

## LESS IS MORE

Carbon markets around the world have built up an oversupply of permits – is this an amenable problem or incurable disease, ask Marcus Ferdinand and Emil Dimantchev

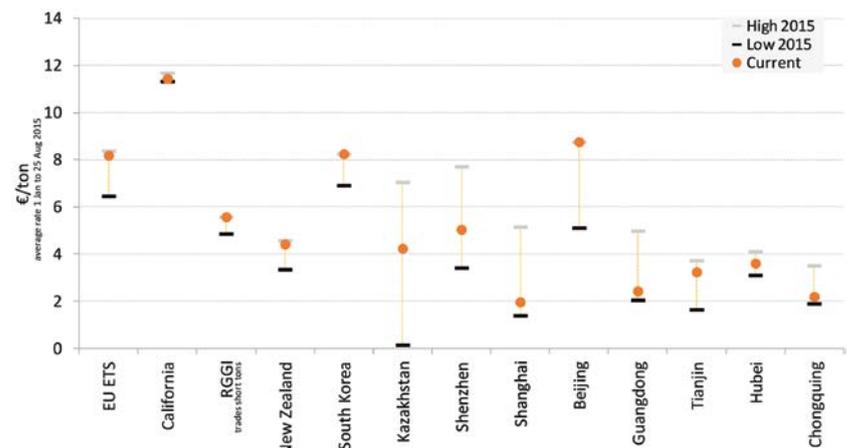
Carbon markets can reduce emissions, but their effectiveness has been limited by the prevalent practice of issuing more carbon allowances than necessary. Frequently the result of inflated emission forecasts and rigid market designs, an oversupply of permits lowers carbon prices and hurts the efficiency of markets. After learning early lessons, lawmakers in many jurisdictions have recently started to strengthen market designs. Yet consistent surpluses in many markets lead us to expect relatively stable carbon prices in the next few years in most markets.

Today, there are 17 emission trading systems (ETSs) in place in 35 countries, 12 states or provinces and seven cities. These jurisdictions are responsible for 40% of global GDP.<sup>1</sup> Despite the geographical diversity, carbon markets suffer from an almost universal affliction: a significant oversupply of CO<sub>2</sub> allowances. An excess of allowances has caused markets to underperform as a tool for cutting emissions, calling into question the causes for the oversupply phenomena and potential remedies.

There seem to be two key reasons why many carbon markets are oversupplied. First, policy-makers have consistently overestimated future emission pathways used to determine the amount of CO<sub>2</sub> allowances to be issued. Emission forecasting relies on the precision of long-term macroeconomic outlooks and energy modelling, two areas hardly known for their accuracy. Yet the practice of overestimating emissions is so widespread that it suggests there is bias, and not just forecasting error. Second, carbon markets that issue allowances based on a rigid schedule become easily oversupplied when emissions turn out lower than expected.

In Europe, both factors caused the

**FIGURE 1: CARBON PRICES AROUND THE WORLD IN 2015 (IN €/t)**



## SHOULD PARIS LEAD TO A SCHEDULED PERIODIC REVIEW OF CONTRIBUTIONS, IT WILL LIKELY CREATE POLITICAL PRESSURE TO STRENGTHEN CARBON MARKETS

accumulation of a large two billion tonne oversupply. Regulators expected the carbon price to be €30 (\$27) per tonne in 2020, but the financial crisis and subsequent recession took them by surprise. Rapid growth of renewables and strong improvements in energy efficiency also belied regulators' expectations. As a result, the price of carbon plunged from around €30/t in 2008 to its current level around €8/t, via €3/t in 2013.

Currencies have been converted by using the average year-to-date euro exchange rate with the respective local currency. The cut-off date for prices is 25 August 2015. The Californian carbon market has also been oversupplied since 2014. This is because regulators set the cap of allowances based on forecasts that ultimately underestimated growth in renewables and underrated the emission-reducing potential of other climate policies. Though the market's creators expected the carbon price to be in the €11-23/t

range, the current excess of allowances has pinned the price near the €9/t price floor.

The Regional Greenhouse Gas Initiative (RGGI) has likewise featured an excess of allowances as a result of an unforeseen increase in natural gas usage and the financial recession. In 2014, RGGI states cut the cap by almost half, sending the carbon price from the price floor near €1.50 per short ton (st) to its current level around €5/st. However, we project energy efficiency improvements and growth in renewables to keep the market oversupplied.

Both sides of the Atlantic, therefore, have seen an inflation of emission forecasts. All in all, one historical review concluded that European and American regulators have systemically overestimated growth in industrial emissions by around 1% per year.<sup>2</sup> Today, emerging carbon markets, too, show such a tendency.

## SURPLUSES MAY BRING A FALSE SENSE OF SECURITY THAT COULD LEAVE COMPANIES UNPREPARED TO RESPOND TO ANY STRENGTHENING OF CLIMATE POLICY

China's seven pilot markets are likely oversupplied. Though emission data is sparse, most large companies admit to having more allowances than necessary. What reflects this excess has been a common pattern across the pilot systems, whereby allowance prices fall ahead of compliance deadlines as companies realise their permits outstrip their emissions. The oversupply partially stems from underestimated energy efficiency potential. The architects of the Shanghai carbon market assumed only 0.5% annual improvement in CO2 emissions per megawatt-hour for 2013-15. But coal plants – the main power source – cut emissions by 3% in 2014 alone.

It is also likely that the creators of most Chinese pilot programmes resorted to generous free allocation of allowances to gain the acceptance of market participants and avoid the embarrassment of potential non-compliance. These factors, together with the availability of domestic offsets, have depressed allowance prices towards their current range between €2/t and €5/t.

Emitters in the Korean ETS, which commenced in 2015, will also receive excess allowances, according to our projections. To set the cap, the government used emission projections that assumed power demand will grow at historical rates. This expectation is perhaps optimistic, considering Korea's slowing economic, population and export growth. Government forecasters now realise this, as they have revised subsequent forecasts lower. Yet due to the market's design, the number of allowances available has remained unchanged – a similar situation to the EU ETS design.

### SYSTEMIC SOLUTIONS TO A SYSTEMIC PROBLEM

Excess allowances raise a number of concerns for policy-makers and market participants. Lawmakers can send misleading signals when they build markets that later devolve into oversupply. Some companies embrace extra permits and low carbon prices. However, surpluses may bring a false sense of reassurance that leaves companies unprepared to respond to any subsequent strengthening of climate policy. Emission reductions that become necessary will be expensive if forced upon infrastructure high in both carbon and inertia.

The remedy for carbon market oversupply is twofold. First and foremost, regulators can introduce market stabilising policies. These can take the form of flexible supply mechanisms, which regulate the amount of CO2 allowances available, or price floors.

The EU has gone for the former. The agreed market stability reserve will begin to withdraw excess allowances from 2019 and release allowances when they are needed. This blends into Europe's ambition to reduce 2030 emissions by 40% compared to 1990 levels, which includes a tightening of the market's cap compared to current legislation. The constant reduction of the oversupply will likely cause EUA prices to increase, with our estimates suggesting prices at €16/t in 2020 and €30/t in 2030. This is a step forward for Europe as it helps prepare its flagship emission reduction instrument for the future. As another example, California has enjoyed a stable carbon price in the midst of an oversupplied carbon market thanks to an

auction reserve price that acts as a price floor.

Second, carbon markets are most effective when their parameters are based on unbiased emission forecasts. Emission expectations determine the economic impact of these policies, which in turn delineates their politically realistic level of stringency. If regulators overestimate emissions, they will come under political pressure to set CO2 caps higher than they otherwise would and vice versa. Market stabilising mechanisms can help, but only to an extent, as their stringency also relies on political feasibility.

The allowance surpluses that pervade carbon markets lead us to expect relatively stable prices in most jurisdictions for the next few years – a notable exception being the EU ETS. When it comes to the negotiations in Paris, the current ambition level of the Intended Nationally Determined Contributions suggests lawmakers of established carbon markets will stick to current reduction targets. However, should Paris lead to a scheduled periodic review of contributions, such a tightening mechanism will likely create political pressure to strengthen carbon markets and drive prices higher.

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(1) ICAP (2015): Emissions Trading Worldwide - ICAP Status Report 2015 (2) Grubb; Ferrario (2006): False confidences: forecasting errors and emission caps in CO2 trading systems

