

# Challenging Headlines Abound for “Cleantech 2.0” – As Opportunities Persist

by Dan Connell



*Market cycles of euphoria followed by the inevitable hangover are not new for investors – but some headaches are sharper than others, the worst of which can blur one’s vision the morning after.*

Market cycles of euphoria followed by the inevitable hang-over are not new for investors – but some headaches are sharper than others, the worst of which can blur one’s vision the morning after. Such may be the case for the Cleantech 2.0 renaissance, which saw the collision of rising interest rates, geopolitical upheaval, inflationary pressure and growing regulatory uncertainty in the face of political backlash combine to cool a hot start to the 2020s. Indeed, look no further than the WilderHill Clean Energy Index as one bellwether for the sector, declining ~85% from its peak in February 2021 at ~\$275/share to ~\$40 in late September 2024.

#### WILDERHILL CLEAN ENERGY INDEX VALUE

February 2021 - September 2024



Source: S&P Global CapIQ

So does this collapse suggest the end for sustainable technologies and investments in them? The history of Cleantech 1.0 suggests that not every headline tells the whole story.

#### CLEANTECH 1.0 - HIGH PROFILE INDIVIDUAL FAILURES... AND BROAD INDUSTRY SUCCESS

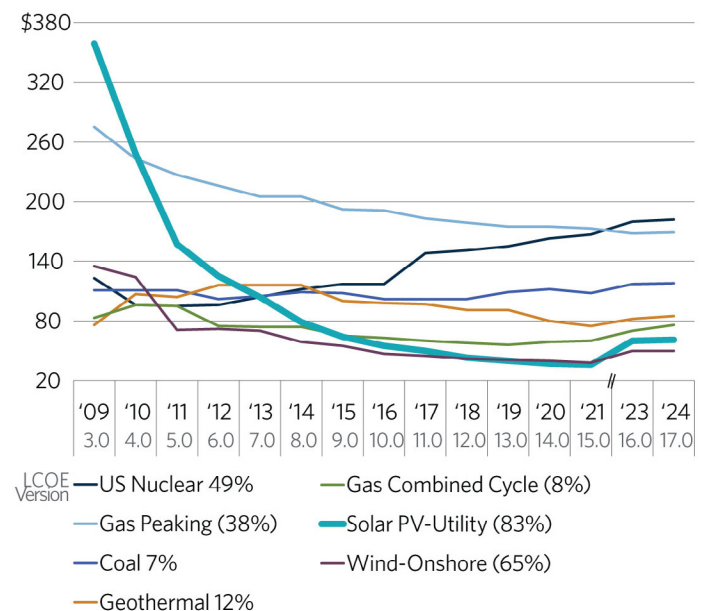
If companies like Solyndra<sup>1</sup> represent the ashes of Cleantech 1.0 then the broad solar industry might well be the phoenix. The solar industry provides an exceedingly useful analog to several sustainably oriented industries today. The collapse of Solyndra, and other cleantech companies of the era, is well documented. Coming on the heels of the bankruptcies of Evergreen Solar and SpectraWatt in 2011, the company’s collapse in September of that year was a lightning rod for

growing criticism of the federal loan program established to support the then-relatively nascent industry. There was ample room for critique and seemingly little space for optimism on solar at the time, but the then-head of the industry’s main lobbying group, the Solar Energy Industries Association, offered a perspective that proved prescient: “What we are seeing in solar happens in every industry that is maturing and growing more competitive. You’re going to see winners emerge who find innovative ways to offer consumers the most competitively priced products.”<sup>2</sup>

Fast-forward to 2024 and the cost of utility scale photovoltaic (PV) solar power has declined by over 80% (depicted in the chart below).<sup>3</sup> Indeed, on a levelized cost basis utility scale solar PV electricity has become some of the lowest cost power available today.

#### LEVELIZED COST OF ENERGY

Selected historical average LCOE values (\$/MWh)



Source: Lazard: “Levelized Cost of Energy Plus – Version 17.0.” (June 2024)

It is little surprise then that deployment has scaled rapidly as the price has fallen. Through the first half of 2024, utility scale PV solar accounted for roughly two-thirds of capacity added in the United States.<sup>4</sup>

<sup>1</sup> NY Times: “Solyndra Bankruptcy Reveals Dark Clouds in Solar Power Industry.” (September 6, 2011)

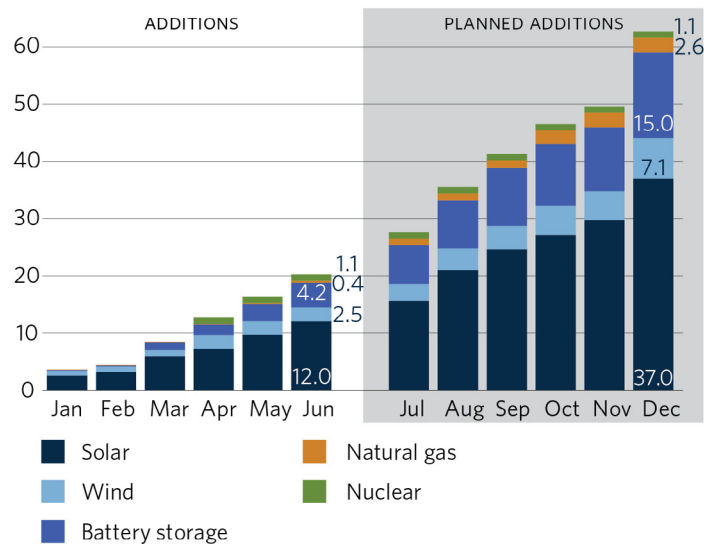
<sup>2</sup> Ibid.

<sup>3</sup> Lazard: “Levelized Cost of Energy Plus – Version 17.0.” (June 2024)

<sup>4</sup> U.S. EIA: “U.S. Power Grid Added 20.2 GW of Generating Capacity in the First Half of 2024.” (August 19, 2024)

## U.S. POWER GRID ADDS 20.2 GW OF GENERATING CAPACITY IN 1H 2024

Cumulative utility-scale electric generating capacity additions in gigawatts (GW)



Source: U.S. EIA: “U.S. Power Grid Added 20.2 GW of Generating Capacity in the First Half of 2024.” (August 19, 2024)

The success of the industry has not been universal, but it has been broad based – supporting an ecosystem of component suppliers, service providers, developers and asset owners. There were winners and losers along the way and solar will not be a panacea for [today's grid challenges](#). That said, PV solar at utility scale has established itself as a key element of the future power system – offering investors opportunities along with risks and representing a winding path to successful growth from Cleantech 1.0.

## THE OUTLOOK TODAY

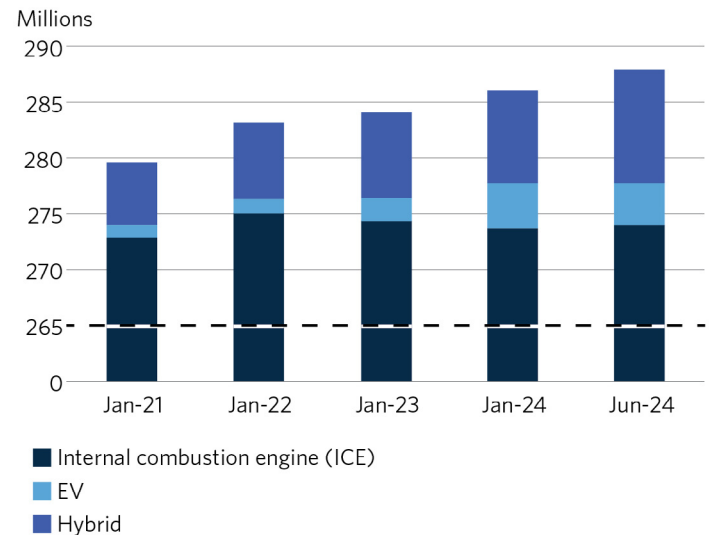
Battery storage, electric vehicles and solar today, as a decade plus ago, all represent growing market segments. Challenges persist (interest rate pressure, supply chain concerns, and adoption pace) but the growth track remains robust.

Given the challenges, high profile headlines abound as individual market participants grapple with this uneven landscape. Swedish battery manufacturer Northvolt's challenges provide one recent high-profile example of such disruption.<sup>5</sup> If the story of a battery maker with government backed debt struggling sounds familiar, it should. In the United States over a decade ago, A123 Systems wound up in bankruptcy despite significant government support.<sup>6</sup> That same year, Tesla traded for less than \$3/share. There are winners and losers in every market – there is no reason to expect areas like electric vehicles should be any different.

Extrapolating a broad narrative from such individual examples is fraught and it is here that zooming out to add context is most helpful. Adoption is never smooth, but the directional path of travel for the industry appears more evident (see below). Since the beginning of 2020, the number of full electric and hybrid electric vehicles in use has doubled.<sup>7</sup>

## ELECTRIC VEHICLE (EV) ADOPTION TRENDS

Number of vehicles on the road by fuel type | Jan 2021 - Jun 2024



Source: S&P Global: “Electric Vehicle Adoption Trends – It’s Not All Grim.” (August 16, 2024)

<sup>5</sup> Bloomberg: “Swedish Debt Office Rules Out Guarantee for Northvolt Green Loan.” (October 9, 2024)

<sup>6</sup> CNN: “Car battery maker A123 files for bankruptcy.” (October 12, 2012)

<sup>7</sup> S&P Global: “Electric Vehicle Adoption Trends – It’s Not All Grim.” (August 16, 2024)

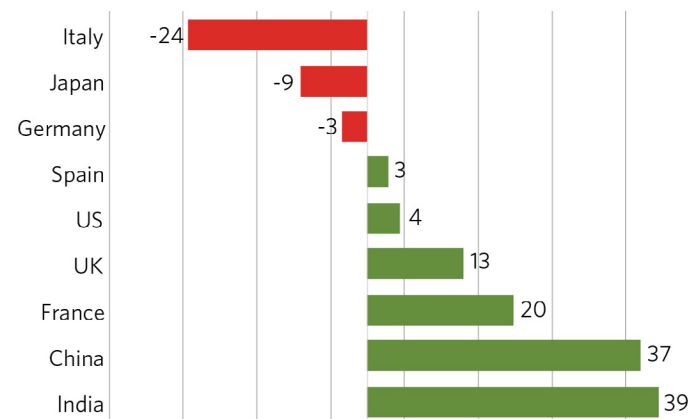
Indeed, today there is an ecosystem of opportunities for investors to consider – from battery metal suppliers to manufacturers of EVs and a litany of service providers, installers and infrastructure. There will be successes and failures here as well, but there is definitively growth.

With adoption growing broadly, why is sentiment so sour for sectors like EVs at the moment? The story would be incomplete without a nod to the animal spirits and a discussion of expectation management. Certainly industry watchers, investors and company management alike have seen material revisions to hockey stick growth assumptions from just a couple of years ago. As Bloomberg New Energy Finance noted in their recent Electric Vehicle Outlook, “Global passenger EV sales continue to grow in the next few years, but the growth rate is visibly slower than before. EV sales are set to rise from 13.9 million in 2023 to over 30 million in 2027 in our Economic Transition Scenario. In the next four years, electric car sales grow at an average of 21% per year, compared to the average of 61% between 2020 and 2023.”<sup>8</sup>

This is not to suggest that EV adoption growth, both near term and projected, is insignificant. In some markets globally it is dramatic. Growth does not always track expectations and is rarely a smooth straight line process.

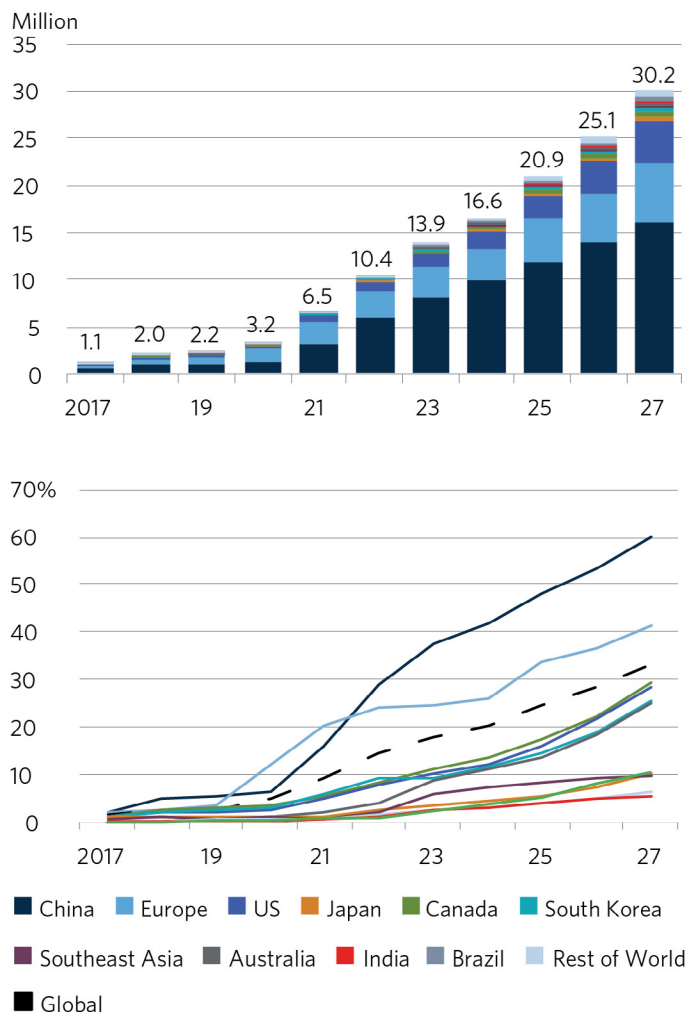
### PASSENGER EV SALES

Year-on-year percent change in select countries | 1Q 2024



Source: Bloomberg New Energy Finance: “Electric Vehicle Outlook 2024.” (June 12, 2024)

### GLOBAL NEAR-TERM PASSENGER EV SALES AND SHARE OF NEW PASSENGER VEHICLE SALES BY MARKET



Source: Bloomberg New Energy Finance: “Electric Vehicle Outlook 2024.” (June 12, 2024)

But in the short term, it has lagged broad expectations. This dynamic begs a reference to the broadly attributed Bill Gates aphorism, “Most people overestimate what they can do in one year and underestimate what they can do in ten years.” There are real challenges – supply chains, battery safety, and unit economics at scale. But there is real growth and it shouldn’t be ignored. While that growth is not consistent with the overly optimistic forecasts from a few years ago, it is real and available to investors – but potentially in a manner that may benefit those with the patience to manage through volatility with a long-term view.

8 Bloomberg New Energy Finance: “Electric Vehicle Outlook 2024.” (June 12, 2024)

## WHAT MAY COME NEXT?

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Solar, batteries and EVs are just a few examples from the sustainable investment ecosystem that have technologically matured to the point where they are realizing broad adoption. There are a litany of potentially crucial technologies and business models that are working their way down the same path those others trod. Carbon capture technologies, an array of hydrogen solutions and nuclear small modular reactors (SMRs) all offer promise but also face fundamental technology, market or commercialization risks. Adoption challenges will present themselves and the growth path will be uneven.

## TAKEAWAYS

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The dot-com era crash of Pets.com didn’t spell the end of internet era investing.<sup>9</sup> One of the principal backers of that business, Amazon, appears to have managed through the disruption and come out the other side passably (tongue firmly in cheek). Examples of failures along the path to success for growing industries are manifold – and such examples don’t always portend the fate of a market segment or sector broadly.

Clear success stories – “traditional renewables” where costs have fallen precipitously, smart metering systems and data services – abound despite the dour headlines and sour public markets. The early stage of these markets is inherently volatile, often exacerbated by some models which are fundamentally hardware oriented and capital intensive. Mature and maturing businesses that are profitable, cash generative, and financially sustainable.

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<sup>9</sup> CNET: “Pets.com Latest High-Profile Dot-Com Disaster.” (January 2, 2002)

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