

“...THE UNDERLYING
FUNDAMENTAL DRIVERS
FOR CLEAN ENERGY
REMAIN INTACT:
AN ACCOMMODATIVE
POLICY BACKDROP,
PRIVATE SECTOR
DEMAND, ATTRACTIVE
ECONOMICS, AND
‘SECURITY OF SUPPLY’.”

2022 Review

2022 began with lingering inflationary and supply chain complications, largely driven by excess demand as economies bounced back from COVID-19. Russia's invasion of Ukraine in February exacerbated these issues, this time on the supply side. Energy imports from Russia were essentially shut off and many countries started to prepare for a shift from globalization to “regionalization.” As a result, supply chain conditions became tighter. The rise in global interest rates added market pressure as central banks attempted to curb inflation.

A positive surprise for clean energy came in late July with the passage of the Inflation Reduction Act (IRA) in the U.S. The IRA is a reincarnation of the much-discussed Build Back Better legislation, which the market believed was untenable. The IRA will set in motion a long-term wave of clean-energy investments and potentially puts the U.S. at the forefront of the global clean-energy transition.

Looking Forward

The macro headwinds that plagued 2022 could persist into 2023. However, as noted, the IRA is a boost for clean energy in the U.S. The IRA provides a package of financial incentives for established technologies such as wind and solar power generation as well as new technologies, namely hydrogen. These incentives are already driving renewable investment by traditional utility companies, developers, industrials, and residential consumers. Moreover, the IRA provides visibility and longevity for clean energy, which is vital to long-term capital investment decisions. In fact, foreign clean-energy firms are dedicating more capital to the U.S., given the country's relatively attractive investment and incentive backdrop.

Europe's efforts to move the energy transition forward have been slowed by crippling energy prices brought on by Russia's invasion of Ukraine and subsequent severing of energy supplies. Due to the EU's unique circumstances, policymakers are caught in a "trilemma" of keeping energy affordable, ensuring adequate supply, and continuing the transition to a clean-energy economy. The latter appears to be on pause as the EU seeks to replace Russian energy. The coming winter season will be critical in many ways. The EU is moving to fast-track renewable energy permitting to help wean the continent off Russian energy as quickly as possible. Energy independence is paramount for Europe and we believe this should drive policy promoting clean energy for many years to come.

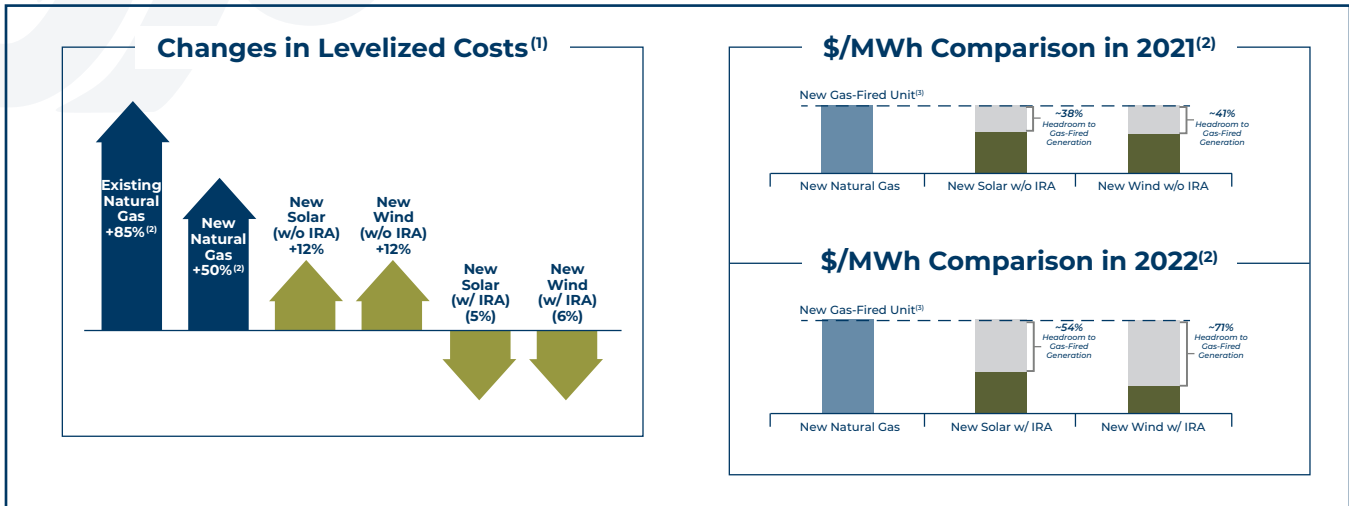
While the U.S. and the EU appear to be on diverging paths, the underlying fundamental drivers for clean energy remain intact: an accommodative policy backdrop, private sector demand, attractive economics, and 'security of supply.' All have arguably strengthened in 2022. Macroeconomic and fiscal factors will continue to influence markets, but we remain very constructive on the global outlook for clean energy. The pace of the energy transition may vary, but when clean-energy deployment slows, pent-up demand could cause significant subsequent momentum.

This backdrop is also driving increased adoption of newer technologies. For example, hydrogen is a clean-energy source to watch in 2023, in part due to significant backing in the IRA. Combined with ITCs (Investment tax credits), last year's Infrastructure

Investment and Jobs Act, and the Department of Energy's 'hydrogen hubs' initiative, critical infrastructure for hydrogen could be available as early as 2025 in the U.S. We anticipate that nuclear power will play a leading role in the electrolysis process of green hydrogen. In the EU, countries and companies are moving forward with plans to utilize existing natural gas infrastructure for the transportation of hydrogen. The continent's main gas transmission companies are starting to prepare their networks to blend in hydrogen and interconnect with the individual EU countries that are more vulnerable to gas shortages. The EU recognizes hydrogen's role in helping to solve the "trilemma."

While 2023 could see an extension of 2022 headwinds, we believe the long-term attraction of clean energy continues to strengthen. One of clean energy's main economic characteristics is relative cost, especially in an environment with rising commodity prices. Simply put, renewable energy is deflationary for consumers, and the higher energy commodity prices go, the greater the attraction of renewables. An analysis by NextEra Energy shows that new solar and wind power generation is now 54% and 71% cheaper respectively versus new natural gas fired power plants. Even before factoring in the IRA's incentives and the run-up in natural gas prices, solar and wind were 38% and 41% cheaper. As we look to 2023 and beyond, the economic, geopolitical, and societal benefits of switching to clean energy will become more apparent. We believe long-term investors will be rewarded by owning a basket of clean-energy market leaders at the vanguard of this transition.

Market and Policy Impacts on Levelized Costs¹



Source: NextEra Energy, Inc.

- 1) NextEra Energy Resources estimate; Levelized cost of energy comparisons from January 2021 to September 2022
- 2) Comparison based on ERCOT pricing
- 3) Includes fixed and variable O&M and fuel; existing natural gas assumes a 7,500 Btu/kWh heat rate; new natural gas assumes 6,800 Btu/kWh heat rate and capital recovery

The Authors:

Benjamin Bielawski, CFA



Benjamin Bielawski provides research for the firm's listed infrastructure strategies and is a portfolio manager for the Duff & Phelps Global Clean Energy Strategy. His research focuses on global utilities and communications sectors, especially on companies and technologies expected to power the energy needs of the future. Mr. Bielawski joined the firm in 2017 and began his career in the investment industry in 1995. He holds an M.B.A. from the University of Chicago Booth School of Business and a B.S. in business administration from Wayne State University. In addition, he is a CFA charterholder.

Eric Fogarty, CFA



Eric Fogarty provides research for the firm's listed infrastructure strategies and is a portfolio manager for the Duff & Phelps Global Clean Energy Strategy. His research focuses on global utilities, especially on companies and technologies expected to power the energy needs of the future. Mr. Fogarty joined the firm in 2018 and began his career in the investment industry in 1997. He holds a B.S. in business administration from Binghamton University. In addition, he is a CFA charterholder.

This material has been prepared using sources of information generally believed to be reliable; however, its accuracy is not guaranteed. Opinions represented are subject to change and should not be considered investment advice or an offer of securities. Forward-looking statements are necessarily speculative in nature. It can be expected that some or all of the assumptions or beliefs underlying the forward-looking statements will not materialize or will vary significantly from actual results or outcomes.

Duff & Phelps Investment Management Co. services are not available in all jurisdictions and this material does not constitute a solicitation or offer to any person or entity in any jurisdiction or country where such distribution or use would be contrary to law or regulation.