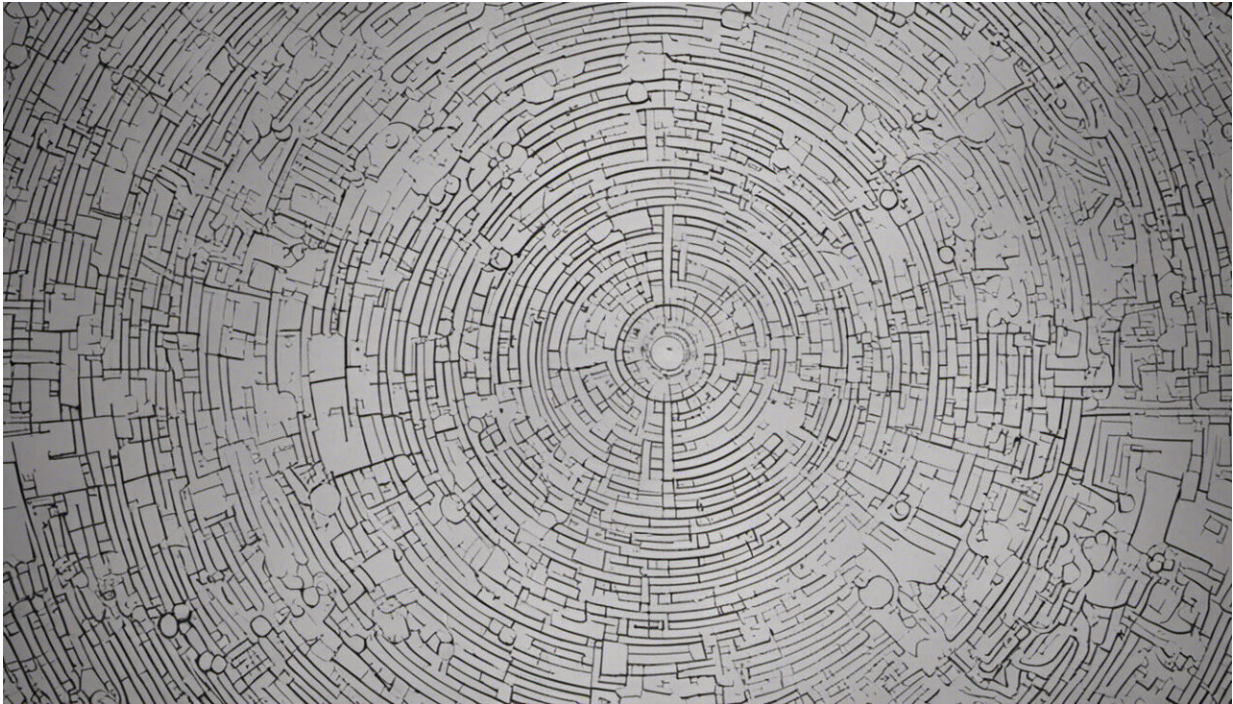


Technological innovation 'trumps' politics

June 23 2017, by Prof. Tobias Schmidt



Credit: AI-generated image ([disclaimer](#))

Technological innovation, often induced by national and sub-national policies, is a key driver of global climate and energy policy ambition and action. Donald Trump's decision to pull out of the Paris Agreement will hardly affect this trend.

US President Donald Trump recently decided to pull out of the Paris Agreement. Will this be the beginning of the end for an international

agreement that took two decades to reach? To answer this question it is important to understand why the Paris Agreement was signed by 195 countries in the first place – only six years after the failure of the Copenhagen conference.

Many political analysts argue that – besides French diplomacy – the key driver of Paris was that emission reduction pledges are voluntary. While this might be valid, in a recent comment, we argue that another, often overlooked factor was decisive: [technological innovation](#).

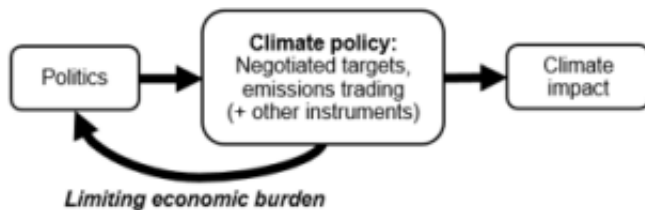
A paradigm shift in climate politics

In 2009, many low-carbon energy technologies were expensive and, even more importantly, analysts predicted rather slow cost declines.

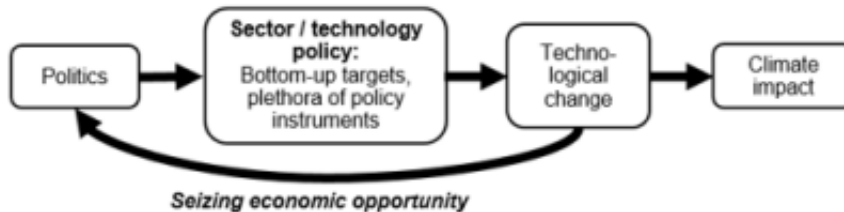
Contrary to this prediction, innovation in renewable energies, battery [technology](#), hydraulic fracturing, ICT based solution etc. massively decreased the cost of these technologies, so that today many low-carbon technologies are cost-competitive in many applications. Crucially, it was primarily national (and sub-national) policies that pushed these technologies down their learning curve and incentivized innovative activities.

These cost reductions have contributed to a paradigm shift in international [climate](#) politics, from an emissions to a technology focus, from minimizing the economic burden of [climate change mitigation](#) to seizing its economic opportunities (see figure). Politicians realize more and more that low-carbon technologies can cut costs while creating local industries and jobs. The core mechanism of international climate [policy](#) is no longer to negotiate national climate targets aimed at fair burden-sharing. The new core mechanism is to draft national policies that target low-carbon technological change.

Kyoto paradigm: emissions focus



Paris paradigm: technology focus



The interplay of politics, policy, technological change and climate change.

The challenges ahead

In other words, technological innovation served as driver of climate policy ambition. This is good news indeed. However, challenges remain: Cost-effective policies supporting the NDCs (Nationally Determined Contributions) need to be tailored to and implemented across many countries (including fossil-fuel subsidy reform and carbon pricing). Financial and technical support needs to be channeled to lower income countries. Importantly, ambition needs to be further increased as the current pledges are not sufficient to reach the agreement's target of limiting the global temperature rise to well below 2 °C.

So what to make of President Trump's decision then? In short: Pulling out of the Paris Agreement will not stop the technological mega-trend towards low-carbon technologies. Even the US low-carbon technology industry is unlikely to suffer from his decision in the short run, in part because states like California, but also many cities, are stepping in.

There are, nevertheless, potentially negative consequences. First, the US looks likely to stop its contribution to the Green Climate Fund, which helps lower-income countries in their climate change mitigation and adaptation measures. Second, the announced budget cut for US-based research in low-carbon technology will have long-term negative effects on innovation. Third, some fear that the Trump decision might lead to a bandwagon effect with other countries also pulling out. Finally, implementing policies that incentivize a shift from fossil fuels (particularly coal) to low-carbon technologies will face local resistance in the US and other countries with strong fossil fuel industries. Local fossil fuel constituencies might try to capture politics, as we have seen in the past with attempts to reform fossil fuel subsidies. They can now point to the US decision.

Overcoming resistance

To overcome local resistance, it is important to strengthen local low-carbon constituencies, i.e. both economic and political actors forming around low-carbon technologies. Creating local jobs in low-carbon technology production, assembly, installation and maintenance is a powerful lever. The cheaper these technologies get, the more likely this is going to happen. Therefore, innovation can also serve as a driver to overcome this type of resistance.

Just one day after Trump's decision, China and India announced that they will exceed their Paris pledges (mostly driven by higher-than-expected renewable energy installations). This leads us to conclude that the Paris Agreement will prevail. Technological R&D, at ETH and elsewhere, is crucial if we are to strengthen the new technology paradigm further.

More information: Tobias S. Schmidt et al. Technology as a driver of climate and energy politics, *Nature Energy* (2017). [DOI](#):

[10.1038/nenergy.2017.84](https://doi.org/10.1038/nenergy.2017.84)

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