



Solar energy is getting really cheap. And that fact could alter the landscape of energy production and the course of climate change in ways we can only begin to imagine today.

One of the conundrums of climate change is trying to predict the future. This difficulty in prediction may be especially true with respect to economics and technology. In trying to figure out, for example, whether we have any possibility of stabilizing and ultimately cutting greenhouse gas emissions over the next four to five decades, it's hard to know exactly how much economic growth will occur; even more daunting is trying to figure out what the world will look like technologically fifty years from now. One need only look backwards a few years to illustrate this point: the first iPhone was released less than five years ago. More stunningly, in 1977 fewer than 50,000 personal computers were sold — today they are so ubiquitous it's hard to imagine life without them.

If private innovation and government regulation and support can work hand in hand, the field of energy technology could experience the kind of heady and rapid technological transformation we've seen in personal computing. And what's interesting about the role of government in assisting this transformation is that it may not be the U.S. government that plays much of a role. In fact, we're already seeing the combined effects that the globalization of markets and national government policies can have on energy technology and economics. The beneficiary: cheap solar power, with prices dropping so rapidly that one knowledgeable observer [predicts](#) that solar will be the cheapest energy source for many parts of the world by 2018.

Two huge developments in government policy have helped encourage this large drop in the price of solar energy. The first occurred in 2000 when Germany adopted a very aggressive feed-in-tariff policy. A [feed-in-tariff](#) provides a long term price guarantee to producers of renewable energy combined with guaranteed access to electricity grids. The price that is guaranteed depends on the type of renewable energy and can be structured in various ways; the most successful policies have covered cost plus provided a guaranteed rate of return. Germany's feed-in-tariff has had two important results: it catalyzed the development of large scale renewable energy, especially wind and solar, and it led many other countries to adopt the same policy.

The second shift in government policy occurred when China began subsidizing its solar manufacturing industry. The [Chinese approach](#) is sort of the flip side of the German one: Germany has encouraged the purchase and production of renewable energy by guaranteeing rates of return for its producers; the Chinese, by contrast, are subsidizing the

manufacture of solar technology. They are doing so by giving Chinese solar manufacturers access to cheap or even free land and cheap financing. The result is an enormous boom in Chinese solar manufacturing and a dramatic drop in the cost of solar panels. The Chinese now dominate the solar manufacturing market, producing almost 60 percent of the world's solar panels. Moreover the cost of solar energy is plunging: the New York Times [reports](#) that prices of solar energy per kilowatt hour have dropped between 30 and 40 percent just this year.

One can argue with good reason that the divergent German and Chinese approaches have significant downsides. The most obvious downside of the Chinese approach is its effect on non-Chinese solar panel manufacturers who can't compete. And the German feed-in-tariff has [raised energy prices](#) for German electricity consumers. But the combined effect of these policies also demonstrates some really interesting things about climate change policy going forward. First, change in the energy landscape can occur really rapidly and sometimes unpredictably. Second, decisions made by one nation about how to regulate energy can have huge ripple effects around the globe. Third, the energy policies of one country can interact with the policies of another in interesting and synergistic ways. We've tended to focus on the need for international policy to tackle climate change but such policy has been almost impossible to achieve. In the meanwhile, individual countries have forged ahead, sometimes with effects rippling far beyond their borders. It may be that the diversity of governmental approaches to climate and energy policy leads to innovation and rapid change in ways we've not previously recognized.