

## Emerging Markets Insights

Autumn 2021

# LEADING FIRMS ARE POSITIONED TO BENEFIT FROM ALTERNATIVE ENERGY

The Vistra Zero Moss Landing Energy Storage Facility in Monterey County, CA, is just one of many battery systems found across the globe that provide power when electric demand peaks. The facility's operator, Vistra Corp., plans to expand the facility to 6,000-megawatt hours or enough energy for 1 million homes. Despite its massive size and use of cutting-edge lithium technology, the system can provide power for just a few hours. With that in mind, start-up firms and academics are racing to develop batteries that could provide power for 10 days or even longer for prolonged periods during which the sun or wind aren't optimal for producing renewable energy. If successful, utilities could reduce their use of traditional coal- or gas-powered systems for generating electricity when solar or wind energy isn't being produced.

At Alger, we have identified emerging markets companies that we believe are well positioned to benefit from the strong secular growth of renewable energy worldwide. At the same time, the success of long-term energy storage could accelerate the adoption of renewable energy. In this paper, we maintain that the potential development of long-term storage is exciting, but not essential for the success of emerging markets companies that provide solar panels, wind turbine blades and battery technology to an energy hungry world.

## Lithium Battery Adoption

Lithium batteries hold more energy than lead acid batteries of similar physical sizes, which has led to the rapid deployment of lithium batteries in electric vehicles, home solar systems, consumer electronics and utility peak energy equipment. As illustrated by research on the U.S. market, the use of lithium battery banks is growing quickly (See Figure 1). We believe this is a worldwide trend.

## Diverse Solutions Are Being Pursued

As countries around the globe seek to reduce carbon emissions to minimize future climate change, researchers are experimenting with carbon capture systems, hydrogen fuel cells, compressed air energy storage and new types of batteries, such as solid-state that would use a solid electrolyte, or iron-air batteries that would use pebble-sized pieces of iron. The start-up firm developing iron-air batteries, Form Energy, maintains it will offer the batteries—which could supply energy for days rather than hours—for only \$20 per kilowatt hour in just four years, which is a fraction of the costs of lithium systems. Researchers at the U.S. Department of Energy's Sandia National Laboratories, meanwhile, are working on a new version of molten sodium batteries that instead of operating at temperatures as high as



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660 degrees Fahrenheit would operate at a relatively cool 230 degrees, which could potentially make it easier to commercialize the technology.

### Emerging Markets Investment Implications

Sifting through start-up firms in search of unproven battery technologies or other new unproven products that can potentially be commercialized is a high-stakes endeavor as many such firms may fail. Instead, we search throughout emerging markets for companies that are already offering compelling technology to the fast-growing alternative energy industry.

First, renewable energy is growing rapidly even without the development of storage systems that could provide energy for long periods. This is allowing emerging markets companies that are well established as exporters to market renewable energy technology worldwide. New net renewable energy capacity totaled 278.3 gigawatts (GW) last year, up more than 50% from record levels of 2017-2019, despite pandemic-related supply chain shortages, according to the International Energy Agency. The organization forecasts net capacity will increase 269.9 GW this year and 279.6 GW in 2022. The longer term forecast from the U.S. Energy Information Administration (EIA) predicts that this will be a sustainable trend (See Figure 2).

This growth is being driven by massive programs designed to minimize climate change resulting from consuming hydrocarbons.

- The European Union, for example, has rolled out its Green Deal, which seeks to achieve carbon neutrality by 2050 and to immediately reduce greenhouse gas emissions by 55% compared to 1990 levels. The program plans to “mobilize” \$8.2 trillion (7 trillion euros) in public and private investments to fight global warming.
- Like many other countries, the U.S. is increasing its efforts to combat climate change and has re-entered the Paris Accord, which seeks to limit future global warming to well below 2 degrees Celsius compared to pre-industrial levels. As part of this effort, President Joe Biden has set a goal of 100% carbon-free electricity by 2035.

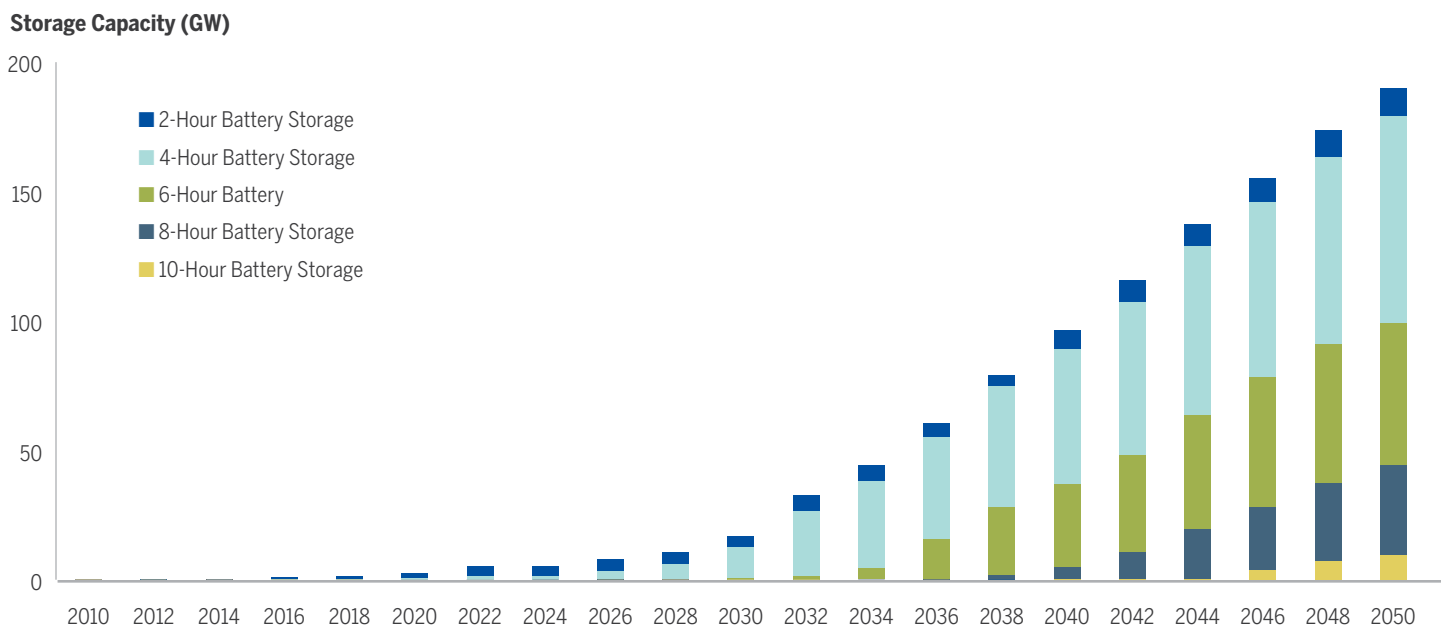
Secondly, the U.S. wind and solar utility-scale market illustrates how renewable energy costs have declined—a trend that we believe is occurring worldwide. According to Lazard, wind and solar have become the least expensive method of producing electricity, even after accounting for government subsidies (See Figure 3).

The organization estimates that the costs for wind and solar energy have declined 27% and 43% over the past five years.

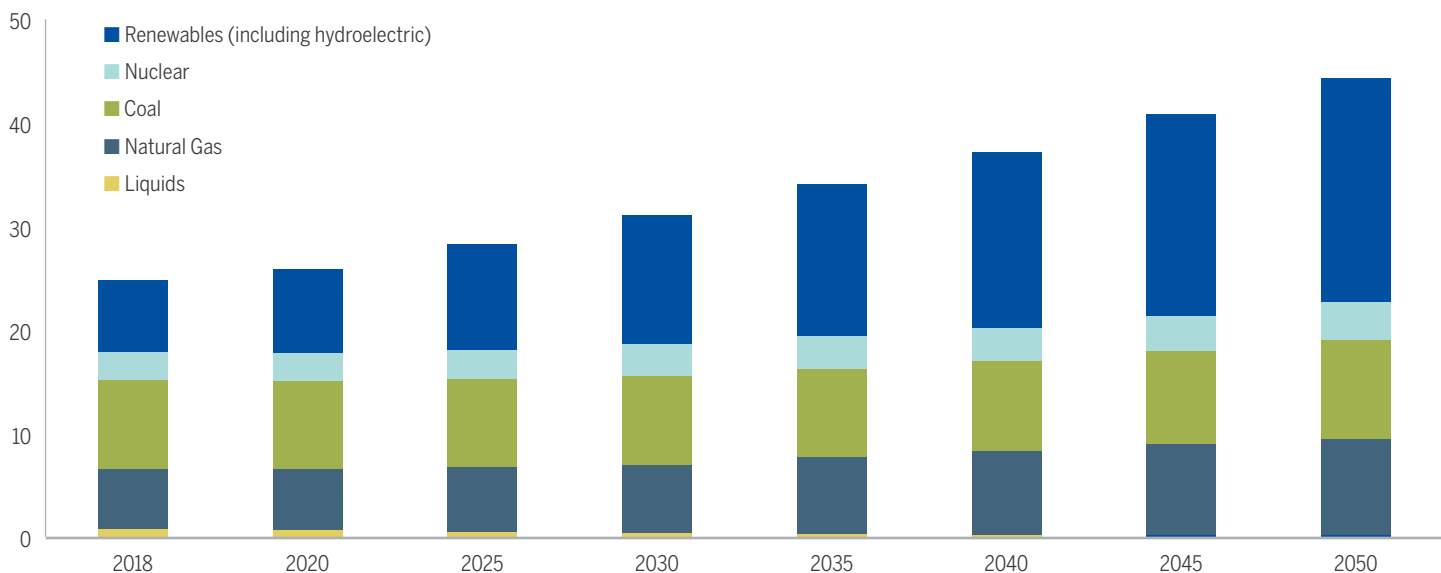
### Beneficiaries of Change

Various emerging markets companies are benefiting from the rapid growth of utility-scale alternative energy and we believe they have potential to grow their earnings as the race to combat climate change accelerates. We believe

Figure 1: **Projected Growth of Battery Storage Capacity**



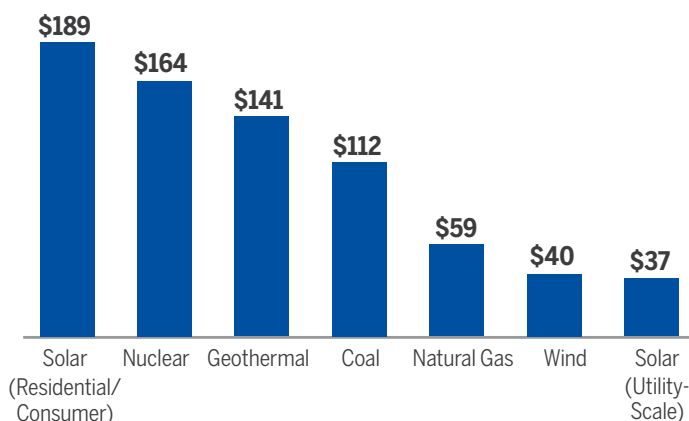
Source: The National Renewable Energy Laboratory (NREL).

Figure 2: **Projected Electricity Generation Worldwide****Electricity Generation (trillion kilowatt hours)**

Source: U.S. Energy Information Administration (EIA).

these companies have compelling products and strong defensive moats.

- Chunbo Co. is a Korean specialty chemical producer with a history in LCD and OLED etching, semiconductor etching and electrolyte materials for rechargeable batteries. Chunbo has either been first to market or has obtained dominant market positions with specialty electrolyte additive materials that stabilize and enhance battery performance. We believe it has potential to benefit from the current growth of deploying peak energy battery banks along with new renewable energy projects.
- Aeris is a Brazilian manufacturer and service provider of wind turbine rotor blades. Growing demand for both turbine components and increases in blade size have encouraged wind turbine producers to outsource the manufacturing of rotor blades, resulting in a robust pipeline for Aeris. Additionally, market dynamics outside of China have narrowed the strategic supply chain relationships to just a few scalable blade manufacturers across the top turbine producers. Aeris also has a strategic geographic advantage, being located in the heart of Brazil's wind generation region, while also being close to one of the country's largest shipping ports.
- BYD Company is a Chinese automotive, battery and electric components manufacturer. As a leading manufacturer of new energy electric vehicles (NEEVs), the company leverages its capabilities as the second largest suppli-

Figure 3: **Levelized Cost of Energy****U.S. Dollars Per Megawatt Hour**

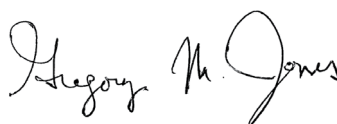
Source: Lazard. Cost represents average of high and low unsubsidized energy cost in the U.S. Utility-scale solar represents crystalline silicon photovoltaic technology.

er of lithium iron phosphate (LFP) batteries in China. While LFP battery chemistry has been the primary technology for NEEVs in China due to its relative stability and cost effectiveness, it is also ideally suited for large storage solutions in applications where weight is not critical. LFP technology also offers a relatively long battery life as measured by charge and discharge cycles and it isn't dependent on other cathode chemistries that are either scarce or located in conflict-ridden areas.

- LONGi Green Energy Technology is a Chinese vertically integrated manufacturer and solutions provider to the solar industry, from raw materials including solar ingot, wafers, cells and modules, down to the construction and installation of complete power systems. Through scale, innovation and process technologies, LONGi has built a leading global position in solar wafer production with a substantial cost advantage over its next closest competitor. The combination of improving cost competitiveness and advances in energy storage and distribution is driving solar adoption and we believe LONGi is well positioned to benefit from the secular growth on the back of aggressive capacity expansion projects across wafers, cells and modules.

### Going Forward

Rather than base our stock selection on the potential impact upon renewable energy of the next generation of batteries, we will continue to pursue opportunities among emerging markets companies that we believe are well positioned to benefit from efforts across the globe to reduce carbon emissions. In our opinion, the secular trend of renewable energy is sustainable and it has the possibility to accelerate even without the development of long-term energy storage.



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The following positions represented less than 0.01% of Fred Alger Management assets under management as of June 30, 2021: Chunbo Co.; BYD; Aeris Industria; and LONGi Green while Vistra Group and Lazard represented 0.00% of assets.