in academia, industry, government, and civil society. Yarime examines smart city projects with policy implications for platform creation, technological development, and end-user engagement.



Video on Research by Jessika Trancik, MIT

Resources

Articles/papers

["User feedback is essential, especially for complex technology"](#), interview with Tobias Schmidt, ETH Zurich.

["How a product's design hierarchy shapes the evolution of technological knowledge—Evidence from patent-citation networks in wind power"](#), scientific paper by Tobias Schmidt, Joern Huenteler et al

["Technology life-cycles in the energy sector — Technological characteristics and the role of deployment for innovation"](#), scientific paper by Tobias Schmidt, Joern Huenteler et al

["Anticipating industry localization effects of clean technology deployment policies in developing countries"](#), scientific paper by Tobias Schmidt and Joern Huenteler

["The hidden virtuous cycle of Paris climate pledges"](#), opinion article by Jessika Trancik, MIT

["Reducing emissions, improving technology: A mutually reinforcing cycle"](#), report on an MIT study by Jessika Trancik

["The future of wind and solar after Paris"](#), news article on a study by Jessika Trancik, MIT

Web

[Energy Politics at ETH Zurich](#)

[Evaluating the costs and environmental impacts of energy technologies to accelerate their improvement](#)

Connections

Meet us at AAAS 2017

["Accelerating Low-Carbon Innovation through Policy"](#)
Saturday, February 18th, 2017, 8:00 – 9:30 AM
Room 311, Hynes Convention Centre, Boston, USA

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