



## Cost-saving innovations and new interest in ESG principles brighten companies' outlook.

As recently as 2010, renewable electricity – other than traditional hydropower – was regarded by many investors as little more than a science project. As part of the U.S. electricity mix, “it was a rounding error,” says Raymond James’ Energy Analyst Pavel Molchanov.

Now, with the next generation of wind and solar farms churning out electricity at less than half the cost of a decade ago, a new day is dawning. “Wind and solar have been gaining the most market share. . . . Within just a few years, I anticipate that renewables, including hydro, will overtake coal as the number one source of U.S. electricity supply,” Molchanov says.

There are many growth drivers for renewable power. Leading the charge toward making the power sector lower-carbon over in the U.S. are much-improved project economics, green energy investments by tech giants like Amazon and Apple, and targets by state governments to become carbon-neutral within 20 to 30 years. In addition, as institutional fund managers become more focused on ESG investing, they are putting more pressure on utilities and other companies to reduce their carbon footprint.

### CLEAN ENERGY'S GLOBAL LUSTRE

When you think of renewable energy vanguards, Europe usually comes to mind. Denmark, for example, sourced about half its electricity from wind power in 2019. But it's not just the most environmentally minded countries seeing value in clean power. “Countries where electricity is traditionally the most coal-dependent, like China and India, are also starting to shift away from coal – not necessarily because of carbon emissions, but simply because of smog,” Molchanov says.

China leads the world in electricity production from renewable energy sources after massive investment over the past several years, including \$83.4 billion in 2019, BloombergNEF reported. Air pollution is one driver, but the country's leaders also see solar and wind as a source of energy security. Solar, in particular, has helped rural communities in both China and India access clean and affordable electricity, putting these countries on a path to meeting one of the U.N.'s sustainable development goals.

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### TURBINES GO HIGH-TECH

Here's a number that may make your head spin: More than 60 gigawatts of wind generation capacity was installed last year – the equivalent of 60 nuclear power reactors – according to the Global Wind Energy Council (GWEC). About 10% of that total came from offshore wind farms, which, despite being more expensive, are appealing for power-hungry cities along coastlines.

A variety of innovations have given wind power a boost. Longer wind turbine blades, like those produced by TPI Composites, have allowed for efficient power production without making turbines taller. (The taller a turbine is, the more challenging it can be for workers to service, and tall turbines can interfere with aviation.) There are also more wind turbines designed to capture energy at the lower end of the wind speed scale, making them adaptable to a wider range of locations.

### A SUNNY OUTLOOK FOR SOLAR

Today, solar power is the world's fastest growing power source, with solar photovoltaic (PV) generation capacity comprising – on average – one-third of all new power plants built globally over the past three years. While wind projects are almost always large – built by or on behalf of utilities – solar can work just as well in small rooftop systems. In fact, solar panels pop up on roofs around the world.

Another benefit to solar is that it can go anywhere the sun shines, including brownfield sites no other developers will touch.

### COLLABORATIVE CHANGE

With large-scale investment by the private sector as well as governments, renewable power has evolved by leaps and bounds over the past decade. Further investments in smart grid technologies and battery storage systems can propel the

momentum needed to transition to a truly low-carbon energy system.

“Renewable energy sources . . . are surfing the wave, so to speak, of this low-carbon trend,” says Molchanov.

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Sources: Raymond James Equity Research; company reports; Sustainability Accounting Standards Board; Bloomberg NEF; Lazard Levelized Cost of Energy Analysis; Global Wind Energy Council; International Renewable Energy Agency

Risk warnings: Investing in the energy sector involves specific risks, including the potential adverse effects of political and regulatory changes, and may not be suitable for all investors.