CHINA'S CARBON NEUTRALITY GOAL SPELLS COMPETITION FOR THE EU IN THE MARKET FOR LOW-CARBON TECHNOLOGY

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Abstract

China's announcement that it intends to achieve carbon neutrality by 2060 is a game changer for international climate policy. It has considerable implications for the EU's climate *and* industrial policy.

China still needs to translate this political promise into concrete goals with verifiable intermediate targets. But its goal of carbon neutrality by 2060 is in some ways a more ambitious long-term climate goal than the EU's, despite the 10-year difference in target years (and the different greenhouse gases covered).

When considering the different growth trajectories, China's target is undoubtedly more ambitious than that of the EU. China will need to reduce emissions at a far faster pace than the EU has managed so far, both in absolute and relative terms, but given its high savings rate, it can afford the vast investments needed to green its economy. On the road to carbon neutrality, China will become the biggest market for low-carbon technology.

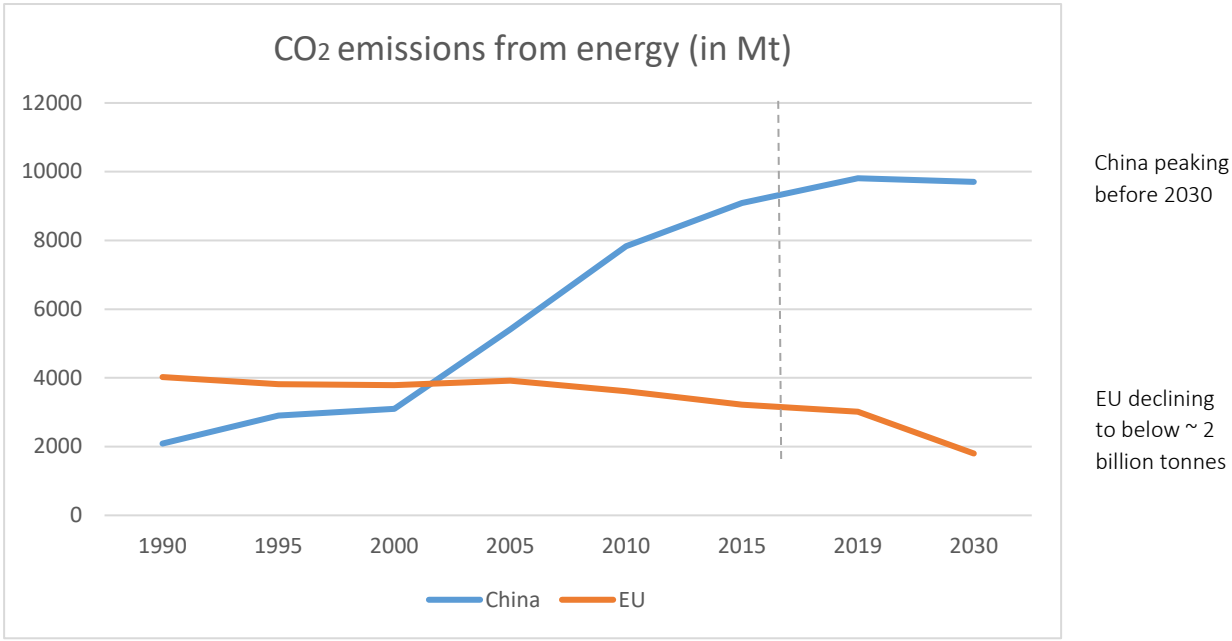
Will this be in competition or cooperation with Europe? For the EU, proposals such as the "carbon border adjustment mechanism" may suddenly be an uneasy fit. There may be stiff competition for the development of climate-neutral technology, especially for energy-intensive industries, which are fundamental to the debate about industrial competitiveness and the risk of carbon leakage.

A Bloomberg article published just before this paper was finalised states that China's announcement covers all greenhouse gases, not just CO_2. This would make China's commitment equivalent to the EU's climate neutrality goal, although China would reach it 10 years later. If this proves to be the case, the main messages of this Policy Insight would be reinforced, as it would represent an even greater level of Chinese ambition.

Too little attention is being paid to the announcement by President Xi at the UN General Assembly in September that his country will strive to become carbon neutral by 2060. This is a mistake. China matters for the global climate. At present the country is the source of about 28% of global CO_2 emissions,[1] about twice as much as the US and three times more than the EU. Moreover, even if China's emissions peak in the next few years (China's Paris Agreement commitment is to do so by 2030), the EU plans to cut its own emissions faster, with an updated 2030 target of -50 to -60% likely to be agreed soon.[2] By 2030 China's emissions might thus amount to four-five times those of the EU.

China's carbon neutrality target implies reaching net-zero CO_2 emissions by 2060. This still leaves the question of abating the other greenhouse gases.[3] The EU's climate neutrality target for 2050 implies reaching net-zero greenhouse gas emissions. While in absolute terms[4] the EU target is thus more stringent, China is still the largest emitter of GHG emissions today and will remain so for some time. The change of direction promised by its leadership represents a hugely important step for the global climate.

Figure 1. CO_2 emissions from energy 1990-2019 and targets for 2030



Source: IEA,[5] (and own estimates for 2030).

[1] In terms of all GHG emissions globally, China represents a share of about 25%.

[2] The European Commission proposes a net -55% reduction compared to 1990, whereas the European Parliament on October 7 voted for an absolute reduction of -60% for 2030. The EU's target is more ambitious because the EU targets climate neutrality, which means 'net-zero greenhouse gases'. The difference is significant because the difficulty in reducing non-CO_2 greenhouse gases (GHGs) puts even more pressure on any residual CO_2 emissions in the context of net-zero targets.

[3] Globally, CO_2 is responsible for about 75% of total greenhouse gas emissions (expressed in CO_2-equivalent)

[4] In relative terms one could argue that China's commitment is more ambitious, given different historical emissions and GDP trajectories, but this is an inherently political judgement.

[5] See https://www.iea.org/data-and-statistics/?country=CHINA&fuel=CO2%20emissions&indicator=TotCO2.

The EU (of 28, with the UK) reduced its overall GHG emissions by 25% (since 1990) from 5.6 billion to 4.23 billion. Its CO_2 emissions from energy have declined by about 1 billion tonnes in the same period, also roughly a quarter.

If the EU adopts a -55% target for 2030, GHG emissions (for the now 27 member states) need to decrease to about 2.2 billion tonnes of CO2e, more than two fifths lower than in 2018. For CO_2 emissions, it implies a decrease to around 1.8 billion tonnes (see Box 1).

China, by comparison, will need to eliminate nearly 10 billion tonnes of CO_2 emissions by 2060. If emissions remain stable throughout 2030, this implies over 3 billion tonnes of emissions reductions per decade – similar to all of the EU's CO_2 emissions today; a stunning rate of decarbonisation compared to the EU having to reduce the same 3 billion tonnes in 30 years.

Box 1. Comparing different greenhouse gases and emissions targets

In the EU, CO_2 emissions comprise 80% of total GHG emissions expressed in CO_2 equivalents. Therefore, if CO_2 emissions remain at 80%, the EU's CO_2 emissions need to decrease to some 1.8 billion tonnes by 2030 with a -55% target. CO_2 emissions do not only arise from fossil fuel use for energy; a small percentage is linked to process emissions from industry in e.g. the cement and chemicals industries.

The EU target for 2030 up to now was expressed as an absolute reduction, i.e. the "at least 40%" target of the Juncker Commission. However, the Commission now proposes expressing the -55% target as a 'net target', where the EU's carbon sink is also accounted for[6] (the sink accounts for CO_2 removals from the atmosphere through e.g. forests and land). The EU net sink in 2018 accounts for 263 million tonnes of CO2e. Including this in the target means that any additions to the sink allow for a lower amount of emissions reductions. The opposite is also true: if the sink shrinks in size, more emissions reductions are necessary to compensate for the smaller sink. With a net target there is therefore more flexibility to achieve the target due to the compensation effect of sinks.

Some complications arise from comparing the EU's all-GHG target to China's CO2-only target. Most importantly, China can use their net-sink to not wholly go to zero on CO2 emissions. For China this amounts to about 400 million tonnes, a relatively modest amount compared to its emissions. For the EU this is different as its sink will be used to offset residual emissions also from other greenhouse gases, such as methane in agriculture. This difference in scope, together with the different time horizons, gives China more time to delay industrial decarbonisation if it so chooses.

In terms of emissions per capita, China exceeded the EU in 2011, even if only 10 years before that, its CO2 emissions per capita were a third of the EU's. However, China's emissions already peaked in 2013 as its growth model shifted away from infrastructure investment and heavy industry towards services. But this might have been a one-off effect. If economic growth continues, CO2 emissions might start to increase again, even with the new economic structure now in place.

[6] This could mean that the 1990 baseline is recalculated, as is also the case to account for Brexit.

China's target is more ambitious than the EU's if one considers the difference in growth prospects. In terms of carbon intensity (emission/GDP), the differences are even starker. China's pledge to essentially keep emissions constant until 2030 must be seen against a projected growth rate of 5%. In the EU the gain in carbon intensity has been only 1-2% in recent decades.

Between 1999 and 2019 the EU's CO_2 emissions from energy use fell by about 1000 million tonnes. China will have to achieve about six times as much between 2030 and 2060. The EU's 2030 target of -55% would mean shaving off another 1 thousand million tonnes in 10 years. China will have to achieve roughly three times as much, every decade, if it starts reducing in 2030 (it could start earlier, of course).

China is therefore likely to become the biggest market, by far, for green technologies.

Implications for China's energy system and investments

For the time being, Xi's announcement remains a political commitment that is yet to be translated into concrete (legislative or regulatory) actions. The next step would be for China to make a formal commitment under the Paris Agreement (i.e. an updated nationally determined contribution) and to present plans that show a credible pathway towards the long-term goal. This is likely to happen because contributing to the battle against climate change represents the one policy area where China can aspire to become a global leader.

The broader economic forces point in the same direction. The (long-term) promise of carbon neutrality plays to China's strength, namely for the government to marshal vast amounts of investment in the pursuit of a collective goal. The savings rate of China has somewhat diminished in recent years, but it remains at over 40% of GDP – almost twice that of Europe (or the US). This means that the country could easily find the resources to invest in renewables, such as photovoltaic and wind, and at the same time insulate its housing stock, all of which are highly capital intensive.

The country can also afford the waste of resources implicit in constructing further coal-fired power plants, which can be used only for a short period because they are incompatible with high carbon constraints. Furthermore, the significance of aiming for net-zero CO_2 emissions is that it will cover virtually all emissions from energy and trade-intensive industries, such as the production of steel and chemicals. This can affect European industry too, whether through low-carbon innovation or through changes to the global industrial competitiveness landscape.

The pledge by Xi is underpinned by the knowledge that the costs of renewables have fallen so much that they are close to those of fossil power. The experience in these sectors, as in batteries, has shown the importance of learning curves. Unit costs tend to decrease strongly with the overall amount of production. The sheer size of the Chinese market thus matters for the rate at which the cost of green technologies can be expected to fall, crucially in sectors beyond the power sector as well.

The power sector and passenger cars both illustrate two sides of a complicated reality.

China remains the largest market for cars with internal combustion engines. At the same time, it has already become the largest market for electrical vehicles (EVs).

The electricity needed to power these EVs still comes from coal-power plants, which not only emit GHGs, but also pollute the local environment. China is also the country with the highest investment in renewables.

For these reasons, the Chinese market matters already in sectors that are key for the green transition.

Implications for European policy and competitiveness

A China fully committed to the transition to a green economy has important practical implications for Europe. The first impact might be on the plans for a carbon border adjustment mechanism, which remains a core element in the European Commission's Green Deal. Such border measures could in principle apply only in a limited way to sectors where the EU's trade is concentrated with countries in its direct neighbourhood – think electricity (the Balkans) or cement. These examples are of limited overall importance, however.

If there were the desire to have such a mechanism target embedded carbon in imports more widely, and thereby even contribute to the EU budget's own resources, then China's carbon neutrality announcement offers a challenge.

At its core the Paris Agreement allows different countries to move at different speeds through nationally determined contributions that are strengthened over time. It would be very difficult for the EU to justify a carbon border measure on imports from a country which, although still much poorer than the EU, nevertheless commits to (arguably transformational) climate action under the Paris Agreement.[7]

Even aside from this political problem, one has to keep in mind that carbon border measures can be defended only on the grounds that production in other countries is much more carbon intensive than in Europe. This might still be the case, on average, in China today, but not for much longer. The most modern and efficient steel production facilities are being built in China, not in Europe (where producers baulk at the cost of refurbishing or replacing their old ones).

For the EU, this could mean that mitigating carbon leakage risk and safeguarding industrial competitiveness should be treated as separate aims with potentially conflicting solutions, whereas in the past the policy response was similar (e.g. free allocation under the ETS).

A related conundrum arises from the push to create more defences for European industry against state-sponsored competition from China. What should the EU do when green technology developed and produced with the support of the Chinese government arrives in Europe?

[7] In principle this could be addressed in the design of such a mechanism, but this has consequences for its complexity, while there would still be an impact on the (export) competitiveness of EU industry.

This dilemma is not new; it arose with Chinese solar panels, which were subject to anti-dumping duties starting in 2013. These duties were gradually reduced over time and phased out in 2018 (but the EU maintains anti-dumping duties for a much smaller market, that of solar glass.) One of the reasons for this was the evident conflict between the goal of protecting European producers of solar panels and of supporting the adoption of photovoltaics. The interlinkages between climate and trade policy are therefore only set to increase. The topic of CO_2 product standards may become an alternative source of friction as the EU tries to develop climate-neutral product markets, but based on EU norms, whereas China might develop its own standards.

This raises the more general issue of the differences in economic systems. With the European Trading System (ETS), the EU has so far chosen a market-led approach. The Green Deal's industrial policy agenda (e.g. the plans for hydrogen or clean steelmaking) might place the onus for industrial decarbonisation more on public-policy directed investment. It remains to be seen what instruments the Chinese authorities will use to take credible steps towards their own long-term goal. A Chinese Emissions Trading System has been slowly emerging from various regional pilot schemes. Nevertheless, with an ETS, everything depends on the design: how stringent will the emissions caps be for different sectors? How will allocation develop over time? If China opts for more regulatory alternative measures, or if it greatly expands its green industrial policy agenda, trade frictions will increase.

In all these ways the EU's green trade policy will be challenged. A potential Biden presidency, if coupled with a Democratic majority in both houses, could also lead to a profound policy change in the US. But given the geo-strategic tensions between the US and China, which are likely to continue whoever wins the presidency, cooperation between the two on climate change might be difficult.

In any case, Europe's approach of treating China both as a competitor and a partner seems to fit the emerging reality of China's important role in combating global climate change much better than the US approach of outright jostling for prime position.

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