

Around the world, climate change policies are tightening, and carbon pricing is playing a big part of that. Once carbon pricing systems are in place, countries can apply pressure to emitters at will – representing the stick part of any energy transition policy, alongside the carrot of possible subsidies and guarantees for cleaner options. New carbon markets have recently been introduced in China, the UK and elsewhere, while prices on the well-established European market have surged as credits are reduced and countries toughen climate change commitments. As prices rise, lower carbon options become more commercially attractive as high emitters incur additional costs.



After testing carbon credit trading at regional level since 2011, China launched a nationwide carbon market for its power sector on February 1st – although initial allocations are free, with prices only expected to be introduced slowly and cautiously to protect investors in the coal sector. The move is part of China's efforts to reach net-zero emissions by 2060 and expected to cover over 4 billion



tons of greenhouse gas emissions, making it the world's largest. China's power sector is only responsible for about 30% of the country's total emissions, and industries such as cement, metals, and petrochemicals will be added over time. Verified company level emissions must be disclosed to the public, but unlike Europe, only direct exchanges and no carbon financial derivative products will be allowed initially – which some suggest may hamper liquidity and price discovery.



CARBON PRICING GAINS TRACTION

The obligation to buy carbon credits will favour gas-fired (as well as renewable) generation in China – at least in the short to medium term – because the main competitor is coal, which emits about twice the carbon that gas does. However, China's priority is to meet surging energy demand – coal supply shortages due to strong post-pandemic economic growth, a ban on Australian imports, and a hot start to summer have sent demand and coal prices soaring, which is having far more impact on costs than a modest carbon price. Among generators, a recent survey suggested the carbon tax was welcomed, but only at low levels, with expectations averaging just 71 yuan/tCO₂e (\$11.1/t) in 2030 and 140 yuan/t by 2050 – well below current European levels.



EUROPEAN PRICES SEE SHARP GAINS

In Europe, where the Emissions Trading System (ETS) has been in operation for power and industry since 2008, prices have risen sharply in recent months (see figure 1) as climate pledges among European member states have toughened. This is now having a significant impact on investment decisions. EU prices for December 2021 hit an all-time closing high of €56.65/tCO₂e on May 14th – although they have dropped back a little following the launch of a new UK post-Brexit market, as UK long positions were transferred across.

In Europe, higher carbon prices may initially accelerate coal to gas switching, expanding the gas market, but in the mid-to-long-term natural gas will begin to lose out to lower or zero carbon options. This latter stage has already been reached in the UK market, where all coal has now been removed thanks to higher overall carbon prices – and rising wind output is now squeezing the call on gas. Since 2014, the UK has added another £18/t Carbon Price Support (CPS) charge to the EU ETS carbon price in its power sector.

The UK's new post-Brexit carbon market is also trading at a slight premium (see figure 2). On its first day (May 19th) the December 21 contract opened at £50.23/t (\$71.13/t) – which was almost £5/t higher than the EU ETS at the time (largely due to 5% tighter initial allocations). This meant the cost of emitting carbon for energy intensive industries (including oil and gas) in the UK moved slightly above that in the EU – and much higher for onshore power producers, which (with the CPS added in), would pay over £68.23/t if UK ETS prices stayed at that level – the highest carbon price in any major economy.

EUROPEAN PRICES SEE SHARP GAINS

Rising carbon prices and expanded coverage have implications for trade, as it will add costs to many areas of business, putting them at a disadvantage to competitors that have a lower or no carbon price. The EU has discussed defending its industrial energy users with a border carbon adjustment (BCA) mechanism, which would be imposed on imported products with embedded carbon from jurisdictions with lower or no carbon price. It is conceivable that this could extend to natural resources such as gas.

In the UK, gas is now largely confined to the times when renewables are not available, and a high carbon price will provide an added incentive to replace it even here, with alternative lower carbon dispatchable sources – such as batteries, hydrogen or biogas – or by adding Carbon Capture and Storage (CCS) to gas-fired plants. That is the plan at several CCGTs in the UK, normally in combination with hydrogen supply plans for nearby refineries and industrial clusters. These include the Shell led Acorn CCS/hydrogen project in Scotland, and BP's H2Teesside hydrogen/CCS project, which has a carbon price assumption of \$50/t for 2021–2025, rising to \$100/t in 2030. S&P Global Platts



said in May that a carbon price of about €70/tCO₂e was needed for parity between blue and grey (produced in refineries without CCS) hydrogen, and the European Commission put the figure at €55–90/t in 2020.

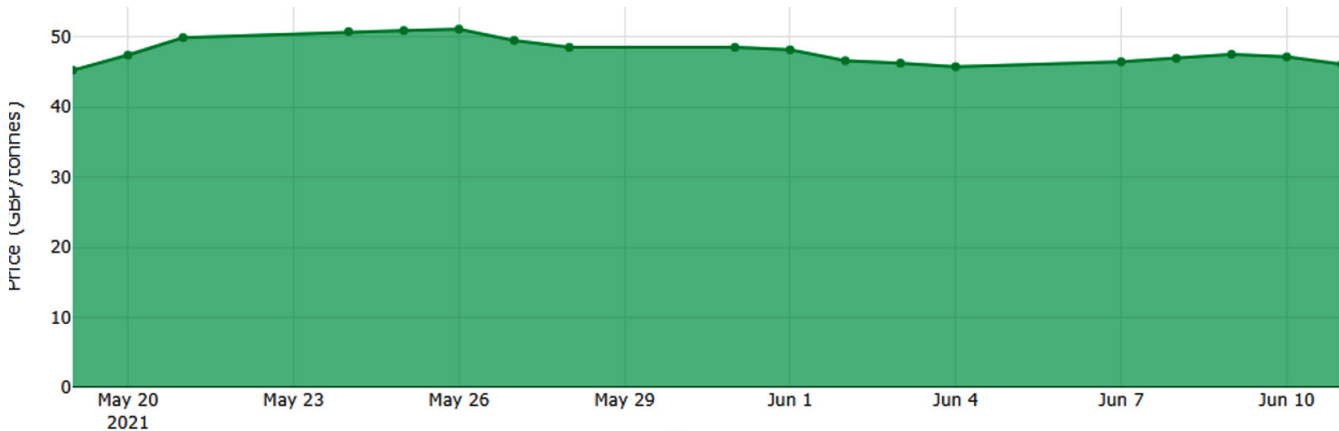
The UK Government may decide to go even further. In early June, the Bank of England increased its carbon price forecast to \$150/t for 2030. It said this was necessary if the country were to meet its 2050 net zero target, and warned banks that they would suddenly be faced with stranded assets if they failed to prepare now.

FIGURE 1: ETS EUA PRICES (ICE DEC 21 CONTRACT) / SOURCE EMBER FROM ICE DATA



EUROPEAN PRICES SEE SHARP GAINS

FIGURE 2: UK ETS PRICES (ICE DEC 21 CONTRACT)/ SOURCE EMBER FROM ICE DATA



The number is up sharply from an upward revision to \$100/t by 2030 a few months ago. That was the same level as BP's latest internal assumptions, and close to the recommendations put forward by economists Joseph Stiglitz and Nicholas Stern in 2017, of at least \$40–80/t by 2020 and \$50–100/t by 2030 to achieve the Paris Agreement goals. Carbon credits may also become a welcome source of income for governments, shifting the tax burden towards polluters.

The UK says it wants a link with the EU ETS, and most believe this will be arranged at some point in post-Brexit negotiations. In the meantime, the European system is being expanded to cover emissions outside industry and power, and the UK plans to do the same. Carbon from flights within Europe is the first new category to be added, bringing coverage up to just under half of all EU emissions. Adding road and rail transport, shipping, and heating, will bring it up to over 90% (although road transport is already taxed heavily in most European countries: In 2018, an OECD study found that in 34 of 42 countries at least 90% of road transport emissions incurred taxes equivalent to a carbon price of more than €60/tCO₂e).

RECORD PRICE SQUEEZES CARBON IN UK

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WORLDWIDE EXPANSION

Away from China and Europe, carbon prices in Canada, and parts of the US, including California, are around \$17/t. There had been talk of a nationwide tax under the new US administration, but so far nothing has been agreed. Canadian prices are set to rise quickly up to C\$50/t (\$40/t) in 2022. South Korea is also introducing a system, and about 70% of all global aviation emissions are due to enter a UN emissions-trading program this year. Nevertheless, most of the world remains uncovered. In mid-2020, only 20% of global emissions were subject to a pricing scheme or soon to become so, with an average price of about \$15/t, according to the Economist. Many expect significant progress by the conclusion of COP26 in Glasgow this November, with the recent successful international deal at the G7 on corporation tax suggesting a similar approach for carbon taxes may be proposed.

