

# 2020 – A tipping point for green energy

The transition away from fossil fuels and towards renewables has been frustratingly slow. Could 2020 be an inflection point for faster renewable energy adoption?

Deeper analysis of investment trends and topics

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**Key takeaways**

- The future is green. Progress in renewables and green technology continues to impress.
- Fossil fuel use, however, remains 80% of U.S. energy consumption. Renewables are gaining share, but slowly.
- The November elections may have altered this trajectory. A Democrat-controlled White House could speed the transition to renewables.

*“Never mistake motion for action.” — Ernest Hemingway*

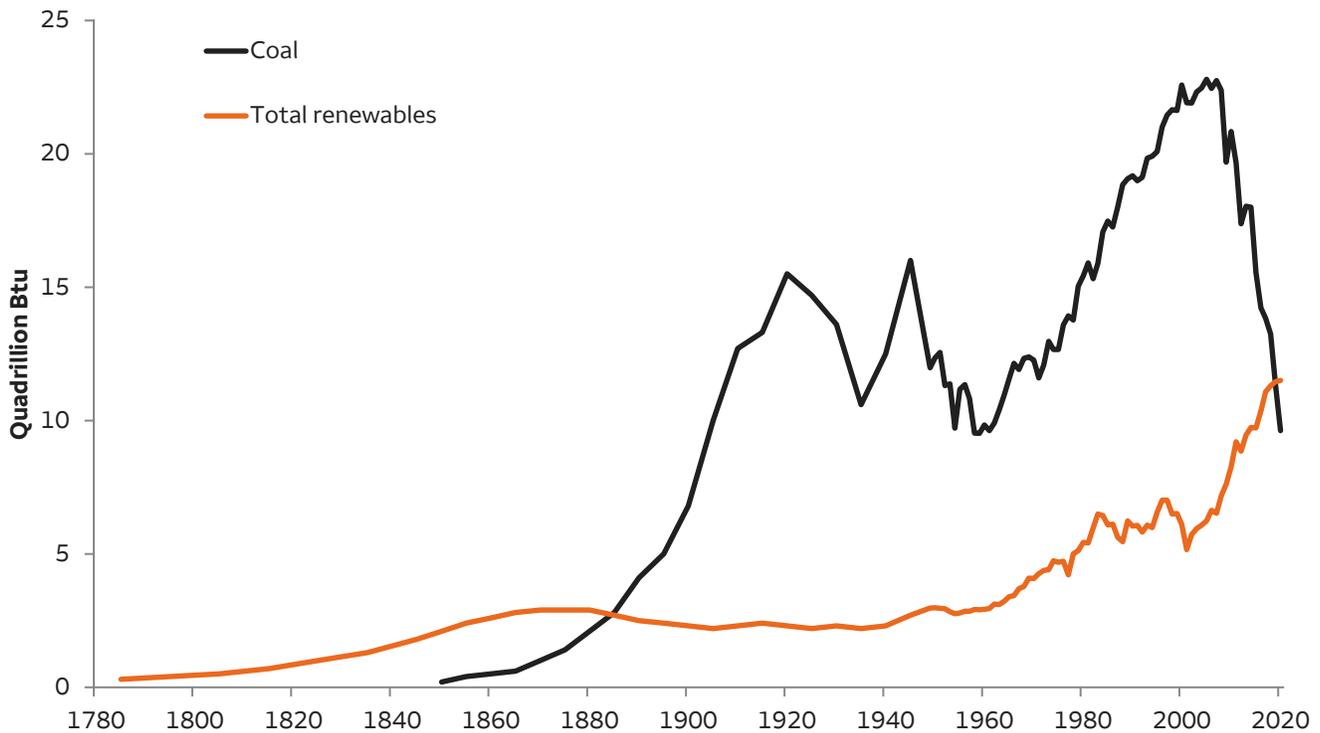
No matter the 2020 election outcome, the future of energy still looks green. The strong rise in renewables and green technologies looks to be transcending political parties. Earlier this year, as an example, we reported that renewables surpassed coal in U.S. energy generation for the first time in 135 years (Chart 1). This is at a time when the current administration has been actively trying to resuscitate a decimated U.S. coal industry.

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Policies matter, though, which means that the election matters too. Said best by my first financial mentor 30 years ago, “Never underestimate the power of the government to ruin, or make, a business.” The energy industry knows this well. Since 2008, U.S. coal use has been chopped in half while nearly all other fuel sources have grown (Chart 1). Coal was hit with the one-two punch of market forces (falling natural gas prices, 2008-2012) and government policies (Obama’s clean energy policies, 2012 to present), and there does not appear to be a light at the end of the tunnel. Coal is on such an ugly path that by 2021 it could make-up its smallest piece of the U.S. energy mix since 1900.

Not all fossil fuels are created equal, of course, and that has cost the green future time. While coal use has been cratering, crude oil and natural gas use has been rising. Fossil fuels still generate 80% of U.S. energy today, down only 3% from a decade ago. Our take for years now has been that the future is green but the transition from all fossil fuels will be slow. That said, we believe market forces are beginning to conspire against crude oil and natural gas. And new, more aggressive energy policies have the potential to emerge in 2021. Fossil fuels may find themselves in the fight of their lives in 2021. Today, we’ll do a quick review of the United States’ and the globe’s energy realities and what may be coming next.

**Chart 1. U.S. energy consumption by fuel: coal versus renewables**



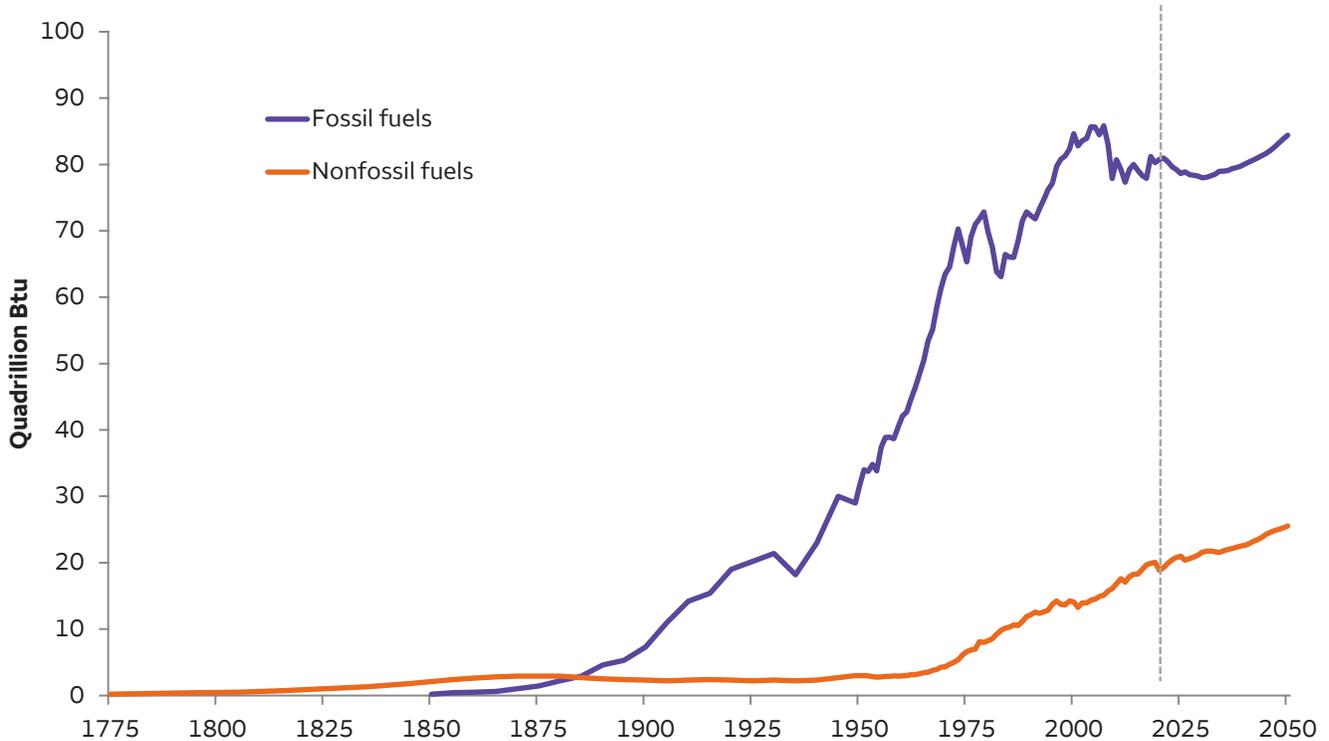
Sources: U.S. Energy Information Administration (EIA), Wells Fargo Investment Institute. Yearly data: 1780-2020. 2020 consumption is estimated by summing the 12 months ending July 2020. Total renewables includes hydro, geothermal, wind, solar, and biomass primary energy consumption. **British thermal unit (Btu)** is a unit of heat; it is defined as the amount of heat required to raise the temperature of one pound of water by one degree.

## Changing our energy realities

Before we get all juiced-up on the green future, let's be real with the present first. The U.S. and the globe remain addicted to fossil fuels. As much success as renewable energies have had in recent years (Chart 2, orange line), they have been slow to alter this fossil fuel

reality. In the U.S., as an example, 80% of energy still comes in the form of fossil fuels (Chart 2, purple line). Ten years ago it was 83%, and in 1980 it was 90%. For some, it seems this has been a frustratingly slow transition.

**Chart 2. U.S. energy consumption by fuel: fossil fuels versus nonfossil fuels (with projections to 2050)**



Sources: U.S. Energy Information Administration (EIA), Wells Fargo Investment Institute. Yearly data: 1775-2050. Fossil fuels include coal, natural gas, and petroleum and other liquids. Nonfossil fuels include wind, solar, hydropower, geothermal, biomass, and nuclear. Forecasts are not guaranteed and based on certain assumptions and on views of market and economic conditions which are subject to change.

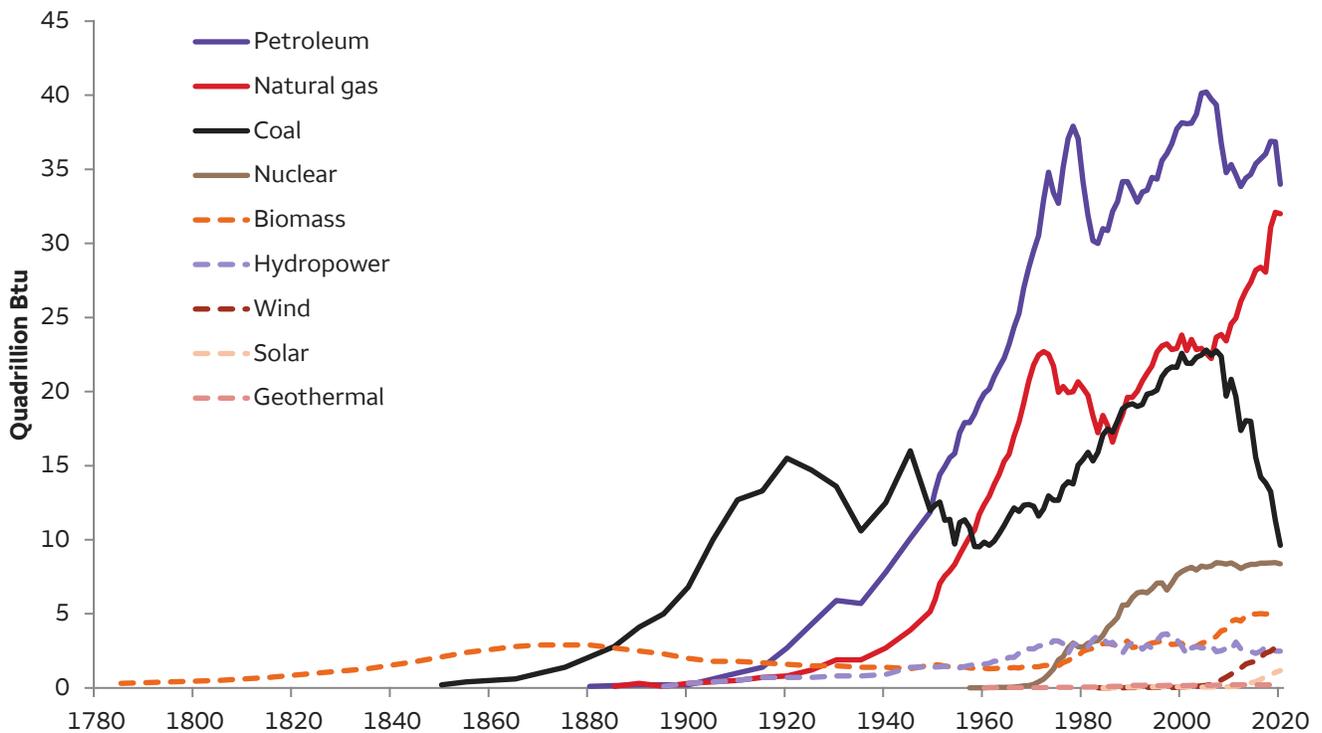
## Three reasons why the green transition has been slow

### 1. The green future requires a fossil fuel bridge

Going off fossil fuels “cold turkey” is not doable if the globe does not want a long and steep economic contraction. One way to think of it is like this — look around the room you are in right now. Nearly everything in it was either built or transported to you using oil or natural gas. Even if you own an electric car,

for example, that car was made in a factory run on fossil fuels, its frame was made of plastics and steel processed using fossil fuels, and the electronics were built with rare earth metals dug-up by 500-ton, diesel-pumping dump trucks. Renewable energies (Chart 3, dashed lines) and their related infrastructure are not yet scaled-up to the point of handling our daily energy needs. The world needs a bridge fuel to get us to the green future, and natural gas is currently the preferred fuel (Chart 3, solid red line) because it emits less carbon dioxide than the others.

**Chart 3. U.S. energy consumption by fuel**



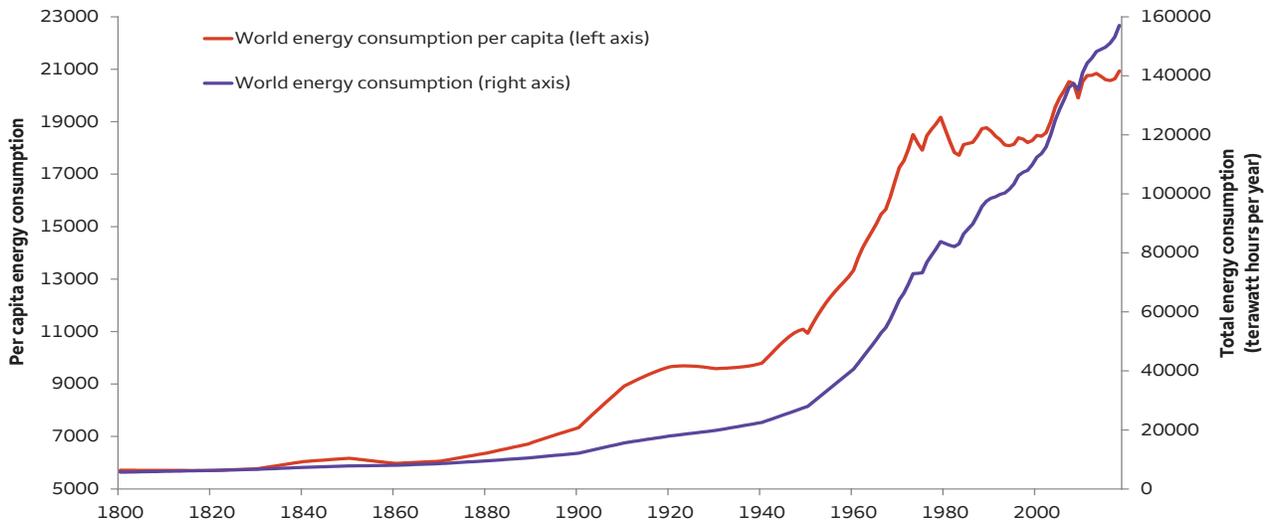
Sources: U.S. Energy Information Administration (EIA), Wells Fargo Investment Institute. Yearly data: 1780-2020. 2020 consumption is estimated by summing the 12 months ending July 2020.

## 2. The global economy keeps growing

Transitioning from fossil fuels to a green future is not as simple as just having the will. Will is critical, but there are other factors too. The green future is constantly fighting a growing global economy. We believe that for renewables to unseat fossil fuels, they effectively have to do “double time.” You may have

noticed in Chart 2 that use for both energy groups, fossil fuels and nonfossil fuels, is projected to increase into 2050. Renewables and green technologies are still too young to absorb the world’s energy needs, or even its growth, at this point. Chart 4 highlights that as the world has grown, so has energy use. And not just total energy use (purple line) but per-person energy use too (orange line).

**Chart 4. World energy consumption**



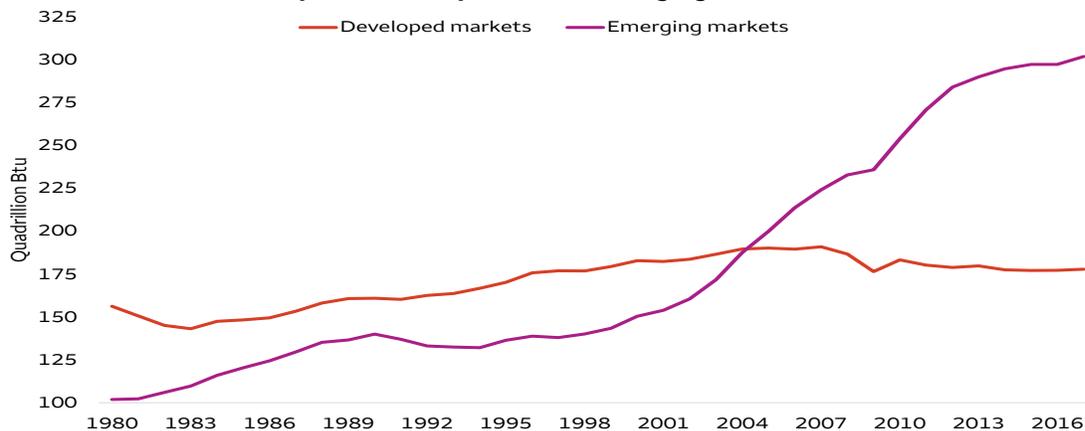
Sources: Bloomberg, Our World In Data, BP Statistical Review of World Energy, World Bank, Wells Fargo Investment Institute. Yearly data: 1800 - 2018. Per capita energy consumption is measured by taking the world energy consumption divided by the world population.

## 3. Emerging countries want to be developed ones

Our view is that emerging countries want to be like developed ones. They want the creature comforts too, and that requires increasing amounts of energy. Future energy use — and its impact on the planet’s health —

has shifted from developed countries, like the U.S., to emerging ones. Chart 5 highlights the differences in fossil fuel use between emerging (Chart 5, purple line) and developed markets (Chart 5, red line). Notice that fossil fuel use continues to grow in emerging markets, while developed market use has stagnated.

**Chart 5. Fossil fuels consumption: developed versus emerging markets**

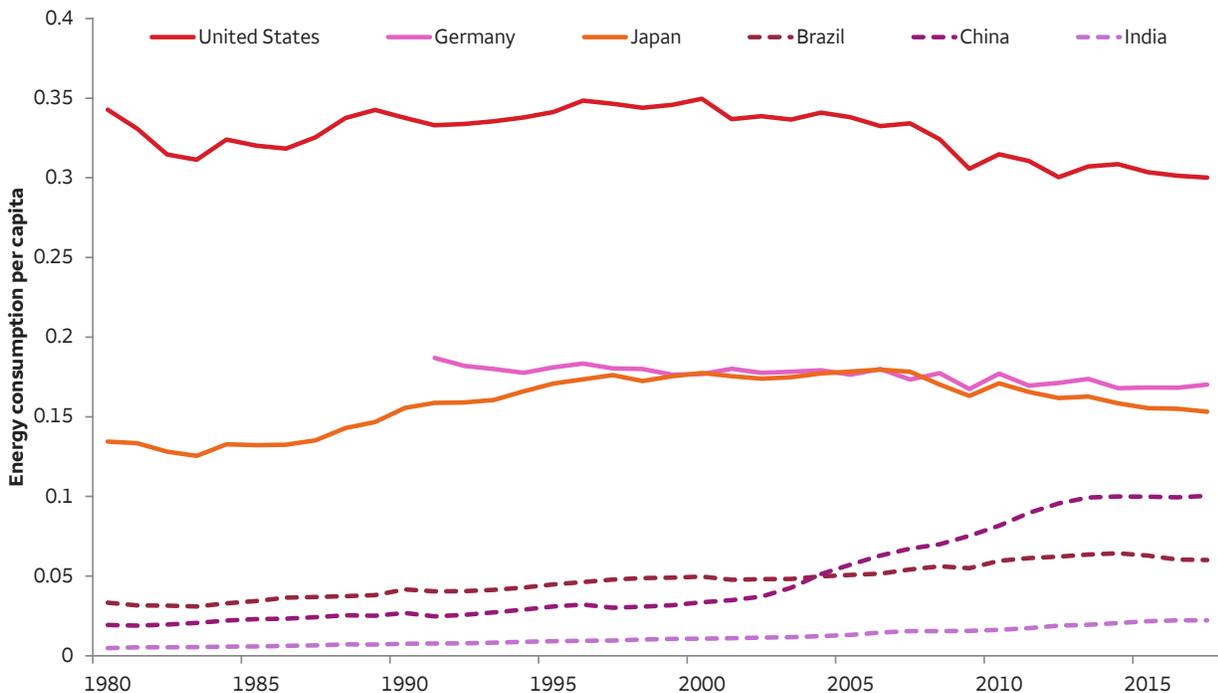


Sources: U.S. Energy Information Administration (EIA), Wells Fargo Investment Institute. Yearly data: 1980 – 2017. Developed markets include all Organization for Economic Co-operation and Development (OECD) countries except Mexico, Chile, Colombia, and Turkey. Emerging markets include all other countries. Fossil fuel consumption includes natural gas, coal, and petroleum.

Chart 6 emphasizes that emerging markets are likely to continue to demand more and more fossil fuels over the coming years. The reason is that emerging markets have a lot of catching-up to do, when it comes to consuming energy on a per-person basis. The dashed lines in Chart 6 highlight that per-person energy use trends, in emerging markets, are low and rising. This is the flip of most developed countries (the U.S. included),

shown as the solid lines in Chart 6. One last issue here, that could keep emerging markets addicted to fossil fuels longer than developed countries, is that emerging markets have generally not had the extra resources to experiment with costly renewables and green technologies or replace existing fossil fuel infrastructure.

**Chart 6. Select countries' energy use per capita**



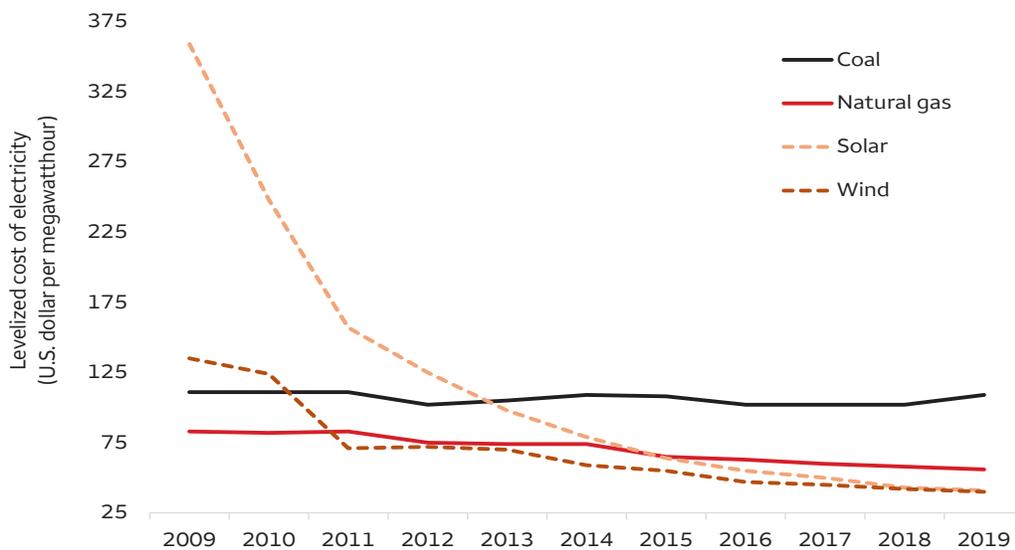
Sources: U.S. Energy Information Administration (EIA), IMF, Wells Fargo Investment Institute. Yearly data: 1980 – 2017.

## Renewables have made good progress but still have a long road ahead

There’s no doubt that green technologies and renewables have made great progress. Probably the best way to view this is through the lens of electricity. In recent years, costs for wind- and solar-generated electricity have dropped below that of natural gas (Chart 7). Natural gas had been for years the cheapest way to generate electricity. This change in costs has led to more new electric plant builds globally going renewable. Chart 8 below shows that new power plant builds have shifted convincingly toward wind and solar and away from fossil fuels over the last 10 years.

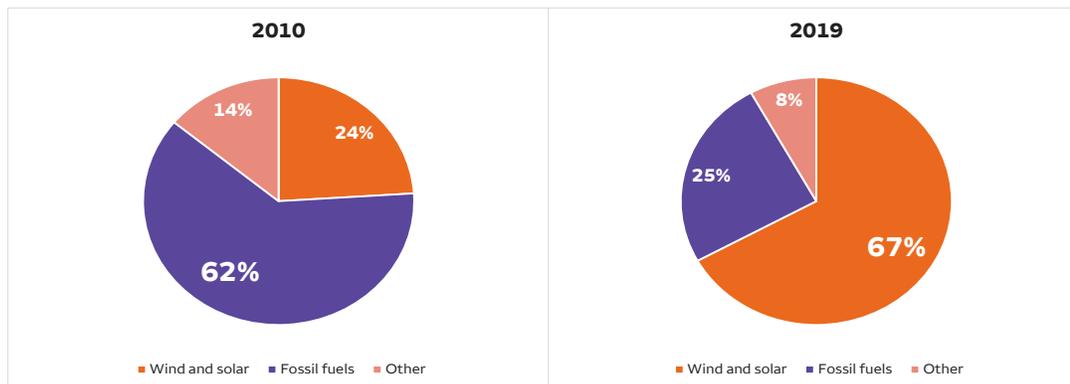
As positive as this looks, and has been, wind and solar power plants account for only 18% of the world’s total existing global power capacity.<sup>1</sup> Renewables still have a long road to go before they unseat existing fossil fuel capacity. First, the sun doesn’t always shine and the wind doesn’t always blow. Consumers want a consistent electricity source. Second, large-scale electricity storage is inefficient and expensive and a good deal of electricity generated by renewables is lost. Third, even when the world does figure out how to store renewable energy in scale, for a period it will help only the locations that generate the renewables if the electrical grid isn’t upgraded. Most countries, the U.S. included, have old transmission lines, which would require huge capital investments to move the electricity.

**Chart 7. Unsubsidized levelized cost of electricity by source**



Sources: Lazard, Wells Fargo Investment Institute. Yearly data: 2009 – 2019. Data shown in log scale.

**Chart 8. Global new power capacity additions: 2010 versus 2019**



Sources: Bloomberg New Energy Finance (BNEF), Wells Fargo Investment Institute.

<sup>1</sup> Bloomberg New Energy Finance.

### Three reasons why 2020 may be a green tipping point

No doubt green progress has been made, but we’ve argued for some time that the transition from fossil fuels would be slow and that more help was needed. 2020 may mark the tipping point where help finally arrives.

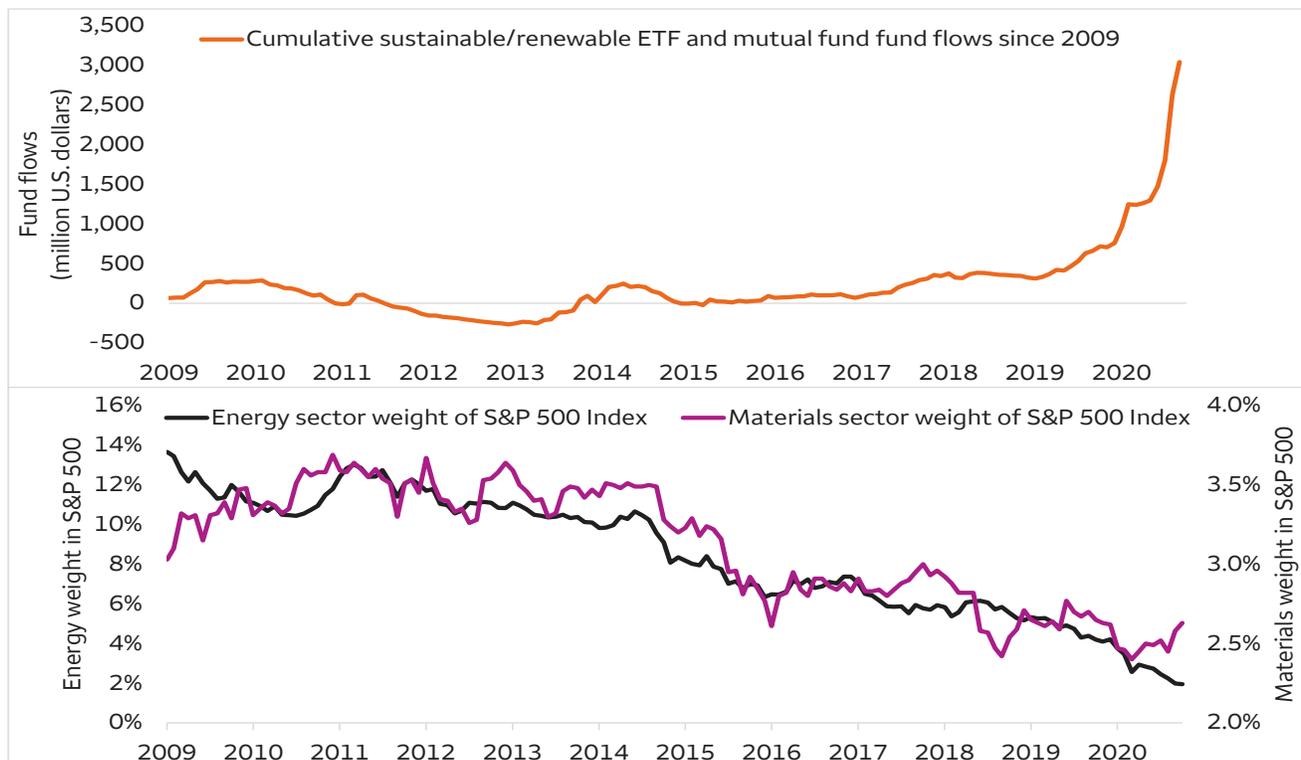
#### 1. Investors are beginning to step-up in the right way.

The black line in Chart 9 shows the performance of energy stocks in the S&P 500 versus other stocks in the S&P 500. The declining black line highlights that investors have slowly been exiting traditional energy stocks, for about a decade now. The Energy sector now accounts for a record low 2% weighting in the S&P 500. Some have blamed this on the rise of renewables. We’ve argued otherwise. The real culprit, in our opinion, has been the commodity bear super-cycle, which began in 2011. Since 2011, nearly all

commodity prices have fallen. During these bear super-cycles, historically speaking, investors lose interest in nearly all commodity-related stocks. The purple line in Chart 9 highlights that the Materials sector has largely suffered the same “investor disinterest” fate as Energy, over the last decade.

In more recent months, though, we’ve noticed that Materials-related stocks have begun to rally, while traditional energy stocks have continued to fade. This new separation of fates could very well be tied to the rise of investors’ appetites for renewables-related stocks. The orange line in Chart 9 shows that money flows into renewable ETFs and mutual funds have tripled, from \$1 billion to \$3 billion, over the last year. While it can’t be proven definitively, we believe some of this renewables money likely came from selling traditional energy stocks. Seeing investors put such serious skin in the green stock game in 2020 is a positive sign for the future of renewables-related investing.

**Chart 9. Fund flows into sustainable/renewable funds versus the Energy and Materials sectors**



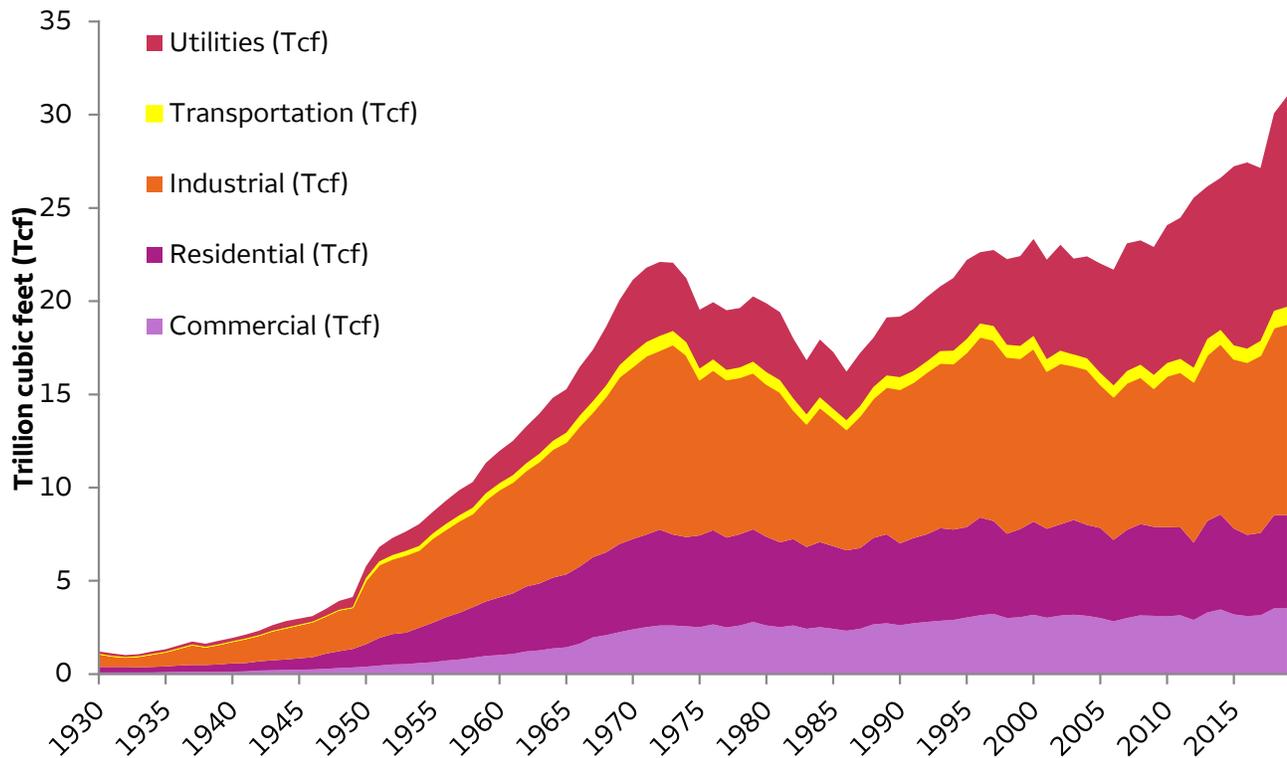
Sources: Bloomberg, © 2020 - Morningstar. All Rights Reserved!, Wells Fargo Investment Institute. Fund flows calculated by summing cumulative flows for the 22 funds which Morningstar categorized as “Sustainable Investment –Renewable Energy” as of October 26, 2020. Energy sector is the S&P 500 Energy sector. Material sector is the S&P 500 Materials sector. Relative strength is calculated as the total return of the sector index divided by the total return of the S&P 500 Index.

**2. Renewable costs are dropping while natural gas prices are rising.**

This matters because electric utilities are the U.S.’s largest buyers of natural gas (Chart 10, red area). While new capacity builds have tilted toward renewables lately, existing capacity has been slow to go green. Cost is a major variable. Natural gas prices have been relatively low for years, which has kept it competitive, even while renewable costs have been falling. Over the

last six months, though, natural gas prices have doubled, from \$1.60 to \$3.25 per million British Thermal Unit (MMBtu), thanks to COVID-19. Natural gas production slowed this past spring, alongside crude oil production, and a production return does not appear imminent as the global economy slowly recovers. High natural gas prices in 2021 may just be the spark that renewables need to start eating into existing natural gas utility capacity.

**Chart 10. U.S. natural gas consumption by sector**



Sources: U.S. Energy Information Administration (EIA), Wells Fargo Investment Institute. Yearly data: 1930 – 2019.

**3. Politics could shift meaningfully green in 2021.**

Going green has been as much a political challenge as a technological one. Americans like their go-go lifestyle, and few want to return to the pre-modern world or pay the trillion(s) dollar price tag. That said, U.S. voters are becoming younger, and climate change has become a growing political issue. No matter how you voted, it is clear that the political winds are beginning to blow green. While U.S. election results are not yet official, it does appear that the White House will soon be occupied by Former Vice President Joe Biden. He will

likely push a green agenda, even if through Presidential Mandate. How aggressive the green agenda becomes we’re not sure, but we think that it is safe to say that over the next four years the transition from fossil fuels to green could accelerate.

**The bottom line**

Our energy future is green, but the transition from fossil fuels has arguably been slow. Fossil fuels still generate 80% of U.S. energy. 2020 may mark a tipping point in our energy future, though.

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John LaForge is the head of real asset strategy for Wells Fargo Investment Institute.

Mr. LaForge is part of the leadership team that develops recommendations and market commentary for real assets, including commodities, real estate investment trusts, and master limited partnerships. In his role, he provides commentary and strategy across the commodity spectrum, covering the most widely followed energy, metal, agricultural, and soft groups. Mr. LaForge has been featured in various media outlets including The Wall Street Journal, The New York Times, USA Today, CNBC, and Bloomberg Television.

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**S&P 500 Energy Index** comprises those companies included in the S&P 500 that are classified as members of the GICS® energy sector.

**S&P 500 Materials Index** comprises those companies included in the S&P 500 that are classified as members of the GICS® materials sector.

**Organization for Economic Cooperation and Development (OECD)** is an international economic organization of 34 countries founded in 1961 to stimulate economic progress and world trade.

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