Our View: EV Tipping Points – BloombergNEF's Wishful Thinking

Philip Verleger
April 8, 2024

On March 28, Bloomberg published an article asserting that EVs had passed "the tipping point to mass adoption in 31 countries."[i] Its subtitle read as follows:

> Once 5% of new-car sales go fully electric, everything changes — according to a Bloomberg Green analysis of transitions underway across four continents.

The Bloomberg writer Tom Randall began his piece with this anecdote:

> New technologies have a tendency to blindside. When color TVs were introduced in the 1950s, for example, they seemed like a flop. The devices were expensive, programming was scarce, and after a decade on the market few homes had one. Then suddenly prices dropped, a ratings war ensued, and in just a few years most US households were watching *The Jetsons* in its futuristic palette.

As noted, Randall claims that the five percent of new sales "threshold signals the start of mass adoption." In making this claim, Randall and the Bloomberg Green consultants lean heavily on the tipping point concept, which the *Oxford Dictionary* defines as "the point at which a series of small changes or incidents becomes significant enough to cause a larger, more important change."

Tipping point discussions in the global-warming-related literature seem to have begun with the International Institute for Applied Systems Analysis (IIASA) in Austria. The organization seems dominated by physicists and mathematicians devoted to applying mathematical models to everything. Their approaches can be traced to the work of MIT researcher Dennis Meadows, who published *Limits to Growth* with other authors in 1972.

Meadow's research has been widely discredited by economists, who highlighted two problems. First, Meadows *et al*. failed to understand the role of innovation. Second, most systems analyses ignore the principle of prices and costs.

The claim that EVs have reached a tipping point and will move to mass adoption is naive. Indeed, "naïve" is not a sufficient pejorative. When we read the article, our first reaction was, "What s@#t!" Those who see EVs rapidly penetrating the transportation market, in our view, lack historical perspective, and their projections are idealistic wishful thinking.

Randall's writing illustrates the naivety of the IIASA and Bloomberg Green:

> New technologies—from televisions to smartwatches—follow an S-shaped adoption curve. Sales move at a crawl during the early-adopter phase, before hooking into a wave of mainstream acceptance. The transition often hinges on overcoming initial barriers such as cost, a lack of infrastructure and consumer skepticism. The tipping point signals the flattening

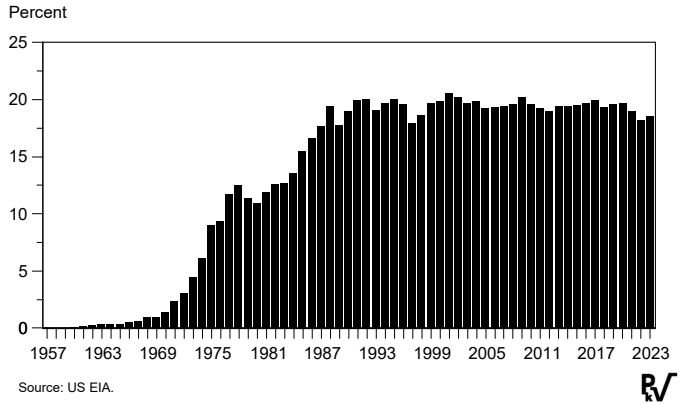
> of these barriers. While each country's journey to 5% plays out differently, timelines converge in the years that follow.
>
> "Once enough sales occur, you kind of have a virtuous cycle," said Corey Cantor, an EV analyst at BloombergNEF. "More EVs popping up means more people seeing them as mainstream, automakers more willing to invest in the market, and the charging infrastructure expanding on a good trajectory."

A review of historical transitions provides no analytical support for the five-percent tipping point assertion: **NONE**. The claim's defect relates to its assumption that hurdles such as costs and the industry structures required to support new technologies "flatten," that is, become inconsequential, after the threshold is passed.

One needs to look no further than nuclear power to understand the absurdity of Cantor's statement regarding a "virtuous cycle." When introduced, nuclear power generation was heralded in the same way as EVs are today. Lewis Strauss, who chaired the US Atomic Energy Commission in 1954, made the following claim: "Our children will enjoy in their homes electrical energy too cheap to meter."[ii] The dream of low-cost nuclear power proved to be just that. Costs and delays have risen to the point where nuclear plant construction has essentially stopped.

Nuclear power generation in the United States passed the five-percent penetration level in 1973. Its timeline, however, did not follow the IIASA S-shaped adoption curve that Randall described. As Figure 1 shows, the share of US electricity from nuclear power has never surpassed twenty percent. The reasons this technology failed to achieve a greater market share once it passed its "tipping point" are many. The accidents at Three Mile Island and Fukushima clearly slowed penetration. However, the primary obstacle has been rising construction costs.

Figure 1
Percentage of US Electricity Produced by Nuclear Power, 1957 to 2023



EVs will face similar barriers. The difficulties in expanding the electricity grid in many countries will hinder adoption. The higher electricity costs associated with constructing needed distribution systems will also likely hamper it, as will the lack of charging stations.

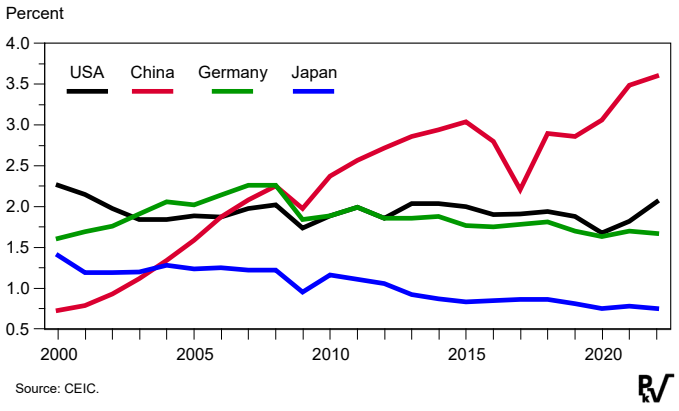
However, the greatest impediment to EV adoption will be the coming trade war with China. Renewable energy advocates are blissfully ignorant of economic events outside their silos, as are those in the oil industry. Thus, it is almost certain that Randall and Cantor and others like them have ignored the growing troubles with the Chinese government.

The China problem was highlighted in an April 5 *Wall Street Journal* article titled, "China Shock 2.0 Sparks Global Backlash Against Flood of Cheap Goods."[iii] The authors wrote that the Chinese are trying to flood the world with cheap goods to revive their economy:

> To offset an epic property bust, China's leaders are funneling investment toward the country's vast factory floor. Propped up by cheap, state-directed loans, Chinese firms are seeking buyers overseas for a ballooning surplus of goods they can't sell back home. The trend has echoes of the Chinese export surge of the early 2000s estimated to have cost around two million manufacturing jobs in the U.S.—a phenomenon economists labeled "the China shock."

A telling graph in the article shows that Chinese exports as a share of global GDP have surged from less than one percent in 2000 to almost four percent in 2023. In contrast, the shares for the US, Germany, and Japan have been relatively stable (see Figure 2).

Figure 2
Goods Exports as a Percentage of Global GDP for the United States, China, Germany, and Japan, 2000 to 2022



This will not continue. The *Journal* writers note that the United States and European Union are threatening to raise trade barriers to Chinese-made EVs and renewable energy equipment. Brazil, Indonesia, India, and Mexico are following suit. The authors also quote Janet Yellen:

> "China is too large to export its way to rapid growth," Treasury Secretary Janet Yellen said Friday in Guangzhou, her first stop on a trip to China in which she repeatedly warned her hosts against revving up its economy by churning out cheap goods. "And if policies are oriented only at generating supply and not also at generating demand, global spillovers will result."

EV sales will fall victim to the coming trade war ignored by BloombergNEF experts and other tipping-point advocates. Yes, EV sales will increase as consumers become more accepting of them. However, they will probably never replace more than half—more likely no more than one-third—of internal combustion engine (ICE) vehicles.

Randell and Cantor's mistake is equating EVs with color televisions. While color TV offers the same product for viewing but with a better-quality presentation, EVs are different from ICE vehicles. They offer similar mobility but come with significant unique issues.

The data on fuel use in Norway, which has made the most progress in replacing ICE vehicles with EVs, warns of a very long transition time for the latter. On the surface, the picture looks promising. A Reuters commentary asserted that EVs could overtake "petrol cars" in Norwegian registrations by the end of 2024. The current data show that EVs account for twenty-four percent of Norwegian auto

registrations and hybrids another twelve percent. EVs also accounted for eighty-two percent of new car sales in 2023.

However, the EV penetration in Norway has had only a modest impact on diesel and gasoline sales. A graph in the Reuters report notes that diesel sales have been down just fourteen percent, and gasoline sales have been down by eight percent since January 2021: "'It's still a huge market for fossil fuels. We haven't seen the main dip yet,' Kristin Bremer Nebben, head of fuel retailers' association Drivkraft Norge, told Reuters."[iv]

Tipping points do occur in the manner Randall describes, as the color TV example demonstrates. Digital photography had a similar experience, replacing film photography almost overnight, especially among professionals, and passing the five-percent "tipping point" within weeks of its introduction. The change was accelerated because the digital camera manufacturers pushed hard for it, and users such as *National Geographic* quickly took advantage of the cost savings offered. Most of the suppliers of digital camera equipment came from the same country (Japan) as most of the suppliers of film cameras. The new product cut out film producers like Kodak and Polaroid, who had no way to resist. In addition, digital adoption was not hampered by infrastructure limits such as an aging, deficient electricity grid.

EVs enjoy none of these benefits. The transition to them will be slow and may be incomplete. Consequently, the credibility of those in the environmental community who trumpet the false EV tipping points today will be damaged.

---

[i] *Tom Randall, "Electric Cars Pass the Tipping Point to Mass Adoption in 31 Countries," Bloomberg, March 28, 2024 [https://tinyurl.com/ypspytah].*

[ii] *Abundant Power from Atom Seen,"* The New York Times*, September 17, 1954 [http://tinyurl.com/526ft3ka*

[iii] *Jason Douglas and Dave Sebastian, "China Shock 2.0 Sparks Global Backlash Against Flood of Cheap Goods,"* The Wall Street Journal*, April 5, 2024 [https://tinyurl.com/yc5n9v3f].*

[iv] *Nerijus Adomaitis, "EVs could overtake petrol cars in Norway by end-2024," Reuters, April 4, 2024 [https://tinyurl.com/msnx2ke7].*