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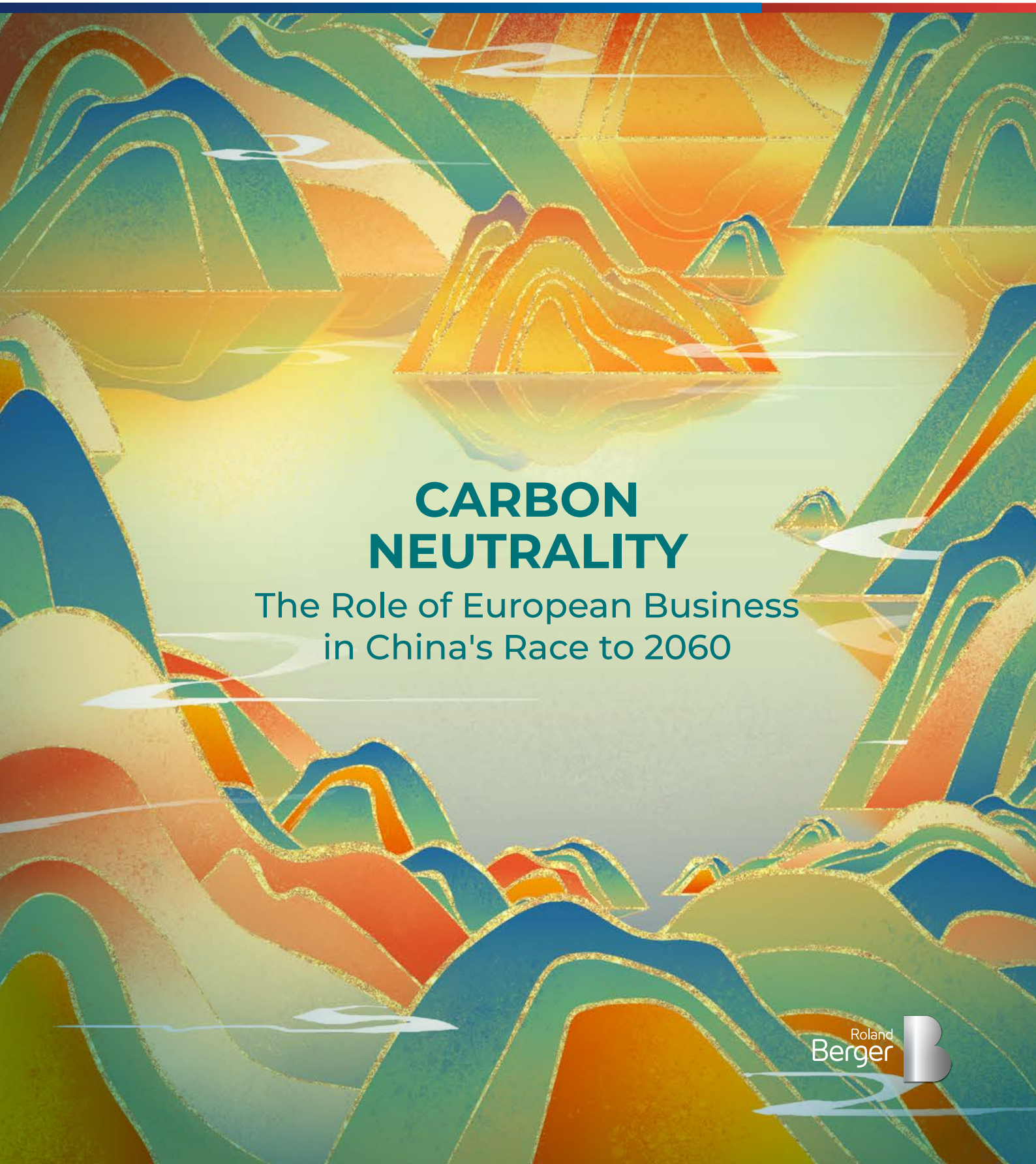
CARBON NEUTRALITY ACTION
WORKING WITH CHINA TOWARDS 2060



CARBON NEUTRALITY

The Role of European Business in China's Race to 2060

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Executive Summary

When China embarked on its programme of opening up and reform 40 years ago, the approach it adopted was 'crossing the river by feeling the stones'. This served China well and gave it the confidence to move cautiously but steadily forward with further opening, culminating in World Trade Organization (WTO) accession in 2001.

Although other WTO members expected that post-accession reform and opening would accelerate, China continued to exercise restraint. This worked to China's advantage as it selectively opened parts of the economy to foreign investment where it needed technology and/or competition, while protecting its domestic companies to allow them to build scale and develop competence in strategic areas of the economy.

With a focus on manufacturing and exports, China built itself into the economic powerhouse that it is today, having established itself as the 'factory of the world'. However, while this economic model propelled economic growth at breakneck speed, it also came at a significant ecological cost. Over the past four decades, China has suffered rapid environmental degradation because of its over-reliance on cheap, highly polluting sources of energy to fuel its manufacturing economy.

The climate crisis came to prominence as a global topic in 1988, when the Intergovernmental Panel on Climate Change (IPCC) was formed,[1] and since then China's level of participation in related discussions has steadily increased. In 1993, China ratified the United Nations Framework Convention on Climate Change (UNFCCC), adopted in 1992 during the Rio Earth Summit,[2] and the country was a non-annex I signatory to the Kyoto Protocol in 1998, with ratification following in 2002. China's status under the Kyoto Protocol allowed it to only undertake nationally appropriate mitigation actions (NAMAs), whereby it declared its "intent to mitigate greenhouse gas emissions in a manner commensurate with…[its]…capacity and in line with…[its]…national development goals."[3]

As China continued to produce a disproportionate amount of goods to satisfy global demand, it was not surprising that it recorded the world's largest carbon footprint in 2004.[4] Following soon afterwards, such items as investing in environmental protection technologies, strengthening environmental controls and density controls appeared in China's 11th Five-year Plan (11FYP), from 2006 to 2010, and were even more prominent in China's 12FYP. Meanwhile, within the context of the Kyoto Protocol, some in China argued that climate change was largely caused by developed nations, and therefore those countries needed to shoulder the most responsibility for fixing it. This argument became harder to sustain when it was reported that China had emitted more greenhouse gases (GHGs) than the entire developed world combined in 2019.[5]

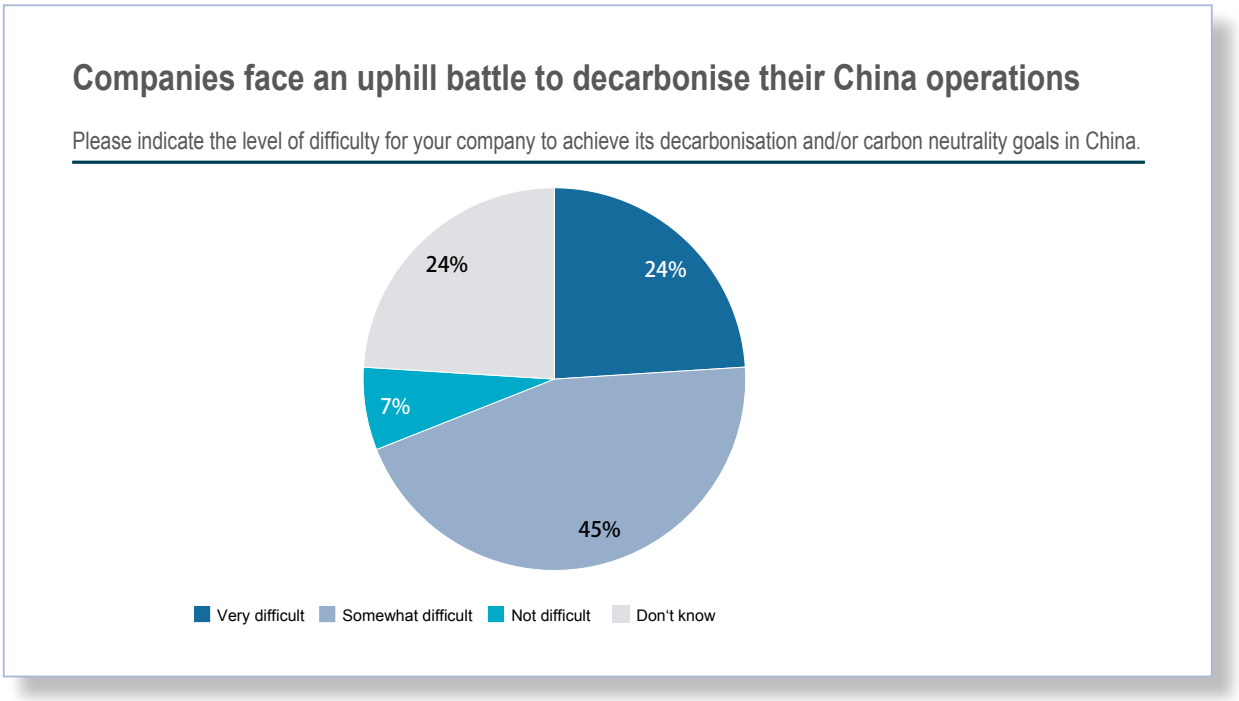
China's firm commitment to mitigating climate change followed a year later, when in September 2020 President Xi Jinping announced to the United Nations General Assembly China's pledge to peak carbon emissions before 2030 and to be carbon neutral by 2060 (30/60 Goals),[6] putting climate change high on China's policy agenda.

China's climate pledge was not just a result of mounting external pressure. The increasingly extreme weather conditions that China faces has played an important role, as has the recognition that the situation presents just as much an economic opportunity as it does an existential threat. Xi's rubber-stamping of these goals has now made decarbonisation an imperative in China, and local government authorities and Chinese companies are being forced to address it.

Although Xi's announcement has acted as a major catalyst, prompting a series of policy shifts, China is aiming to achieve carbon neutrality under extremely challenging conditions relative to the rest of the world. This situation is

1 Jackson, Peter, *From Stockholm to Kyoto: A Brief History of Climate Change*, United Nations, viewed 8th April 2022, <https://www.un.org/en/chronicle/article/stockholm-kyoto-brief-history-climate-change>
2 *Guide to Chinese Climate Policy, UNFCC*, Columbia University in the City of New York, SIPA Center on Global Energy Policy, viewed 12th April 2022, <https://chineseclimatepolicy.energypolicy.columbia.edu/en/unfccc>
3 *Nationally Appropriate Mitigation Actions (NAMAs)*, United Nations Climate Change, viewed 12th April 2022, <https://unfccc.int/topics/mitigation/workstreams/nationally-appropriate-mitigation-actions>
4 *How is China Managing its Greenhouse Gas Emissions?*, China Power, viewed 8th April 2022, <https://chinapower.csis.org/china-greenhouse-gas-emissions/>
5 *Report: China emissions exceed all developed nations combined, BBC*, 7th May 2021, viewed 8th April 2022, <https://www.bbc.com/news/world-asia-57018837>
6 Darby, Megan & Farand, Chloé, *Xi Jinping: China will aim for carbon neutrality by 2060*, Climate Home News, 22nd September 2020, viewed 3rd March 2022, <https://www.climatechangenews.com/2020/09/22/xi-jinping-china-will-achieve-carbon-neutrality-2060/>

recognised by European companies and makes it more difficult for them to reach their own decarbonisation goals in China.



Source: European Chamber member survey

While the EU is moving towards carbon neutrality at a time when its per capita electricity consumption is decreasing, China is doing so while its per capita electricity consumption is continuing to increase. China's economic growth is also still largely dependent on manufacturing for both domestic consumption and export, and while this remains the case its transition towards an economic model predicated on services and consumption—which would allow it to vastly reduce its energy use—is still some way off.[7&8] The days of being able to cautiously feel the stones beneath the water before charting a path forward are rapidly dwindling.

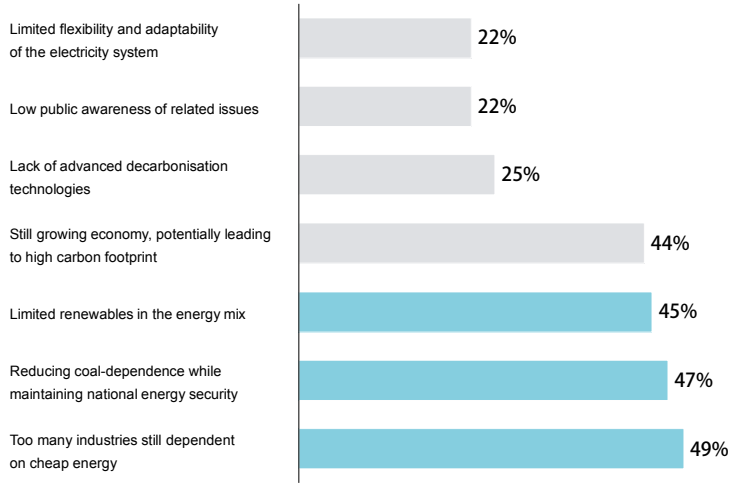
According to European companies operating in China, the main challenges to the country achieving its 30/60 Goals are reducing industrial dependence on cheap energy while maintaining energy security, and the fact the current energy mix contains only a small proportion of renewables.

7 It has been projected that the service sector will account for 72 per cent of China's gross domestic product (GDP) by 2030: *Service sector to account for 72 percent of China's GDP by 2030: gov't think tank*, State Council, 6th April 2017, viewed 12th April 2022, <http://english.www.gov.cn/news/top_news/2017/04/06/content_281475618220064.htm>

8 According to the World Bank, in 2020, China's service sector accounted for 54.53 per cent of its GDP, which placed it 91st in a list of 169 countries and regions ranked by their share of services. By comparison, Hong Kong was ranked first with services making up 88.99 per cent of its economy, and Macau ranked second with services making up 88.66 per cent of its economy: *Share of services: Country rankings*, The Global Economy, viewed 12th April 2022, <https://www.theglobaleconomy.com/rankings/Share_of_services/>

Limited renewables in energy mix, coal dependency and reliance on cheap energy key challenges

What do you think are China's top-three challenges to achieving carbon neutrality?



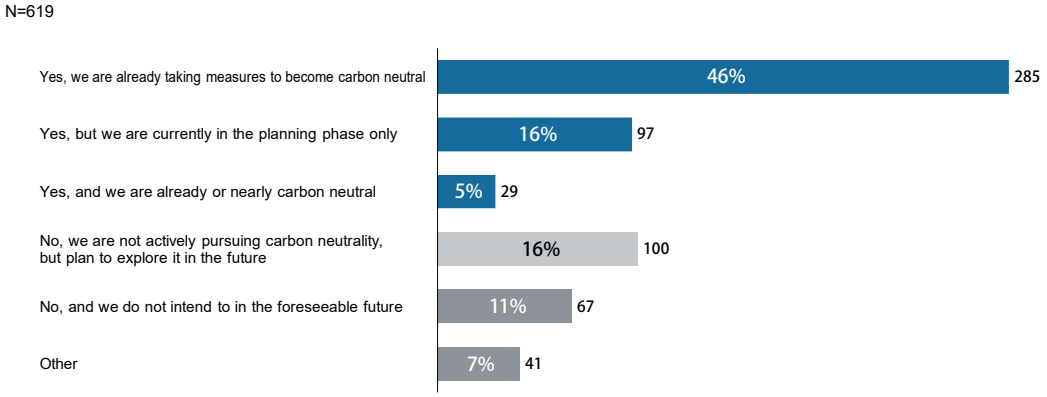
Source: European Chamber member survey

Fortunately, China does not need to reinvent the wheel in its pursuit of carbon neutrality. European companies have deployed effective decarbonisation technologies in their home markets and want to work with China to help it quickly frontload, presenting a strong argument for deepening European Union (EU)-China industrial cooperation.

Most European companies have global decarbonisation pledges to fulfil and are already comparatively well advanced with their strategies: 40 per cent have established decarbonisation teams, with many of these teams reporting directly to boards; and 67 per cent have achieved at least a basic level of preparation.

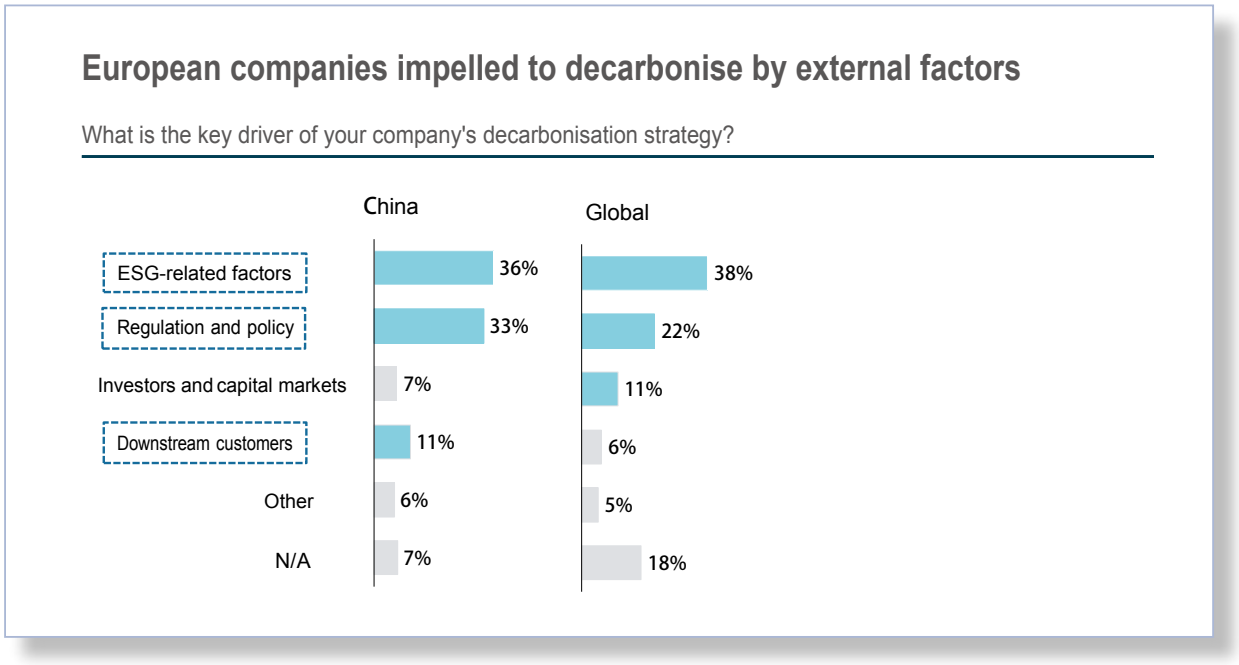
Most members taking concrete steps to decarbonise their China operations

Is your company pursuing the idea of becoming carbon neutral?



Source: European Chamber *Business Confidence Survey 2022*

China's decarbonisation framework provided for in the 14th Five-year Plan (14FYP) was seen by many as weak, partly because it came late in the process of putting the plan together, having only been prioritised since Xi's September 2020 speech. This makes 2025 another significant milestone in addition to 2030 and 2060, as it will be the end of the 14FYP period. By that time China will need to have fleshed out its '1+N' policy framework,[9] and have added more granular detail at the provincial, municipal and industry levels. The experience that European companies bring from working in their home markets can also help in this regard, to ensure that policies are practical and implementable. The two most significant drivers for European companies to decarbonise are environmental, social and governance (ESG) requirements, and regulation. This creates a mutually reinforcing situation as these companies are both driven to meet their own corporate commitments and obligated to comply with regulations.



Source: European Chamber member survey

At the government level, the EU is already deep into the process of developing and rolling out the European Green Deal to its 27 Member States. Much like China's provinces, each member state is at a different level of development and has unique socio-economic conditions, making the EU a logical institutional partner for China to collaborate with on formulating practical decarbonisation policies that can take a range of stakeholders' interests into account.

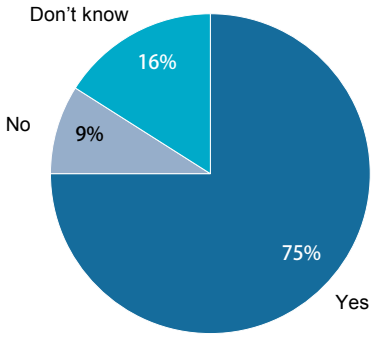
A less tangible challenge for China will be bringing about a wholesale change in mindset, starting with local officials that are still highly target-driven and often struggle to see the bigger picture. Even when local authorities are presented with key performance indicators (KPIs) related to decarbonisation, the methods employed for achieving them often lack a measured, scientific approach. Addressing this will require further fine-tuning to China's environmental governance model to ensure robust incentive and accountability mechanisms are in place, and that there is more effective and professional enforcement at the local level. Within corporate culture and consumer society, there also needs to be a wider understanding of both climate change and the need for common standards to ensure that 'greenwashing' does not take hold. This can be accelerated through the creation of a framework that enforces corporate transparency and accountability regarding emissions. All companies operating in China must be held to the same environmental standards and should be subject to the rigors of independent, third-party environmental assessments. Finally, there needs to be much greater awareness among consumers that the higher immediate cost of verifiably 'green' goods and services pays back dividends in the long run.

Despite these challenges, European companies believe that China can achieve its goals.

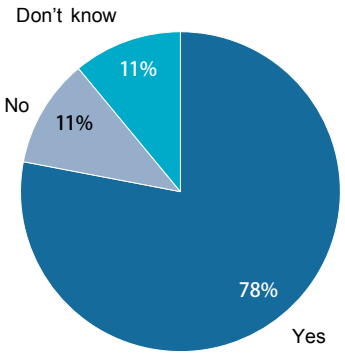
9 *China's "1+N" Policy Framework*, Embassy of the People's Republic of China in the United States of America, 17th November 2021, viewed 4th March 2022, <http://www.china-embassy.org/eng/zt/climatechange/202111/t20211117_10449121.htm>

European companies have confidence in China's ability to decarbonise

Do you think China can achieve its goal of peaking its carbon emissions before 2030?



Do you think China can achieve its goal of becoming carbon neutral by 2060?



Source: European Chamber member survey

However, China's success will be predicated on its ability to leverage as much expertise as possible. This will require providing European companies with increased market access and a level playing field on which to operate, so that they can make greater contributions. A clear mutual benefit in this regard is that China is fertile for both receiving and developing European technologies. In many respects, China serves as a 'fitness centre' for European companies – the pace of the research and development (R&D) environment allows companies to commercialise new products faster than they are generally able to in Europe, as the innovation environment is largely less risk averse.

That being said, even with the political will to achieve carbon neutrality, the whole plan could be derailed by decoupling. The scale of the challenge of meeting the 30/60 Goals demands an open and collaborative approach, so that China can leverage all the tools at its disposal. The EU and China must therefore remain open and committed to multilateralism and keep the channels of bilateral communication and cooperation, as well as trade and investment, fully open.

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Introduction

China's recognition of the importance of fighting climate change was reflected in the ambitious pledges made by President Xi Jinping at the United Nations General Assembly in 2020. The unprecedented scale of the challenge—peaking emissions before 2030 and achieving carbon neutrality by 2060 (30/60 Goals)—demands an inclusive approach, with China bringing to bear all the tools it has at its disposal.

It will require China to fundamentally restructure its energy economy, reshape whole industries and accelerate the development of nascent technologies and value chains. Key to this will be the realisation of China's '1+N' framework, the policy vehicle that is supposed to drive practical decarbonisation across all industries. This will require greater communication with and input from all companies operating in China, to ensure that the policies are practical and implementable.

The technological expertise and experience that European companies have working on decarbonisation with government stakeholders, non-governmental organisations (NGOs) and civil society in their home markets puts them in a strong position to contribute. However, they currently face numerous challenges that prevent them from doing so, including the following:

- A lack of clear information on decarbonisation policies at the national, local and sectoral levels.
- The lack of a transparent, open, flexible power market and well-developed carbon market.
- Issues with renewable energy access.
- Investment barriers.
- Undeveloped value chains for green technologies.
- The absence of a low-carbon culture in China.

This report explores these issues, and makes recommendations on how to best address them, so that European companies can more effectively contribute to China's 30/60 Goals.

Definitions of key terms used in this report

Carbon emissions: This encompasses all greenhouse gas (GHG) emissions, including carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_20), hydrofluorocarbons (HFC-23 and HFC-134a), perfluorocarbons (CF_4 and C_2F_6), sulphur hexafluoride (SF_6) and nitrogen trifluoride (NF_3). CO_2 always refers to the total emissions of all GHGs, equivalent to CO_2 emissions calculated per relative global warming potential (GWP) (refer to https://cdm.unfccc.int/Reference/CDM_note.html for a breakdown of GWP for each type of emission).
Carbon emission intensity: The amount of CO_2 emitted per unit of revenue or per unit product.
Carbon emission volume: The total amount of CO_2 emitted per year.
Carbon neutrality: The point at which net zero CO_2 emissions has been achieved, i.e., a balance between carbon emitted and carbon absorbed.
Carbon footprint: The amount of CO_2 and other carbon compounds emitted due to the consumption of fossil fuels, industrial processes, etc.
Carbon offsetting: The action or process of compensating for CO_2 emissions arising from industrial or other human activity, by participating in programmes designed to make equivalent reductions of CO_2 in the atmosphere.
Decarbonisation: The process of reducing overall CO_2 emissions – this can be achieved by direct methods such as switching to renewable energy sources, or through compensatory methods such as carbon offsetting.
Scope 1 emissions: Direct emissions from sources that are owned or controlled by a company or organisation, such as furnaces, boilers or vehicles.
Scope 2 emissions: Indirect emissions from the generation of electricity that a company or organisation has purchased.
Scope 3 emissions: Emissions that are produced due to a company's activities, but do not come directly from sources that are directly owned or controlled by the company, for example, during extraction of raw materials that a company uses for production, during production of components that a company uses for production, during transportation of raw materials or components, and during the use of products or services produced by a company.

Chapter 1: More Detailed and Concrete Policies are Needed

China's pledge to peak carbon emissions before 2030 and achieve carbon neutrality by 2060 (30/60 Goals), announced by President Xi Jinping on 20th September 2020 at the United Nations General Assembly,[10] was an extremely welcome development. It demonstrated China's commitment to fighting climate change and, perhaps more importantly, forced local governments and corporates in China to make decarbonisation a priority.

The Chinese Government has begun to provide broad guidance to business as to how its 30/60 Goals will be achieved, in the form of its '1+N' policy framework.[11] While this is a working document that will be expanded in the coming months, at the time of writing it is largely theoretical and does not contain much in the way of concrete targets or coordination mechanisms.

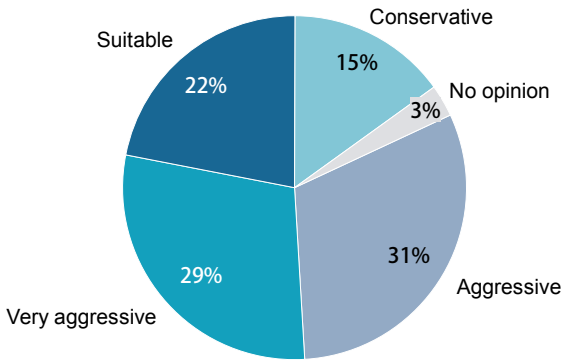
In the absence of such detail—particularly industry- and local-level guidance, and an understanding of what tools will be adopted—businesses are unable to make well-informed investment decisions that factor China's plans into their own global corporate decarbonisation strategies.

China's 30/60 Goals a welcome start

European businesses welcome the fact that addressing climate change is being taken seriously at the very highest level in China. As Figure 1 shows,[12] China's 30/60 Goals are largely viewed as aggressive. This is necessary given the scale of the challenge facing China.

Figure 1: China's decarbonisation goals are seen as aggressive

How would you characterise China's decarbonisation goals?



Source: European Chamber member survey

The announcement of China's 30/60 Goals has helped accelerate climate action in China. The fact that it was made by President Xi was a clear indication that this is something that companies must take seriously. European companies that had already been making significant progress in decarbonising their operations report that, since the announcement, their Chinese-owned partners have been increasingly placing emphasis on green technologies, projects and solutions. An independent study also points to the fact that, not long after the goals were announced, firms from China's high-emitting industries began cautiously announcing emissions reduction targets, whereas prior to the announcement there had been little to no pressure for them to do so.[13]

10 Darby, Megan & Farand, Chloé, *Xi Jinping: China will aim for carbon neutrality by 2060, Climate Home News*, 22nd September 2020, viewed 3rd March 2022, <https://www.climatechangenews.com/2020/09/22/xi-jinping-china-will-achieve-carbon-neutrality-2060/>

11 *China's "1+N" Policy Framework*, Embassy of the People's Republic of China in the United States of America, 17th November 2021, viewed 4th March 2022, <http://www.china-embassy.org/eng/zt/climatechange/202111/t20211117_10449121.htm>

12 Based on responses to the question: How would you characterise China's decarbonisation goals (peaking emissions before 2030 and achieving carbon neutrality by 2060)?

13 Downie, Edmund, *Getting To 30-60: How China's Coal Power, Cement and Steel Corporations are Responding to National Decarbonization Pledges*, Center on Global Energy Policy, Columbia University, 25th August 2021, viewed 28th February 2022, <https://www.energypolicy.columbia.edu/research/report/getting-30-60-how-china-s-biggest-coal-power-cement-and-steel-corporations-are-responding-national>

There has also been increased interest in carbon management practices and green solutions from local government stakeholders. Several companies interviewed for this report explained how low and zero-carbon initiatives they had promoted without success to local level authorities prior to September 2020 suddenly gained traction once President Xi delivered China's climate pledge.

For example, while the conversation about greening urban transportation had been around for a long time in China the willingness to follow through had been lacking in many locations, mainly due to cost considerations. The relatively sudden shift in policy focus signalled by President Xi's announcement provided local governments with fresh impetus to revisit the topic and begin looking for ready-made solutions. This has worked in favour of some European companies that—due to the size of the Chinese market—have been able to utilise legacy technology that would otherwise only have been used in small-scale pilots in Europe.

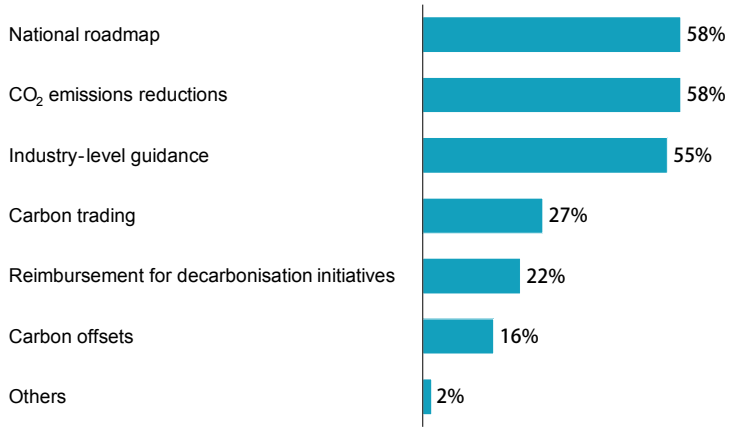
'1+N' needs fleshing out, backed by strong, consistent enforcement

While continuous top-down guidance on environmental targets is important, it is not enough on its own to bring about the changes needed for China to meet its 30/60 Goals. Policies need to be developed within the '1+N' framework that can set clear, binding targets and ensure a coordinated nationwide approach to enforcement of environmental regulations.

As the national roadmap for decarbonisation, China's '1+N' policy framework is seen as the joint most significant future policy for European Chamber members, alongside those related specifically to restrictions on carbon emissions (see Figure 2). The framework was announced by President Xi during the United Nations 15th Conference of Parties (COP15) on biodiversity, which took place in Kunming, China, from 11th to 15th October 2021.

Figure 2: European companies need more specific policy guidance

Which upcoming decarbonisation policies in China does your company pay most attention to?



Source: European Chamber member survey

The '1'—the overarching guidance for China to achieve its 30/60 Goals—is already well known.[14] It outlines the plan to "gradually increase the share of non-fossil energy consumption to around 20 percent by 2025, around 25 percent by 2030, and over 80 percent by 2060."[15]

The 'N'—the various action plans with concrete solutions for achieving the 30/60 Goals across specific sectors, including supporting measures—needs to be rapidly fleshed out.[16] At the time of writing, more than 30 sectoral 14th Five-year Plans (FYPs) had been released that include keywords such as 'green' and 'low carbon', but as there is no official classification for what

14 *Working Guidance for Carbon Dioxide Peaking and Carbon Neutrality in Full and Faithful Implementation of the New Development Philosophy,* National Development and Reform Commission (NDRC), updated 24th October 2021, viewed 4th March 2022, <https://en.ndrc.gov.cn/policies/202110/t20211024_1300725.html>

15 *China's "1+N" Policy Framework,* Embassy of the People's Republic of China in the United States of America, 17th November 2021, viewed 4th March 2022, <http://www.china-embassy.org/eng/zt/climatechange/202111/t20211117_10449121.htm>

16 ""N" will continue to be released as specific implementation plans for key areas such as energy, industry, construction and transport, and for key sectors such as coal, electricity, iron and steel, and cement, coupled with supporting measures in terms of science and technology, carbon sink, finance and taxation, and financial incentives.": Ibid.

constitutes an 'N' policy, it is not clear if they are part of the '1+N' roadmap.

China's overarching 14FYP provides some general guidance towards 2030, but as a high-level plan it lacks the level of specificity that businesses need. For example, while it mentions that from 2021 to 2025 carbon dioxide (CO_2) intensity is to fall by 18 per cent and energy intensity is to fall by 13.5 per cent, the methods and mechanisms for achieving these goals are not defined.[17]

Details are even lighter on what the national-level roadmap will look like for the period 2025 to 2030, with the specification that CO_2 emissions are to peak "before 2030" leaving a lot of room for manoeuvre.[18] It was encouraging that the 2021 Central Economic Work Conference (CEWC) outlined China's intention to move towards controlling carbon emissions and intensity as opposed to energy consumption, but there is no clear timeline for this either. The readout from the CEWC also contained ambiguities. For example, although it notes that the "phase-out of conventional energy must be based on secure and reliable replacement with new energy", it also emphasises "that coal is the foundation of China's energy system and promises to promote 'clean coal'".[19] At the CEWC, it was also announced producers of industrial raw materials and newly-installed renewable energy projects should be exempted from energy volume caps, which could help to relieve shortages of materials needed by manufacturers of solar and wind technology and boost demand for renewable energy.[20] However, a timeline for this is also needed so that companies can plan accordingly. Business uncertainty over China's cautious, piecemeal approach to energy policy was compounded following Premier Li Keqiang's opening speech at the 2022 National People's Congress, during which he outlined the need for China to take a more flexible approach to improving energy efficiency in the interest of maintaining energy security.[21]

Looking to 2060, the picture is even less clear. For example, along with its updated nationally determined contribution (NDC), submitted to the United Nations ahead of the 26th Conference of Parties (COP26), China also published its *Mid-century Long-term Low Greenhouse Gas Emission Development Strategy* (LTS) on 28th October 2021. Although the LTS outlines China's 'strategic vision' for 2060, it only describes one qualitative goal, which is to target "an 80% share of energy from non-fossil fuels – an increase from 25% by 2030, as set in the revised NDC".[22]

This lack of clarity is not surprising given that achieving carbon neutrality will require structural changes to China's economy, including the development and roll out of innovative technologies, the creation of new value chains and a radical change in demand pattens.[23] The sheer scale of this challenge requires China to employ all the tools at its disposal, including opening its market to European companies that have cutting-edge technology and expertise in working with policymakers on addressing climate change in their home markets.

China has made some headway with developing a more coordinated approach to environmental issues. Following institutional restructuring in 2018, the Ministry of Ecology and Environment (MEE) was created in order to defragment all environmental and ecological responsibilities that had previously been shared between the former Ministry of Environmental Protection, the Ministry of Water Resources, the former Ministry of Land and Resources, the former Ministry of Health, the National Development and Reform Commission (NDRC) and the former State Oceanic Administration.[24]

However, dissonance still exists between central and local authorities. The dependence many local authorities have on highly-polluting companies that provide a fast-track to economic growth has not been broken,[25] indicating a need for stronger enforcement of environmental regulations to hold all levels of government to account. Introduced in 2016, environmental vertical management reform (EVMR), which focusses on reconfiguring environmental management functions among local governments and their environmental protection authorities at the provincial, city and county levels, was seen as a solution. However, fundamental changes to EVMR are still needed, including strengthening rule of law as part of a long-term strategy,[26] and creating "robust incentive and accountability mechanisms, and more effective and professional enforcement activities at local levels."[27]

17 The 14FYP also outlines a focus on increasing the share of non-fossil fuels in China's energy mix, improving CO_2 intensity and adopting further offsetting measures, such as increasing forest coverage. For a summary of the main aspects of the 14FYP with regard to climate change see: Tsang, Byford, *China's Five Year Plan: A Contender for the European New Deal?*, E3G, April 2021, viewed 3rd March 2022, <https://9tj4025ol53byww26jdkao0x-wpengine.netdna-ssl.com/wp-content/uploads/E3G_14th_Five-Year_Plan_Briefing_Final.pdf>

18 Ibid.

19 *"Stability, stability, stability" – what will China's economic priorities mean for the climate?*, Centre for Research on Energy and Clean Air, 13th December 2021, viewed 31st March 2022, <https://energyandcleanair.org/china-economic-work-conference-2021-climate/>

20 *Central economic work conference held, Xi Jinping Li Keqiang delivered important speeches, Xinhua*, 10th December 2021, viewed 11th May 2022, <http://www.gov.cn/xinwen/2021-12/10/content_5659796.htm>

21 *Two Sessions: China shuns energy use target to focus on securing fuel supply, Bloomberg,* 5th March 2022, viewed 31st March 2022, <https://www.thestandard.com.hk/breaking-news/section/3/187794/Two-Sessions:-China-shuns-energy-use-target-to-focus-on-securing-fuel-supply>

22 Liu, Hongqiao & You, Xiaoying, *What Does China's New Paris Agreement Pledge Mean For Climate Change*, Carbon Brief, 16th December 2021, viewed 25th February 2022, <https://www.carbonbrief.org/qa-what-does-chinas-new-paris-agreement-pledge-mean-for-climate-change>

23 *An Energy Sector Roadmap to Carbon Neutrality in China*, International Energy Agency, p. 271, September 2021, viewed 28th February 2022, <https://iea.blob.core.windows.net/assets/9448bd6e-670e-4cfd-953c-32e822a80f77/AnenergysectorroadmaptocarbonneutralityinChina.pdf>

24 Wang, Jinpeng, *Reform of China's Environmental Governance: The Creation of a Ministry of Ecology and Environment, Chinese Journal of Environmental Law*, Brill, 23rd July 2018, viewed 12th November 2021, <https://brill.com/view/journals/cjel/2/1/article-p112_8.xml?language=en>

25 Geall, Sam, *China, Climate politics and COP26*, Lowy Institute, October 2021, viewed 11th March 2022, <https://www.lowyinstitute.org/sites/default/files/Geall%20LOWY%20China%20COP26%20PDF%20v7.pdf>

26 Di, Zhou, *China's Environmental Vertical Management Reform: An Effective and Sustainable Way Forward or Trouble in itself?*, MDPI, 11th November 2020, viewed 10th March 2022, <https://www.mdpi.com/2075-471X/9/4/25/pdf>

27 Ma, Yun, *Vertical Environmental Management: A Panacea to the Environmental Enforcement Gap in China?, Chinese Journal of International Law,* 27th June 2017, viewed 10th March 2022, <https://brill.com/view/journals/cjel/1/1/article-p37_3.xml?language=en#affiliation0>

Making local governments more accountable to the public and implementing self-enforcing incentives could help in this regard.

Local- and industry-level guidance crucial, but requires capacity building among policymakers

Nearly two-thirds of companies surveyed for this report stated that a lack of industrial guidance and best practices from government or NGOs is the second most significant issue that may prevent them from achieving their decarbonisation goals in China.[28] In general, provincial and municipal governments currently have a limited understanding of how to implement high-level targets, and lack industry-specific knowledge. As a representative of a large European environmental company that works with numerous local government partners notes, companies are often asked to adopt measures to reduce their energy consumption, or their use of raw materials, despite the authorities having little understanding of how, or if, such policies can be practically implemented.

At times businesses are expected to comply with unrealistic regulations that are impossible to fulfil, such as requirements to reduce their environmental impact and/or source renewable energy beyond what is feasible.[29] Some European companies—including those operating in designated industrial parks—have reported being forced by local authorities to cease production despite being compliant with the most stringent environmental regulations. Such cases only serve to undermine investor confidence while doing nothing to help China achieve carbon neutrality, and can even cause harm. For example, temporary closures of chemical plants not only risk production and supply chain disruptions they can also pose serious safety and ecological risks.[30]

There is also little, if any, industry-level dialogue between businesses operating in the same sectors, which means it is impossible for companies to gain an understanding of how they are performing in relation to their peers. Almost half of the respondents surveyed for this report do not know how they benchmark against Chinese players in their industry in terms of decarbonisation.[31] The significance of this should not be underestimated. For example, a major European automotive manufacturer explained during an interview that having been able to gain a clear understanding of the kind of improvements its suppliers would be implementing has allowed it to formulate its own decarbonisation strategy more precisely. While the picture varies depending on the sector, in general industry-level forums would give China's 30/60 Goals a boost and, as one European company representative noted, "ensure that *everyone* is able to meet their decarbonisation targets."

The importance of policy consultation

If the authorities only have a limited understanding of company operations, the ultimate outcome of a policy can often end up being somewhat contrary to its objective. The initial implementation of China's 'dual control' system—aimed at controlling energy consumption and energy intensity—provides a good example of this.[32&33]

Energy intensity is a poor metric because it fails to account for the energy source. For example, a product may be highly energy-intensive, yet the energy required to produce it comes from renewable sources, and hence it is low carbon. Conversely, a product that is not highly energy-intensive to produce may get its energy from heavy-polluting fossil fuels and therefore may still result in a high level of emissions. The metric also does not account for companies that consume a lot of energy, but whose products ultimately reduce emissions or increase energy efficiency, hence leading to low or negative total net emissions levels.

In response to an August 2021 NDRC warning that only 10 out of 30 regions had achieved their energy reduction targets,[34] local governments took extreme measures to achieve their targets before the end of the year, with many curtailing power supplies to businesses and residential properties. The situation was further exacerbated due to both the current energy mix and deficient infrastructure: China's power supply from new energies (wind and photovoltaic) was (and still is) unstable, and badly integrated into an inflexible grid system that itself is badly integrated at the interprovincial level. As a result, renewable energy was unable to make up for the shortfall of thermal power and hydropower generation. In addition, rising prices for coal and gas sharply increased

28 Based on the question: What are the top-three issues that may prevent your company from achieving its decarbonisation and/or carbon neutrality goals in China?

29 *European Business in China Position Paper 2021/2022*, European Union Chamber of Commerce in China, Environment Working Group, p. 52, September 2021, viewed 10th March 2022, <https://www.europeanchamber.com.cn/en/publications-archive/932/Environment_Working_Group_Position_Paper_2021_2022>

30 *European Business in China Position Paper 2021/2022*, European Union Chamber of Commerce in China, Petrochemicals, Chemicals and Refining Working Group, p. 275, September 2021, viewed 10th March 2022, <https://www.europeanchamber.com.cn/en/publications-archive/957/Petrochemicals_Chemicals_and_Refining_Working_Group_Position_Paper_2021_2022>

31 Based on the question: How would you characterise the targets set by Chinese players in your industry in terms of their own decarbonisation strategies?

32 China has since announced the metric will change to carbon intensity (per product) and carbon emissions, although it has not been made clear when this will happen: Yin, Ivy, *China will establish dual control system for cutting emissions, carbon intensity: Xi,* S&P Global, 27th January 2022, viewed 10th March 2022, <https://www.spglobal.com/commodity-insights/en/market-insights/latest-news/energy-transition/012722-china-will-establish-dual-control-system-for-cutting-emissions-carbon-intensity-xi>. While this is a welcome step, and is expected to help address these issues, companies are still unclear about the full scope of the policy and how it will impact their business. For example, many countries use an emissions trading system (ETS) and/or a disclosing system to manage such measurements. In China, given such tools are not standardised across sectors, it is not clear therefore whether/how similar measures could be adopted in practice.

33 Emission controls relate more directly to China's climate goals. A focus on energy intensity can at best restrict fuel emissions, but not process emissions; this leaves scope for a large amount of emissions to not be covered by this metric. For example, for cement production, a highly emitting process, process emissions account on average for around 60 per cent of total industrial GHG emissions; therefore, even if the sector switches to renewable fuels, it may still be far from the green target.

34 *China warns two-thirds of regions for missing energy targets, Reuters*, 3rd June 2021, viewed 18th April 2022, <https://www.reuters.com/business/energy/china-warns-two-thirds-regions-missing-energy-targets-2021-06-03/>

costs for power producers, who were reluctant to increase supply as they would incur losses.

Apart from such actions lacking transparency, consistency or legal grounds, a poor understanding of businesses' operations meant that some actions taken by local governments risked increasing overall emissions. For example, several European Chamber member companies were requested to shut down manufacturing operations for two days a week. This led to adverse consequences as bringing operations back online consumed more energy than if they had been left continuously running. Member companies operating in the chemicals sector were also asked to cease operations in certain provinces, despite producing carbon specifically for products and industrial processes, meaning that it was not ultimately turned into CO_2 that was released into the atmosphere. Such measures therefore did nothing to lower emissions levels. Moreover, in response to the energy shortages, some companies, especially small- and medium-sized enterprises (SMEs), installed diesel generators to maintain operations, which increased their emissions.

To avoid such outcomes the European Chamber recommends that the government institutionalises policy consultations with all industry stakeholders, including European companies. While it is encouraging that European companies were involved in consultations with the Ministry of Commerce (MOFCOM) on issues related to decarbonisation,[35] such opportunities have so far been limited.

Over a third of companies surveyed for this report identified that one of the main areas in which China can cooperate with the EU is in formulating its overall decarbonisation plan,[36] which makes sense given that a great deal of complementarity could be found in this regard. The vastness of China, and the fact that each of its provinces are at different stages of development, makes implementing a coordinated and practical decarbonisation plan a challenge similar in scale and scope to rolling out a decarbonisation plan across the EU's 27 Member States. Presented in December 2019, the European Green Deal aims for the EU to reach carbon neutrality by 2050. In July 2021, the EU adopted the first part of its Fit for 55 policy framework, a package of legislation under the European Green Deal that completely overhauls its climate rules. Fit for 55 has enshrined in law targets of at least a 55 per cent reduction in GHG emissions by 2030, compared to 1990 levels, and becoming carbon neutral by 2050.[37] It takes a holistic approach with wide-reaching proposals for firm emissions reductions targets across different sectors of the economy, changes to the EU's Emissions Trading System (ETS), individual member state emissions targets, a review of the renewable energy directive, CO_2 emissions standards for cars and vans, sustainable aviation fuels and greener fuels in shipping, among many others.[38]

In the absence of clear policy direction in China, companies are unable to make well-informed investment decisions—as can be seen in the maritime case study—which poses further risks to China's 30/60 Goals.

Case study: Clearer industrial guidance needed in the maritime sector

While companies operating in the maritime sector welcomed the recent *14th Five-year Plan for the Development of Green Transport*,[39] the document, by definition, does not provide an in-depth policy roadmap beyond 2025. Furthermore, the guidance provided in the document lacks concrete proposals and does not contain binding or clearly measurable targets.

For example, the plan mentions that China will "actively explore the application of oil-electric hybrid, hydrogen-fuelled, ammonia-fuelled and methanol-powered vessels" and "accelerate the transformation of existing operating vessels receiving electricity facilities and continuously increase the proportion of receiving electricity facilities installed" without providing detail as to how this will be achieved. Given China's position as the leading importer of liquified natural gas (LNG),[40] and that it has a well-established LNG distribution network and bunkering infrastructure, synthetic LNG—a carbon-neutral marine fuel—should be promoted as well.

This lack of clear guidance is a major problem for ship manufacturers and logistics service providers given that the lifespan

35 *European Chamber Meeting with Minister Wang Wentao of Ministry of Commerce (MOFCOM)*, European Union Chamber of Commerce in China, 19th October 2021, viewed 10th March 2022, <https://www.europeanchamber.com.cn/en/lobby-actions/5359/European_Chamber_Meeting_with_Minister_WANG_Wentao_of_Ministry_of_Commerce_MOFCOM_>

36 Based on the question: What are the most relevant EU polices that China can learn from?

37 As a result of Russia's invasion of Ukraine, the EU subsequently released REPowerEU, a joint European action aimed at reducing reliance on Russian gas and mitigating rising energy prices. Specifically, the plan is based on: "Diversifying gas supplies, via higher Liquefied Natural Gas (LNG) and pipeline imports from non-Russian suppliers, and larger volumes of biomethane and renewable hydrogen production and imports; and, reducing faster the use of fossil fuels in our homes, buildings, industry, and power system, by boosting energy efficiency, increasing renewables and electrification, and addressing infrastructure bottlenecks." It envisages being able to remove 155 billion cubic metres of fossil gas use, which is the amount it imported from Russia in 2021, and that nearly two thirds of that will be removed within a year: *REPowerEU: Joint European action for more affordable, secure and sustainable energy*, European Commission, 8th March 2022, viewed 11th April 2022, <https://ec.europa.eu/commission/presscorner/detail/en/ip_22_1511>

38 *European Green Deal, Fit for 55*, European Council, reviewed 25th March 2022, viewed 6th April 2022, <https://www.consilium.europa.eu/en/policies/green-deal/fit-for-55-the-eu-plan-for-a-green-transition/>

39 *Notice of the Ministry of Transport on the Printing and Distribution of the 14th Five-Year Plan for Development of Green Transportation*, Ministry of Transport, 21st January 2022, viewed 18th April, <https://xxgk.mot.gov.cn/2020/jigou/zhghs/202201/t20220121_3637584.html>

40 *China Overtakes Japan as Top LNG Importer, Caixin Global*, 7th January 2022, viewed 18th April 2022, <https://www.caixinglobal.com/2022-01-07/china-overtakes-japan-as-top-lng-importer-101826804.html>

of a ship is approximately 25 to 30 years.[41] Ships being built at the time of writing can be expected to still be operational in the late 2040s or even early 2050s. It is therefore pivotal that they are built with the fuels and technologies of the future in mind. Although numerous new fuels and technologies—such as synthetic fuels, hydrogen, biofuels and electrification—are under trial for the shipping sector, few shipowners are prepared to invest in a technology that is not guaranteed to prevail in future markets.

This has prompted many shipowners to look for interim solutions that can meet short-term environmental regulations and improve the performance of their fleet, such as by ordering dual-fuel newbuilds, which can run on greener LNG, methanol or ammonia options in addition to conventional liquid marine fuels, such as fuel oil. While such measures have the potential to reduce emissions compared to today's levels, they are not sufficient for China to meet its 2060 targets. Indeed, today's methanol and ammonia bunker fuels are often promoted as 'zero-carbon' fuels, which is true when they are in use in vessels. However, the production of such fuels emits more CO_2 than the combustion of conventional liquid marine fuels. It is therefore essential that the use of fuels that are carbon neutral throughout the entire value chain be promoted. This can only be achieved with synthetic fuels such as e-LNG or e-methanol. Last but not least, when a fuel is burned the production of nitrogen and sulphur oxides, methane slip and fine particulate matter should also be carefully considered.

For China to decarbonise its shipping sector, and to deliver on the International Maritime Organization's target of reducing GHG emissions from shipping by 50 per cent by 2050,[42] economically-competitive, zero-emission vessels must be operating on a global scale by 2030. Since China is the largest shipbuilding nation in the world, this goal is unlikely to be reached unless Chinese shipyards can step up efforts to develop and implement effective policies in cooperation with foreign companies.

Targets need to be more specific, comprehensive and ambitious

While China's 30/60 Goals are viewed positively, there is concern among European companies that the sole focus is on achieving carbon neutrality. As a European executive interviewed for this report noted, while China has a track record of reaching its goals, in practice "[c]arbon emissions may be mitigated, but other harmful emissions may be ignored and allowed to get worse. There needs to be more to decarbonisation and environmental protection than just this one zero carbon target."

European companies therefore believe it is important for China to continue building on its stated targets in order to demonstrate its ambition and keep businesses motivated. The announcement that China's steel sector will push back its target date for achieving carbon neutrality from 2025 to 2030—as well as a watering down of specific goals—was disconcerting.[43] It signalled to business that China may relax other climate-related goals in the future should progress be deemed difficult,[44] which suggests a lack of ambition. According to one independent scientific analysis project, as of 3rd November 2021, "China's current policies are 'insufficient' to meet the Paris Agreement's 1.5°C limit, and more consistent with a global warming of 3°C. "[45]

Other independent studies suggest it is not only possible but would also be beneficial for China to adopt a more ambitious climate action plan. For example, a recent study conducted at the invitation of the Chinese Government, which evaluated various pathways to carbon neutrality, found that achieving net-zero before 2060 could provide additional socio-economic benefits to the state.[46] The press release published to accompany the launch of the report states that accelerating its clean energy transition "would result in China's CO_2 emissions declining to almost 20% below their current level by 2030. On top of the major advantages that come from reducing the impact of climate change, the social and economic benefits include greater prosperity for regions that have not yet fully benefited from China's economic development and a bigger net gain in job creation nationwide."[47] Likewise, a recent joint report from the universities Tsinghua, Oxford, Cambridge, LSE and HKUST found that should China continue to ratchet up its climate ambitions, its transition to net-zero would be cheaper, enhance China's international competitiveness in emerging markets and set a strong example to the world.[48]

41 *Do you know what happens to a ship when it's too old to sail anymore?*, Safety4sea, 4th February 2020, viewed 18th April 2022, <https://safety4sea.com/cm-do-you-know-what-happens-to-a-ship-when-its-too-old-to-sail-anymore/>
42 Compared to 2008 levels.
43 Updated guidelines published in February 2022 omitted language from the previous draft calling for "top five steelmakers to account for 40% of the country's total steel output, and the top 10 steelmakers to account for 60%", replacing it with the more general language that industry concentration should be "greatly boosted": Luo, Guoping & Zou, Manyun, *China's steel makers get 5 more years to reach peak carbon output, Caixin*, 11th February 2022, viewed 4th March 2022, <https://asia.nikkei.com/Spotlight/Caixin/China-s-steelmakers-get-5-more-years-to-reach-peak-carbon-output>
44 *2020: Green Olympics; Steel Industry Instructions; Beijing-Moscow Energy Deal,* Carbon Brief, 10th February 2022, viewed 21st February 2022, <https://www.carbonbrief.org/china-briefing-10-february-2022-green-olympics-steel-industry-instructions-beijing-moscow-energy-deal>
45 *China,* The Climate Action Tracker, viewed 10th March 2022, <https://climateactiontracker.org/countries/china/>
46 *An Energy Sector Roadmap to Carbon Neutrality in China*, International Energy Agency, September 2021, viewed 28th February 2022, <https://iea.blob.core.windows.net/assets/9448bd6e-670e-4cfd-953c-32e822a80f77/AnenergysectorroadmaptocarbonneutralityinChina.pdf>
47 *China has a clear pathway to build a more sustainable, secure and inclusive energy future*, IEA, 29th September 2021, viewed 18th April 2022, <https://www.iea.org/news/china-has-a-clear-pathway-to-build-a-more-sustainable-secure-and-inclusive-energy-future>
48 Hepburn, Cameron, Stern, Nicholas, Qi, Ye, Ward, Bob, Xie, Zhunping & Zenghelis, Dimitri, *Towards carbon neutrality and China's 14th Five-Year Plan: Clean energy transition,*

However, as mentioned on page nine, Premier Li Keqiang's announcement at the 2022 National People's Congress that ensuring energy security is now China's priority casts further doubt over decarbonisation in the near-term.[49] While energy security is extremely important, it should be balanced against the severe cost of neglecting effective measures to keep China on the path to carbon neutrality by 2060.

More transparency is key

In addition to China displaying greater ambition with its climate agenda, European businesses report an urgent need for greater policy transparency at multiple levels in order for them to reach their corporate decarbonisation goals.[50] For example, although local government's emissions-related KPIs are usually known, European companies often struggle to understand exactly how they should calculate their own emissions.

There is also a need for policies to be communicated with as much advance warning as possible, to ensure that companies can be compliant without compromising their operations. For example, when air pollution measures were introduced for the Beijing-Tianjin-Hebei area on 1st October 2019, companies were only given five days' notice to prepare. As a result, they were put under enormous pressure and in some cases were unable to fulfil client orders.[51]

Recommendations

- Introduce in a timely manner a clear policy roadmap with intermediate targets and which includes binding, measurable KPIs leading up to 2030, and a roadmap to 2060.
- Work with industry to design and roll out detailed, industry-specific plans under the '1+N' policy framework as soon as possible.
- Ensure that environmental reforms are applied consistently nationwide.
- Improve industrial knowledge among local officials so that environmental policies are practical and implementable and to avoid a one-size-fits-all approach to environmental enforcement.
- Strengthen rule of law as part of a long-term environmental strategy, and supplement reforms with robust incentive and accountability mechanisms, and more effective and professional enforcement activities at the local level.
- Facilitate further coordination between local- and national-level targets.
- Communicate decarbonisation-related measures and enforcement plans well in advance of their publication, and consult with industry on how best to mitigate any potential negative impacts.
- Provide full online access to official environmental- and decarbonisation-related information, including policies and standards that are applied locally and nationally, in a consolidated format.
- Increase EU-China cooperation in environmental policymaking, to facilitate the sharing of best practices.
- Ensure that decarbonisation policies target reductions of all harmful GHGs, not just CO_2.
- Hold all industries to decarbonisation timelines, while finding ways to ensure energy security.
- Institute formal government-industry policy consultations on decarbonisation.
- Establish direct communication channels for companies to notify central government authorities of any issues/irregularities related to 'one-size-fits-all' approaches or other unreasonable environmental enforcement.

sustainable urban development, and investment priorities, Environmental Science and Ecotechnology, Elsevier, 11th October 2021, viewed 27th April 2022, <https://reader.elsevier.com/reader/sd/pii/S2666498421000545?token=1D30E84A15991E71F3FC1EEDEE979FF61121BB33D9C5A7C9827939F58160CA039CD60B30CE004136BF7047EDE349AB14&originRegion=us-east-1&originCreation=20220427023446>

49 *Two Sessions: China shuns energy use target to focus on securing fuel supply, Bloomberg*, 5th March 2022, viewed 31st March 2022, <https://www.thestandard.com.hk/breaking-news/section/3/187794/Two-Sessions:-China-shuns-energy-use-target-to-focus-on-securing-fuel-supply>

50 Based on the question: What does your company expect from the Chinese Government in order for you to achieve your decarbonisation and/or carbon neutrality goals in China? 47 per cent responded that they needed transparency in communication about upcoming policies related to decarbonisation.

51 *European Business in China Position Paper 2021/2022*, European Union Chamber of Commerce in China, Environment Working Group, p. 51, September 2021, viewed 10th March 2022, <https://www.europeanchamber.com.cn/en/publications-archive/932/Environment_Working_Group_Position_Paper_2021_2022>

Chapter 2: China's Energy System and Carbon Market

One of the biggest challenges China faces in decarbonising its power generation sector is moving away from fossil fuels while maintaining energy security. Increasing the share of renewables in China's energy mix is a key aspect of this strategy. Part of this will require comprehensive power planning and grid regulation, development of a sustainable interprovincial exchange and a guarantee that the dispatch of renewable sources will be prioritised through national, local and onsite grids.

China's transition to renewable sources of energy will require an increase in the use of less-polluting fossil fuels, such as natural gas and biogas, as coal use is reduced, as well as the development of related infrastructure and policies to encourage their utilisation. It will also necessitate a clear exit strategy that highlights under what circumstances and for how long less-polluting fossil fuels will be used, so that companies are able to plan their investments accordingly.

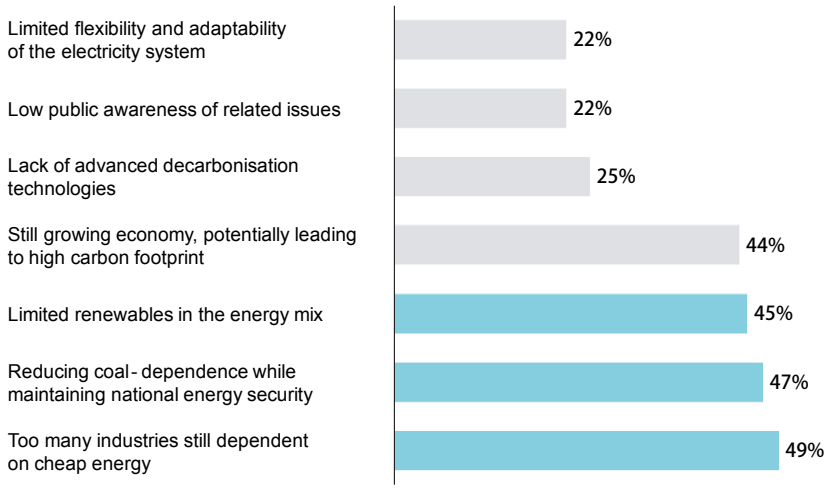
A third component that could help China reduce emissions would be the full implementation of its national ETS. Improvements have been made to the system since its launch in 2021, but its impact currently remains limited due to its restricted scope, the low price of carbon and the lack of an absolute cap on emissions, among other issues.

Weaning China off coal – a key challenge

European companies identify China's biggest challenges to achieving carbon neutrality as eliminating industry dependence on cheap energy, reducing coal dependency while maintaining energy security and increasing the share of renewables in China's energy mix (Figure 3).

Figure 3: The transition from coal to renewables the biggest challenge

What do you think are China's top-three challenges to achieving carbon neutrality?



Source: European Chamber member survey

It is already understood by China that increasing consumption of non-fossil energy—which will entail a corresponding increase of renewable energy in its energy mix—will be pivotal for achieving carbon neutrality. However, the "phasing down" of coal will only start from 2026,[52,53&54] as China prioritises economic stability in light of recent geopolitical tensions and the impact of COVID-19, as well as in response to disruptions that were experienced in the second half of 2021 due to power cuts.[55]

In the *Working Guidance for Carbon Dioxide Peaking and Carbon Neutrality in Full and Faithful Implementation of the New Development Philosophy*, the main objectives include increasing the total installed capacity of wind and solar to 1,200 gigawatts (GW) and for non-fossil energy consumption to exceed 80 per cent by 2060.[56] With 69 per cent of European companies reporting that a lack of access to renewables could derail their corporate decarbonisation targets,[57] questions clearly remain over how, or even if, this tectonic shift will take place.[58] There are also questions over the numbers, with the suggestion that China is considerably underplaying the task ahead. One expert analyst projects that for China to achieve the goal of producing 25 per cent of all energy from non-fossil sources, the country will actually need to increase solar and wind capacity to 1,600–1,800 GW by 2030. This would require averaging around 110–140 GW in additional wind and solar capacity every year or, to put it another way, "China will need to install wind and solar power equal to Germany's entire installed capacity every year from 2021 to 2030."[59]

A further challenge for China is to ensure that its installed renewables capacity is better utilised. With 895 GW of installed renewables capacity reported in 2021, China accounts for nearly a third of global capacity and has more than the next five countries combined.[60] Even though the curtailment issue has been largely mitigated over the past few years, given China's ambitious capacity deployment targets, renewables integration remains one of the key challenges.[61]

Sharing best practices can strengthen the case for increasing investment in renewables

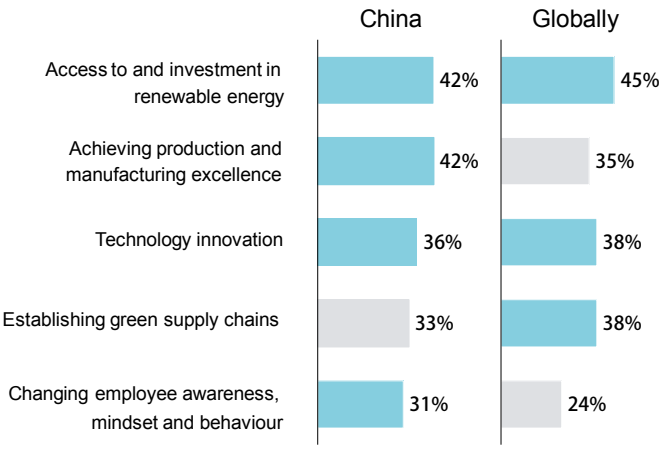
For now, China's companies appear slower to take up the cause for renewable energy compared to their European counterparts,[62] many of which have global green pledges that they need to meet in advance of China's 30/60 Goals.[63] To increase renewable energy use, clear, practical examples of how companies are decarbonising through widescale adoption could help.

Figure 4 shows the extent to which European companies' China and global decarbonisation strategies depend on access to and investment in renewable energy.[64] For these companies, increasing their use of renewable energy is imperative.

52 Cadell, Cate & Stanway, David, *President Xi says China will start cutting coal consumption from 2026, Reuters*, 22nd April 2021, viewed 12th April 2022, <https://www.reuters.com/world/china/chinas-xi-says-china-will-phase-down-coal-consumption-over-2026-2030-2021-04-22/>
53 The wording "phasing down" as opposed to "phasing out" coal was included in the Glasgow Climate Pact due to a last-minute intervention from India and China at the conclusion of the COP26: Hodgson, Camilla, Hook, Leslie & Pickard, Jim, *India and China weaken pledge to phase out coal as COP26 ends, Financial Times,* 14th November 2021, viewed 12th April 2022, <https://www.ft.com/content/471c7db9-925f-479e-ad57-09162310a21a>
54 Liu, Hongqiao & You, Xiaoying, *What does China's new Paris Agreement pledge mean for climate change?*, Carbon Brief, 16th December 2021, viewed 12th April 2022, <https://www.carbonbrief.org/qa-what-does-chinas-new-paris-agreement-pledge-mean-for-climate-change>
55 Hoskins, Peter, *China power cuts: What is causing the country's blackouts, BBC*, 30th September 2021, viewed 12th April 2022, <https://www.bbc.com/news/business-58733193>
56 *Working Guidance for Carbon Dioxide Peaking and Carbon Neutrality in Full and Faithful Implementation of the New Development Philosophy*, Central Committee of the CPC and the State Council, updated 24th October 2021, viewed 4th March 2022, <http://english.www.gov.cn/policies/latestreleases/202110/24/content_WS61755fe9c6d0df57f98e3bed.html>
57 Based on the question: What are the top three challenges which may prevent your company achieving its decarbonisation and/or carbon neutrality goals in China?
58 Kyriakopoulou, Danae, Xia, Lucie Qian, & Xie, Chunping, *Internationalism in climate action and China's role*, Grantham Research Institute on Climate Change and the Environment, London School of Economics, January 2022, viewed 1st March 2022, <https://www.lse.ac.uk/granthaminstitute/wp-content/uploads/2022/01/Internationalism-in-climate-action-and-Chinas-role.pdf>
59 Myllyvirta, Lauri, *Analysis: China's new 2030 targets promise more low-carbon power than meets the eye*, Carbon Brief, 15th December 2020, viewed 6th April 2022, <https://www.carbonbrief.org/analysis-chinas-new-2030-targets-promise-more-low-carbon-power-than-meets-the-eye>
60 *China leads in renewable energy capacity at 895 gigawatts*, *American Journal of Transportation*, 5th May 2021, viewed 7th March 2022, <https://ajot.com/news/article/china-leads-in-renewable-energy-capacity-at-895-gigawatts>
61 Song, Feng, *As China's energy mix shifts to renewables, how can power markets evolve?*, China Dialogue, 9th April 2021, viewed 18th April 2022, <https://chinadialogue.net/en/energy/power-markets-chinas-energy-mix-shifts-to-renewables/>
62 For example, European-headquartered businesses account for 40 per cent of the *RE100* group's members — a group of businesses that aim to achieve 100 per cent renewable energy usage in their energy mix. By contrast, companies headquartered in Mainland China account for under two per cent of the group. *RE100 Members*, RE100, viewed 3rd March 2022, <https://www.there100.org/re100-members>
63 According to the *Business Confidence Survey 2022,* 87 per cent of 407 respondents aim to reach carbon neutrality before 2050: Unpublished survey data, based on the question, When does your company aim to achieve carbon neutrality?
64 Based on the question: What are your company's top three priority initiatives for achieving its decarbonisation and/or carbon neutrality goals?

Figure 4: Global and China decarbonisation strategies closely aligned

Select the top-three priority initiatives for achieving your company's decarbonisation and/or carbon neutrality goals



Source: European Chamber member survey

European businesses are in a strong position to contribute to China's renewables drive, as well as to comment on associated challenges, by drawing on the experience and successes they have accumulated in their home markets.

The road to 30/60 is littered with barriers

Despite the clear overlap of Chinese Government and European business objectives, European companies currently experience barriers that limit both their access, and the contributions they can make, to renewable energy in China, including the following:

- **Policy barriers**

- *Lack of market access*
  China's renewable energy market is split into two layers, with one for state-owned enterprises (SOEs) and one for private enterprises. Those operating in the private sector—both Chinese and foreign-invested firms—have less market access and face more barriers to develop, own or operate renewable assets. Removing legal constraints at all administrative levels would greatly incentivise foreign investment (direct and indirect), and would facilitate the deployment of innovative solutions developed by small Chinese and foreign private enterprises.

  Foreign investment in renewables is further limited in public procurement. Most provinces have implemented competitive tendering processes to determine which renewable energy projects to include in their annual construction plans, a pre-condition for projects to be approved. Many use a score-based system to measure developers' track records. However, only track records accrued within China are assessed, meaning companies with a great deal of expertise and the most appropriate technology may be excluded from projects due to an administrative technicality.

- *Undeveloped renewable direct power purchase (R-DPP) market*
  Previously, all companies that required access to renewable energy had to purchase directly from the grid, resulting in inefficiencies such as companies being unable to purchase renewable electricity from generation sites located close to their operations. This was largely at the behest of grid companies who wanted to maintain profits gained from transmission and distribution fees.

This changed in 2021, when a European chemicals company proposed and then pioneered R-DPP for a large project in Guangdong.[65] While the creation of a R-DPP market is an extremely positive development, giving end users the opportunity to choose supplier and negotiate pricing, it will take some time for it to develop fully. The market size is currently quite small and relatively unregulated, deals are usually made on a monthly or annual basis and prices are not yet market-driven.

- *Limited electricity market reforms*
  China needs to develop a more transparent, open and flexible power market to enable power to be freely traded between provinces,[66] and to create a more stable power system overall.

  At the moment, protectionism of local thermal coal assets prevents cross-provincial trade even when transmission capacity is available, leading to high renewable energy curtailment rates. Facilitating trade across provinces would allow, for example, the renewable-energy-rich northwest of China to trade electricity generated from renewable sources with China's power-hungry coast. Combining this with a pricing structure that rewards suppliers for having peak capacity available (such as time-of-day pricing, more spot transactions and payments for ancillary services) would encourage further investment in renewable energy capacity and facilitate the move of coal to peak load.

  These factors will need to be addressed for China to effectively promote its low-carbon transformation at a lower cost using market-based means. There is a need to create a better-coordinated national market for electricity, to help improve the flexibility of China's electricity system and allow it to accommodate large outputs from variable renewable sources while maintaining supply reliability and security.[67] Pricing fluctuation reforms potentially mark a step in the right direction,[68] but at time of writing it remains to be seen how this will pan out in practice.

- **Economic barriers**

- *High upfront investment costs*
  From a company perspective, the upfront costs for developing renewable energy infrastructure in China are relatively high compared to other regions, including Europe. It should be taken into consideration, though, that returns over the entire project lifecycle are comparable if not higher in China and that the government will also continue to try and control electricity prices. While this does not guarantee that renewable energy projects will be continuously profitable, it does imply rewards for those that are willing to take the long view. What would help to further incentivise companies to invest in renewables is an additional lowering of upfront costs while also ensuring that official procedures for developing renewable energy projects are more transparent and easily accessible to all companies in China.

  From a local government point of view, given that fossil fuels provide a quicker, more convenient path towards economic growth, there is a need to create incentives that can quickly steer them away from highly-polluting energy sources and towards investing more in renewable solutions.[69] Not doing so risks China peaking its emissions at an unnecessarily high level. It could also put some European companies in an untenable position. If they cannot access sufficient green energy and/or achieve net-zero through China's ETS, they may be forced to exit the market to meet global corporate decarbonisation targets.

- *Limited purchasing power*
  Smaller companies are less able to bargain, and must often pay over the odds for green energy, disincentivising its use. At the same time, SMEs a have huge footprint in China's economy. They represent more than 99 per cent of all companies, contribute more than half of the country's gross domestic product (GDP), create more than 80 per cent of the jobs, hold more than 70 per cent of the patents and contribute more than 50 per cent of the taxes.[70] It is therefore crucial that China finds ways to incentivise SMEs to commit to carbon neutrality.

65 Volkova, Margaret, *BASF to power its first plants of Guangdong Verbund site with 100% renewable energy,* MRC, 10th March 2021, viewed 1st April 2022, <https://www.mrchub.com/news/384701-basf-to-power-its-first-plants-of-guangdong-verbund-site-with-100-percent-renewable-energy>
66 *Power Market Reform: 'Energy-Conserving' 14FYP Scheme; Xi's Trip to Coal Province,* Carbon Brief, 3rd February 2022, viewed 22nd February 2022, <https://www.carbonbrief.org/china-briefing-3-february-2022-power-market-reform-energy-conserving-14fyp-scheme-xis-trip-to-coal-province>
67 Ibid.
68 Ibid.
69 Wu, Emilie, *State of Transition, EURObiz*, 13th April 2021, viewed 1st March 2022, <https://www.eurobiz.com.cn/state-of-transition/>
70 Guo, Linmao, & Ma, Xianghui (Editors), *People's Republic of China Small and Medium-sized Enterprises Promotion Law: Guidebook*, China Democracy and Legal System Publishing House, Beijing, 2017, pp. 15–19.

- **Technology barriers**

- *Lack of smart/digital infrastructure*
  Substantially increasing the share of electricity generation from renewable sources in China will pose challenges to the real-time balance of the existing power system. Issues such as increasing disruptions, randomness and intermittence of power supplies, the integration of new demand sources such as electric vehicles, and interregional imbalances need to be addressed. To overcome these challenges, China's grid system will need to be completely overhauled and digitalised to enable it to adapt to the large-scale and high-proportion grid requirements of new energy.[71&72]

  While China's 'new infrastructure' proposal has led to a lot of digitalisation in the power sector, much of it has occurred without a clear roadmap or coordination among various players, which can lead to serious issues down the line: hasty investments and redundant construction can result in overcapacity, a focus on construction at the expense of operations, and poor integration with existing infrastructure. In addition to digital upgrading of the main power grid, digitalisation of power distribution and demand-side responses will be equally important and therefore require due attention and investment.[73]

- *Limited long-distance power transmission and storage capacity*
  With the majority of China's power demand in its eastern provinces and most of its large-scale renewable energy supply concentrated in the west, how to transmit power is a considerable challenge that risks becoming a key bottleneck to increasing renewable energy uptake.[74] Solutions also need to be developed to optimise green energy storage for times when it cannot be generated, such as when the sun is not shining and the wind is not blowing. Importantly, whichever technologies are settled upon need to be economical.

  There are several technical discussions taking place in China on how to tackle the issue of transmission. Ultra-high voltage (UHV) transmission from west to east is one solution. China has already invested a great deal in UHV technology and is now a world leader. Green hydrogen is another possibility that the EU and China both have big expectations for, however while this remains a viable option, issues related to high-production costs, transportation and safety still need to be tackled. Nevertheless, Sinopec revealed in 2021 that it is aiming to become the largest hydrogen producer in China, with the announcement of an initial investment of around United States dollar (USD) 4.6 billion over the next five years.[75]

  Onsite storage facilities can be deployed to deal with intermittency once current technologies have been further developed. As with most countries, pumped storage hydropower (PSH)[76] currently makes up the vast majority of energy storage installed in China.[77] However, it is not a feasible option in west China due to water shortages and geographical conditions that are not ideal for the creation of PSH facilities. Chemical batteries could provide an alternative solution, but upfront investment costs need to be lowered and the chemical energy storage density increased first, which could take some time.

  Probably the most viable option for now is for UHV transmission from power plants that integrate renewable energy and gas as a solution to deal with intermittency. As UHV transmission lines constitute critical infrastructure, the investment should come from the State Grid Corporation, with funding for power generation infrastructure coming from developers. Sinopec and the China National Petroleum Corporation (CNPC) are both planning such

71 Yin, Ivy, *China's Net-zero Plan Will Require Whole Grid Overhaul*, S&P Global, 7th September 2021, viewed 3rd March 2022, <https://www.spglobal.com/commodity-insights/en/market-insights/latest-news/energy-transition/090721-feature-chinas-net-zero-2060-plan-will-need-full-power-grid-overhaul>
72 *European Business in China Position Paper 2021/2022*, European Union Chamber of Commerce in China, Energy Working Group, p. 221, September 2021, viewed 8th March 2022, <https://www.europeanchamber.com.cn/en/publications-archive/964/European_Business_in_China_Position_Paper_2021_2022>
73 *Ibid.*
74 Yin, Ivy, *China's Net-zero Plan Will Require Whole Grid Overhaul*, S&P Global, 7th September 2021, viewed 3rd March 2022, <https://www.spglobal.com/commodity-insights/en/market-insights/latest-news/energy-transition/090721-feature-chinas-net-zero-2060-plan-will-need-full-power-grid-overhaul>
75 Chen, Aizhu & Xu, Muyu, *Sinopec Plans to Spend $4.6 Billion on Hydrogen Energy by 2025, Reuters*, 30th August 2021, viewed 12th April 2022, <https://www.reuters.com/business/energy/sinopec-plans-spend-46-bln-hydrogen-energy-by-2025-2021-08-30/>
76 "Pumped storage hydropower (PSH) is a type of hydroelectric energy storage. It is a configuration of two water reservoirs at different elevations that can generate power as water moves down from one to the other (discharge), passing through a turbine. The system also requires power as it pumps water back into the upper reservoir (recharge). PSH acts similarly to a giant battery, because it can store power and then release it when needed.": *Pumped Storage Hydropower,* Water Power Technologies Office, Office of Energy Efficiency and Renewable Energy, viewed 11th April 2022, <https://www.energy.gov/eere/water/pumped-storage-hydropower>
77 Colthorpe, Andy, *China's energy storage deployments for first nine months of 2020 up 157% year-on-year, Energy Storage News*, 2nd December 2020, viewed 11th April 2022, <https://www.energy-storage.news/chinas-energy-storage-deployments-for-first-nine-months-of-2020-up-157-year-on-year/>

investments,[78&79] which may see them take an advantageous role in these kinds of projects, with their preferential access to existing gas infrastructure putting private investors at a competitive disadvantage.

Less-polluting fossil fuels an important part of the transition

In China's transition from a system that relies predominantly on coal to one based on renewable sources of energy, the use of less-polluting fossil fuels, such as natural gas and bioenergy, will need to increase.[80] In order to bring about a smooth transition, the exact role that these fuels will play needs to be clarified and current infrastructure deficiencies addressed. This is another area where consultation with foreign companies with relevant expertise would be beneficial.

- *Natural gas*
  Compared to coal, and particularly if paired with carbon capture, usage and storage (CCUS) technology, natural gas can provide a more stable, less-polluting energy source. Boosting the natural gas share in the energy mix will be important for helping China to increase its baseload energy flexibility, improve energy efficiency and reduce energy-intensity-related challenges.[81]

  However, the role that natural gas will play as a 'bridging fuel' on China's road to net-zero is currently ill-defined from a policy perspective. This needs to be addressed so that businesses clearly understand where and in what situations it is to be used. Equally important will be advance information on plans to phase out the use of natural gas, so that investments can be planned accordingly.[82]

  There are infrastructure challenges, too, with China's current natural gas transportation, distribution network and storage capacity currently incapable of satisfying the growth in demand required to support the energy transition.[83] Although recent government recommendations have sought to speed up and incentivise the development of new storage capacity and introduce new pricing catalogues,[84&85] gaps remain. A lack of sufficient midstream storage and transmission infrastructure upsets the delicate balance between centres of production and consumption. China's natural gas system also lacks the ability to deal with seasonal changes and peaks in demand, or to optimise LNG import costs during winter peaks, which restricts usage of the fuel. These issues are compounded by limited opportunities for foreign companies to share their expertise in this area.[86]

  Placing further emphasis on a holistic energy transition that involves both domestic and foreign suppliers would address these issues. There is scope to utilise foreign expertise to improve production, importation, transportation, storage, distribution and smart metering practices along the natural gas value chain; to better align domestic standards with international standards to promote development of natural gas; and to help ensure distributed energy production is taken into consideration for the sake of designing efficient grids, heating systems and related infrastructure.[87]

- *Bioenergy*
  China is exploring the possibility of integrating bioenergy sources, such as bioethanol, biodiesel and biogas, into oil and gas pipelines to diversify its energy mix. Despite this, the use of bioenergy in China is hampered by a lack of policy clarity and incentive policies.

78 *China's Sinopec sets out hydrogen, renewables plans*, Argus, 30th August 2021, viewed 12th April 2022, <https://www.argusmedia.com/en/news/2249020-chinas-sinopec-sets-out-hydrogen-renewables-plans>
79 Zhang, Xin, *CNPC to ramp up new energy, gas power generation, China Daily*, 17th September 2021, viewed 12th April 2022, <https://www.chinadaily.com.cn/a/202109/17/WS6143eda6a310e0e3a6822349.html>
80 Yan, Qin, *Natural Gas in China's Power Sector: Challenges and the Road Ahead*, The Oxford Institute for Energy Studies: *Energy Insight*, vol. 80, December 2020, viewed 15th January 2022, <https://www.oxfordenergy.org/wpcms/wp-content/uploads/2020/12/Insight-80-Natural-gas-in-Chinas-power-sector.pdf>
81 Yin, Ivy, *China's Net-zero Plan Will Require Whole Grid Overhaul*, S&P Global, 7th September 2021, viewed 3rd March 2022, <https://www.spglobal.com/commodity-insights/en/market-insights/latest-news/energy-transition/090721-feature-chinas-net-zero-2060-plan-will-need-full-power-grid-overhaul>
82 *European Business in China Position Paper 2021/2022*, European Union Chamber of Commerce in China, Energy Working Group, pp. 215-216, September 2021, viewed 8th March 2022, <https://www.europeanchamber.com.cn/en/publications-archive/964/European_Business_in_China_Position_Paper_2021_2022>
83 For instance, at the end of 2020, China had around 14.1 billion cubic metres of underground storage capacity, falling short of the target set in its 13FYP and insufficient to avoid supply shortages in winter: *China's Storage Shortage*, Natural Gas World, 12th February 2021, viewed 15th January 2022, <https://www.naturalgasworld.com/chinas-storage-shortage-ngw-magazine-85170>
84 *The State Issued Implementation Opinions to Accelerate the Construction of Natural Gas Reserves*, NDRC, 21st April 2020, viewed 18th April 2022, <https://www.ndrc.gov.cn/xwdt/xwfb/202004/t20200421_1226216.html>
85 *Decree of the National Development and Reform Commission of the People's Republic of China No. 31*, NDRC, 13th March 2020, viewed 18th April 2022, <https://www.ndrc.gov.cn/xxgk/zcfb/fzggwl/202003/t20200316_1223371.html>
86 *European Business in China Position Paper 2021/2022*, European Union Chamber of Commerce in China, Energy Working Group, pp. 215-216, September 2021, viewed 9th March 2022, <https://www.europeanchamber.com.cn/en/publications-archive/964/European_Business_in_China_Position_Paper_2021_2022>
87 Ibid.

Although from a technical perspective, biogas is mature enough for wide commercialisation in China, and despite China having ambitious targets for the fuel's production by 2030,[88] a lack of clear incentives and the absence of a stable feedstock supply has led to biogas development lagging far behind this plan. European companies have a wealth of experience in biogas production, utilisation and market development that China could tap into. Such cooperation would help China develop more transparent, stable and implementable guidelines, along with clear technical standards and incentive policies, that could incubate an optimal market for the fuel.[89]

Policies also need to be introduced to accelerate the uptake of bioethanol and biodiesel, fuels that have a role to play in greening China's transportation system. China has set targets to substantially develop its bioethanol industry by 2025.[90] However, in the short-term, large-scale bioethanol production will not be economically feasible without government support and subsidies. For biodiesel, policies will need to be introduced to accelerate its uptake. In many European nations, a B5 mandate, where five per cent biodiesel is mixed with 95 per cent petroleum diesel, has been adopted, something that is currently lacking in all Chinese regions except for Shanghai. Expanding this to a nationwide mandate would help accelerate the adoption of the fuel.[91]

China's ETS needs to evolve

China's ETS has the potential to play a significant role in driving China's decarbonisation.[92] After piloting several regional initiatives for just over a decade, China launched its national ETS—the world's largest carbon market—on 16th July 2021.[93] The spike in trading volumes and prices witnessed at the end of 2021 in China's national ETS, as businesses jumped to meet compliance deadlines, highlights that the system works as a general mechanism.[94] However, its impact has been limited due to its scope currently being restricted to the power sector.

There are plans to expand the ETS's coverage to more industries in the coming years; however, additional challenges need to be solved in the meantime, including low carbon pricing, the lack of a total emissions cap and emissions reporting issues. At the same time, continued support from China's leadership and closer intergovernmental coordination is also required.[95]

- *Low carbon pricing*
  China's ETS has the potential to accelerate decarbonisation of China's power sector if a carbon price is adopted that is high enough to motivate companies to reduce or offset their emissions. Current carbon prices in China's ETS are far too low to have this effect.[96] Carbon traded at an average price of around Chinese yuan (CNY) 43/tonne during 2021, fluctuating between CNY 40–60;[97] by comparison, carbon traded for euro (EUR) 80–90/tonne (equivalent to CNY 550–620/tonne) of CO_2 for the majority of the first quarter of 2022 in the EU's ETS.[98] China's carbon price thus remains well below the thresholds that most European businesses report would motivate them to make significant carbon reduction investments.[99]

- *Lack of a total emissions cap*
  China's national ETS has adopted an intensity-based emissions cap, instead of an absolute cap on the total volume of emissions. While this is seen as being well-suited to achieving a balance between economic growth and

88 *China's Biogas Production to Increase to 20 BCM in 2030*, Silk Road News, 24th December 2019, viewed 3rd March 2022, <https://silkroadnews.org/cn/news/2030-200-d11>
89 *European Business in China Position Paper 2021/2022*, European Union Chamber of Commerce in China, Energy Working Group, p. 217, September 2021, viewed 8th March 2022, <https://www.europeanchamber.com.cn/en/publications-archive/964/European_Business_in_China_Position_Paper_2021_2022>
90 *Plan for Expanding Biofuel Ethanol Production and Promoting Ethanol Usage in Motor Vehicles,* National Energy Administration, 13th September 2017, viewed 5th May 2022, <http://www.nea.gov.cn/2017-09/13/c_136606035.htm>
91 *European Business in China Position Paper 2021/2022,* European Union Chamber of Commerce in China, Energy Working Group, pp. 222-223, September 2021, viewed 8th March 2022, <https://www.europeanchamber.com.cn/en/publications-archive/964/European_Business_in_China_Position_Paper_2021_2022>
92 Liu, Jing, *Carbon pricing can boost Chinese growth,* HSBC, 16th February 2022, viewed 20th February 2022, <https://www.gbm.hsbc.com/en-gb/feed/financing/carbon-pricing-can-boost-chinese-growth>
93 *China's carbon trading scheme makes debut with 4.1 mln T in turnover, Reuters,* 20th July 2021, viewed 9th March 2022, <https://www.reuters.com/business/sustainable-business/chinas-national-carbon-emission-trading-opens-48-yuant-chinese-media-2021-07-16/>
94 Liu, Jing, *Carbon pricing can boost Chinese growth,* HSBC, 16th February 2022, viewed 20th February 2022, <https://www.gbm.hsbc.com/en-gb/feed/financing/carbon-pricing-can-boost-chinese-growth>
95 Ritchie, Alistair & Rudd, Kevin, *China's ETS needs high-level political support to succeed*, China Dialogue, 25th May 2021, viewed 11th March 2022, <https://chinadialogue.net/en/climate/chinas-national-ets-needs-high-level-political-support-to-succeed/>
96 *The Role of China's ETS in Power Sector Decarbonisation*, IEA and Tsinghua University April 2021, viewed 25th February 2022, <https://iea.blob.core.windows.net/assets/61d5f58d-4702-42bd-a6b6-59be3008ecc9/The_Role_of_China_ETS_in_Power_Sector_Decarbonisation.pdf>
97 Xie, Chunping, *Is China Living Up to Its Pledges on Climate Change and Energy Transition?*, Carbon Brief, 21st February 2022, viewed 23rd February 2022, <https://www.carbonbrief.org/guest-post-is-china-living-up-to-its-pledges-on-climate-change-and-energy-transition?utm_campaign=China%20Briefing&utm_content=20220224&utm_medium=email&utm_source=Revue%20newsletter>
98 *EU Carbon Permits*, Trading Economics, viewed 27th March 2022, <https://tradingeconomics.com/commodity/carbon>
99 European Chamber member survey: To trigger significant carbon reduction investments, 54% said the carbon price would need to be CNY 50–200/tonne, 29% said it would need to be CNY 200–400/tonne and 17% said it would need to be CNY 400–800/tonne.

emissions reduction targets,[100] businesses wonder whether this will undermine the system's ability to fulfil its overall purpose. An intensity-based emissions cap tends to incentivise "more efficient coal plants over less efficient ones", whereas an absolute cap would give companies with renewable assets "a reason to shift their overall generation portfolio away from coal and towards renewables as the price of carbon is expected to rise over time."[101]

- *Emissions reporting issues*
  European companies cite limitations with the ETS's GHG emissions accounting and reporting, with a notable gap in data quality assurance between China and its peers. This stems largely from differences between China's and other actors' respective approaches to monitoring, reporting and verifying (MRV) emissions. In Europe, third-party auditors verify emissions; in China, emissions are predominately verified via desk reviews conducted by a carbon verification working group, established by the MEE, with third-party verifications only required for those with "questionable data".[102] Questions have also been raised about potential bias leading to conflicts of interest because a high percentage of companies being assessed are SOEs. Adopting the European model for MRV would help to boost the credibility of China's system, as third-party auditors have the required technical expertise and experience, have greater resources and bandwidth, and are also impartial.

  In addition to improving the quality assurance of GHG data, transparent data collection methods at the enterprise level are also necessary. It will likewise be important to enforce consistent rules nationwide for GHG disclosure, to introduce sterner penalties to ensure the rules are adhered to, and to have stronger regulation of the oversight and disclosure of such information.

China's ETS would benefit from deeper collaboration with the EU

While the EU's ETS is the most established carbon market in the world, it is not a solution that can be transplanted anywhere – each country has its own unique circumstances. However, it is still important for the EU and China to continue to cooperate through such initiatives as the EU-China ETS Platform, which was established in 2014 to support the development of China's ETS through policy dialogues, capacity building and information sharing.[103]

The EU's ETS shares similarities with China's. First, the scope of its coverage also started out quite limited, before gradually expanding to cover sectors beyond power generation. Second, the EU's ETS also required policymakers to take an incremental development approach so that socio-economic concerns could be managed. Like the EU's 27 Member States, China's provinces have differing socio-economic conditions, business and political interests, and are at different stages of development. The EU therefore provides a good example of how an ETS can be rolled out while balancing the interests of diverse stakeholders.

The EU's experience highlights the need for a successful ETS to be continuously tweaked, especially in terms of allowances allocation and carbon price levels.[104] More specifically it illustrates:

- the issues that can arise when carbon credit allowances are over-allocated during the ETS's initial stages, leading to very low carbon prices;
- the advantages of adopting varied carbon allocation methods for different sectors, according to their historic emissions and grandfathering; and
- the merits of introducing a market stability reserve,[105] to make the ETS more resilient to future shocks.

Finally, China could learn from the EU's emissions MRV experiences.[106] The introduction of standardised reporting frameworks and metrics, as well as mandatory third-party verification, introduced during the EU ETS's third stage (2013–2020) helped to remove systemic flaws that had allowed illegal allowance transactions and tax fraud to take place.

100 De Boer, Dimitri, Shu, Wang & Slater, Huw, *China's national carbon market is about to launch,* China Dialogue, 29th January 2021, viewed 28th February 2022, <https://chinadialogue.net/en/climate/chinas-national-carbon-market-is-about-to-launch/>
101 Roldao, Renato, *China's ETS: Carbon Trading the Chinese Way,* Energy Monitor, 5th January 2022, <https://www.energymonitor.ai/policy/carbon-markets/carbon-trading-the-chinese-way>
102 Ibid.
103 *Project Introduction, EU-China Emissions Trading System*, EU-China ETS Platform, 2014, viewed 9th March 2022, <https://www.eu-chinaets.org/about-us/project-introduction>
104 Liu, Jing, *Carbon pricing can boost Chinese growth*, HSBC, 16th February 2022, viewed 20th February 2022, <https://www.gbm.hsbc.com/en-gb/feed/financing/carbon-pricing-can-boost-chinese-growth>
105 Market Stability Reserve, European Commission, Climate Action, viewed 9th March 2022, <https://ec.europa.eu/clima/eu-action/eu-emissions-trading-system-eu-ets/market-stability-reserve_en>
106 Roldao, Renato, *China's ETS: Carbon Trading the Chinese Way,* Energy Monitor, 5th January 2022, viewed 16th March 2022, <https://www.energymonitor.ai/policy/carbon-markets/carbon-trading-the-chinese-way>

Recommendations

- Remove market access and regulatory barriers that prevent companies from investing in renewable energy.
- Encourage the rapid, widespread adoption of renewable energy.
- Promote success stories of renewable energy utilisation.
- Improve private companies' access to renewable energy.
- Take companies' global track records into account when assessing bids for renewable energy projects in public procurement.
- Continue to develop the R-DPP market to give companies more flexibility to purchase renewable energy from producers.
- Lower upfront costs for developing renewable energy projects.
- Make official procedures for developing renewable energy projects more transparent and easily accessible to all companies in China.
- Facilitate the development of new purchasing mechanisms for renewable energy that incentivise use among SMEs.
- Create a fully functioning national electricity market, including developing an ancillary market and mechanisms for renewable energy to be easily sold nationwide.
- Adopt smart, digital grid infrastructure nationwide.
- Continue to address power transmission and storage related bottlenecks.
- Clarify the role of natural gas and bioenergy in achieving carbon neutrality in China's energy regulations.
- Develop subsidies that provinces can adopt to foster the adoption of bioenergy.
- Utilise the expertise and best practices of foreign enterprises to better facilitate the use of less-polluting fossil fuels as a coal alternative.
- Encourage the building of natural gas infrastructure, with special regard to gas storage, by setting tariffs to cover building costs, while remunerating investors and operators.
- Promote bulk LNG supply by bringing national standards in line with international standards.
- Introduce an absolute cap on emissions in China's national ETS.
- Facilitate the introduction of a higher carbon price in China's national ETS by tightening emissions caps.
- Communicate clearly to businesses how China's national ETS and associated mechanisms will work in practice during each phase.
- Introduce standardised reporting frameworks and the widespread use of third-party verification of GHG emissions under China's ETS.

Chapter 3: The Importance of Open Markets, Common Standards and Awareness Raising

For China to accelerate its climate action, companies need to be able to bring their leading technologies and holistic solutions into the Chinese market at speed and scale. This will require the removal of formal investment barriers, increasing consumer awareness, building green value-chains to drive down costs, developing shared standards and taxonomies, and cultivating an understanding of holistic green practices.

Barriers preventing green technologies entering the Chinese market need to be dismantled

Although European companies have leading environmental solutions to bring to market in China, and could play an important role in reducing the risks of commercialising technologies that will be crucial for China's decarbonisation,[107] formal investment barriers prevent them from doing so.[108]

For example, 54 per cent of European businesses operating in the environment sector report they missed opportunities in China in 2021 due to market access restrictions or regulatory barriers,[109] with two thirds of respondents reporting these missed opportunities equated to up to 10 per cent of their annual turnover, and a third saying they equated to 11 to 25 per cent of their annual turnover.[110]

It is important that China does not risk undermining investor confidence by turning inwards. As a senior director at a leading Chinese think tank said, "The timeframe from [carbon] peak to neutrality is very condensed, meaning China will need all the support it can get, but questions remain over whether it will be open to this given its self-reliance policy." It is therefore positive that during a press conference at COP26 on 2nd November, China's Special Envoy for Climate Change Xie Zhenhua stressed the need for international cooperation, and referred to dialogues that had taken place with the EU and the US on the need to cooperate on energy conservation, energy efficiency and shifting from fossil to renewable energy, among others.[111]

Consumer awareness needs to be raised

Many European companies are trying to promote sustainable products in China, but with limited success. As one multinational manufacturer put it, "Public awareness of green products is not as high in China as in Europe. The money and effort we put into promoting the uptake of green technologies does not translate into value."

As highlighted by a recent survey, Chinese consumers are less aware of sustainable products and practices compared to the global average and have less interest and time to look for such products.[112] A second challenge is that more environmentally-friendly products and services are often more expensive than alternatives, which also supresses consumer demand. The Chinese Government can help to address these challenges through policies that "accelerate the uptake of clean energy technologies" through a reduction of "their cost and performance gap relative to existing technologies by incentivising deployment."[113] This could be bolstered through a coordinated public awareness campaign to promote the benefits of green products.[114]

107 Flowers, Simon, *The Prize for China From Decarbonisation*, Woods McKenzie, 23rd April 2021, viewed 5th March 2022, <https://www.woodmac.com/news/the-edge/the-prize-for-china-from-decarbonisation/>
108 *European Business in China Business Confidence Survey 2021*, European Union Chamber of Commerce in China, p. 19, June 2021, viewed 11th March 2022, <https://www.europeanchamber.com.cn/en/publications-archive/917/Business_Confidence_Survey_2021>
109 Unpublished survey data from the European Chamber's *Business Confidence Survey 2022*, based on the question: Has your company missed any opportunities in China as a result of market access restrictions or regulatory barriers?
110 Unpublished survey data from the European Chamber's *Business Confidence Survey 2022*, based on the question: What percentage of your annual revenue in China do you estimate these missed opportunities in China represent?, asked as a follow-up question to: Has your company missed any opportunities in China as a result of market access restrictions or regulatory barriers? (Excludes figures for 'don't know').
111 Liao, Chenjie & Wang, Zichen, *Transcript: Chinese Climate Envoy's press conference at COP26*, Pekingnology, 14th March 2021, viewed 11th March 2022, <https://pekingnology.substack.com/p/transcript-chinese-climate-envoys?s=r>
112 Cheng, Michael, Ye, Jennifer & Zhong, Steven, *Decoding new consumer behaviour in the age of bricks and clicks, 2021 Global Consumer Insights Survey China Report*, PwC, 2021, viewed 10th March 2022, <https://www.pwccn.com/en/retail-and-consumer/publications/consumer-insights-survey-2021-china-report.pdf>
113 *An Energy Sector Roadmap to Carbon Neutrality in China*, pp. 278–279, International Energy Agency, September 2021, viewed 28th February 2022, <https://iea.blob.core.windows.net/assets/9448bd6e-670e-4cfd-953c-32e822a80f77/AnenergysectorroadmaptocarbonneutralityinChina.pdf>
114 In response to the question, "What does your company expect from the Chinese government in order to achieve your decarbonisation and/or carbon neutrality goals in China?" 42 per cent of European companies responded, "Better promotion of low-carbon culture".

A third challenge is the increasing preference among Chinese consumers for domestic brands in general. Although partly fuelled by nationalism,[115] this kind of shift is also natural as a country's production quality increases and domestic brands become more established. However, it is hoped that this bias towards Chinese products does not find its way into official policy, as happened in the medical devices industry when some local procurement policies included a provision encouraging hospitals to buy domestic brands.[116] Given the very tight timeframe China has to achieve carbon neutrality by 2060, it is imperative that the best green technologies enter its market at speed, regardless of the country of origin.

Developing value chains to drive down costs

While some technologies necessary for China's decarbonisation already exist, many are too expensive to be rolled out at scale. Companies find themselves facing a kind of 'chicken and egg' situation: a lack of initial demand precludes cost reductions, which rules out economies of scale, which in return retards growth in consumer demand.[117] Therefore, for some sustainable technologies to prevail in the market, more attention needs be paid to developing value chains, while additional regulatory or economic incentives may also be needed.

The aviation sector provides a good example of these dynamics. In the future, aircraft will need to use sustainable aviation fuel (SAF) and/or hydrogen. However, current limitations to value chains impede their uptake, slowing the sector's decarbonisation. From a technical perspective, aircraft in China can already use SAF, and the infrastructure is widely in place at airports to adopt its use at scale. However, as a result of limited policy and finance support the price of SAF is not competitive compared to other fuel sources, including when carbon pricing from China's ETS market is accounted for.[118] Thus, commercial airlines have no incentive to use SAF, in turn hindering further the development of a SAF market.

Although it is technically possible to produce green hydrogen, the fuel is also not currently being used in the aviation industry. Costs are a challenge but a second more fundamental roadblock is the lack of required infrastructure such as hydrogen fuelling and storage facilities at airports. Hydrogen production also illustrates the need to decarbonise the entire value chain, including the energy and infrastructure networks. In China, hydrogen production is typically based on fossil fuels without CCUS technology, and hindered by the lack of an effective ETS, meaning it is far from green. If hydrogen is to lower GHGs, it must be produced not only using low-carbon and renewable energy sources, but also employing more efficient production methods.[119] This includes using renewable energy for water electrolysis, biomethane reforming and capturing existing low carbon off-gases. This process would be further enhanced through direct renewable energy sourcing and the establishment of a certification scheme aligned with international standards, such as the EU's CertifHy.[120] The current lack of shared standards and regulations is also a barrier to investment, which further limits development of a clean hydrogen industry.[121]

Common standards can accelerate products' market entry

Standards ensure interoperability and minimise costs. Without them, new innovations can be blocked from market entry, which results in companies having to invest time and resources to meet multiple certification requirements, sometimes across multiple regions. A lack of common standards can also impact innovation, as in the example of hydrogen production. International standardisation will be crucial not only to regulate production methods, but also to help develop a cross-border value chain that integrates the fuel source and facilitates international cooperation to enable the sharing of knowledge and best practices. This can accelerate R&D, and spur investments in factories and infrastructure to ultimately bring down costs.[122]

115 *In backlash against foreign brands, Chinese consumers pick local, Reuters*, 28th June 2021, viewed 1st April 2022, <https://www.aljazeera.com/economy/2021/6/28/in-backlash-against-foreign-brands-chinese-consumers-pick-local>
116 *European Business in China Position Paper 2021/2022*, European Union Chamber of Commerce in China, Healthcare Equipment Working Group, p. 253, September 2021, viewed 8th March 2022, <https://www.europeanchamber.com.cn/en/publications-archive/964/European_Business_in_China_Position_Paper_2021_2022>
117 Li, Shuyi, *How the Chinese Government is Supporting Decarbonisation of Harder to Abate Sectors*, Climate Action, 10th May 2021, viewed 10th March 2022, <https://www.climateaction.org/climate-leader-interviews/shuyi-li-on-how-the-chinese-government-is-supporting-decarbonisation-of-the>
118 This is no small issue, fuel typically accounts for around 30 per cent of airlines' total costs.
119 *European Business in China Position Paper 2021/2022*, European Union Chamber of Commerce in China, Energy Working Group, pp. 219–220, September 2021, viewed 10th March 2022, <https://europeanchamber.oss-cn-beijing.aliyuncs.com/upload/documents/documents/Energy_EN_2021[931].pdf>
120 *European Business in China Position Paper 2021/2022*, European Union Chamber of Commerce in China, Energy Working Group, p. 220, September 2021, viewed 10th March 2022, <https://europeanchamber.oss-cn-beijing.aliyuncs.com/upload/documents/documents/Energy_EN_2021[931].pdf>
121 *The Future of Hydrogen*, International Energy Agency, p. 14, June 2019, viewed 10th March 2022, <https://iea.blob.core.windows.net/assets/9e3a3493-b9a6-4b7d-b499-7ca48e357561/The_Future_of_Hydrogen.pdf>
122 Ibid.

It would also be advisable for China to adopt and contribute to existing international standards for assessing product carbon footprints rather than trying to develop its own.[123] This is an area where the EU has already done a lot of work,[124] and where there should be strong EU-China cooperation. A bifurcation here would make the development of an international carbon market impossible, and European companies would be unable to meet their ESG commitments.

Decoupling of Chinese and international standards, which is already showing signs of taking place—including in fields related to decarbonisation such as new energy vehicles, new fuel sources and environmental regulations—therefore needs to be reversed. If allowed to continue, leading European and Chinese companies will face even more challenges to offer their best technologies in each other's markets.[125]

Greenwashing concerns prevail

Another important reason for developing common environmental standards is to help counter greenwashing, the practice of companies using advertising and branding to portray a false image of being environmentally responsible.

Products are often marketed as being 'carbon neutral', 'ecological', 'clean' or 'green', yet their manufacturers neglect to disclose their overall emissions.[126] Some companies have also put forward greenwashed decarbonisation pledges, advertising that they will decarbonise their operations without clearly outlining how or when this would take place.[127]

Developing common standards that clearly define terms such as 'green' and 'carbon neutral', and precisely the circumstances under which they can be applied to products and processes, can help to hold all companies to the same level of accountability and provide consumers with credible information. It is also important that 'eco-labelling' be assessed and certified by independent, third-party organisations.

The importance of publicly-available emissions data

Eliminating greenwashing requires companies to disclose transparent information on their emissions.[128] However, China does not have a unified system for monitoring all companies' carbon emissions, with verification only taking place in cities that have established a carbon trading system, which currently only applies to companies in the power generation sector.[129] Not only is this coverage too narrow, MRV in China is predominantly carried out by working groups via desk research, with onsite investigations only conducted when data is 'questionable', which raises doubts over data accuracy and transparency. There are signs that this situation is improving, with the national ETS placing greater focus on reporting and monitoring after reports came to light suggesting some companies had mis-reported their emissions under the ETS pilots.[130]

One of the best ways to address the transparency and accuracy issue would be for China to adopt a system more in line with Europe's, whereby MRV is carried out by independent, third-party organisations and companies are certified based on international standards (for example, GHG Protocol, ISO14064/ISO14067, PAS 2050/60/70), with support from media to call out any instances of corporate greenwashing.[131] Such a scheme could be pilotted in China's industrial parks given that not only do they play a prominent role in China's industrial development overall, but also

123 De Schryver, An & Zampori, Luca, *Product Carbon Footprint standards: which one to choose?*, PRé Sustainability, 31st January 2022, viewed 2nd April 2022, <https://pre-sustainability.com/articles/product-carbon-footprint-standards-which-standard-to-choose/>

124 *Environmental footprint methods,* European Commission, 16th December 2021, viewed 2nd April 2022, <https://ec.europa.eu/environment/news/environmental-footprint-methods-2021-12-16_en>

125 Rühlig, Tim, *The Shape of Things to Come: The Race to Control Technical Standardisation*, European Union Chamber of Commerce in China and The Swedish Institute of International Affairs, December 2021, viewed 10th March 2022, <https://europeanchamber.oss-cn-beijing.aliyuncs.com/upload/documents/documents/The_Shape_of_Things_to_Come_English_Final[966].pdf>

126 *2022 is the Year to Call out Greenwashing in China, Bloomberg*, 20th December 2021, viewed 2nd March 2022, <https://www.bloomberg.com/news/articles/2021-12-20/china-s-climate-change-goals-are-creating-a-greenwashing-wave>; Wu, Yunong and Yao, Zhe, *Carbon Neutrality in China: Behind the Corporate Hype*, China Dialogue, 12th April 2021, viewed 4th March 2022, <https://chinadialogue.net/en/climate/carbon-neutrality-in-china-behind-the-corporate-hype/>

127 For example, as of April 2021, following a wave of carbon neutrality statements and pledges by Chinese companies in the wake of China's 30/60 Goals being announced, analysis from China Dialogue found that Ant Group was the only major Chinese company to formally define the scope of its carbon neutrality commitments: Wu, Yunong & Yao, Zhe, *Carbon Neutrality in China: Behind the Corporate Hype*, China Dialogue, 12th April 2021, viewed 4th March 2022, <https://chinadialogue.net/en/climate/carbon-neutrality-in-china-behind-the-corporate-hype/>

128 Gao, Baiyu, *Without a Carbon Cap, You Can't Provide Strong Support for a Carbon Peak,* China Dialogue, 15th March 2021, viewed 1st March 2022, <https://chinadialogue.net/en/energy/can-controlling-energy-use-drive-chinas-green-transition-during-the-next-five-years/>

129 ETS regional pilots are in Beijing, Chongqing, Fujian, Guangdong, Hubei, Shanghai, Shenzhen and Tianjin: International Carbon Action Partnership, viewed 14th March 2022, <https://icapcarbonaction.com/en/>

130 Nogrady, Bianca, *China launches world's largest carbon market: but is it ambitious enough?, Nature*, 20th July 2021, viewed 14th March 2022, <https://www.nature.com/articles/d41586-021-01989-7>

131 Gao, Baiyu, *Without a Carbon Cap, You Can't Provide Strong Support for a Carbon Peak,* China Dialogue, 15th March 2021, viewed 1st March 2022, <https://chinadialogue.net/en/energy/can-controlling-energy-use-drive-chinas-green-transition-during-the-next-five-years/>

add significantly to China's environmental degradation. It was estimated in 2018 that industrial parks in 80 per cent of China's provinces caused environmental problems due to "illegal production, excessive pollutant emissions and ineffective environmental monitoring", and that this will actually prevent China from proceeding with its "environmental rehabilitation".[132] If local governments were able to demonstrate that they implemented and adhered to international green standards within their industrial parks, it could also put them in a position to attract more foreign investment.[133]

It is also important that NGOs play a strong role in holding corporates to account. A good example is China's Institute of Public and Environmental Affairs (IPE), which "promote[s] environmental information disclosure" among companies, and collates relevant information from nationwide monitoring data points in an online platform. Some of the data contained in IPE's Blue Map database is a result of companies being increasingly pressured to be transparent with their emissions data by customers as well as government.[134]

New environmental disclosure rules that came into effect on 8th February 2022 were a positive development,[135] but more can be done. First, while the rules currently focus on heavy-polluting industries, China could move towards gradually requiring mandatory emissions disclosures for all listed firms. Second, the MEE could work with other regulatory bodies to gradually ramp up environmental disclosure and performance requirements for listed firms. Third, different government bodies could work together to encourage companies towards environmental transparency and providing reliable data to access green finance and sustainable investment. Fourth, there is also scope for industry associations "to produce and issue sector-specific disclosure standards, providing evidence for categorised, graded and detailed disclosure indices."[136]

Making transparent, emissions-related information widely available is important not only to influence consumer decisions and prevent companies from greenwashing, but also to facilitate the greening of financing.

China needs to create a 'virtuous cycle' in its green finance ecosystem

Deputy Governor of the People's Bank of China Chen Yulu has recognised the need for greater international cooperation in promoting green finance in China.[137] This is good news for European financial services companies that have relevant experience. In order to facilitate their involvement, shared taxonomies need to be in place so investors have a common understanding of precisely how projects are classified as 'green' or 'sustainable', the metrics employed for assessing emissions and how compliance is reported. As one senior executive at a European bank noted, "for a long time China and Europe were using the same words without meaning the same things, prohibiting investment."[138] In that regard, the EU and China agreeing on a set of joint designated green projects,[139] and the publishing of the EU-China Common Ground Taxonomy (CGT) in late 2021—which will be expanded over time—were very positive developments.[140]

EU-China Common Ground Taxonomy

Investors building 'clean' portfolios need certainty that the investments they make can genuinely be defined as 'green' or 'sustainable', no matter where in the world they are investing. This is why establishing shared taxonomies is so important. "Taxonomies are definitions of sustainable finance that aim to be comprehensive

132 *Enhancing China's Regulatory Framework for Eco-Industrial Parks: Comparative Analysis of Chinese and International Green Standards*, The World Bank Group, April 2019, viewed 14th April 2022, <https://documents1.worldbank.org/curated/en/950911554814522228/pdf/Enhancing-China-s-Regulatory-Framework-for-Eco-Industrial-Parks-Comparative-Analysis-of-Chinese-and-International-Green-Standards.pdf>

133 For example, if a Chinese city or district developed an industrial zone that was able to demonstrate that the power it supplied to its tenants was certified by a third-party, independent organisation as being 'green' according to internationally-recognised standards, it could be particularly attractive to European SMEs that have corporate decarbonisation targets to meet, and could encourage them to invest there. Most importantly, however, would be for such standards to be applied throughout China and not just limited to designated zones.

134 *IPE: A potent force of environmental change in China, IPE*, viewed 14th March 2022, <http://wwwen.ipe.org.cn/public_en/files/About-IPE-2-pages-2021.pdf>

135 Zhang, Zoey, *What is ESG Reporting and Why is it Gaining Traction in China?,* China Briefing, 13th January 2022, viewed 14th March 2022, <https://www.china-briefing.com/news/what-is-esg-reporting-and-why-is-it-gaining-traction-in-china/>

136 Song, Ziying, *How Should Businesses in China React to New Environmental Disclosure Requirements*, China Dialogue, 10th February 2022, viewed 5th March 2022, <https://chinadialogue.net/en/business/how-should-businesses-in-china-react-to-new-environmental-disclosure-requirements/>

137 Chen Yulu, *Deputy Governor of the Central Bank: Continue to Promote Green Finance to Better Serve the High-quality Development of China's Economy in the Double Cycle,* Tanpaifang, 21st September 2020, viewed 1st February 2020, <http://www.tanpaifang.com/tanjinrong/2020/0921/74099.html>

138 For example, the EU and China's use of the word 'green' had historically differed, with it referring to climate change-related concerns in the EU and pollution-related concerns in China.

139 *Climate Action, EU Action, International action on climate change, Cooperation with non-EU countries and regions, China*, European Commission, viewed 18th April 2022, <https://ec.europa.eu/clima/eu-action/international-action-climate-change/cooperation-non-eu-countries-regions/china_en>

140 *Common Ground Taxonomy – Climate Change Mitigation,* International Platform on Sustainable Finance, viewed 1st March 2022, <https://ec.europa.eu/info/sites/default/files/business_economy_euro/banking_and_finance/documents/211104-ipsf-common-ground-taxonomy-instruction-report-2021_en.pdf>

classification systems" that bring more clarity to the market, which gives investors the confidence they need.[141]

For a long time, China and the EU spoke roughly the same words but were coming at the problem from different angles. This can be seen, for example, when comparing some of the aspects of the EU Sustainable Finance Taxonomy from 2020 (Taxonomy), with the NDRC's *Green Industry Guiding Catalogue (Catalogue) from 2019.*[142]

1. The Taxonomy is based on the EU's climate and environmental policies with the specific aim of meeting goals set out in the Paris Agreement, while the *Catalogue* is guided more generally by China's "ecological civilisation plan".
2. The Taxonomy highlights climate change, while the *Catalogue* focusses on pollution prevention and control without providing full context.
3. Projects included under the Taxonomy must state "specific and quantitative carbon emission thresholds", and any that involve fossil fuels without carbon capture are not allowed; projects included under the *Catalogue* do not need to have a carbon emission threshold and those involving fossil fuels are allowed.

It is therefore very encouraging that EU-China cooperation is seeing some convergence. In addition to being founding members of the International Platform on Sustainable Finance, launched in 2019 to coordinate global standards and rules on green finance, the EU and China initiated a working group on taxonomies in 2020. The purpose is to comprehensively assess existing standards and rules governing environmentally-sustainable financing in the EU and China, with the aim of creating a CGT.[143] If fully implemented it will give European companies confidence to invest in projects in China and label them 'green'. It will also make it easier in principle for both European and Chinese companies to obtain funding for such projects. As the CGT is a dynamic work, which has the potential to evolve and expand in scope,[144] European banks see this as a small but significant step in the right direction and believe EU-China cooperation in this area should deepen.

In addition to continuing momentum at the policy level, there is a need to promote green investment within the private sector.[145] According to a report from Tsinghua University, removing carbon from China's energy system by 2060 will require CNY 138 trillion,[146] which is far beyond what the state can provide itself.[147]

Addressing this will require the creation of a virtuous green-finance ecosystem, one that is in the interests of all stakeholders. China's green bond market is currently dominated by Chinese banks buying bonds issued by other Chinese banks, largely because there is a limited financial rationale to make green investments in China. For example, social security funds are not being invested in green bonds because they bring returns that are around 40 per cent lower than normal government bond products that carry almost no risk.[148]

To get the ball rolling will take a change in mindset and for one or two investors to lead by example and break the reliance on short-term returns. One way to bring this about this could be for the Chinese Government to encourage its sovereign funds to make more green investments to stimulate the market with the rationale that green projects are as, or sometimes more, profitable than 'traditional' investments over a longer period.[149]

141 *Developing Sustainable Finance Definitions and Taxonomies: A Brief for Policy Makers*, Organisation for Economic Cooperation and Development, October 2020, viewed 17th March 2022, <https://www.oecd.org/environment/cc/developing-sustainable-finance-definitions-and-taxonomies-brief-for-policy-makers.pdf>
142 *Comparing China's Green Bond Endorsed Project Catalogue and the Green Industry Guiding Catalogue with the EU Sustainable Finance Taxonomy (Part 1)*, Climate Bonds Initiative, September 2019, viewed 17th March 2022, <https://www.climatebonds.net/files/reports/comparing_chinas_green_definitions_with_the_eu_sustainable_finance_taxonomy_part_1_en_final.pdf>
143 *Common Ground Taxonomy – Climate Change Mitigation*, International Platform on Sustainable Finance, 4th November 2021, viewed 16th March 2022, <https://ec.europa.eu/info/sites/default/files/business_economy_euro/banking_and_finance/documents/211104-ipsf-common-ground-taxonomy-instruction-report-2021_en.pdf>
144 *Call for feedback on the result of the technical comparison of some features of the EU and China taxonomies*, International Platform on Sustainable Finance, 4th November 2021, viewed 16th March 2022, <https://ec.europa.eu/info/sites/default/files/business_economy_euro/banking_and_finance/211104-ipsf-common-ground-taxonomy_table-call-for-feedback_en.pdf>
145 Liu, Jing, *China Green Investment: Carbon Pricing as an Accelerator*, HSBC, January 2022, viewed 20th February 2022, <https://www.gbm.hsbc.com/en-gb/feed/financing/carbon-pricing-can-boost-chinese-growth>
146 Xie, Echo, *What is green finance, and why is it important to China's carbon neutral goal?, South China Morning Post*, 2nd April 2021, viewed 16th March 2022, <https://www.scmp.com/news/china/politics/article/3128167/what-green-finance-and-why-it-important-chinas-carbon-neutral>
147 *An Energy Sector Roadmap to Carbon Neutrality in China*, p. 75, International Energy Agency, September 2021, viewed 28th February 2022, <https://iea.blob.core.windows.net/assets/9448bd6e-670e-4cfd-953c-32e822a80f77/AnenergysectorroadmaptocarbonneutralityinChina.pdf>
148 Interview discussion with a senior executive at a European multinational bank.
149 Ibid.

China's 30/60 Goals must be supported by the establishment of a green circular economy

Half of total GHG emissions and more than 90 per cent of biodiversity loss and water stress come from resource extraction and processing,[150] making the cultivation of a green circular economy an important part of China's journey to net-zero.[151] Analysis indicates that applying circular economy principles at scale in China's cities could reduce emissions of fine particulate matter by 50 per cent and GHG emissions by 23 per cent nationwide.[152] However, while China has adopted certain policies to promote the creation of a circular economy over the past two decades, it has fallen short in some areas.[153]

This is in large part because, despite China having long been a frontrunner in resource recycling practices, its institutional arrangements remain weak and its system is not holistic.[154] China has carried out numerous initiatives in areas such as industrial symbiosis, urban mining, resource recycling and utilisation, and municipal waste separation, yet these efforts are led by different ministries without overall coordination.[155]

The development of China's circular economy has also been hindered by a one-size-fits-all approach to policymaking. For example, chemical plants are required by local environmental bureaus to treat as waste chemicals that could be recycled. An additional example is that recycled plastics are still not allowed to be used as food contact materials in China, even though there is no technical reason for this. Such blanket policies lead to avoidable carbon emissions and resource waste.

China's efforts to implement a circular economy would be boosted by introducing well-defined principles and clear guidelines for recycling, recovery and reusage. Currently, such processes are often governed by outdated or ill-defined principles. For example, under current Chinese recycling guidelines, incineration is still considered a valid method of disposal, resource utilisation and even recycling, meaning that many things that are 'recycled' are in practice burnt; in many cases, "circular economy industry parks" contain waste incineration facilities only. Recycling of mineral oil and electronic waste in China are good examples of processes that are well-meaning on the face of it, but in fact result in environmental damage, while posing a significant health threat, if not carried out properly.[156&157]

As with many other aspects related to China's 30/60 Goals, policy change cannot occur in a vacuum. Developing a green circular economy requires increased awareness of the importance of green practices among Chinese stakeholders, and importantly needs buy-in from industry. The policies that have been introduced to try and cultivate the development of a circular economy in China have not yet been matched by bottom-up efforts from businesses.[158]

Recommendations

- Remove market access barriers that prevent green technologies from entering the Chinese market.
- Deepen international cooperation on decarbonisation.
- Raise consumer awareness of the importance of purchasing green products.
- Promote the adoption of the best green technologies and services, regardless of the country of origin.
- Facilitate the decarbonisation of value chains, including through the introduction of regulatory and economic incentives.
- Contribute to existing common standards and cooperate with international partners on the development of new common standards related to decarbonisation.

150 *European Business in China Position Paper 2021/2022*, European Union Chamber of Commerce in China, Environment Working Group, p. 55, September 2021, viewed 10th March 2022, <https://europeanchamber.oss-cn-beijing.aliyuncs.com/upload/documents/documents/Environment_EN_20210714_0722[932].pdf>
151 It is important to make the distinction that there is a need for a 'green' circular economy, as recycling practices do not all contribute to decarbonisation.
152 In addition to assisting China with achieving its 30/60 Goals, the study finds that such action could also have the additional benefits of making lives more affordable for citizens, increasing the liveability of cities, and could save businesses and households the equivalent of 16 per cent of China's GDP by 2040: *The Circular Economy Opportunity for Urban and Industrial Innovation in China*, ARUP, The Ellen McArthur Foundation, Mckinsey & Company, UNCTAD, 2021, viewed 8th March 2022, <https://ellenmacarthurfoundation.org/urban-and-industrial-innovation-in-china>
153 For instance, the volume of gross industrial solid waste produced in China grew by around 2.41 billion tonnes to 4.41 billion tonnes from 2010 to 2019, while over the same period the rate for recycling industrial solid waste fell from 67.2 per cent to 52.6 per cent. Han, Shi, *How Jump-Starting China's Circular Economy Strategy Can Bolster its Net-Zero Climate Ambitions*, Asia Global Online: The University of Hong Kong, 13th October 2021, viewed 22nd February 2022, <https://www.asiaglobalonline.hku.hk/how-jump-starting-chinas-circular-economy-strategy-can-bolster-its-net-zero-climate-ambitions>
154 *European Business in China Position Paper 2021/2022*, European Union Chamber of Commerce in China, Environment Working Group, pp. 53-56, September 2021, viewed 10th March 2022, <https://europeanchamber.oss-cn-beijing.aliyuncs.com/upload/documents/documents/Environment_EN_20210714_0722[932].pdf>
155 Han, Shi, *How Jump-starting China's Circular Economy Strategy Can Bolster its Net-zero Climate Ambitions*, Asia Global Online: The University of Hong Kong, 13th October 2021, viewed 22nd February 2022, <https://www.asiaglobalonline.hku.hk/how-jump-starting-chinas-circular-economy-strategy-can-bolster-its-net-zero-climate-ambitions>
156 *How About Waste Oil Recycling in China?*, Yangjiang Machine Manufacture Co., 8th February 2022, viewed 2nd April 2022, <https://www.oilrecyclingplant.com/articles/detail/how-about-waste-oil-recycling-in-china.html>
157 Whitacre, Paula, T., *E-waste Recycling in China: A Health Disaster in the Making?*, National Institute of Environmental Health Sciences, July 2012, viewed 2nd April 2022, <https://www.niehs.nih.gov/research/programs/geh/geh_newsletter/2013/7/articles/ewaste_recycling_in_china_a_health_disaster_in_the_making.cfm>
158 Ibid.

- Continue to introduce more stringent emissions recording requirements.
- Amend the current MRV system, so that emissions data is verified by independent, third-party auditors.
- Require companies to publicly disclose their emissions data.
- Pilot a scheme for MRV in China's industrial parks to be conducted by independent, third-party organisations according to internationally-recognised standards.
- Deepen EU-China cooperation on the development of shared taxonomies for green financing.
- Introduce new tax incentives, as well as regulatory changes, that can kick-start China's green financing ecosystem.
- Encourage Chinese sovereign funds towards green investments.
- Strengthen institutional arrangements and develop a more holistic approach with regard to resource recycling.
- Define an overall strategy for circular economy development, with a mid- and long-term legislative framework, including targets and roadmaps.
- Formulate policies that increase the list of materials—in addition to plastic and cardboard— that can be sent to recycling plants.
- Define clearly what recycling is, either through a deposit-return system or waste-sorting technologies.
- Promote greater awareness of the importance of green practices and technologies among businesses.

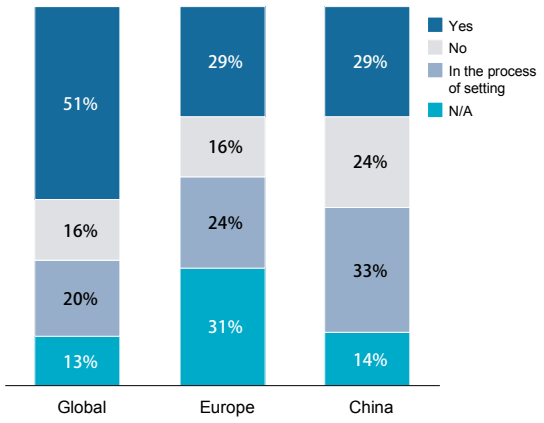
Annex

How European Companies in China are Performing

Two thirds of European companies in China have set, or are in the process of setting, specific decarbonisation targets for their China operations. Achieving these targets is important not just as milestones but also in terms of demonstrating accountability to consumers and investors.

Figure 5: European companies have a high level of preparedness with concrete targets

Has your company set a concrete target for decarbonisation or carbon neutrality?



Source: European Chamber member survey

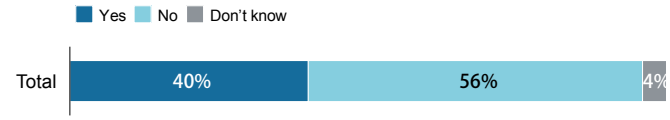
In line with the EU's pledge to achieve carbon neutrality by 2050,[159] the majority of European companies surveyed in the European Chamber's *Business Confidence Survey 2022* (87 per cent) are targeting carbon neutrality by or before this date.[160]

European companies are already taking concrete measures to decarbonise their China operations. For instance, 40 per cent of surveyed companies report having established decarbonisation teams in Mainland China. This is especially true for larger companies (with 1,000+ employees), with over two thirds of them having already established such teams. Many of these teams have real clout, with several interviewees confirming that they report directly to the board.

159 *2050 long term strategy*, European Commission, 2022, viewed 3rd March 2022, <https://ec.europa.eu/clima/eu-action/climate-strategies-targets/2050-long-term-strategy_en>
160 Unpublished survey data from the *Business Confidence Survey 2022,* based on the question: When does your company aim to reach carbon neutrality?

Figure 6: European companies implement decarbonisation strategies at the highest level

Has your company established a specific decarbonisation team in Mainland China?



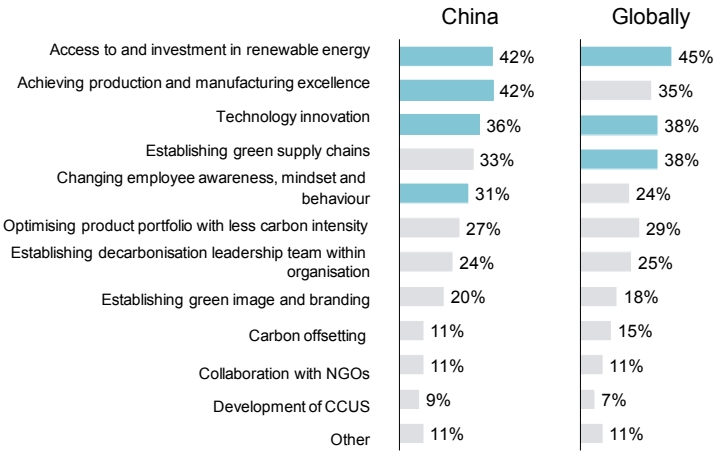
Source: European Chamber member survey

What drives European companies' decarbonisation strategies?

The methods European companies are using to decarbonise align with those being promoted by the Chinese Government. They are emphasising access to and investment in renewable energy, achieving production and manufacturing excellence, technological innovation and greening supply chains.

Figure 7: How European companies will achieve their decarbonisation goals

Select the top-three priority initiatives for achieving your company's decarbonisation and/or carbon neutrality goals

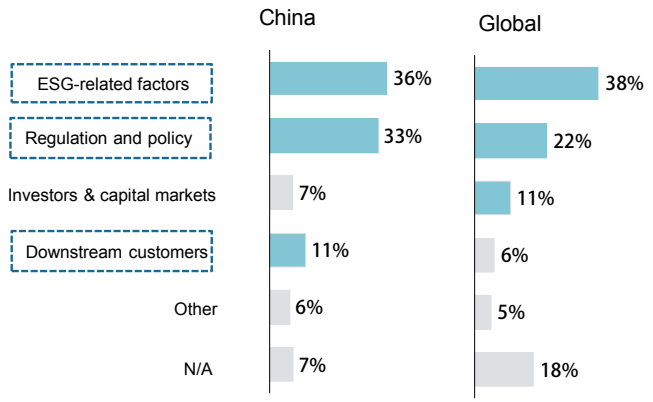


Source: European Chamber member survey

European businesses are predominantly being driven to decarbonise by ESG concerns, regulation and policy, and demand from downstream customers.

Figure 8: The forces compelling European companies to decarbonise

What is the key driver of your company's decarbonisation strategy?



Source: European Chamber member survey

ESG by far the biggest driver of company strategies

Importantly, ESG concerns are prompting companies to place more emphasis on decarbonising not only their own operations, but also their supply chains as the importance of disclosing Scope 2 and Scope 3 emissions grows.[161] This is expected to continue due to external and internal pressure. External pressure is likely to increase as public opinion on the importance of fighting climate change strengthens and financing options narrow due to banks, also reacting to external pressure, eliminating 'dirty' investments from their portfolios. Internal pressure is likely to grow as employees become more aware of issues surrounding climate change and subsequently become more demanding of their employers.

Regulation and policy play their part

Although Chinese environmental regulations and policies undoubtedly inform the decarbonisation strategies of European companies in China, it is stringent European-level regulations and policies that have shaped the standards these enterprises implement globally and have seen them move ahead of the curve in relation to their Chinese counterparts.

Europe's aviation industry, one of the world's most heavily regulated, is a good example of this. First, the aviation industry has been included in the European ETS since 2012.[162] On top of this, the EU's Fit for 55 legislation puts additional pressure on European aviation companies to decarbonise.[163] As a representative from a European airline put it, "China is not the driver of airline emissions planning. Decarbonisation is very important, but China's goals are of no great importance in Europe where the goals are more stringent and political stakes are even higher."

161 Bussiere, Sara, Halper, Jason & Shriver, Timbre, *"Sustainable" Companies Face Increased Pressure,* Harvard Law School Forum on Corporate Governance, 26th December 2021, viewed 3rd March 2022, <https://corpgov.law.harvard.edu/2021/12/26/sustainable-companies-face-increased-pressure/>

162 *Reducing emissions from aviation*, European Commission, 2022, viewed 10th March 2022, <https://ec.europa.eu/clima/eu-action/transport-emissions/reducing-emissions-aviation_en>

163 For example, the EU has drafted a regulation that "proposes obligations on fuel suppliers to distribute SAF, with an increasing share of SAF (including synthetic aviation fuels, commonly known as e-fuels) over time, in order to increase the uptake of SAF by airlines and thereby reduce emissions from aviation. The proposal also includes obligations on airlines to limit the uptake of jet fuel before departing from EU airports to what is needed for safe operation of flights, with the aim of ensuring a level playing field for airlines and airports, and avoiding additional emissions related to extra weight of aircraft carrying excessive amounts of fuel.": *ReFuelEU Aviation initiative: Sustainable aviation fuels and the fit for 55 package,* European Parliament, 31st January 2022, viewed 10th March 2022, <https://www.europarl.europa.eu/thinktank/en/document/EPRS_BRI(2022)698900>

Customer demand highlights need to create mutually-reinforcing relationships

Although only 11 per cent of European companies in China report downstream customers as a current driver of their decarbonisation strategies, this is expected to grow as awareness of climate change becomes more widespread. Several interviewed companies said that downstream customers are increasingly asking for environmental impact assessment reports.

For their part, European companies are already demanding such reports from their suppliers, to facilitate decarbonisation along supply chains. This is partly driven by commercial considerations, as sustainable solutions will present better future growth opportunities. However, it is also driven out of necessity. Many European companies operating in China outsource the production of certain goods or key components to suppliers they do not own and factories they do not operate. The GHGs from these suppliers account for a large proportion of their total carbon footprint, so it is natural that European companies pressure them to decarbonise as long as their GHG footprint assessment covers Scope 2 emissions.

Having high-polluting suppliers could also have an implication on the cost of exports from China. The EU's proposed carbon border adjustment mechanism (CBAM) provides an example of how this could play out. Intended to be fully operational by 2026, the CBAM aims to prevent carbon leakage by requiring manufacturers of products imported into the EU to pay the same carbon price that manufacturers in Europe are required to pay under the EU's ETS.[164&165] It is projected that this will have a large impact on Chinese exports, which further strengthens the need for credible carbon footprint assessments in China based on international standards.[166] From the perspective of European companies whose finished goods are heavily reliant on Chinese suppliers, this poses a challenge and could even prevent them from exporting their Chinese-produced goods into Europe if the costs are too high. One multinational manufacturer reported that it has placed a requirement on its China-based suppliers to source 100 per cent renewable energy by 2030, and noted: "If they do not do anything to reduce their emissions, then they will be hit by the European carbon tax-adjustments[...]As a result, we are helping them to reduce their emissions and expand their business to Europe."

164 *Carbon Border Adjustment Mechanism*, European Commission, 2022, viewed 3rd March 2022, <https://ec.europa.eu/taxation_customs/green-taxation-0/carbon-border-adjustment-mechanism_en>

165 To do this, the CBAM will require EU importers to buy carbon certificates corresponding to the carbon price that would have been paid had the goods been produced under the EU's carbon pricing rules. If a non-EU producer can show that they have already paid a price for the carbon used in the production of the imported goods in a third country, the corresponding cost can be fully deducted for the EU importer. The CBAM will help reduce the risk of carbon leakage by encouraging producers in non-EU countries to green their production processes: *Carbon Border Adjustment Mechanism: Questions and Answers*, European Commission, 14th July 2021, viewed 16th March 2022, <https://ec.europa.eu/commission/presscorner/detail/en/qanda_21_3661>

166 Petkova, Mirela, *Weekly data: EU's CBAM to impact Russia, China and the UK the most*, Energy Monitor, 7th February 2022, viewed 22nd February 2022, <https://www.energymonitor.ai/policy/eus-cbam-to-impact-russia-china>

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Abbreviations

11FYP	11th Five-year Plan
12FYP	12th Five-year Plan
14FYP	14th Five-year Plan
30/60 Goals	China's pledge to peak carbon emissions before 2030 and to achieve carbon neutrality by 2060
Catalogue	NDRC *Green Industry Guiding Catalogue*
CBAM	Carbon Border Adjustment Mechanism
CCUS	Carbon Capture Usage and Storage
CEWC	Central Economic Work Conference
CGT	Common Ground Taxonomy
CNPC	China National Petroleum Corporation
CNY	Chinese Yuan
CO_2	Carbon Dioxide
COP15	15th Conference of Parties
COP26	26th Conference of Parties
ESG	Environmental, Social and Governance
EVMR	Environmental Vertical Management Reform
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GW	Gigawatt
IPCC	Intergovernmental Panel on Climate Change
IPE	Institute of Public and Environmental Affairs
KPI	Key Performance Indicator
LNG	Liquid Natural Gas
LTS	Mid-century Long-term Low Greenhouse Gas Emission Development Strategy
MEE	Ministry of Ecology and Environment
MOFCOM	Ministry of Commerce
MRV	Monitoring, Reporting and Verification
NAMA	Nationally Appropriate Mitigation Action
NDC	Nationally Determined Contribution
NDRC	National Development and Reform Commission
NGO	Non-Governmental Organisation
PSH	Pumped Storage Hydropower
R&D	Research and Development
R-DPP	Renewable Direct Power Purchase
SAF	Sustainable Aviation Fuel
Taxonomy	EU Sustainable Finance Taxonomy
UHV	Ultra-High Voltage
UNFCCC	United Nations Framework Convention on Climate Change
USD	United States Dollar

Methodology

Survey

The European Chamber invited its member companies to take part in the survey over a six-week period during September and October 2021. The survey was conducted in cooperation with Roland Berger. It was distributed to selected European Chamber working groups, with a total of 55 respondents:

- 15% of respondents were from companies with less than 50 employees
- 20% of respondents were from companies with 51–250 employees
- 16% of respondents were from companies with 251–1,000 employees
- 33% of respondents were from companies with 1,000–5,000 employees
- 16% of respondents were from companies with more than 5,000 employees

The largest industry representation was from chemicals and petrochemicals (16%), automotive and automotive components (15%), machinery (9%), and professional services (9%).
The survey comprised 33 questions grouped under three themes:

- Company profile and background information on decarbonisation
- China climate performance, impact and benchmark
- Suggestions and recommendations

Level of preparedness and barriers to decarbonisation were two of the key factors that guided the design of the questionnaire and data analysis. The aim was to identify and understand the development of both company strategies in Europe, China and globally, and how they relate to China's decarbonisation plan.

Additional data was also used from the *European Business in China Business Confidence Survey 2022*, which was also conducted in cooperation with Roland Berger and took place in February 2022.

Interviews

To add to the quantitative survey data, interviews were conducted with executives from European Chamber member companies. These discussions helped corroborate much of the data from the survey. They also provided the opportunity to understand both the impact that China's carbon neutrality pledge will have on European companies operating in China, and the areas where European companies can contribute to China's 30/60 Goals. Discussions also took place with experts from the World Bank, IHS Markit, the Institute of Public and Environmental Affairs and China Dialogue to provide broader context to China's decarbonisation drive and to provide clarification on earlier drafts of this report.

About Roland Berger

Roland Berger is an independent company, solely owned by our partners, who are responsible for overall corporate performance and business success. Founded in 1967, Roland Berger remains the only leading global consultancy firm with non-Anglo-Saxon roots. We are German by origin, European by nature and global by ambition, including a strong footprint in Asia and other geographies where we feel that we can truly make an impact.

We have always strived to provide a different perspective in the field of consulting and business, and today we continue to constructively challenge standard patterns of thought and provide clients with new solutions to manage disruption and transformation.

Our entrepreneurial spirit has shaped our growth and fuelled our outstanding achievements since the early days of the firm. In short, being a game changer is in our DNA. With nearly 50 years of continuous growth behind us and 2,400 employees working in 35 countries, we are one of the leading players in global top-management consulting and have successful operations in all major international markets.

Through mutual trust and sustainable value added for our clients, we have become a longstanding advisor of major international industry and service companies as well as public institutions worldwide.

About the European Union Chamber of Commerce in China

The European Union Chamber of Commerce in China (European Chamber) was founded in 2000 by 51 member companies that shared a goal of establishing a common voice for the various business sectors of the EU and European businesses operating in China. It is a member-driven, non-profit, fee-based organisation with a core structure of 34 working groups and fora representing European business in China.

The European Chamber now has more than 1,800 member companies in seven chapters operating in nine cities: Beijing, Nanjing, Shanghai, Shenyang, South China (Guangzhou and Shenzhen), Southwest China (Chengdu and Chongqing) and Tianjin. Each chapter is managed at the local level by local boards reporting directly to the Executive Committee.

The European Chamber is recognised by the European Commission and the Chinese authorities as the official voice of European business in China. It is also recognised as a foreign chamber of commerce by the Ministry of Civil Affairs. The European Chamber is part of the growing network of European Business Organisations, which connects European business associations and chambers of commerce from 42 non-EU countries around the world.

Principles:

- We are an independent, non-profit organisation governed by our members.
- We work for the benefit of European business as a whole.
- We operate as a single, networked organisation across Mainland China.
- We maintain close, constructive relations with the Chinese and European authorities, while retaining our independence.
- We seek the broadest possible representation of European business in China within our membership: small, medium and large enterprises from all business sectors and EU Member States throughout China.
- We operate in accordance with Chinese laws and regulations.
- We treat all of our members, business partners and employees with fairness and integrity.

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