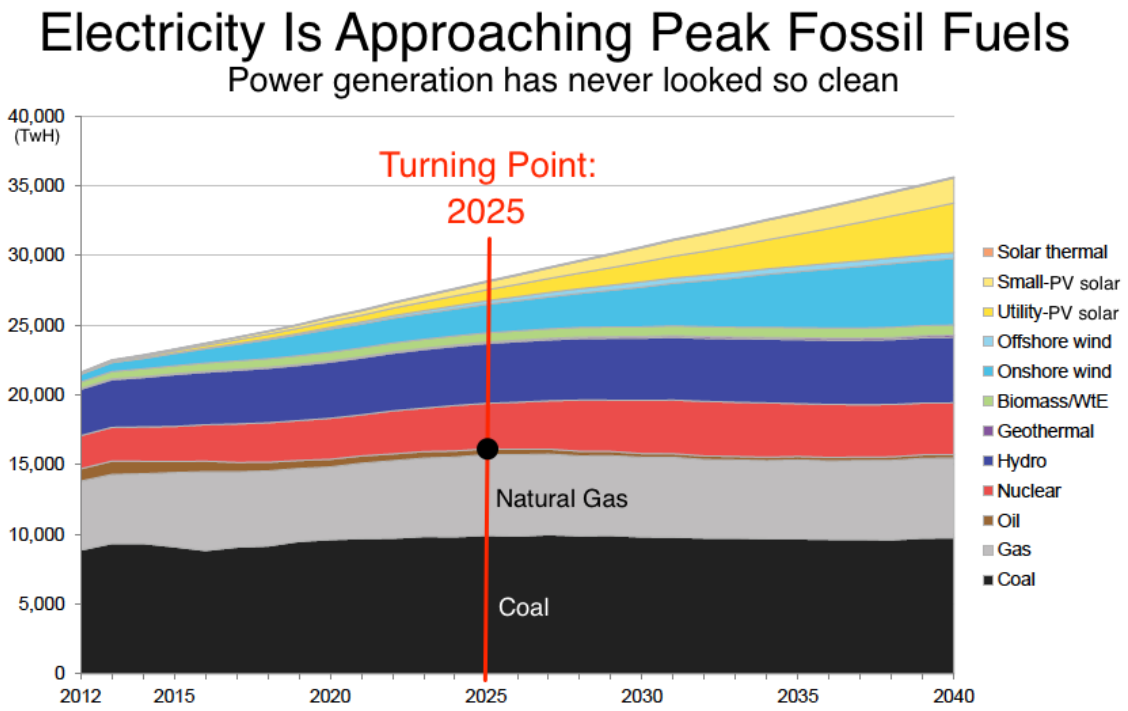
IEAGHG Information Paper: 2016-IP17; Bloomberg NEO 2016, Powering a Changing World

Bloomberg have released their New Energy Outlook (NEO) for 2016, entitled "Powering a changing World" New Energy Outlook (NEO) is Bloomberg New Energy Finance's annual long-term view of how the world's power markets will evolve in the future. The Executive Summary of the report can be found at: http://www.bloomberg.com/company/new-energy-outlook/?utm_medium=homepage&utm_campaign=NEO2016&utm_source=carousel&utm_content=link&utm_term=

The report forecasts that there are a number of significant changes that will occur to global power markets in the coming decades which are discussed briefly in the following sections.

1. There Will Be No Golden Age of Gas

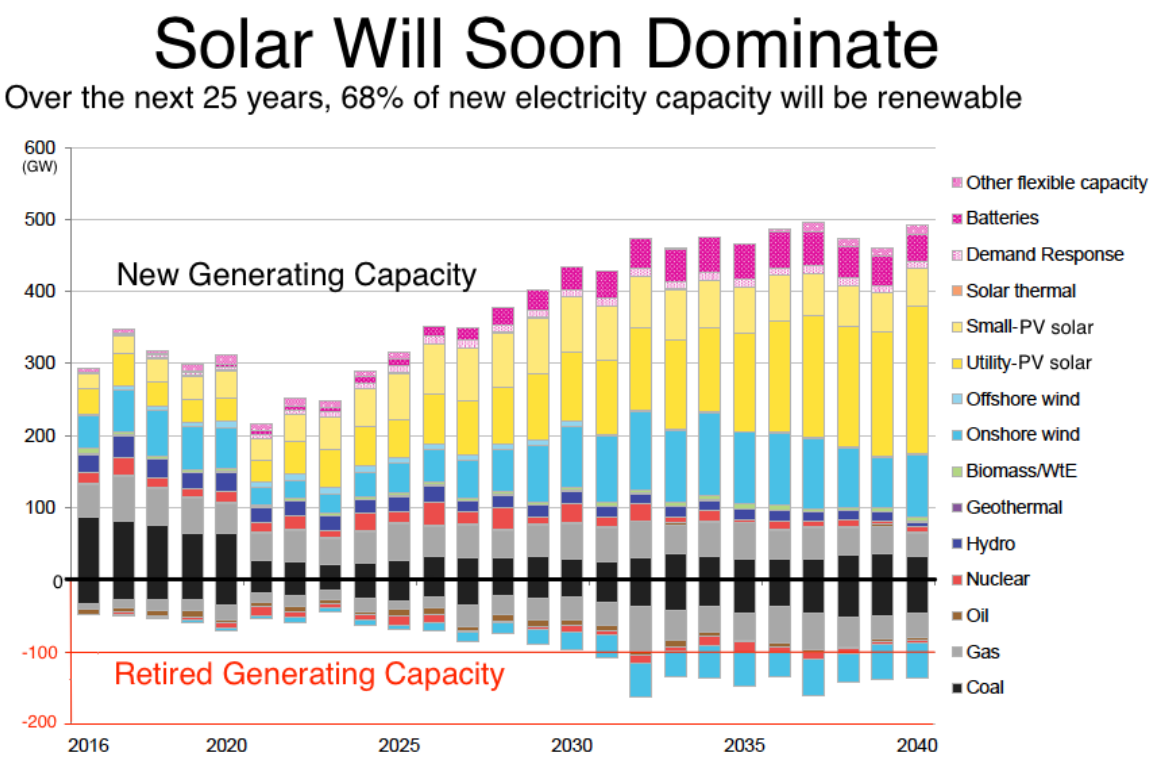
The argument proposed by Bloomberg is that since 2008 cheap natural gas has changed the power market in the USA, with gas replacing coal for power generation. Bloomberg suggest that this is a North American phenomenon and talk of gas acting as a "bridge fuel" that moves the world from coal to renewable energy will not happen. The reason for this they propose is that the costs of wind and solar power are falling too quickly for gas ever to dominate on a global scale. They predict that the peak year for coal, gas, and oil is 2025.



2. Renewables investment is greater than fossil fuels.

Global investment in renewables they suggest dwarf that in fossil fuels. Investments in fossil fuels will add up to $2.1 trillion through 2040, but renewables will reach $7.8 trillion in that time: including $3.4 trillion for solar, $3.1 trillion for wind, and $911 billion for hydro power.

The report suggests that already, in many regions, the lifetime cost of wind and solar is less than the cost of building new fossil fuel plants, and that trend will continue. By 2027, they suggest that building new wind farms and solar fields will often be cheaper than running the existing coal and gas generators.



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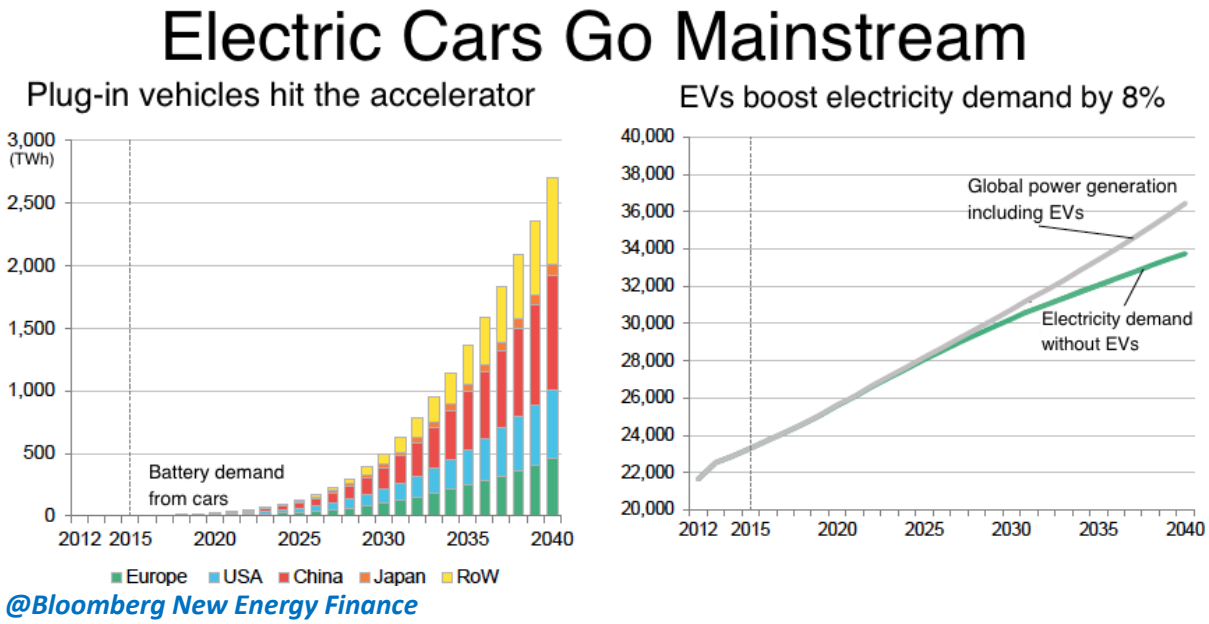
A new component this year they suggest is flexible capacity—technology, primarily large batteries for the home and grid, that smooths out the peaks and valleys inherent in wind and solar power. Bloomberg forecast that by 2028, batteries will be as ubiquitous as rooftop solar is today.

3. Electric Cars Rescue Power Markets

For cars, Bloomberg predict that peak oil demand will occur after that of coal and gas for electricity generation. They claim that the sudden rise of electric cars is on the verge of disrupting oil markets as well, and that will have profound implications for electricity markets as more cars plug in.



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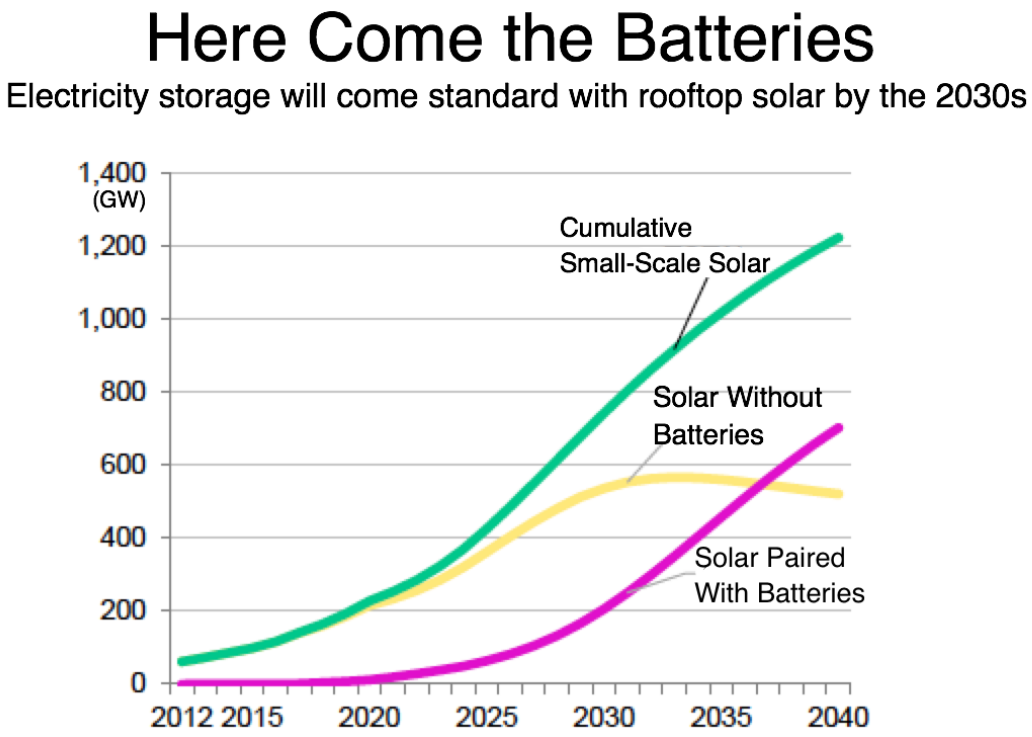
The charts on the previous page shows how Bloomberg assess the soaring demand for battery capacity for cars and the difference that EVs will make to power demand worldwide. The adoption of electric cars will vary by country and continent, but overall they will cause global energy demand to rise by add 8% by 2040.

4. Batteries Join the Grid

Bloomberg predict that Renewable energy and electric cars create a virtuous cycle of demand growth. Unlike fossil fuels—where a surge of demand leads to higher prices—with new energy technologies more demand begets more scale, and that drives prices lower. The scale-up of electric cars increases demand for renewable energy and drives down the cost of batteries. And as those costs fall, batteries can increasingly be used to store solar power.



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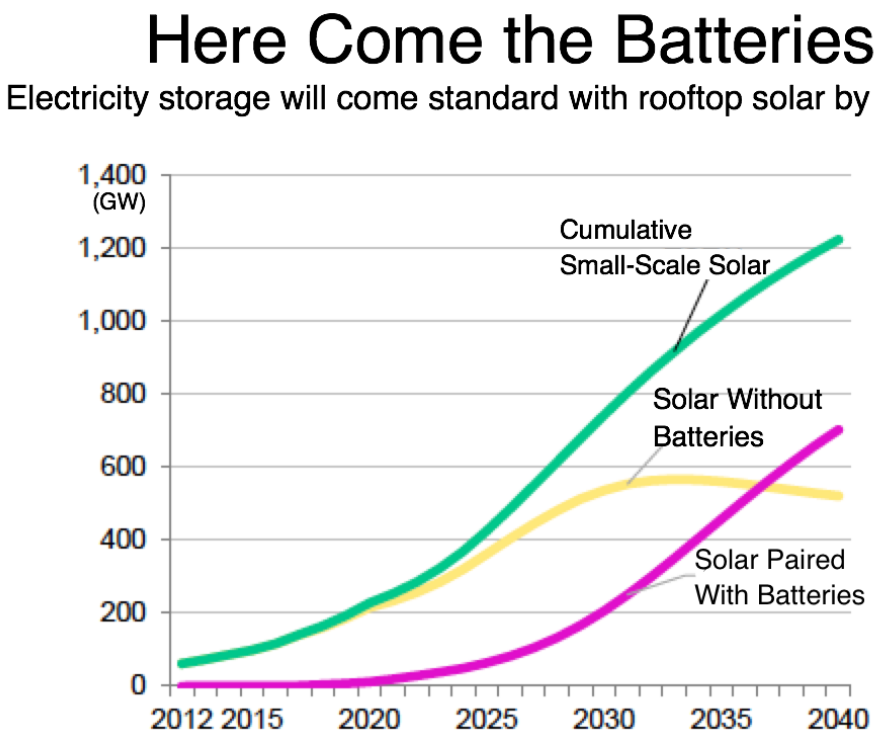
5. Solar and Wind Prices Plummet

Bloomberg's analysis suggests that for every doubling in the world's solar panels, costs fall by 26 percent, a number they call "solar's learning rate." Solar because it is a technology, not a fuel, and as such it gets cheaper and more efficient over time, a factor they claim is driving the energy revolution they forecast in this report.

According to Bloomberg, wind-power prices are also falling fast—19 percent for every doubling. Wind and solar will be the cheapest forms of producing electricity in most of the world by the 2030s.



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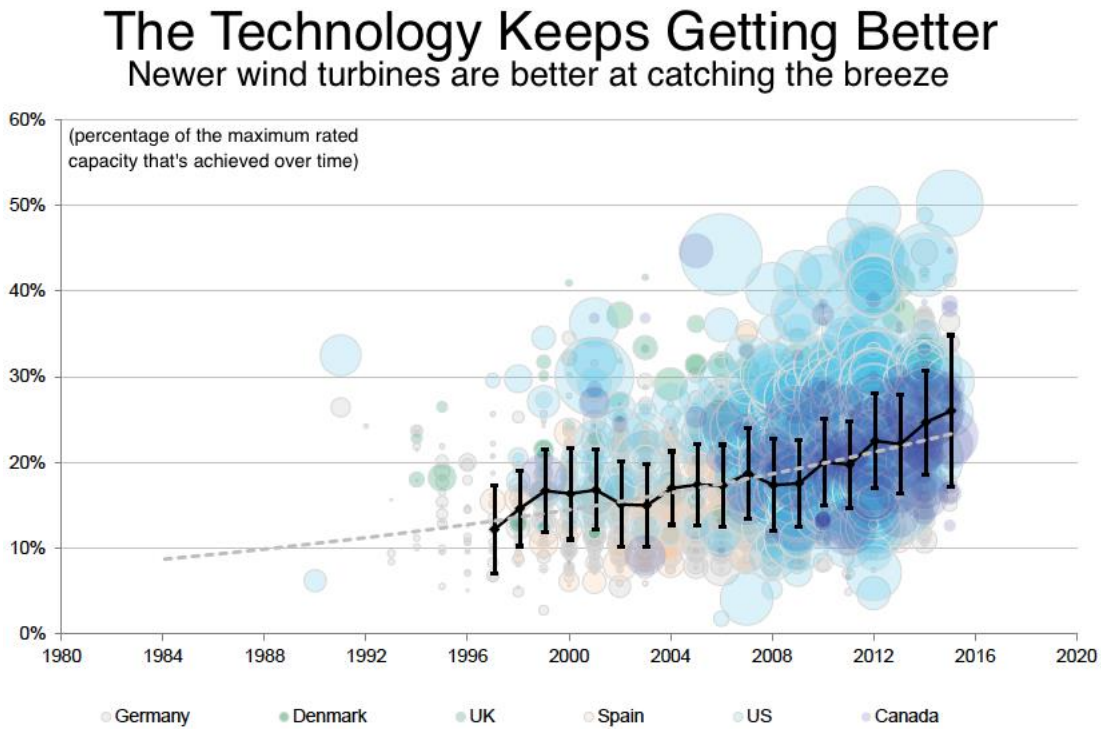
6. Capacity Factors Go Wild

Bloomberg claim that one of the fast-moving stories in renewable energy is the shift in what's known as the capacity factor. That's the percentage of a power plant's maximum potential that's actually achieved over time. They suggest that as technologies continue to improve and as project designers get smarter about their placement, the capacity factors of renewables are increasing.



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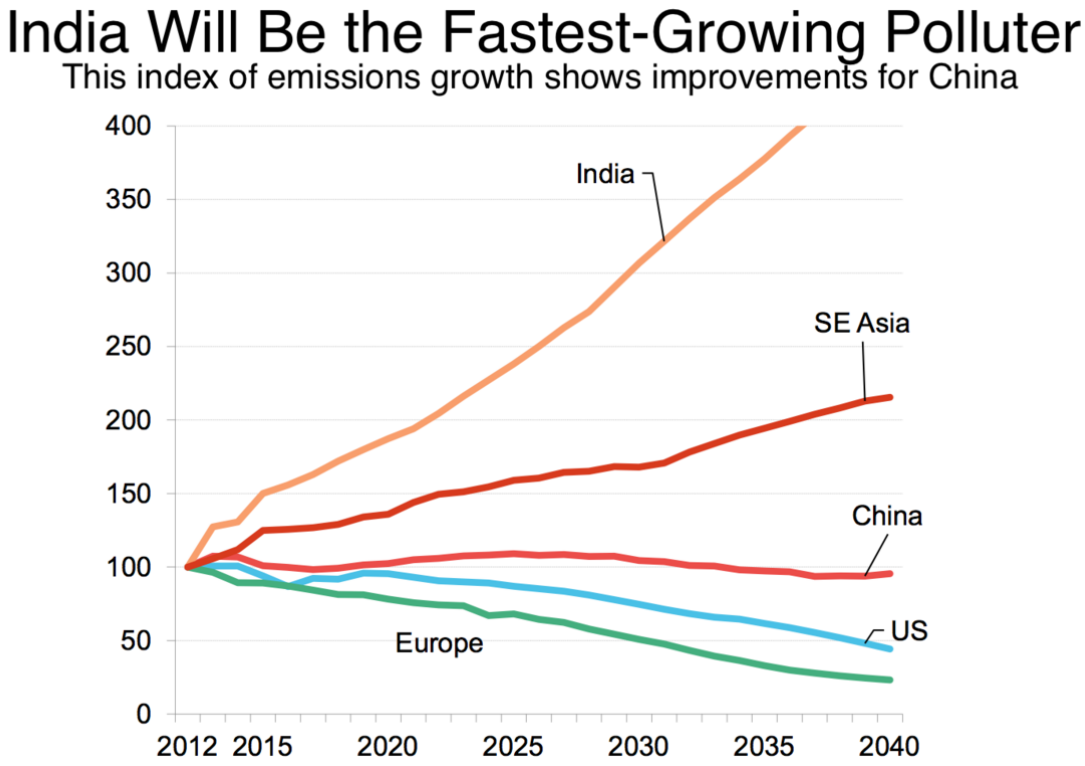
Some wind farms in Texas are now achieving capacity factors of 50 percent, according to Bloomberg Improving capacity factors make renewables more attractive. But capacity factors of gas and coal plants are also changing. Bloomberg propose that because renewable are not fuels, once a solar or wind project is built, the marginal cost of the electricity it produces is pretty much zero, which is a debateable point. Whilst coal and gas plants require more fuel for every new watt produced. According to Bloomberg, if you're a power company with a choice, "*you choose the free stuff every time".*

They conclude that as natural gas and coal plants are increasingly idled in favour of renewables, their capacity factors will take a big hit, and lifetime cost of those plants goes up. They suggest we thank of these plants as "*expensive back-up power for cheap renewables"*

7. A New Polluter to Worry About

China, the biggest and fastest-growing polluter, has become a major global environmental concern over the past few decades. However Bloomberg feel this situation is changing rapidly.. China's evolving economy and its massive shift from coal to renewables mean it will have the greatest reduction in carbon emissions of any country in the next 25 years. This they suggest is good news for the climate and is a significant change for the global energy outlook.



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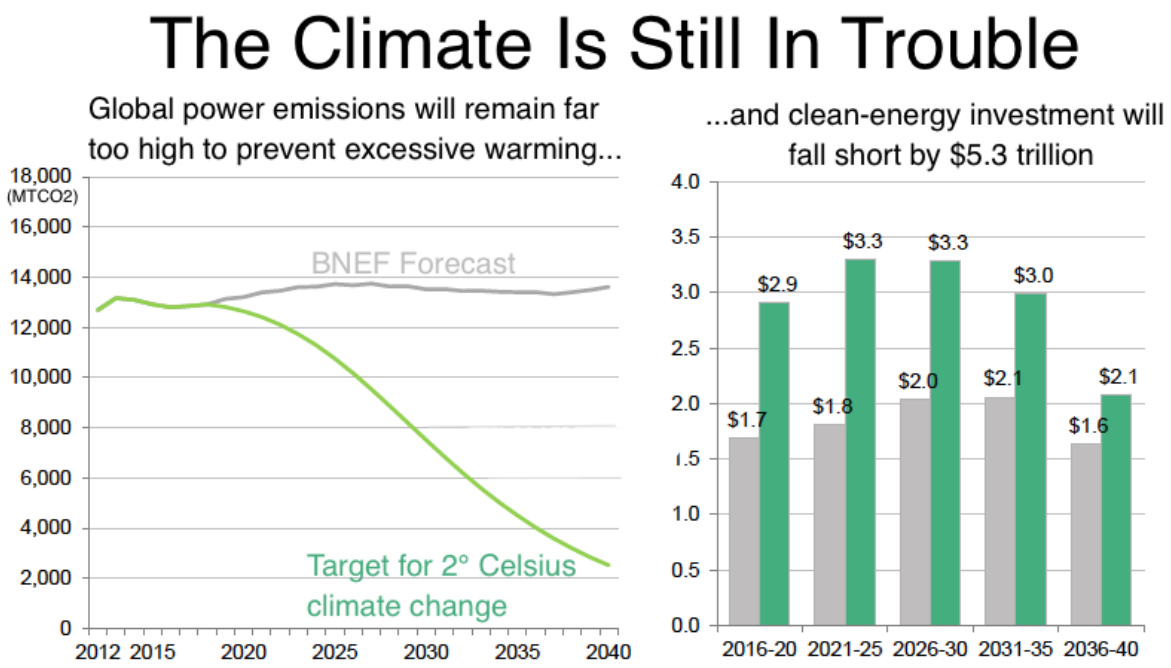
The downside to this Bloomberg suggest is that leaves India, which is emerging as the biggest threat to efforts to curb climate change. India's electricity demand is expected to increase fourfold by 2040, and the country will need to invest in a variety of energy sources to meet this overwhelming new demand. India has hundreds of millions of people with little or no access to electricity, and the country intends to use coal to meet its growing energy dean they predict.

8. The Transformation Continues

Bloomberg suggests that their outlook for carbon dioxide emissions has improved significantly over the past year, despite cheap fossil fuel prices. The shift to renewables they suggest is happening fast—but not fast enough to prevent perilous levels of global warming.



They summarise by saying that without additional policy action by governments, global carbon dioxide emissions from the power sector will peak in the 2020s and remain relatively flat for the foreseeable future. However that's not enough to prevent the surface of the Earth from heating more than 2 degrees Celsius, according to Bloomberg.

It is worth noting Bloombergs's report focuses on fundamental economics: price, demand, supply. It includes climate-related policies that have already been set into action but doesn't make any efforts to factor in new policies beyond those in place already. The impact of new climate measures post COP21 for instance. It also doesn't include any breakthroughs in technology that aren't clearly already under way. Mission Innovation launched at COP21 could there for have a big impact in the future.

Summary

This is an interesting report that is certainly "renewables friendly" and some of the predictions with regard to their assumptions with regard to market penetration of electric cars and battery storage could be considered optimistic. On GHG emissions their numbers look much like the business as usual scenario, with the levels of renewable penetration they are suggesting intuitively one could have expected them to be predicting emissions reductions which they are not. On the GHG emission side this scenario looks out with others that suggest the policy pushes from COP21 for instance and technology innovation will drive down GHG emissions in the future

John Gale
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