The renewable energy boom is here

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In 1839, French physicist Edmond Becquerel discovered the photovoltaic effect when he noted that the cell he was experimenting with produced more electricity when it was exposed to light[1]. Humble beginnings and serendipitous outcomes are typical of scientific progress. But it took another 15 decades before this technology was used at an industrial scale, in what became the first large-scale solar plant built in California in 1981. Similarly, the origins of using wind power to generate electricity go back well over a century but large-scale wind farms, as we know them today, began appearing on the global landscape around the same time as solar plants.

The world has gradually increased its adoption of renewables, like wind and solar, over the past four decades bringing them from the margins to the mainstream. But now they are experiencing a boom. At COP 28, world leaders pledged to triple global renewable energy capacity by 2030[2]. This is a lofty goal, but it delivers exactly what the world needs from policymakers: an audacious vision and a clear direction of travel.

Are we on track?

In its January 2024 report on renewables, the International Energy Agency (IEA) provides a status report for where the world is and whether we are on track to meet the target set at COP28. Notably, the report states that global annual renewable capacity additions increased by almost 50% to nearly 510 gigawatts (GW) in 2023, the fastest growth rate in the past two decades. The IEA further state that 2023 was the 22nd year in a row that renewable capacity additions set a record.

These statistics are impressive but may still not be enough to reach COP28's target. The IEA predict that, under existing policies and market conditions, global capacity is likely to increase to 2.5 times its current level by 2030, falling short of the triple goal (see figure below).

Cumulative renewable electricity capacity

IEA's pulse check suggests that world leaders have set a reasonably stretching target. To get there, countries will need to remove administrative barriers to renewable energy projects by improving the planning and permitting processes. Naturally, more financing will also be required, especially to help build renewable capacity in emerging economies.

Why renewable energy works

In their award-winning 2023 book, “How Big Things Get Done”, Bent Flyvberg and Dan Gardner reveal how large projects not only struggle to get completed within budget, most of the time, but that they tend to go significantly over budget. Having said that, among the projects that have the best track record of staying within or as close to budget are wind and solar. The main reason for this is the modularity of these technologies. Large one-off projects, like the construction of a skyscraper, the building of an old-school nuclear power plant, or even a home renovation, are shrouded with so many variables, that the cost of the project is hard to estimate, even for experts.

In contrast, projects that build modular things follow a repeatable process. After learning to build one solar panel or wind turbine, manufacturers simply repeat the process. In doing so, they learn along the way and benefit from economies of scale. This is why solar power costs have come down so dramatically. In 1975, the first solar panels cost about $115.3 per watt[3]. By the end of 2023, costs have dropped to around 14.5 cents per watt[4]. These trends give hope that the world might be able to push towards achieving COP28’s ambitious goal.

Investing in the theme

At WisdomTree, we have worked alongside Wood Mackenzie, experts in the energy transition, to develop the idea of the renewable energy value chain. This gives investors a carefully crafted exposure to the theme that captures all the facets of the industry. The renewable energy value chain is defined as follows:

Source: WisdomTree, Wood Mackenzie, 2024.

2023 was, of course, a challenging year for green themes, renewable energy included. Rising interest rates were a headwind for many risk assets but particularly so for renewable energy given large projects often require sizeable financing, something that became challenging with rising rates. Moreover, macroeconomic headwinds penalised Chinese stocks despite the country growing leaps and bounds on renewable energy. According to the IEA, China commissioned as much solar power in 2023 as the entire world in 2022. Its wind additions also grew by 66% year-on-year.

So, although there continues to be substantial growth in the underlying theme, market movements for renewable energy companies have painted a contrasting picture in recent times. At WisdomTree, we believe that 2024 could be the year for this dynamic to correct itself especially once rates begin to come down. For investors, a booming theme underappreciated by markets could present an ideal opportunity.

[1] Solarfabric.com, January 2024.

[2] United Nations Climate Change Conference held in Dubai from 30 November 2023 to 12 December 2023.

[3] Sustainable Finance Disclosure Regulation

[4] Avenston, May 2023.

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