

BBGI CLEAN ENERGY 100 USD INDEX AND STRATEGY

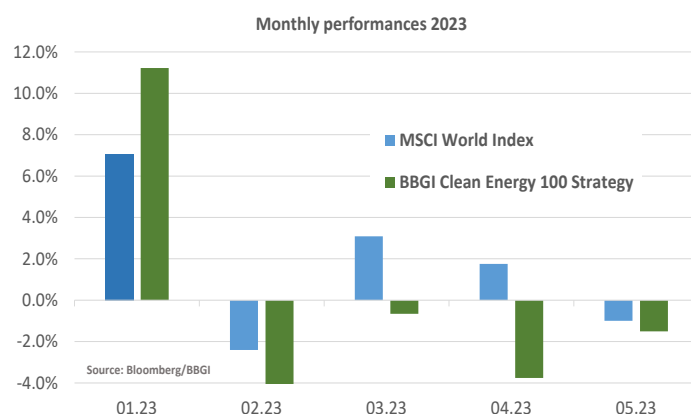
A BBGI Exclusivity since 1999

May 2023

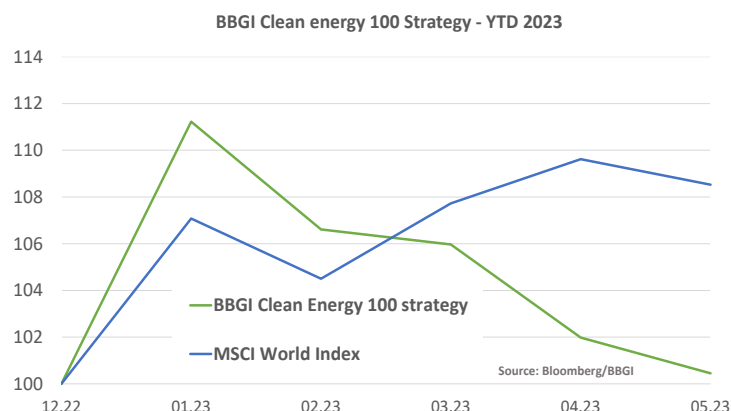
Annualized performance of
+10.70% since 1999

1.8 trillion invested in renewable energies by the end of 2023

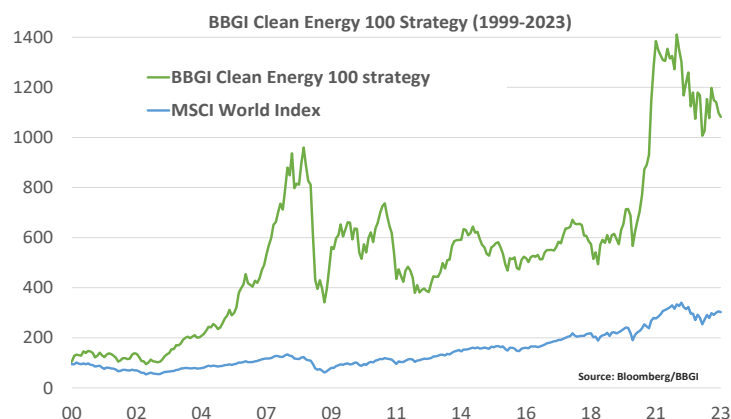
	May	YTD
BBGI Clean Energy 100 strategy:	-1.51%	+0.44%
BBGI Solar Sector:	-3.55%	+0.38%
BBGI Wind Sector:	-1.73%	+2.79%
BBGI Biofuel Sector:	+2.21%	-15.46%
BBGI Energy efficiency Sector:	-0.88%	+2.84%



The Clean Energy 100 strategy declined again in May (-1.51%), despite still very solid fundamentals. Demand for solar energy is still on track to grow by +30% to +40% in 2023, building on an already impressive +38% growth in 2022. According to estimates, if the trend continues, annual photovoltaic installations could exceed one terawatt in 10 years' time. Such an increase could help manufacturers' sales to grow even faster than consensus forecasts (+32%), despite a drop in module prices compared to 2022. Among the major wind power players, **Vestas'** Ebitda margin should recover in 2023-24 due to lower steel costs and soaring turbine prices, which have risen by +33% over the past three years, according to the company's order book. Ebitda could reach around €2.5 billion in 2024, according to our scenario, some +20% higher than the €2.1 billion forecast by consensus.



Overall, the increase in renewable energy capacity is set to leap from +107 GW in 2022 to 440 GW in 2023, representing the largest increase in history. We owe this trend to strong political support, of course, as well as to recent fears about energy security. These factors have helped to mitigate the interest-rate problems experienced by renewable energy stocks during 2022, and now a global investment of 1.8 trillion is expected for 2023 across all sectors. It seems clear to us that this sector, whose companies have very positive sales and margin growth prospects, will be reconsidered by investors.



The systematic diversified strategy of the BBGI Clean Energy 100 Index has produced an annualized return of +10.70% since 1999 against +4.84% for the MSCI World

Comments by sector:

Solar: -3.55%

Margins may improve faster than consensus forecasts. Since the beginning of December, the price of poly-silicon, an essential raw material for the solar industry, has fallen by almost -60%. This rapid decline could lead to revisions of Ebitda's growth, according to consensus, for companies such as **Canadian Solar**, **Maxeon** and other module manufacturers. Even if the consensus proves correct, it's interesting to note that Ebitda's margin of the median company of our US-listed peer group is expected to reach 17% in 2023, up from 9% last year. Solar developers such as **SunPower** and **Sunrun** could see the lowest margins, mainly due to their more labor-intensive business models and less exposure to raw material costs compared to equipment manufacturers. Poly-silicon production capacity is set to increase by over +50% in 2023, thanks to new plants currently under construction. If all announced projects are completed, this figure could almost triple. Although solar demand is booming, we believe that this growth has led to an oversupply, which is a bearish signal for prices. Most producers are estimated to have variable costs below \$10 per kilogram, which could set a floor for prices. While lower poly-silicon prices are welcome news for most players in the solar industry, they are likely to squeeze margins for raw material producers such as **GCL Technology**, **Daqo**, **Xinte**, **Wacker Chemie** and **OCI**.

Biofuel: +2.21%

Renewable diesel supply could be +7% surplus in 2023 and +17% surplus in 2025 to renewable diesel production plans. RIN production up to 2025 could be well in excess of final volume requirements, which we believe will be detrimental to renewable credit prices. The increase in renewable diesel production is at the root of concerns about the RIN glut, as 2025 volume could be 3.4 times higher than 2022 levels if projects are implemented as planned. RIN supply could be +7% oversupplied in 2023 and +17% in 2025, based on EIA ethanol blending forecasts, -10% annual biodiesel declines and moderate gains from other advanced generations. Production rose by +64% in April to 138k b/d, and if the trend continues until 2024, 326k b/d could be reached, the final incorporation mandate will support only 66% in 2023 or 46% in 2024, which will weigh heavily on biodiesel prices.

Energy Efficiency: -0.88%

In 2021, the hydrogen segment became an important part of our energy efficiency segment. We believe that this energy source will be essential for decarbonizing the entire economy, and we are certainly not alone. The Sultanate of Oman recently unveiled its Net Zero and Hydrogen 2040 plan. This hydrocarbon-producing country, which relies on oil for 60% of its exports and natural gas for 95% of its electricity production, is beginning to restructure its economy by focusing on green hydrogen production. This Middle Eastern country is an ideal candidate for this industry, with perfect climatic conditions and large areas available for large-scale photovoltaic and wind power projects. The country's geographical location also gives it access to major import markets such as Europe and Japan, as well as expertise in harnessing and transporting natural gas that can easily be transposed to hydrogen. According to their ambitions, the number of electrolyzers on the territory should be multiplied by 300 by 2030, resulting in a hydrogen production cost of 1.6 USD/Kg, placing the Sultanate among the two most competitive nations in the world.

Wind: -1.73%

Falling steel prices (around -40% since peaking in March 2022) could lead to a turnaround in our wind turbine manufacturing group, helping to restore margins. Net-zero energy targets and legislation are likely to increase installations to 140-190 gigawatts per year by 2027, a positive development for sales of **Vestas**, **Nordex** and their counterparts. Vestas' adjusted Ebitda recovered to 236 million euros in Q1, and we believe that 2022 price increases and lower steel costs could take full-year 2023 Ebitda beyond 1 billion euros. The addition of 3.3 gigawatts onshore this quarter (up 42% year-on-year) suggests that orders could continue to accelerate in 2023, driven by the Americas and South Africa. Sales rose by +14%, and our scenario analysis indicates that annual sales could rise towards the top end of forecasts this year and exceed +20% in 2024, based on high turbine prices and a substantial order backlog.

