

Advanced Technology and the 'Energy Revolution'



UC San Diego energy expert outlines new trends in global production, advocates for policy change to provide benefits for all

By Anthony King | [UC San Diego News](#)

Three years ago, oil prices crashed from more than \$100 per barrel to about half that, and a growing number of experts and analysts think prices will stay lower for longer. But why are oil prices so low?

A central answer to this question is technology, says energy expert David G. Victor of the UC San Diego School of Global Policy and Strategy. Some of the most profound effects of advanced technology will actually be felt in the traditional energy industries, most notably oil and gas. Similar changes are also transforming the electric power industry.

Victor expands on this argument in the new essay "[The Next Energy Revolution: The Promise and Peril of High-Tech Innovation](#)." Coauthored by Kassia Yanosek, associate partner in McKinsey & Company's Global Energy and Materials practice, the essay appears in the July/August 2017 issue of Foreign Affairs,

available online June 13 and in print June 20.

The authors focus on the impacts of advanced technology in unlocking new supplies of oil and gas. The effects will be most profound, they argue, in countries whose policies are inviting to innovation — in particular, the United States.

“The coming transformation of the energy industry is, for the most, good news for the world,” they write. “But as the revolution unfolds, it will profoundly change politics, economics, and the environment. Policymakers and business leaders will need to tread carefully.”



Outlined in the essay, the most profound effects will be felt through cheap energy, which will be good for economic growth but could potentially create extremely difficult side-effects. Countries that depend on revenues from expensive oil will be hardest hit, they say: countries in the Persian Gulf are already struggling to reform, while Russia, for example, is in the midst of adjusting its government budget to the new realities of low prices.

“Most disturbing,” Victor said, “is that cheap fossil fuels will make the task of stopping global warming a lot harder.” Victor is co-chair of the [Energy Security and Climate Initiative](#) at the Brookings Institution, co-leads the UC San Diego [Deep Decarbonization Initiative](#) and co-directs the [Laboratory on International Law and Regulation](#) at the [School of Global Policy and Strategy](#).

The authors outline three trends that are leading what they call the “new energy revolution:”

- advanced management of complex energy systems,
- sophisticated data analysis that helps manage production and
- automation, or an increased reliance on non-traditional labor.

It is automation that the researchers call the most important trend driving the move to keep energy inexpensive, efficient and plentiful.

“Although people remain indispensable for critical safety roles that require complex decision-making, automation will transform the industry’s work force,” they write. Combined with better data analytics, automation will not only make managing these complex, decentralized energy grids easier, but it will also make the grids more reliable.

“The inability of grid operators to understand what is happening in real time plays an important role in many power outages; automation and improved human-computer interaction could make blackouts much rarer,” they say, while recognizing automation could drive job loss among lower-skilled workers and create new hurdles for government regulation.

Victor and Yanosek outline how these huge benefits from advanced technology are already reaching consumers, and end for a renewed call to policymakers to adjust their focus. Attention should be made to managing a “new world of cheap, plentiful energy,” they say.

“The energy revolution will have profound effects, much greater than the jobs and economic growth that the United States is already witnessing,” Victor said. “Policy makers around the world must help local industries get access to the latest technologies in order to reap these huge benefits.”