

GETTING SERIOUS WITH CARBON PRICING POLICY¹

David Hone and Jonathan Grant on the outlook
for carbon pricing in Paris – and beyond

Governments meeting in Paris in December to adopt a new climate agreement have already agreed the ultimate goal: to limit warming to 2°C. This will require industry, energy and transport systems to transition to near-zero levels of CO₂ emissions, ideally within this century. PwC's Low Carbon Economy Index shows that the transition needs to be more than twice as rapid as the reduction in emissions that has taken place in the US economy over the last decade as a result of the shift to shale gas. Imposing a cost for emitting CO₂, across the economy, is arguably the single most effective public policy that can be implemented to achieve this objective. It is where governments started the climate journey nearly 20 years ago, but not where they find themselves now.

That starting point was the creation of the UNFCCC in 1992, which came on the back of the first Earth Summit, held that year in Rio de Janeiro. By 1997, governments that were party to the UNFCCC had made astounding progress, agreeing on the Kyoto Protocol and its underpinning trading regime, which was designed from the outset to see a cost develop for major emitting economies should CO₂ emissions continue to rise. That cost would act as an economic incentive to reduce emissions. This was the very beginning of what is now more broadly referred to as a carbon price.

While a government-imposed cost on emissions is regarded as the most efficient means of driving change, that efficiency is also its downfall. National implementation of carbon pricing policy skews those economics, which is manageable in the short to medium term as other locations implement similar carbon costs. But, over

IMPOSING A COST FOR EMITTING CO₂, ACROSS THE ECONOMY, IS THE SINGLE MOST EFFECTIVE PUBLIC POLICY FOR DECARBONISATION

the long term, the economy efficiently regroups around the change, with no global reduction of emissions. Activities that are penalised by the cost will most likely progressively shift to areas where the penalty doesn't exist, all other factors being equal (which of course they never are). This is instead of responding in the location where the government-imposed price mechanism is present; explaining why partial implementation of carbon costs around the world has yet to have a visible impact on global emissions. Rather, intermittent local implementation leads to a rearrangement of global activities and global emissions continue without interruption, driven by increasing demand for energy.

While it is unrealistic to expect a cost on emissions to emerge globally without a hitch, over time that cost must embed itself within the global economy. Arguably, this should be the single objective of a global approach to managing CO₂ emissions. While the Kyoto Protocol didn't contain such a lofty objective, its approach involved price discovery through the trading of emission allowances, which encouraged the emergence of a policy driven global price.

The Kyoto Protocol's Clean Development Mechanism (CDM) and Joint Implementation, forced a standardised approach to emission reductions and introduced the beginnings of a single carbon pricing mechanism into the global

economy, or at least they were meant to. Kyoto's Assigned Amount Unit (AAU) is similar to an allowance under a cap-and-trade system and is issued to participating governments with absolute targets under the Protocol. In theory, building domestic approaches on the back of the national assignment of AAUs meant that such systems could easily link up, with their domestic units exchanged for AAUs and vice versa. The commonality of the AAU also meant that nations could be quite inventive in implementing national action.

But the deal in Paris is set to scrap this system, in spite of its carbon pricing design and structure and the economic efficiency that results. The Kyoto framework was unable to progressively expand absolute targets and AAU allocation to developing countries, and rather than trying to revise that, the politics have been allowed to defeat the process. Nevertheless, as the Kyoto Protocol departs the scene, it leaves us with the legacy of carbon pricing mechanisms such as the EU ETS, the various North American sub-national approaches and project-based systems such as the CDM, together with a demonstration of their collective effectiveness in shifting funds, triggering project activity and reporting on emissions.

The current international discussion over an approach that delivers the global objective of limiting warming of the climate system to 2°C is now at a crucial point and arguably without a focus other than

FIGURE 1: AVERAGE EUA PRICE EXPECTATIONS FOR PHASE III AND BEYOND OVER SUCCESSIVE IETA SURVEYS



on the goal itself. The economic clarity delivered by the Kyoto Protocol and its carbon price is rapidly coming to an end, being replaced in many instances by a series of actions implemented by decision-makers in cities and states. But building a strategy as the sum of local actions to meet an extraordinarily difficult global goal may well be self-defeating. Rather, what is needed is a clear international focus on a single primary objective: getting a government-imposed cost associated with CO2 emissions into the global energy and industrial economy.

While the implementation of a carbon emissions cost will initially trigger a range of activities throughout the global economy, its eventual purpose is twofold: either to reduce the extraction of fossil fuels which become uneconomic compared to low or zero emission alternatives or to implement carbon capture and storage (CCS), as these are the only two mechanisms available for addressing the accumulation of CO2 in the atmosphere.

The real aim of applying a cost to emissions of CO2 is to encourage investment in low-emission energy, industrial and transport infrastructure so that emissions begin to fall within the economy and long-term lock-in to high-carbon emissions, the result of continued construction of facilities such as coal-fired power plants, is avoided. This requires a government-imposed cost of carbon that drives such behaviour. A survey conducted by IETA earlier in 2015 suggested that a price around \$30 per tonne of CO2 could achieve this. That

cost of carbon could start to encourage fuel switching away from coal and towards natural gas (though that depends entirely on the relative prices of these commodities at any point in time).

In the case of CCS, some sources² have suggested that around \$100 per tonne may be needed to drive this technology forward now, but a lower carbon cost in combination with technology funds directed at CCS demonstration could deliver projects in the near term. As the technology matures, the carbon cost needed to trigger CCS activity may settle below \$100 – but recognising that government policy remains the deciding factor for prices to reach such a level. But in all cases, project developers will need to have confidence that the policy mechanism establishing a cost of carbon and its effectiveness in delivery are there to stay.

Scenarios ask “what if?” questions to explore alternative views of the future and create plausible stories around them. They consider long-term trends in economics, energy supply and demand, geopolitical shifts and social change, as well as the motivating factors that drive change. In doing so, they help build visions of the future. As such, scenarios offer useful insight into the development of new policy mechanisms and approaches to manage the climate issue. This has long been at the heart of the Shell scenario efforts, where emissions mitigation has featured in all the outlooks published over the last two decades.

The most recent New Lens Scenarios, published in 2013, are no exception. For the first time, the scenarios extend out far enough to see full resolution of the mitigation challenge with emissions close to net-zero by the end of the century. This is achieved through a major transition of the energy system and the application of CCS on a very large scale. Not surprisingly, the cost of carbon plays a very important role. While the New Lens *Mountains* scenario takes a strong regulatory approach to mitigation, effectively requiring the use of CCS, the *Oceans* scenario looks more to the market and a cost on carbon emissions to drive change. But for the scale of change that the *Oceans* scenario envisages, policy-driven carbon prices need to permeate the global economy rapidly and at levels in developed and emerging economies that almost no current systems are delivering today. The scenario is underpinned by global convergence on the cost of carbon in the second half of the century that drives consistent deployment of CCS, with a strong starting point around 2020. That starting point ranges from modest levels in developing economies (eg, such as the proposed South African government-imposed carbon tax of ~\$10 per tonne CO2) through to a level in a system such as the EU ETS that fosters a shift away from

COST-EFFECTIVE ACTION TO ADDRESS EMISSIONS WOULD ENCOURAGE MORE AMBITION IN FUTURE

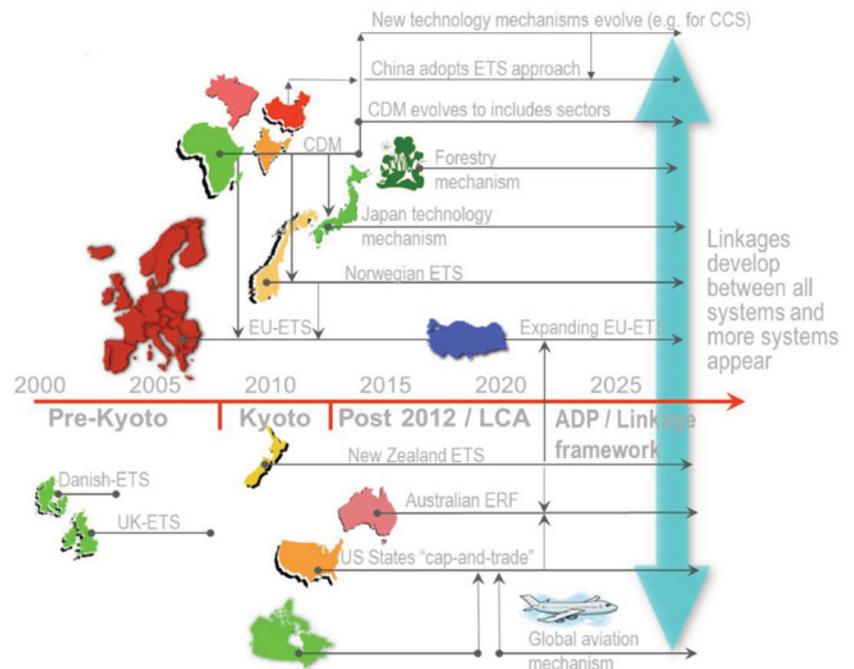
coal and encourages natural gas, solar PV and wind.

Despite numerous governments now seriously considering or implementing policies that deliver a cost on emissions, few contemplate carbon levies that would drive such rapid change. A rising cost on emissions in leading developed countries with a starting point somewhat higher than the IETA survey seems to be out of reach today as concerns about competitiveness abound. But such an outcome could be envisaged if emitters and policy-makers in those countries had confidence that carbon pricing policies implemented by many more governments would become well established and show some sign of convergence.

The key to such confidence is a global framework that encourages the national implementation of allowance based systems for managing emissions and then offers the tools to link these systems. This in turns fosters a degree of convergence on the appropriate cost of carbon and therefore diminishing resistance to implementation on the back of competition concerns. And cost-effective action to address emissions would encourage more ambition in future.

But such a linkage framework needs a starting point, which is why there are proposals from IETA to this effect in front of the national negotiators for consideration in Paris and subsequent COP discussions. The details can be filled in later and by others, such as through the Networked Carbon Markets initiative under the World Bank or similar institutions, but even these

FIGURE 2: A GLOBAL LINKING FRAMEWORK COULD BRING ABOUT THE NEEDED CARBON MARKET



(Source: IETA GHG survey 2015)

ideas may not gain traction if a bolthole isn't created in the new agreement. The Paris summit could open the door to the possibility of a global approach to putting a price on carbon and accelerating the low-carbon transition.

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2°C Will be Harder than we Think and Why Carbon Pricing Matters.

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(1) In this article the term "carbon price" refers to a government-imposed carbon pricing mechanism, the two main types being either a tax on the sale of fossil fuels, based on their carbon intensity, or a quota system setting a cap on permissible emissions in the country or region and allowing companies to trade the right to emit carbon (aka as allowances). This should be distinguished from some companies' use of what are sometimes called "internal" or "shadow carbon prices", which are not prices or levies at all but individual project screening values. (2) Carbon Capture and Storage Association

