

It only takes a few countries to kickstart a decarbonisation revolution

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In 2016, more renewable energy was added to the global grid than ever before, and at a lower cost. A global energy revolution is clearly underway.

What catalysed this transformation?

In our latest study, [Faster and Cleaner 2: Kick-Starting Decarbonization](#), we looked at the trends driving decarbonisation in three key sectors of the global energy system – power, transportation and buildings.



By following the emission commitments and actions of countries, we examined what forces can drive rapid transition through our [Climate Action Tracker analysis](#).

It turns out that, in these fields, it has taken only a few players to set in motion the kind of transformations that will be necessary to meet [the Paris Agreement's target](#) of keeping the global temperature increase to [well below 2°C](#), ideally to 1.5°C, over its pre-industrial level.

Renewable energy on its way

The most progressive field in the power sector is renewable energy. Here, just three countries – Denmark, Germany and Spain – were able to show the way and start an international shift.

All three introduced strong policy packages for wind and solar that provided clear signals to investors and developers to invest in these new technologies. Renewable energy targets and financial support schemes, such as feed-in tariffs, were central to them.

By 2015, 146 countries had implemented such support schemes.

Next, we established that the United Kingdom, Italy and China, along with the US states of Texas and California, pushed bulk manufacturing of solar technology even further and provided the kinds of economies of scale that led to this massive increase in renewable capacity globally.

Between 2006 and 2015, global wind power capacity increased by 600%, and solar energy capacity [increased](#) by 3,500%.

Solar is projected to become the cheapest energy generation source by 2030 in most countries. In some regions, renewables are [already competitive with fossil fuels](#).

Information [released this month](#) by the United Nations Environmental Programme and Bloomberg New Energy Finance confirms that, in 2016, the rate of renewable take-up rose yet again, with clean energy providing 55% of all new electricity generation capacity added globally. This is the first time there was more new renewable capacity than coal.

Investment in renewables doubled that of investment in fossil fuels. Yet clean power investment dropped 23% from 2015, largely because of falling prices.

To meet the goals of the Paris Agreement, we need to fully decarbonise the global energy system by mid-century. That means the historic trends in the energy sector – 25% to 30% annual growth in renewables – must continue for the next five to ten years.

This will require [additional policies](#) and incentives, from increased flexibility in the energy system to new regulatory and market approaches.

Electric vehicles poised to take off

A similar trend is beginning to transform [the transportation sector](#). In 2016, more than one million electric vehicles were sold, and new sales continue [to exceed projections](#).

Again, our research tells us that it took only a few players to kick off this trend: Norway, the Netherlands, California and, more recently, China.



Their policies focused on targets for increasing the share of electric vehicles for sale and on the road, campaigns to promote behavioural change, infrastructure investment, and research and development.

The European Union saw sales of electric vehicles [pick up](#) in 2013. And in the US, their market segment grew between 2011 and 2013, slowed down slightly in 2014 and 2015, and [bounced back](#) again in 2016.

China's market took off a little later, in 2014, but sales there [have already surpassed](#) both the US and the EU.

Though, to date, it lags behind the renewable power sector, the electric vehicle market is poised to see a similar boom. Current sales numbers are impressive, but we are still far from seeing a transportation transformation that would allow us to meet the Paris Agreement targets.

For the world to meet the upper limit of 2°C set in Paris, half of all light-duty vehicles on the road would need to be electric by 2050. To reach the 1.5°C target, nearly all vehicles on the road need to be electric drive – and no cars with internal-combustion engines should be sold after roughly 2035.

To get us going down that path, more governments around the world would need to introduce the same strict policies as those adopted by Norway and The Netherlands.

Buildings come in last

The third sector we examined is buildings. Though higher energy efficiency standards in appliances are really starting to curb emissions, emissions from heating and cooling buildings have been much more difficult to phase out.

There are proven technological solutions that can result in new, [zero-carbon buildings](#). If designed correctly, these constructions are cost-effective over their lifetime and can improve quality of life.

In Europe and elsewhere, there are some good initial policies on new building standards that make new constructions more environmentally friendly, and some EU states – the United Kingdom, France and the Netherlands among them – are also beginning to mandate that older buildings be retrofitted.

Still, the rate of retrofitting falls well short of what is required to substantially drop building emissions.

Innovative financial mechanisms to increase the rate of retrofitting buildings, along with good examples of building codes for new constructions, would go a long way to drive adoption of [these technologies](#).

And, as our study showed, only a handful of governments (or regions) would need to make a move to kick-start a transformation. It worked for energy and transport – why not buildings, too?

The more governments work together sharing policy successes, the bigger the global transformation. With collaboration, we can meet that 1.5°C goal.

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