A Clearer Future of the Clean Energy Economy

Demystifying valuations of the Nasdaq Clean Edge Green Energy Index (CELS)

March 2021

Introduction

U.S. President Joe Biden ran on a clean-energy platform and made climate change and the energy-transition one of the major topics in his inauguration address. Just hours after the inauguration, in one of his first acts as president, he signed the executive order to rejoin the Paris Climate Agreement that the U.S. had originally championed and signed onto in 2015.

The new administration's agenda includes an aggressive nationwide effort to enable an equitable clean energy future built on modern, sustainable and resilient infrastructure[1]. The proposed $2 trillion investment plan includes:

- **Infrastructure** projects to improve sustainable growth, climate change and public health, including access to clean air and clean water,
- **Auto industry** and auto infrastructure, including the electric vehicle charging stations,
- **Power sector** goal to achieve carbon neutrality by 2035,
- 1.5 million **sustainable homes** and housing units,
- **Innovation** in clean-energy technologies, including battery storage, negative emission technologies, and next generation building materials.

Globally, the European Union has set up the world's first international emission trading system (EU ETS) (which quickly became the cornerstone policy for EU to combat climate change) and recently passed the world's largest green recovery plan. China launched their first national (and world's largest) carbon market in February 2021 and is poised to put clean energy over fossil fuels in their next Five-Year Plan. One of the clear goals of these

Investors can gain access to the Nasdaq Clean Edge Green Energy Index (CELS) through the First Trust Nasdaq Clean Edge Green Energy Index Fund (Ticker: QCLN).

117%

CELS Index's earning is projected to grow to $17 billion in 2023, an average of 117% growth per year.

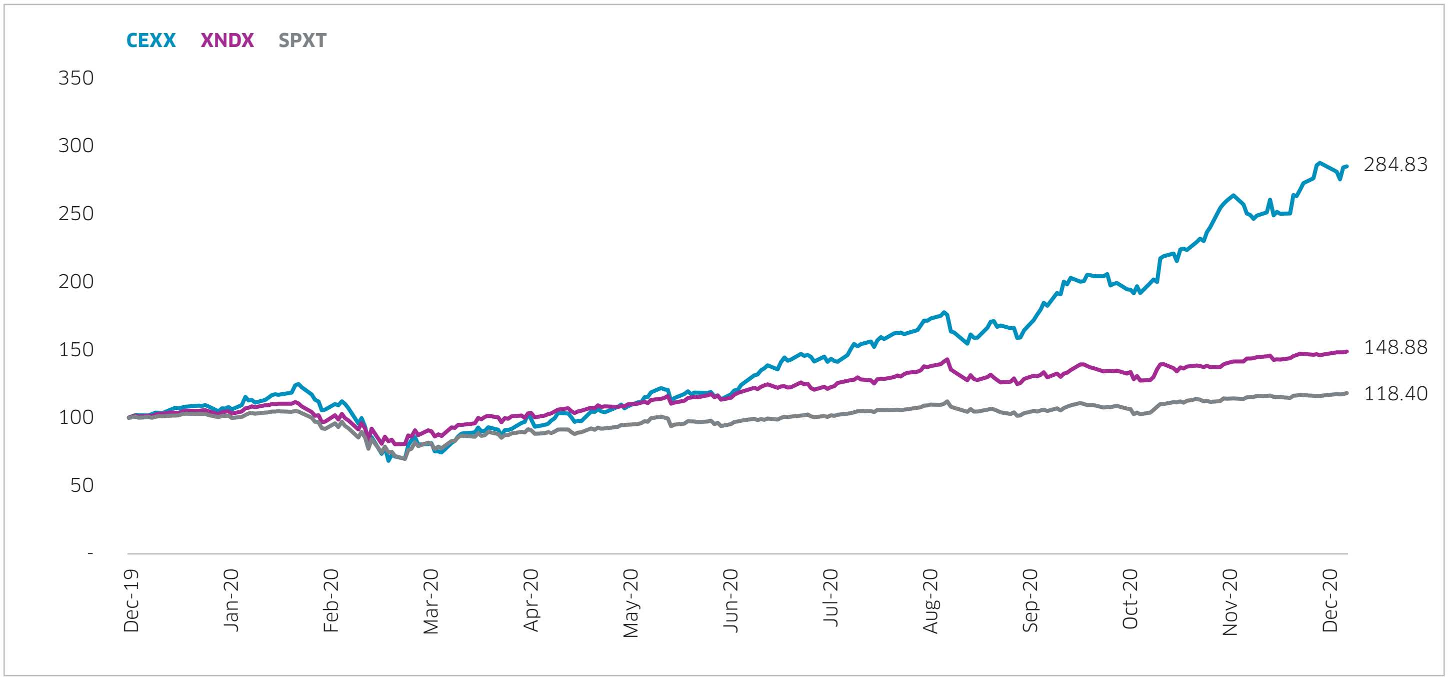
1 https://joebiden.com/clean-energy/

Emission Trading Systems and green strategies is to make carbon prices higher – and clean energy programs front and center – so that renewable energy will become even more financially attractive.

Investors' interests for clean-energy stocks are clearly firing up. Is there any way to invest in the clean-energy economy as a whole? Nasdaq offers a solution – the Nasdaq Clean Edge Green Energy Index (CELS). The Nasdaq Clean Edge Green Energy Index (CELS) is designed to track the performance of companies that are manufacturers, developers, distributors, and/or installers of clean-energy technologies. It returned an exceptional 185% in 2020, which easily beats any of the 35 years in the Nasdaq-100's illustrious history[2].

CELS Performance in 2020

Growth of $100 investment in Nasdaq Clean Edge Green Energy Total Return Index (CEXX), Nasdaq-100 Total Return Index (XNDX), S&P 500 Total Return Index (SPXT)



Source: Nasdaq and Bloomberg.

How to better understand CELS's sudden popularity in 2020? Is there any sign of a bubble like the internet stocks in 2000 that were doomed to burst?

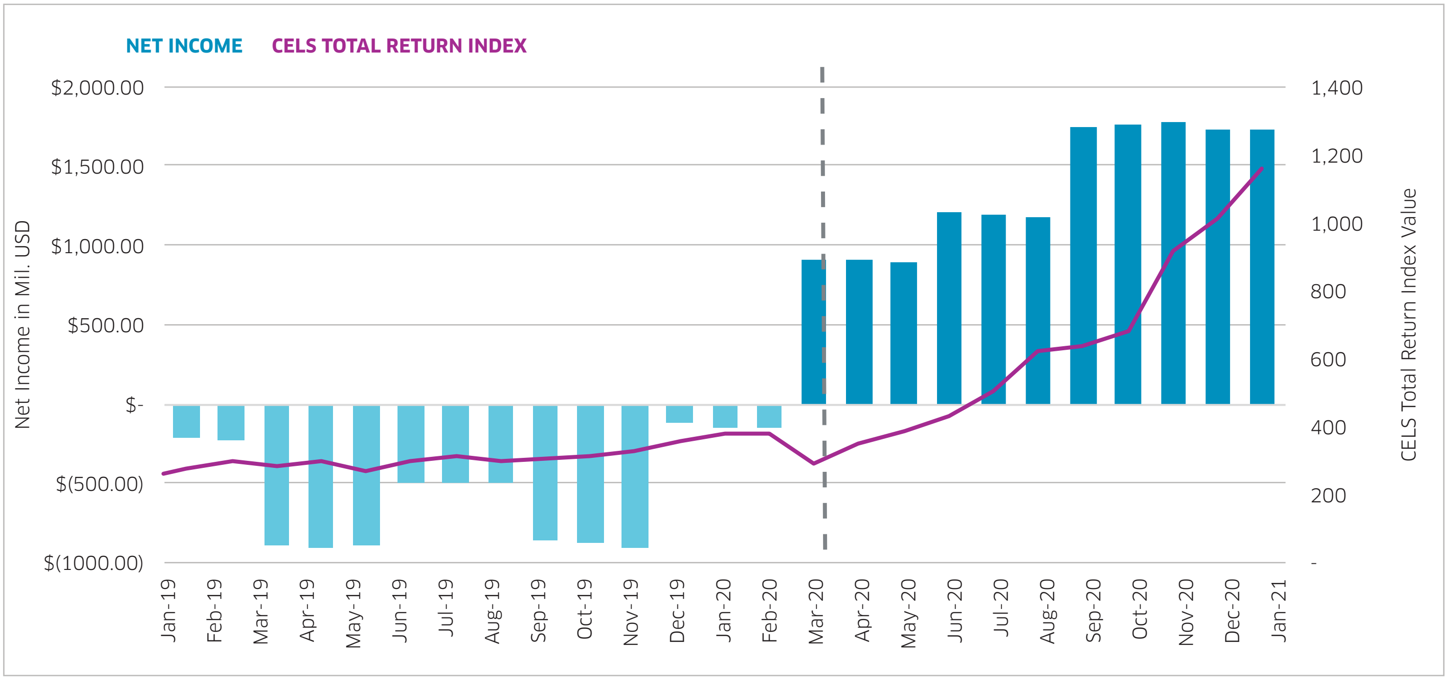
Today, we'll take a deep dive into CELS's evolving fundamentals and try to understand the valuation of CELS in the current state and its foreseeable future.

2 The highest annual return in Nasdaq-100 is 102% in 1999.

Why did CELS skyrocket in 2020?

The primary reason behind CELS' skyrocketing performance in 2020 has to do with the improving fundamentals of the index. Our analysis shows that CELS' index aggregated Net Income[3] has finally turned positive since March 2020. This turning point aligns well with the index's strengthening performance on the capital market.

CELS Net Income Turned Positive since March 2020



Source: Nasdaq and FactSet. Units are presented in millions of U.S. dollars.

When growth companies finally become profitable it can make it much easier to attract new investments. And the next step is for investors to judge whether the current growth and profit outlook can continue on an ongoing basis for the sector. The FactSet aggregated Analysts' Estimates suggest that the answer is YES. The CELS Index's total sales are expected to grow from $90 billion at the end of January 2021 to $174 billion in 2023, an average of 25% growth per year. CELS Index's earning growth is more extraordinary: it is projected to grow from $1.7 billion in Jan. 2021 to $17 billion in 2023, an average of 117% growth per year. Profitability, as measured by Net Income divided by Revenue, will also improve over time to more than 10% in 2023. This will make clean energy, as a sector, more attractive than the S&P 500, which has a current trailing 12 months net profit margin of 7.2%[4].

CELS Growth and Earning Pattern Will Continue

TRAILING 12 MONTHS ENDING AT	TOTAL SALES	TOTAL NET INCOME	NET INCOME / SALES
1/31/2018	$ 60,981	$ (2,065)	-3.39%
1/31/2019	$ 74,987	$ (205)	-0.27%
1/31/2020	$ 80,451	$ (146)	-0.18%
1/29/2021	$ 89,893	$ 1,728	1.92%
2021E	**$ 117,568**	**$ 8,227**	**7.00%**
2022E	**$ 145,810**	**$ 12,641**	**8.67%**
2023E	**$ 173,664**	**$ 17,591**	**10.13%**

Source: Tailing 12 months fundamentals and consensus estimates from FactSet. Units are presented in millions of U.S. dollars.

3 Measured as the index total tailing 12 months Net Income based on FactSet data.

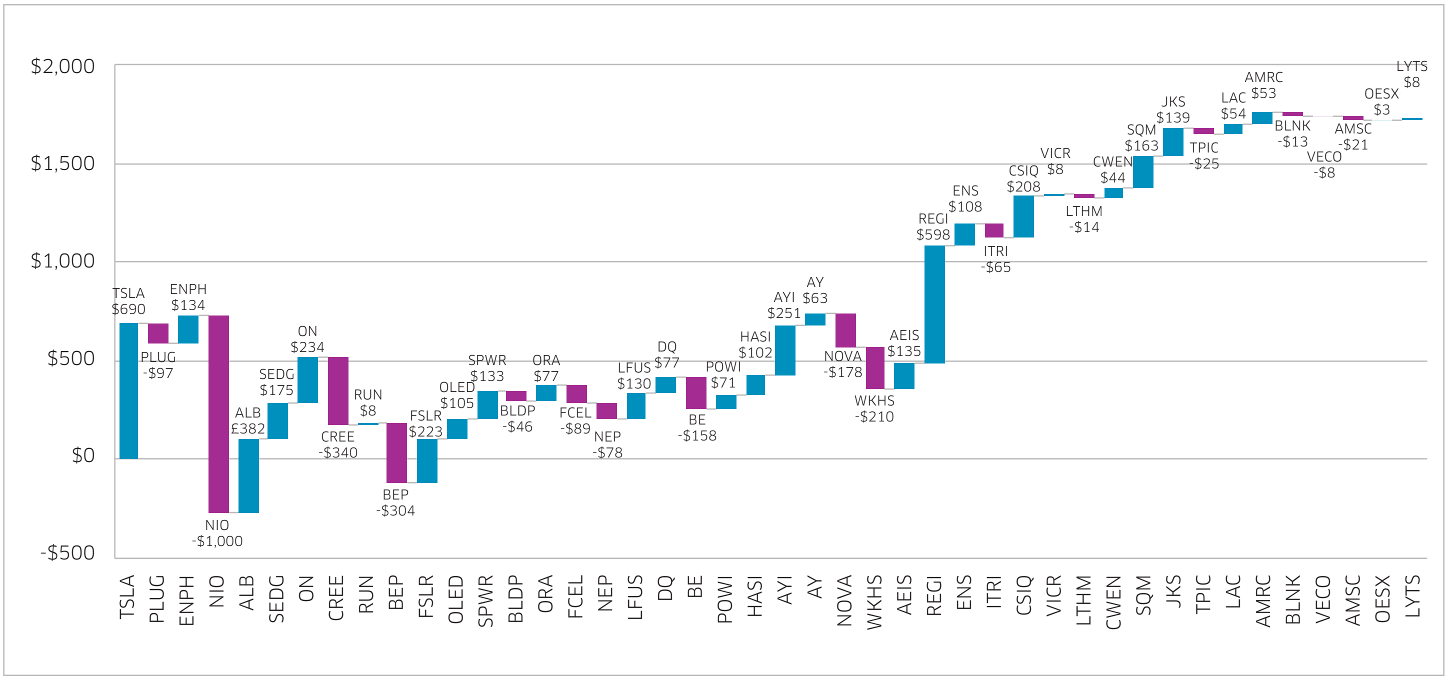
4 Calculated using FactSet trailing 12 months Net Income / Sales as of January 31, 2021.

Making the case of EV

How profitable are the individual stocks within the CELS index? As we can see from the following water-flow chart that lists company earnings ranked by index weights, Tesla (TSLA) with $690 million in earnings, and Nio Inc. (NIO) with -$1,000 million in losses, as the top contributor and detractor to the CELS index's total net income. Despite the huge difference in terms of profitability, the two electric vehicle (EV) manufacturers are both favored by investors and priced as the top 1 and 4 holdings in the CELS index, respectively.

Breakdown of CELS Earners (and Detractors)

CELS companies' tailing 12 months net income ranked by index weights. The total index aggregated Net Income is 1.7Bn U.S. dollars.



Source: FactSet Tailing 12 months Net Income as of January 31, 2021. Units are presented in millions of U.S. dollars.

Moreover, when compared with the other (traditional) automakers, both of the EV stocks seem to be dramatically over-valued (see table below). So is EV really too pricey, or do we need to take other factors into consideration as well?

EV Valuation and Peer Comparison As Of January 31, 2021

COMPANY NAME	FISCAL PERIOD	ENT VALUE	SALES	EV / SALES
Tesla	12/31/2020	$ 947,829	$ 31,536	30.06x
NIO	09/30/2020	$ 91,775	$ 1,780	51.57x
Valuation of Auto Stocks				
Toyota Motor	12/31/2020	$ 390,277	$ 249,370	1.57x
Daimler	09/30/2020	$ 226,528	$ 173,291	1.31x
General Motors	12/31/2020	$ 165,963	$ 122,485	1.35x
Ford Motor	12/31/2020	$ 157,837	$ 127,144	1.24x
Hyundai Motor	09/30/2020	$ 92,532	$ 85,881	1.08x

Units are presented in millions of U.S. dollars.

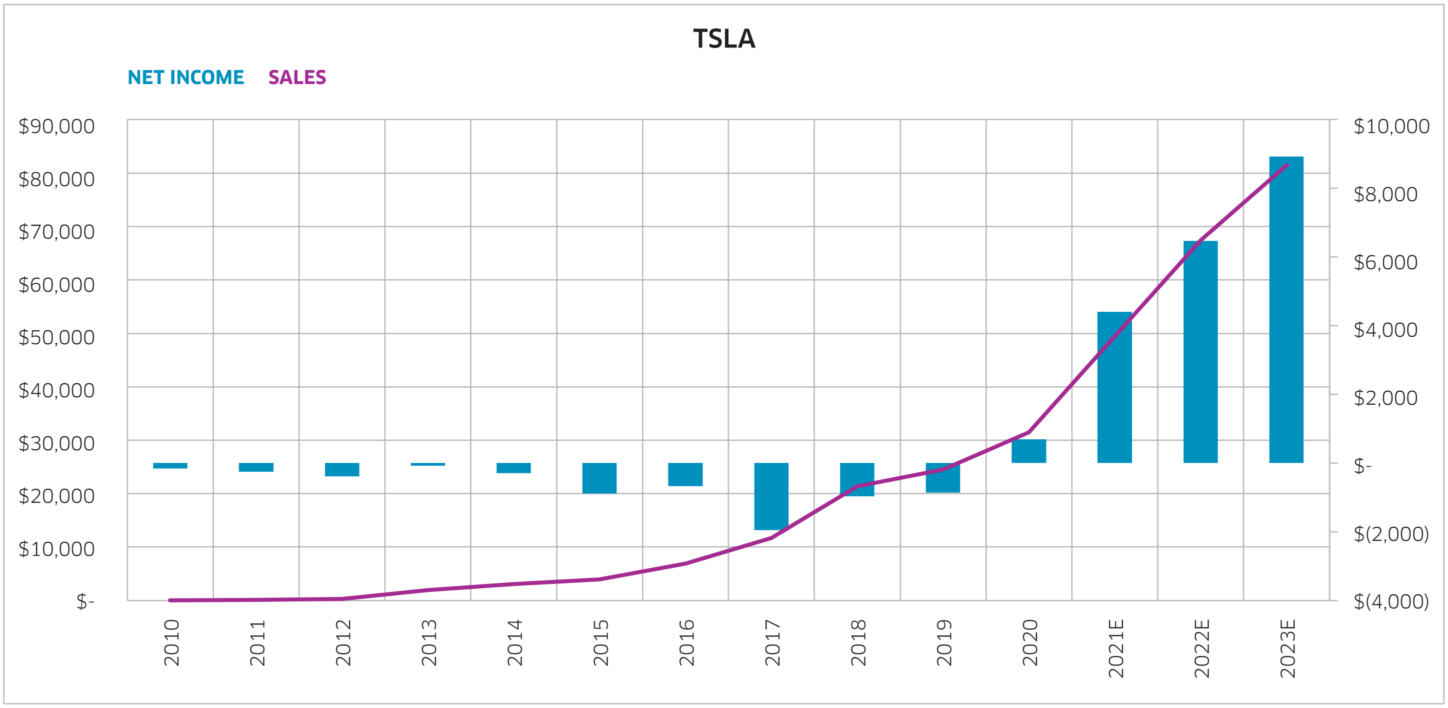
COMPANY NAME	FISCAL PERIOD	ENT VALUE	SALES	EV / SALES
Valuation of Tech Stocks				
Apple	12/26/2020	$ 2,194,480	$ 293,971	7.46x
Microsoft	12/31/2020	$ 1,797,299	$ 153,284	11.73x
Alphabet	12/31/2020	$ 1,344,220	$ 182,350	7.37x
Facebook	12/31/2020	$ 744,483	$ 85,966	8.66x
NVIDIA	10/25/2020	$ 386,210	$ 14,777	26.14x

Source: FactSet. Units are presented in millions of U.S. dollars.

The answer is the latter. Seasoned technology investors prefer to look beyond just the valuation matrix. What commonly sparks their endorsement for investment is usually the same magic word - growth.

Let's first take a look at the case of Tesla. Tesla's revenue has grown nearly 270 times in the first 10 years since its start manufacturing EV. Its enterprise value also rose in a comparable scale of more than 300 times. 2020 is the first year that Tesla finally became profitable. It is expected, based on the FactSet analysts' estimates, that Tesla's sales will continue to grow 1.58 times, and net income to grow 12 times in next three years. Its current valuation, when adjusted with these growth estimates, are well in-line with other high growth big-tech names (see previous table for the tech valuation comparison).

Tesla's Financial History



Units are presented in millions of U.S. dollars.

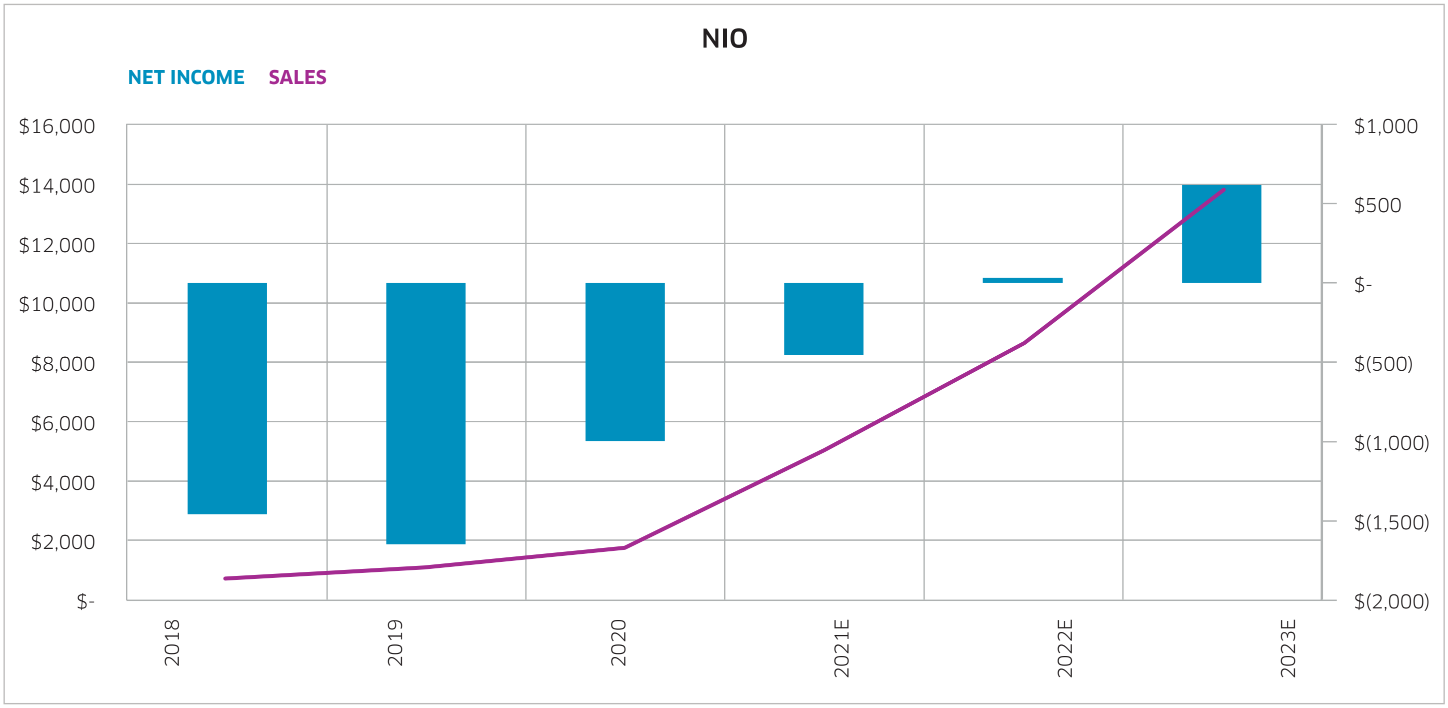
	ENT VALUE	SALES	NET INCOME	EV / SALES
2010	2,426.86	$ 117	$ (154)	20.79x
2011	2,843.45	$ 204	$ (254)	13.92x
2012	3,881.60	$ 413	$ (396)	9.39x
2013	17,722.42	$ 2,013	$ (74)	8.80x
2014	28,257.45	$ 3,198	$ (294)	8.83x
2015	32,449.22	$ 4,046	$ (889)	8.02x
2016	37,062.06	$ 7,000	$ (675)	5.29x

Units are presented in millions of U.S. dollars.

	ENT VALUE	SALES	NET INCOME	EV / SALES
2017	61,611.44	$ 11,759	$ (1,961)	5.24x
2018	68,090.18	$ 21,461	$ (976)	3.17x
2019	87,902.72	$ 24,578	$ (862)	3.58x
2020	759,419.61	$ 31,536	$ 690	24.08x
2021E	759,419.61	$ 49,463	$ 4,399	15.35x
2022E	759,419.61	$ 67,399	$ 6,471	11.27x
2023E	759,419.61	$ 81,390	$ 8,931	9.33x

Source: FactSet. Units are presented in millions of U.S. dollars.

Now, let's switch to the case of Nio. Nio, an EV manufacturer with a much smaller production output than Tesla, is still one of the top brand names in China. It started manufacturing EVs just three years ago and is currently suffering huge losses similar to the early years of Tesla. It is catching up quickly, however, as production has grown consistently and the company is expected to turn profitable in 2022. Many investors are speculating, from the proven story of Tesla's miracle over the past 10 years, that Nio might be the next Tesla, and at worst is a front-runner in the EV sector in China.



Units are presented in millions of U.S. dollars.

Nio's Financial History

	ENT VALUE	SALES	NET INCOME	EV / SALES
2018	1,563.01	$ 748	$ (1,460)	2.09x
2019	5,736.81	$ 1,132	$ (1,652)	5.07x
2020	58,073.50	$ 1,780	$ (1,000)	32.63x
2021E	58,073.50	$ 5,042	$ (454)	11.52x
2022E	58,073.50	$ 8,636	$ 34	6.72x
2023E	58,073.50	$ 13,778	$ 621	4.22x

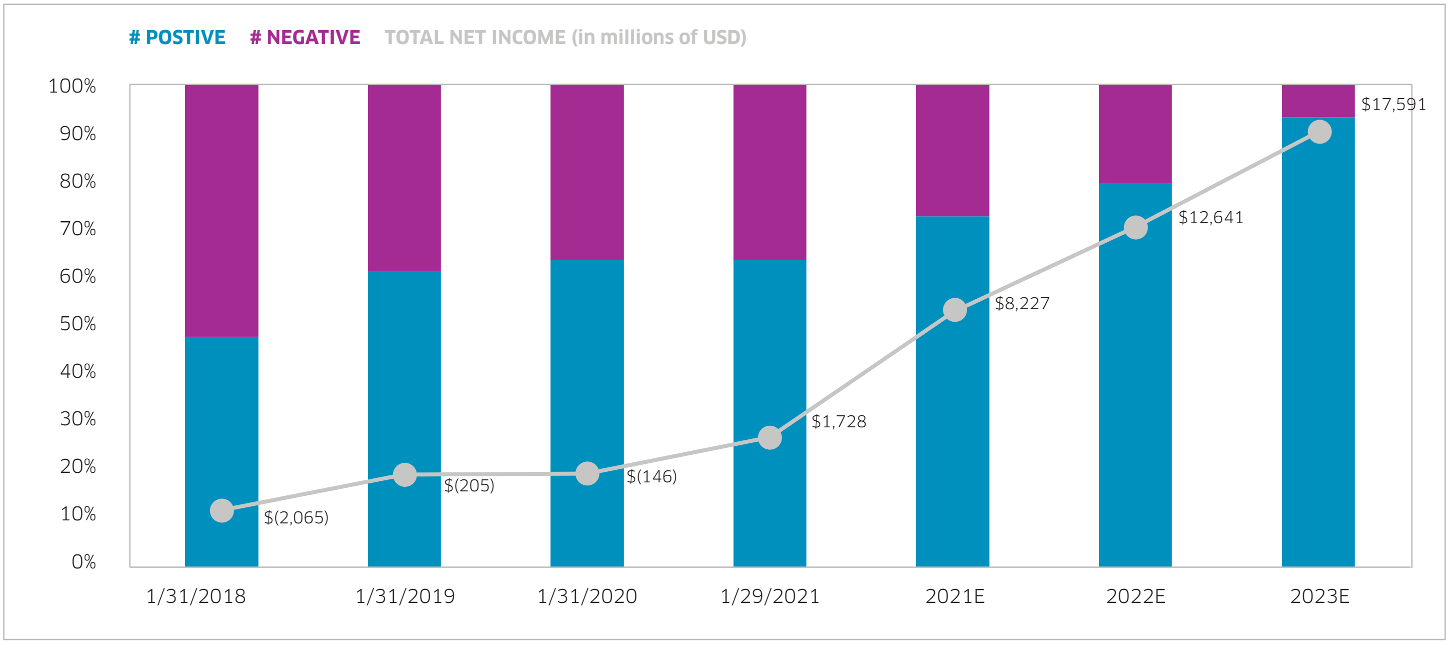
Source: FactSet. Units are presented in millions of U.S. dollars.

Sector As-A-Strategy

Investors should worry less about how many cars Tesla can sell, or whether Nio can lose less in the next quarter, but rather focus on the overall, industry-wide, accelerated improving picture of earnings. Based on the FactSet analysts' estimate consensus, the overall CELS index aggregated earnings will not only grow exponentially, the majority of companies in the clean-energy industry, as represented by the CELS index universe, are expected to be profitable in three years. The percentage of companies that reported positive earnings in the CELS index, has grown from 48% in 2018 to 64% in 2020, and are expected to be 93% by 2023.

CELS Earning Growth and Positive Ratio

Bar charts are measured by the percentage of companies within the CELS index that reported (expect to report) positive or negative earnings.



Source: FactSet tailing 12 months net income and estimates data as of Jan. 31, 2021.

Conclusion

The Nasdaq Clean Edge Green Energy Index (CELS) returned an exceptional 185% in 2020. This has refreshed many investors' concerns that we might be witnessing a bubble and burst story similar to what happened among dot-com names in the early 2000s.

Our review of CELS index's fundamentals shows that the skyrocketing of the index in the last year was mainly due to the improved profitability and the brighter outlook of the industry. The total net income of the clean-energy sector, as represented by CELS index's universe, has finally turned positive since March 2020. Its revenues are expected to continue growing with an average of 25% per year and net income with an average of 117% per year. This will sharply improve the industry's net profit margin to over 10% in 2023 and outperform the current net margin of 7.2% in S&P 500.

Although the fluctuations of individual companies' quarter to quarter earnings do impact their short-term valuations and drive a lot of market attention, long-term investors should still focus on the sector's aggregated trends to make clearer assessments. Factset analysts' estimate consensus tells us that the improved profitability will be widely observed within the clean-energy sector over time, with 93% of the companies expected to become profitable by 2023.

Investors can gain access to the clean-energy sector by tracking the Nasdaq Clean Edge Green Energy Index (CELS) through the First Trust Nasdaq Clean Edge Green Energy Index Fund listed in the US, London, or Canada (Ticker: QCLN).