Off To The Races: Global Electric Vehicles Set To Take Off (Further)

- **Global purchases of electric vehicles surged last year, near-doubling sales in 2020 despite the -16% y/y contraction in total vehicle sales around the world.**
- **Europe has driven the gains on the back of a tighter regulatory environment, along with ramped-up purchase incentives. Sales of EVs in Europe continue to accelerate through the first half of 2021, comprising around 15% of all new sales.**
- **However, China still holds by far the largest stock of EVs, the greatest number of EV manufacturers and models, and the most expansive charging infrastructure network. Over the medium term, its growth prospects, at least on a volume basis, have made it one of the most attractive—though perhaps somewhat impenetrable—markets for electric vehicles.**
- **Enter stage left...the United States. Last week's executive order by US President Biden could be a game-changer. It targets a 50% EV share of all new vehicle sales by 2030. While it may not be as ambitious as some, in sheer numbers it is big—and importantly, *should* have real money behind it.**
- **Nevertheless, if achieved, it would likely only get the US to the starting line. By 2030, the new mandate would translate into approximately 8 mn annual EV sales in the US, where China is expected to approach 9 mn units that year. And China can surely be expected to respond.**

GETTING BACK IN THE GAME

While the near term auto sales outlook has been fraught with uncertainty, the medium term outlook for electric vehicle (EV) sales arguably proffers more clarity. Global electric vehicle sales have taken off over the course of the pandemic. Total EV sales in 2020 increased by 43% y/y (to 3 mn units), whereas all light vehicle sales dropped by 16%. Global EV stock now stands above 10 mn (1% of total LV stock), while new EV sales represent almost 5% of global LV sales. European EV sales more than doubled to 1.4 mn units in 2020, overtaking Chinese purchases at 1.2 mn units (12% y/y). The US was barely in the game with less than 300 k EV sales in 2020 (chart 1).

A variety of factors have supported global EV demand. Broad-based policies have underpinned a consumer-driven recovery that has benefited most durables including vehicle sales. Moreover, wealth effects have also likely bolstered EV sales, which tend to be pricier than traditional internal combustion engine models. Targeted EV purchase incentives also ramped up substantially (+25% y/y according to the International Energy Agency—IEA) over the course of the pandemic, particularly in key European markets like Germany. Meanwhile, greater model selection also underpinned EV sales strength globally.

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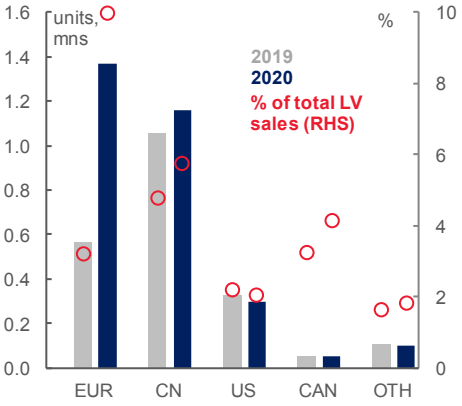
Chart 1

Europe Drove Global Electric Vehicles Sales Growth in 2020



Sources: Scotiabank Economics, IEA.

In early August, President Biden signed an executive order outlining a target that 50% of all new vehicle sales be electric by 2030. (Incidentally, a CarGurus survey earlier this spring found 52% of American consumers felt they would "probably" or "definitely" own an EV within the next 10 years.) This 50% target may be less ambitious than the likes of Canada, the UK, Japan and several states including California with 100% targets by 2035, but in sheer volume, it is material. In 2020, only 2% of new sales were EVs in the US. Under a status quo (or "Stated Policy") scenario, the IEA estimates that this share would rise to about 16% by 2030 (or 2.5 mn vehicles). All else equal, meeting the 50% target would suggest EV sales of over 8 mn units by 2030 in the US.

President Biden stated his new slew of EV policies should get the US "back in the game". It should at least get the US to the starting line. The President noted that China "owns the market" currently. While Europe may have overtaken China on a flow basis in 2020, China still dominates on a stock basis and, perhaps most importantly, is set to outpace all other regions on a volume basis over the long term. Under the IEA's Stated Policy scenario, Chinese EV sales would approach 9 mn by 2030, while European sales would be closer to 6 mn (chart 2).

The race is likely just starting as China transitions its support for the EV market. China has massively subsidized both supply and demand channels for the EV market for years. According to the Centre for Strategic and International Studies, China's USD60 bn in subsidies has spurred the development of over 400 domestic EV manufacturers. Not surprisingly, consumer choice in the Chinese market stands far above even regulatory-heavy environments like Europe (200 models versus 101 and 49 in Europe and the US, respectively, according to the IEA).

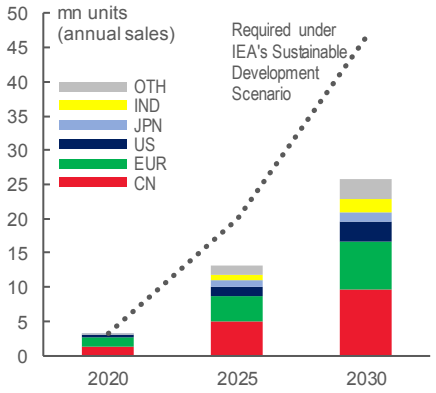
While China had begun phasing out subsidies prior to the pandemic, this was put on hold until the end of 2022. Furthermore it was apparently driven by a desire to better target support versus remove it. In a lucrative and burgeoning market, China can surely be expected to make the next move in protecting its market lead over the long run.

Importantly, the US *plans* to put real money in the game. The *American Jobs Plan* tabled earlier this year had earmarked USD174 bn to bolster the domestic EV market including through purchase incentives and charging infrastructure. Purchase incentives could amount to up to USD12,500 per vehicle under the plan—if the budget bill is passed—once top-ups are included for American-made and union-protected vehicles. This would top those of already-generous European markets, as well as Canada—though to a lesser degree depending on your province of purchase (chart 3).

Pricing meanwhile should come down over the medium term. Looking through recent transitory inflationary pressures, higher electric vehicle prices (at least in North American markets) may be more about market concentration than technological factors given Tesla sales accounted for over three-quarters of EV sales in the US last year. The average price of an EV in the US is in the range of USD55 k versus USD30 k in China. Looking forward, greater brand and model selection should improve affordability, particularly for coveted SUV models in the US where only 23 models were available last year—less than half those in Europe, and not even a quarter of those available in China.

Chart 2

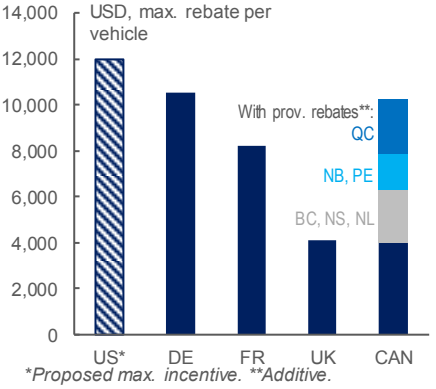
Global Electric Vehicle Sales to Gain Momentum



Sources: Scotiabank Economics, IEA.

Chart 3

Proposed American Electric Vehicle Subsidies Hefty

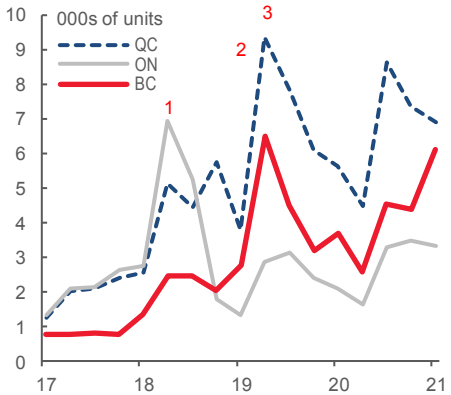


**Proposed max. incentive. **Additive.*

Sources: Scotiabank Economics, government websites.

Chart 4

New ZEV Registrations in Canada



1: ON eliminates subsidy; 2: Federal introduces subsidy; 3: BC halves subsidy.

Sources: Scotiabank Economics, Statistics Canada.

Material costs also matter. Battery packs are still a substantial cost factor—around a quarter of production costs—but these have been coming down (by 85% in the last decade and 13% in the last year alone, according to BNEF). Substantial price reductions are still expected, with the same source suggesting price parity with traditional engine vehicles could be achieved within five years. A wild card remains the impact of precious metal and material consumption on prices over the medium term as EV production (and consumption) scales up.

In the meantime, policy measures are likely to distort short-term price movements. Globally, the average price of an EV increased by 6% in 2020, but this was largely a result of the larger share of sales in Europe where prices are higher than China. In these respective markets, prices nevertheless retreated in 2020 (for example, BEVs by -3% y/y in China and PHEVs by -8% y/y in Europe) as both markets introduced price caps on vehicles over a certain price. There is not yet clear data to track this.

Closer to home, the fragmented and fluctuating policy incentive landscape across Canada also distorts the picture. Federal and provincial incentive spending programs are clearly driving differentiation (chart 4). All regions saw a boon to sales when the federal government introduced EV incentives in the spring of 2019. Meanwhile, Quebec dominates the national market in terms of volume with its higher provincial subsidies along with sales mandates. British Columbia punches above its weight, but saw a temporary pull-back when its provincial incentives were halved in June 2019. The Ontario market still remains sluggish after its incentive program was halted in 2018.

Regions (and countries) may find themselves competing for limited inventory in the years ahead as production scales up. This could very well support profit- versus volume-strategies which would add to price pressures at least in some markets.

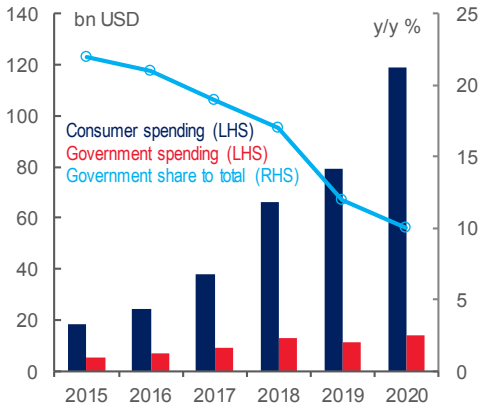
IF YOU BUILD IT, THEY WILL COME

Price is only one hurdle to higher EV adoption. In fact, consumer spending has been accelerating at a much faster pace than government subsidies for EV purchases, which has brought down the share of government support (chart 5). Survey after survey cites range anxiety (or access to fast-charging infrastructure) as a key impediment to higher EV sales including a recent one by the Canadian Vehicle Manufacturers' Association (CMVA). The same survey points to distinctions between urban and rural drivers, which is a particularly important consideration for geographically-expansive countries like Canada and the US. Nevertheless, the proposed scale-up of another half a million charging stations in the US would go a long way in closing current gaps with other more advanced markets in this regard (chart 6).

European markets have demonstrated the role regulatory approaches can play in accelerating the transition to EVs. Vehicle emissions standards have been progressively tightened since early 2019, propelling EV sales forward (at the expense of traditional internal combustion engine vehicle sales). The rapid sales momentum in 2020 has carried over into 2021 with first-half EV sales increasing to 15% of market share, according to the European Automobile Manufacturers' Association. President Biden's plans to advance smart fuel efficiency and emissions

Chart 5

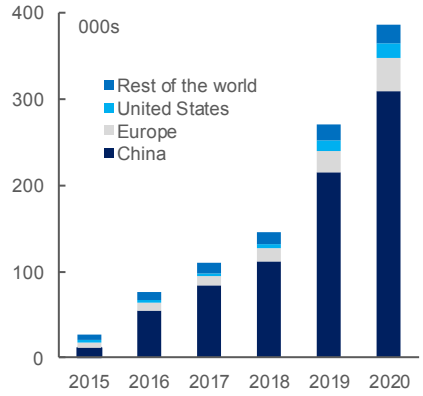
Global Consumer Spending on Electric Vehicles Accelerating



Sources: Scotiabank Economics, IEA.

Chart 6

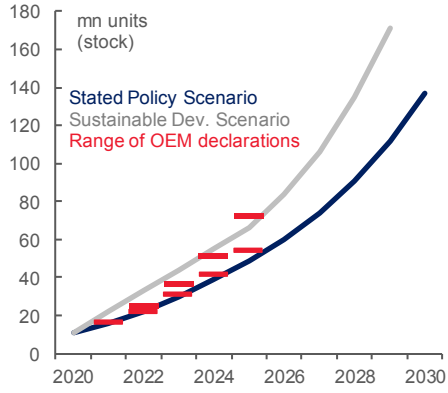
Publicly Available Fast-Charging Stations for Electric Vehicles



Sources: Scotiabank Economics, IEA.

Chart 7

Auto Manufacturers Setting Ambitous Production Targets



Sources: Scotiabank Economics, IEA.

standards that were rolled back under former President Trump will underpin the broader transition. Irrespective of the levels themselves, a coherent approach to emissions standards across the continent would remove a headwind to vehicle production.

President Biden is arguably playing catch-up with auto manufacturers themselves. The IEA reports that 18 of the top 20 global vehicle manufacturers have stated plans to widen EV models and rapidly scale up production. Over the near term (i.e., 2021–22), OEM production plans largely align with the IEA's roll-up of government stated policy plans in terms of global EV sales. By 2025, EV production plans according to OEM declarations would exceed current policy ambitions (before taking into account the new US mandate), bringing the sales trajectory closer to the agency's "Sustainable Development Scenario", i.e., what would be required to meet net zero targets by 2050 (chart 7).

Needless to say, this is clearly a space to watch.

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