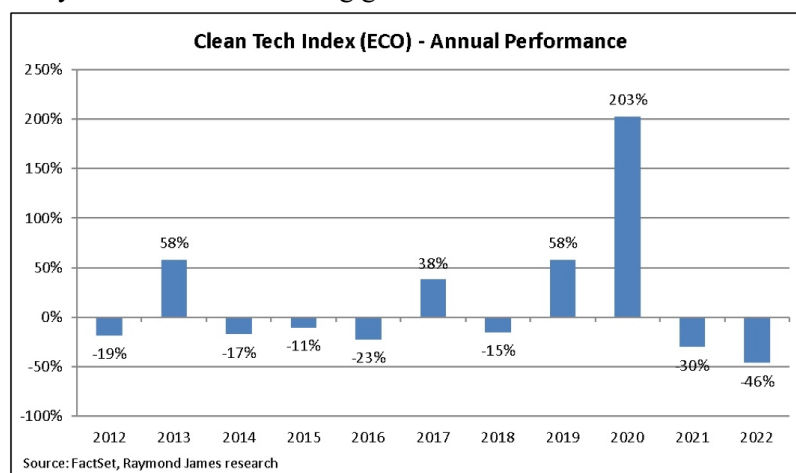


Excerpt from Raymond James, January 4, 2023

## RENEWABLE ENERGY AND CLEAN TECHNOLOGY

### After 2 Rough Years Selectivity Still Key; ....

A year like 2022 brings to mind Dickens: "it was the best of times, it was the worst of times". The year was characterized by a disconnect between clean tech's underlying fundamentals (in solid shape overall) and stock performance (the worst since the global financial crisis). The WilderHill Clean Energy Index (ECO) posted a 2022 decline of 46%, including 4Q down 20%. Combined with the 2021 decline of 30%, nearly all of the record-setting gain of 203% in 2020 has been erased.



To be clear, the demand side of the equation is emphatically **not** a culprit for the past year's underperformance. Demand drivers vary around the world, but there is strength everywhere. With Russia's war in Ukraine about to enter its second year, the Kremlin's relentless weaponization of gas supply and EU/G7's recently commenced enforcement of oil-related sanctions have made energy security an issue of the utmost importance in Europe. This is above and beyond the mandates imposed by the European Climate Law, including a 55% reduction in CO2 emissions by 2030, en route to net zero emissions (carbon neutrality) by 2050. Meanwhile, the Inflation Reduction Act is providing a similarly wide-ranging catalyst for U.S. energy transition: mostly extensions/enhancements of existing policies, but also some brand-new ones (particularly the manufacturing credits for many categories of clean tech hardware). The difference is in the approach. European climate policy has always been a story of "sticks", whereas the only climate legislation that is able to get through Congress is "carrots". The past year also bolstered climate policy in places that are somewhat below the radar, such as the Labor Party's victory in Australia and Lula da Silva's return to the Brazilian presidency. (With Australia having legislated a net zero CO2 emissions mandate, the U.S. stands out as the only large industrialized country without such a legally binding mandate.) Zooming out even more broadly, the fact that global oil prices are near nine-year highs naturally bolsters the economic rationale for substitution into renewable and low-carbon solutions in the transport sector, as shown by a strong year for electric vehicle sales. Likewise, gas prices are lofty on both sides of the Atlantic — with Europe having peaked at an astonishing \$100/Mcf last summer — which is having the same effect vis-a-vis power generation and industrial processes, for example offshore wind and green hydrogen. Considering that global emissions are **not** on the right track, the past year also brought ample reminders about the importance of climate adaptation, which includes needing to address reduced hydropower output, scarce drinking water, and weather-related power grid outages.

Notwithstanding the improvement in supply chain conditions over the past year, the frequent (and impossible to predict) manufacturing disruptions in China provide reminders that supply chain risk is **not** over. Under domestic pressure, Beijing is dismantling its zero-COVID policy, but this takes time, and there are transitional complications. As it stands, supply chain tightness remains a headwind for clean tech manufacturers that depend on semiconductors and electrical components such as ....

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Combining the strong demand with lingering supply chain headwinds, investor sentiment surrounding clean tech remains decidedly mixed. After two years of rotation out of story stocks and resulting multiple compression, our ECO index forecast for 2023 is a gain of ...

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