

GCRI Interview

Dr. Patrick Graichen

Executive Director, Agora Energiewende

Based on your research, what strategies are most effective for mitigating climate change?

Climate change can primarily be attributed to the use of fossil fuels, such as for power production, heating, and transport. In order to eliminate CO₂ emissions that result thereof, the first priority should be to use energy more efficiently, therefore using less of it. The second priority should be to substitute fossil fuels with non-carbon technologies, i.e. nuclear power, carbon capture and storage (CCS), and renewable energies. New nuclear power comes at very high cost, very lengthy construction times, and a lot of long-term safety issues. CCS is not yet available on the industrial scale and is also very expensive. For these reasons, the only option which is both currently feasible and available is the use of renewable energies. In particular, solar PV and wind energy are very mature and as or even more cost-effective than new coal and gas power plants. That's the reality for most parts of the world. Therefore, to mitigate climate change, we should quickly ramp up renewable capacities and increase efficiency.

In your opinion, which technology offers the greatest potential to propel the renewable energy field forward?

Two technologies emerge as key players: wind and solar. The reason for this is that wind and solar energy are available in all regions of the world in contrast to other renewables, for instance, hydro or geothermal energy which require very specific meteorological, geographic, or geological conditions. Moreover, wind turbines and solar PV plants are nowadays a state-of-the-art technology that can often be constructed within a few months. Some of this is also true for energy from biomass. However, as biomass is important as a feedstock and there are limitations of land use, one has to carefully consider the role of biomass. For this reason, biomass can only be an addition to wind and solar PV, not a substitute.

What are your thoughts on Germany's nuclear phase-out?

The decision for the nuclear phase-out highlights the end of a more than 30-year-long debate within German society. In some years in particular, it has been really serious. The phase-out has pacified this debate. In 2011, after the Fukushima accident, all political parties in our parliament voted for the phase-out and a vast majority of the German people agree to it.

There are many reasons for this decision, but let me just highlight the most important ones: First, nuclear power plants will never be 100% safe; there is always the risk of a

major nuclear accident. In case of an incident like Chernobyl or Fukushima, substantial parts of a country will be polluted. With its high population density, Germany simply can't afford this risk. The second important reason is the concern to not further increase the amount of nuclear waste, which is highly toxic and will remain so for some 100,000 years. How can we ensure that nuclear waste will be stored safely over such a long time span? Remember, even the pyramids have only existed for 5,000 years – and we need to develop a safe storage system that works more than 20 times longer than this.

How will the energy transition affect our lifestyle in the short and long term?

I am very confident that our lifestyle will improve: In short, because the energy transition delivers better products at lower costs. Today, new renewable energy installations can generate power for the same or even lower cost than new conventional power plants. But in contrast to these options, renewable energy sources do not harm the climate and do not come with such high risks like those from nuclear energy. Similar advancements can be observed in the energy efficiency realm. Think of modern LED lighting, which only requires 10-20 percent the power that traditional light bulbs use – at comparable costs and with additional features like remote controls for different color scenes.

Moreover, consumers are becoming active players within the power system. In the past, they were confined to passive behavior like purchasing electricity delivered by utility monopolies. Now consumers are increasingly generating energy locally as part of their electricity consumed and can potentially adjust their energy demand as a response to price and regulatory incentives.

What challenges lie ahead for gaining the general public's acceptance of this energy transition?

Overall public acceptance continues to be high. About 90 percent of people in Germany support the energy transition. A recent government poll showed that conventional power has lost all backing within society: only five percent of people want coal to play a role in the future German power system; nuclear follows at eight percent. Compare that to solar PV with 85 percent support and wind energy with 77 percent support and you can tell that Germans are absolutely serious about this energy transition. The challenge is to maintain this level of acceptance, which requires keeping costs low and security of supply high. With the costs of new renewables coming down continuously and the power outage rate per customer now being at an all-time low of 12 minutes per year, we are on track with these issues as well.

What people also increasingly recognize is that Germany is not a special case. There is a continuous deployment of renewables now occurring in a growing number of places around the world, such as the 50% renewables target by 2030 adopted by the state of California and India's plans to build 100 gigawatts of solar by 2022.