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## I N S I G H T

### For Carbon Pricing, the Only Way Isn't Necessarily Up

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# For Carbon Pricing, the Only Way Isn't Necessarily Up

Recently there has been increasing convergence, particularly among various European think tanks, towards the idea that the price of carbon is going to keep rising. They suggest that, in Europe, we are going to 150 euros a ton, and then on to 350 euros a ton, and beyond. The Bank of England's Breedon is the latest to warn companies to be ready for 150 USD per ton prices in their scenarios.<sup>1</sup>

There are several reasons why this assumption is questionable. Simply looking at the long-term fundamentals of the market, ultra-cheap renewable-based power is likely to drastically change the landscape of emission reduction technologies across different sectors of the economy, regardless of a carbon price. It is the politics, however, that pose the biggest challenge: the current enthusiasm for ever-rising carbon prices is driven by speculators and financial investors betting on a market they are told by its own regulator can only go up.<sup>2</sup> With their gains coming at the expense of the European consumers, who pay carbon prices through their power bills, it is a scenario that is hardly politically feasible.

In June 2019, we published an Autonomy Insight piece on carbon that discussed how we were thinking about pricing in carbon emissions, talking through the many issues with a non-linear climate system.

Considering the material change in international ambitions and the corresponding change in the market since the piece was published, we think it is time to update that work. Below is our most recent thinking on the current state of the carbon market and where we believe we might be going from here.

## State of the Carbon Market

As countries globally have become more focused on the emission targets they communicate to their own electorate and to the world, carbon pricing mechanisms have come to the forefront of investor consideration.

The global picture on carbon pricing, however, is far from clear. Looking at the three global economic powerhouses, the landscape is fragmented.

The E.U. has put carbon markets at the core of its climate strategy, and a tightening of the frameworks around emissions credits scoping has become a political objective in Europe.

In the U.S., there is no clear backing yet for an explicit, nationwide carbon price, with policymakers preferring regulatory and tax credit measures in order to mitigate the regressive nature of carbon taxes and markets on the poor, who would pay more of their overall income on increasing power charges from higher carbon prices.

China has recently launched its own carbon market, but the prices and scope of the market are still limited and have already generated an intense debate on the cost to the Chinese economy.<sup>3</sup>

This fragmentation matters because without a common carbon price, trade partners need to protect their domestic industry against unfair competition from countries that do not charge the same for carbon, leading to expensive, administratively unwieldy, and possibly illegal trade barriers.

## Welcome to the Climate Club

There is no more prominent figurehead in carbon economics than William Nordhaus, Nobel Prize winner and author. His insistence on the need for a global price of carbon seems something worth thinking through.

Nordhaus has described the climate as a global public good, pointed out the free rider problem, and talked about the social costs of higher emissions. He concludes that it is really only a harmonized (global) price of carbon that matters or is feasible.<sup>4</sup>

In other words, the father of climate economics is saying that the market idea that European carbon is going to the moon while ignoring other global carbon prices like California makes little sense in the long run. Expecting a harmonized global carbon price in the near term, however, is not practical, but that must be the only direction for policymaking in the longer term as the impact of carbon in the atmosphere is agnostic to its original source.

A multilateral climate club that is open to all, with a zero tariff for participants that agree to charge the same domestic price for carbon, is a sound idea, but it comes with some caveats.

- A transition period would require national carbon border price adjustments – but this is not an easy shift, and it may come at a significant short-term cost in terms of higher domestic carbon prices along with reduced trade and, potentially, growth.
- Short-term costs are also likely to come from difficulties in implementation. Take, for example, the E.U.: the implementation of such a system is subject to huge uncertainty and arbitrage. Bureaucrats are going to tax imported products according to assessed carbon intensity and origin, but life is complicated and there are bound to be immense areas for arbitrage and gaming within such a system because it is next to impossible to know the true carbon content for a whole host of different products located in different countries with variable carbon commitments and pricing policies.

A climate club is bound to be a mess if Europe tries to do this alone, and the higher their unilateral carbon price, the more distortive the potential issues. It helps to have another major regional club member at least, and the U.S. may be the most likely.

There is, however, a catch. The U.S. does not have a nationwide carbon price, is lukewarm on a cap-and-trade system – preferring regulation – and will certainly not sign up for a very high carbon price at the outset.

Their reluctance will limit what Europe may be prepared to do unilaterally in the near term, whether we like it or not, because the costs of continuing to be the only member of the club are high.

## Speculation and its Disconnects

Importantly, the issues with the current carbon market setup extend beyond the lack of global coordination. Take the current design of the EU-ETS: while the almost inexorable mechanisms tightening the supply-demand balance are clear, we see huge issues with some analyst forecasts for immediate very high carbon prices. Many of these forecasts have little to do with fundamentals, or market design mechanisms; they have more to do with the massive amount of speculative capital that has come into the European carbon market to date.

The number of positions held by financial actors has doubled this year.<sup>5</sup> Berenberg has a target of 110 euros per ton this year,<sup>6</sup> based on the idea that we will run out of permits somehow, despite having an overhang in excess of 5 billion euros worth of these permits in 2020.<sup>7</sup>

Of course, we may run out of permits in the future, but we may not. Bloomberg, on the back of a presumed further tightening of emissions and expansion of included sectors come July, sees a potentially similar trajectory.<sup>8</sup>

This is, at its core, a market where regulators determine the scope of the demand and set its supply – something that makes it the ultimate political market. The politics of this market, however, as prices go up along with the power bills of the European consumers, are heating up. Can Europe afford these unequal, immediate costs to its poorer citizens? Can it politically afford another *gilets jaunes*?

This pathway of change we have embarked on may not be tenable, risking causing a delay to urgent climate action. Meanwhile, with a multilateral club still far from existence, the California carbon system is trading below 20 USD per ton.

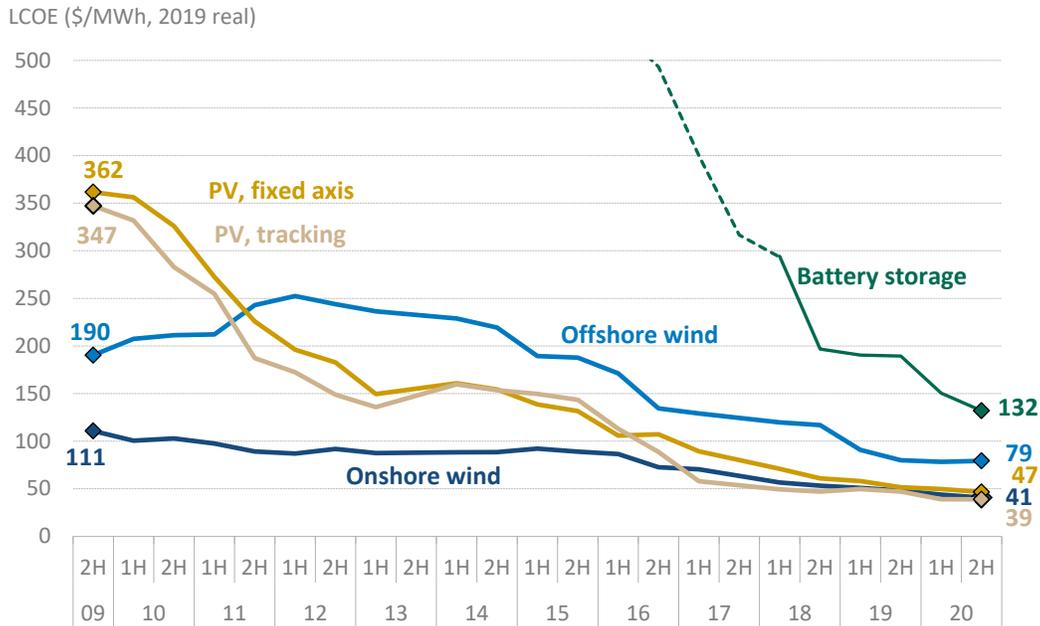
## The Falling Costs of Renewable Energy Generation

Something else is afoot in the relative collapse of renewable energy prices vs. fossil fuel generation costs, a dynamic which may have a significant downward impact on the long-term price of carbon.

The carbon market at its core is a mechanism to induce a gradual switch out of emission-intensive energy and production methods into less emission-intensive alternatives, along a merit order from the cheapest to the most expensive.

The base question, therefore, should almost always be “how much more expensive is low-emission vs. high-emission?” Some years ago, the answer was “considerably more expensive” (see chart below on renewables costs vs. fossil fuel costs). At this point, at least for power generation, the low-emission alternatives are cheaper, increasingly even considering the additional cost for system stability.

## Levelized Cost of Electricity – Global Benchmarks



Source: Bloomberg New Energy Finance (BNEF), 2H2020 LCOE Update. Chart modified by Autonomy Capital.

Note: The global benchmark is a country weighted-average using the latest annual capacity additions. The storage LCOE is reflective of a utility-scale Li-ion battery storage system with four-hour duration running at a daily cycle and includes charging costs assumed to be 60% of wholesale average power price. All LCOEs calculations are unsubsidized. In 2H 2017, BNEF did not publish any update. Dashed green lines reflects derived LCOEs based on historic battery pack prices. Continuous green line reflects collected project data from 2018.

In other words, the switch is going to happen anyway – for economic reasons – regardless of carbon pricing. So, the idea that demand for emission permits will continue to be strong from utilities really reflects an assumption around the switching time for our power system from fossil fuels to solar and wind.

It is true that the higher the carbon price is, the faster that switching can happen, and indeed we may have carbon pricing to thank (at least partially) for faster adoption of renewables and their associated fall in cost so far. The limit, however, is twofold:

- First, it is the consumer who ultimately pays for carbon under the existing system, and we indicated above that consumers may be paying too much for it at this point.

- Second, the financial health of utilities (and whether they can remain in business) is very far from assured if the switching happens quickly. Some may survive the transition to being renewables-driven, but many others may find their existing fossil fuel investments and infrastructure are rapidly loss-making.

The shift to renewables will create lower overall capacity utilization for existing fossil fuel generation systems, with lower profitability and the potential to run at considerable loss once the switching gets going in earnest.

As the system shifts to cheaper renewables and reduces utilization of existing fossil generation capacity, solvency problems will emerge, creating political issues again in terms of how to bailout (at least temporarily) socially useful “backup” power systems that are financially nonviable in their own right.<sup>9</sup>

Our own view is that the power system will be overwhelmingly renewable within the next decade and a half, able to accommodate deep renewable penetration, based purely on the relative economics of the different energy systems. As a result, we think these solvency issues will appear soon.

## System Thinking

The shift to renewables will have far-reaching consequences. Within a renewable power system, it is not clear that EU-ETS pricing today should be based on expectations about how to decarbonize the hardest to abate industrial sectors looking at today’s technology and processes. This is not only because it is unfair, as we saw above, but because it really assumes that all else is unchanged.

Current projections for prices – despite knowing that a renewable power system will operate at a very low (if at all positive) marginal price of electricity given excess capacity or redundancy in the system – assume that such a system will not lead to different production processes in industry itself. In our view, that is hardly likely to be the case.

Take steel as an example: with cheap, distributed, resilient and abundant renewable power, we may not produce or need steel in the same way that we do today. With breakthroughs in material science proceeding at the rate we currently expect, will we even produce steel?

Already we are seeing disruption happening at lightning speed in how we think about mobility – from EVs, to autonomous vehicles, and to mobility as a service. While it is difficult, if at all possible, to get our head around such complex changes in our economies and markets, past history tells us that they will likely be disrupted in ways and through technologies that are difficult to imagine, let alone predict.

## Many Roads Ahead

There are then a lot of uncertainties to think through and therefore a wide range of potential outcomes in terms of carbon pricing. Currently, however, the market can see only one path.

Different scenarios may play out. One includes markets starting to discount the political and social consequences of ever higher carbon prices. Another scenario may see our production systems becoming disrupted with

technologies unleashed by the underlying economics of shifting power systems towards cheap renewables. And we should also not ignore the possibility (inevitability?) of a more harmonized global or “club” carbon price in the context of any single national policy. In these scenarios, the potential paths for carbon pricing are less clear.

Given all of this, what are the trades?

First, some caution might be warranted in any “one way” trade, especially with technology moving so fast.

Second, the focus on the European carbon market in isolation might give way to a broader focus on the potential for various other carbon markets within a framework of a more harmonized agenda on global carbon pricing, should it appear in the near future.

Finally, carbon prices are likely here to stay, with the ultimate global goal of removing CO<sub>2</sub> from the atmosphere, and, therefore, ultimately focusing on the marginal price for specific industrial processes and storage of carbon. Our next piece will be on this subject, and – we hope – it will not be what you are expecting.

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<sup>1</sup> <https://www.bloomberg.com/news/articles/2021-05-18/boe-s-breedeen-says-banks-are-unprepared-for-150-carbon-price> as of May 18, 2021.

<sup>2</sup> 'EU climate chief warns against curbing carbon price rally' as of May 7, 2021.

<sup>3</sup> 'China tempers climate change efforts after economic officials limit scope' as of June 9, 2021.

<sup>4</sup> 'Climate Clubs: Overcoming Free-riding in International Climate Policy' accessed June 2021.

<sup>5</sup> BloombergNEF: European Carbon Monthly as of May 28, 2021.

<sup>6</sup> <https://www.linkedin.com/pulse/carbon-110-how-when-lawson-steele> as of March 11, 2021.

<sup>7</sup> European Commission: 'Publication of the total number of allowances in circulation in 2020 for the purposes of the Market Stability Reserve under the EU Emissions Trading System established by Directive 2003/87/EC' as of May 12<sup>th</sup>, 2021.

<sup>8</sup> BloombergNEF: European Carbon Price Rallies Toward Reforms as of May 12<sup>th</sup>, 2021.

<sup>9</sup> 'The Great Stranding: How Inaccurate Mainstream LCOE Estimates are Creating a Trillion-Dollar Bubble in Conventional Energy Assets' as of February 2021.