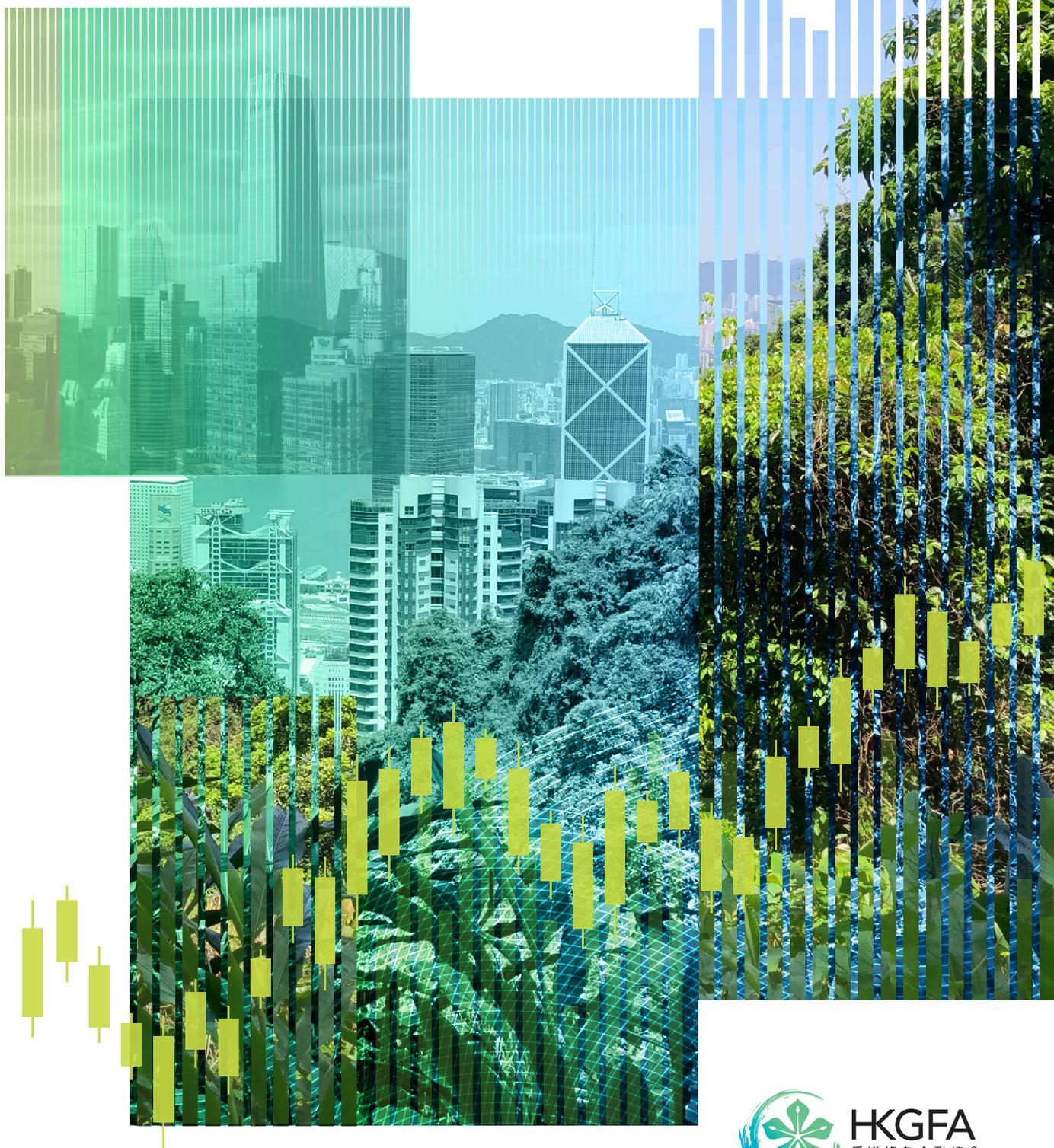


Navigating Climate Transition Finance

The China & Hong Kong SAR (China) Context



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1 Executive Summary

Our aim is to create a framework for what we believe are important principles that market authorities and market participants should consider in defining an operational structure for climate transition finance, particularly in China and Hong Kong SAR. In addition to adopting the format and transparency requirements of existing regulatory standards or market-accepted frameworks, we propose that issuers and borrowers:

- 1** Explain their mid- and long-term plan to align with the Paris Agreement.
- 2** Explain the constraint(s) they face when engaging in low-carbon activities given sector, geographical, material, and technological considerations, with evidence.
- 3** Elaborate on partially satisfactory technologies and activities that are considered eligible for the climate transition financing.
- 4** Explain the measures in place to ensure operations, activities, investments “do no significant harm” for non-climate-related sustainability topics, including social ethics, and propose a “do least harm” strategy for when partially satisfactory technologies and activities are deployed.
- 5** Explain a deliberate phase-out plan for these partially satisfactory technologies and activities in order to make way for net-zero compatible technologies and activities.

The impacts of climate change are increasingly stark and the imperative for swift and transformative action cannot be clearer. The 2015 Paris Agreement aims at an international response to keep global temperature rise well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C. The International Energy Agency's recent World Energy Outlook 2020 explains that existing countries' policies and commitments (Stated Policies Scenario) are still not as ambitious as needed for a Paris Agreement aligned world (the Sustainable Development Scenario or Net-Zero Emissions by 2050 case) in 2050.

The scale of transformation of our economies will be huge if we are to achieve the goals of the Paris Agreement. In response to the immense financing needs of this transformation, green and climate finance concepts were created to facilitate capital allocation towards activities, technologies, and assets that contribute significantly to the transition to a climate resilient economy. These contributions involve enabling mitigation actions, especially the reduction of greenhouse gas emissions, as well as adaptation initiatives that protect us from the damaging impacts of a warming climate, sea level rise, and higher frequency of extreme weather events.

A new "climate transition finance" label is emerging to encompass sectors and activities that may not be able to become entirely green today, but where partially satisfactory improvements will be instrumental for a net-zero world

While current green and climate finance tools are critical in allocating capital towards the transformation, we will likely need new tools going forward. In particular, industries that are historically high-emitting, or that face constraints to decarbonise, may not have access to green or climate finance to accelerate their transition. Steel and cement are examples of industries that are, and will continue to be, fundamental to our economy. While they may be relatively high emitting today, they still have a key contribution to make in the fight against climate change. To capture this financing need, a new "climate transition finance" label is emerging to encompass sectors and activities that may not be able to become entirely green today, but where partially satisfactory improvements will be instrumental for a net-zero world. Thus, clarity on the definition of "climate transition finance" will facilitate purposeful capital towards these needs.

This paper proposes a principles-based framework to define climate transition finance. This approach, in spirit, is about financing technologies and activities that drive lower carbon outcomes than business-as-usual

This paper proposes a principles-based framework to define climate transition finance in context of market developments to date in China and Hong Kong but is also potentially regionally relevant. This approach, in spirit, is about financing technologies and activities that drive lower carbon outcomes than business-as-usual. These technologies and activities, however, are not considered compatible with a net-zero world in 2050, although they partially help towards this goal. In other words, these are partially satisfactory technologies and activities. Safeguards are also necessary in order to prevent greenwashing. Safeguards to ensure the credibility of this transition must include a clear plan by the entity to align with the Paris Agreement goals, to show that best efforts are being made to minimise emissions and other externalities. These efforts must include deliberate phase out plans for these partially satisfactory technologies and activities. Additionally, transparency is critical. Borrowers or issuers must also detail constraints faced and include clear information about the transition technologies and activities, as well as the measures in place to "do least harm".

Entities are not without help in determining their climate transition journeys. There are existing tools and initiatives which use a science-based approach to assist in defining climate transition:

- The Science Based Targets Initiative supports corporations to set verified, science-based decarbonisation targets.
- The Climate Bonds Initiative has released a white paper proposing a framework to define the different types of transition activities along the trajectory towards the Paris Agreement goals.
- The Transition Pathway Initiative is an investor-led initiative that evaluates companies' transition performance based on management approaches and actual carbon emissions as modelled against the International Energy Agency scenarios.

Emerging tools and methodologies such as these complement the proposed principles-based framework and help to facilitate credible and impactful climate transition financing. In the policy space, there is growing acknowledgement and reference to transition finance, explicitly and implicitly. Moreover, we can expect stronger convergence on definitions related to transition finance over time. Consequently, this paper offers (see appendix D) a question-based framework for governments, institutions, and corporations to kick-start a transition financing strategy of their own.

This paper jumps into the fast-growing global discussion on the topic of climate transition finance with an overview of existing terms and market discussions. The aim of this proposal is to add to the conversation on defining climate transition finance, with insights and views from China and Hong Kong SAR, which we hope will add to the momentum that leads to greater climate action.

2 The Hong Kong 2050 is Now Climate Report

In Hong Kong, there is a growing chorus of support to transition our economy to net-zero by 2050. Although the government has set targets only to 2030, a recent public consultation on the topic raises the ambition. The reality is that Hong Kong, like other regions, must develop a concrete plan that can transform the city into a net-zero emissions economy by 2050. Local think tank, Civic Exchange, World Resources Institute, the ADM Capital Foundation, RS Group, and others, have created a new initiative, HK2050isnow.org, to build a platform to drive this discussion. After a year of consultations, data analysis, and modelling, the consortium this year published *Towards a Better Hong Kong: Pathways to Net-Zero Carbon Emissions by 2050*, which illustrates how Hong Kong can reduce its carbon emissions by 90 per cent by 2050, relative to 2005 levels, and offset the remaining 10 per cent from hard-to-abate sectors.

Hong Kong has high potential to achieve net-zero emissions, but the city must begin planning and taking accelerated action now

Indeed, without substantial agriculture or heavy industry, Hong Kong has high potential to achieve net-zero emissions, but the city must begin planning and taking accelerated action now. It needs to adopt a significantly more aggressive decarbonisation target, with annual reductions of 6.6% beginning immediately and continuing through 2050.

Hong Kong's greenhouse gas (GHG) emissions in 2017 amounted to 37.4 million tonnes of CO₂e (MtCO₂e)¹. Hard-to-decarbonise sectors only account for a very small share of Hong Kong's economy. Under the Current Policy Scenario, emissions will reduce to 22 million tonnes of CO₂e by 2050. Under the proposed Decarbonisation Scenario in the report, Hong Kong's emissions can be further reduced to 3.9 Mt CO₂e by 2050.

The greatest potential to reduce emissions comes from improving electricity generation, making buildings more energy-efficient, and increasing the sustainability of mobility. The detailed modelling exercise in the report incorporates scientific, technical, and economic perspectives to evaluate the medium- and long-term CO₂ emission impacts of key policies for the electricity and gas, building energy efficiency, and mobility sectors. It also makes additional policy recommendations to strengthen the pathway towards net-zero emissions:

- **Power decarbonisation**²: 27 MtCO₂ can be abated through developing local renewable energy sources and sourcing more nuclear and renewable energy from neighbouring regions, replacing coal with gas and coupled CCS, as well as replacing distributed gas with a net-zero emission energy.
- **Building energy efficiency**: 10.6 MtCO₂ emissions can be abated through a range of energy efficiency enhancements. Buildings and infrastructure constructed between 2020 and 2030 are likely to be still in use in 2050. They must therefore comply with the much stricter energy efficiency standards with retrofits and improved operational management.
- **Mobility**: 6.7 MtCO₂ emissions can be abated by avoiding journeys through better town planning; shifting away frequent journeys from inefficient transport modes and improving transport management. An electric vehicle transition road map should be formulated and pursued.

A net-zero emissions economy would provide Hong Kong with a cleaner, greener, and healthier environment and yield substantial economic and social benefits

The private sector has a critical role to play in shifting capital at scale towards net-zero-aligned and climate transition projects that are not currently being financed

Green and development do not contradict each other, the report argues. A net-zero emissions economy would provide Hong Kong with a cleaner, greener, and healthier environment and yield substantial economic and social benefits. Projected reductions in air pollutants would increase life expectancy to the equivalent of about 26,000 lives saved by 2050, and cumulative economic benefits could amount to HK\$460 billion.

The report provides Hong Kong with a roadmap to a brighter future under a decarbonised scenario. However, the transition is a major undertaking that requires effort among the government, private sector and the public. Clearly, the private sector has a critical role to play in shifting capital at scale towards net-zero-aligned and climate transition projects that are not currently being financed. Increased investment and collaboration among government, research bodies, and industry participants will be key to achieving this. Hong Kong-based investors should have a clear mandate to seek out carbon-reducing investments, providing an opportunity to match finance with demand from resilient and net-zero aligned projects.

3 Climate Transition Finance for China and Hong Kong SAR

The Paris Agreement

The Paris Agreement³, ratified by 183 parties⁴, is the first-ever global climate change agreement within the United Nations Framework Convention on Climate Change (UNFCCC). Though legally non-binding, the agreed goal is to avoid climate change by limiting global warming to well below 2°C above pre-industrial levels, and to strive to further limit the increase in global temperature to 1.5°C.

Yet, the current Nationally Determined Contributions (NDCs)⁵ agreed by states parties are not ambitious enough to achieve either target. According to UNEP's Emissions Gap Report 2019, if all current unconditional commitments under the Paris Agreement are implemented, temperatures are expected to rise by 3.2°C. The report argues that NDCs need to increase at least threefold to get on track for 2°C, and fivefold for 1.5°C. This requires an emissions reduction of 7.6% per year from 2020 to 2030 to meet the 1.5°C goal and 2.7% per year for the 2°C goal.

The 2017 *Energy Technology Perspectives*⁶ report published by the International Energy Agency (IEA) modelled China's CO₂ pathways across three scenarios (Figure 1). The Reference Technology Scenario (RTS) is the baseline scenario that accounts for existing energy and climate-related commitments, including the NDC. The 2°C Scenario (2DS) and the Beyond 2°C Scenario (B2DS) set out a decarbonisation pathway in line with international policy goals, with the B2DS pursuing a more aggressive decarbonisation plan.

FIGURE 1 China's Direct CO₂ Emissions Pathways

Source: Energy Technology Perspectives 2017, IEA

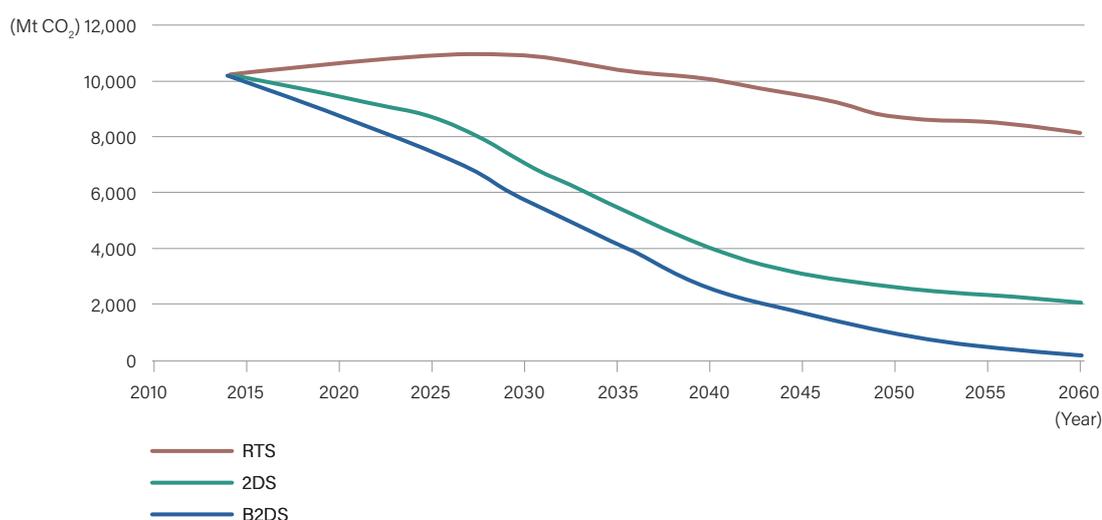


Figure 2 shows the modelled composition of China's emissions by economic sector in 2DS across time. In 2018, about 50% of Chinese CO₂ is produced by the industrial sector, 40% from the power sector, and 8% from transport. Coal combustion is by far the leading source of GHG in China, at around 7.5 Gt⁷. Figure 3 shows the annual emission reduction required by economic sectors under the 2DS pathway.

FIGURE 2 Percentage Breakdown of China's Sector Direct CO₂ Emissions (2DS)

Source: Energy Technology Perspectives 2017, IEA

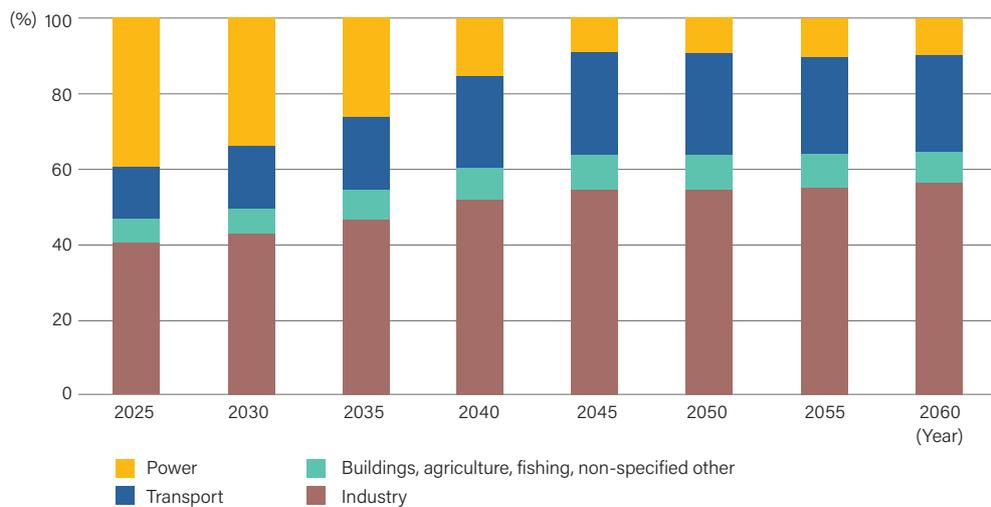
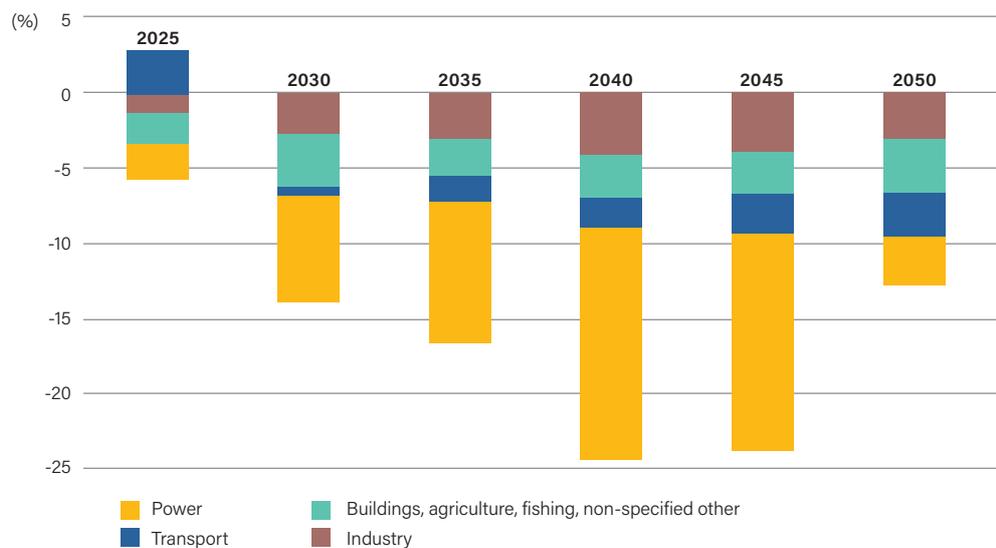


FIGURE 3 Annual Percentage Emissions Reduction Required Under 2DS

Source: Energy Technology Perspectives 2017, IEA



IEA's ETP2017 2DS model is arguably an overly optimistic model in achieving the 2°C goal. Hence, we should use the 2DS model as the "baseline pathway" and go beyond for a higher probability in approach to achieving the Paris Agreement goals.

The Alignment of China and Hong Kong SAR Targets with the Paris Agreement

China

In an address to the United Nations General Assembly on September 22, 2020, President Xi made a surprise pledge to aim for carbon neutrality before 2060⁸ and to peak CO₂ emissions before 2030. In his address, Xi pledged that China would “scale up” its commitment to the Paris Agreement by “adopting more rigorous policies and measures”. While there were no further details given, China’s 14th five-year plan (FYP) for 2021-25 and its second NDC are likely to reveal more on the policies and roadmap.

For now, we must look to China’s first NDC⁹ submitted in September 2016. The main objectives are:

- To achieve carbon dioxide emissions peak around 2030 and making best efforts to peak earlier
- To lower carbon dioxide emissions per unit of GDP by 60% to 65% from the 2005 level (an intensity target)
- To increase the share of non-fossil fuels in primary energy consumption to approximately 20%
- To increase the forest stock volume by around 4.5 billion cubic meters, as compared to the 2005 level

In the 2016 NDC, China elaborated on the various policies and initiatives that were either already in place or would be implemented by ministries and regulators. Examples included increasing carbon sinks, building low carbon energy systems, enhancing climate resilience and improving statistical and accounting system for GHGs.

However, China’s CO₂e per unit GDP intensity target does not equate to a reduction in absolute emissions. An analysis¹⁰ conducted by the Dutch Environment Agency shows that China’s GDP is growing faster than the intensity reduction rate. In addition, research by Climate Action Tracker (CAT) argues¹¹ that if all countries were to adopt China’s equivalent NDC, global temperature will rise by 3-4°C.

China’s Coal Use: The bulk of China’s energy use comes from industrial production, especially export-orientated manufacturing activities. Although China’s energy is mainly powered by coal, the proportion of coal in the energy mix declined slightly since 2015 (Figure 4). In 2019, 57.7% of the total energy supply is from coal¹². Between 2000 and 2018, approximately 75.5% of China’s CO₂ emissions were from coal (Figure 5)¹³.

Currently, China’s coal power capacity represents 49.1% of the global total, whereas the United States represents only 12%. As of June 2020, China still has 250 GW of coal power under development¹⁴.

FIGURE 4 China's Total Energy Supply by Source (1990-2018)

Source: International Energy Agency (2020)

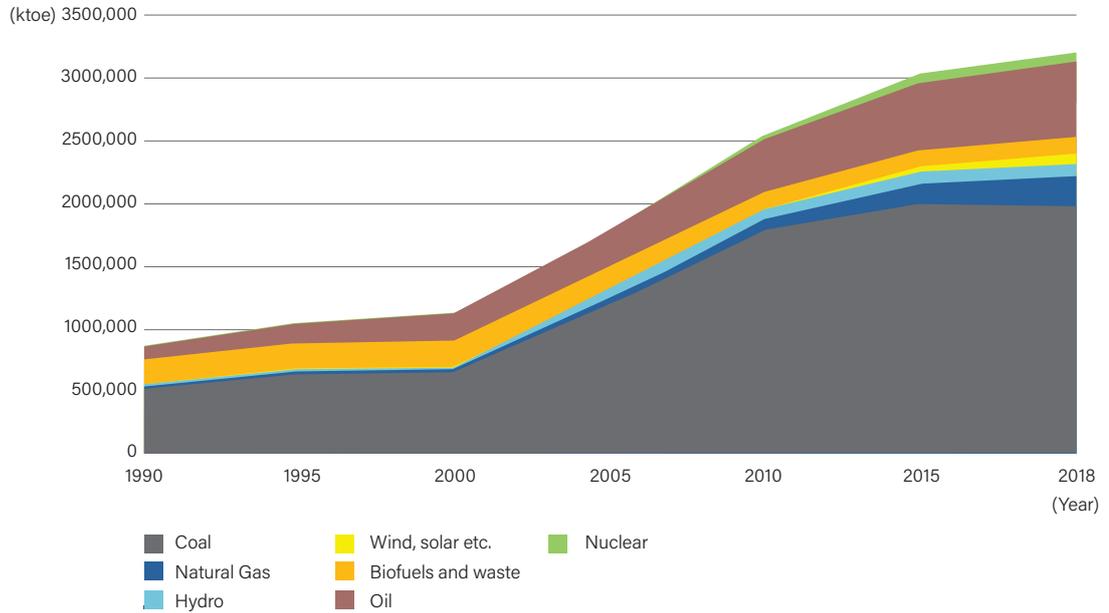
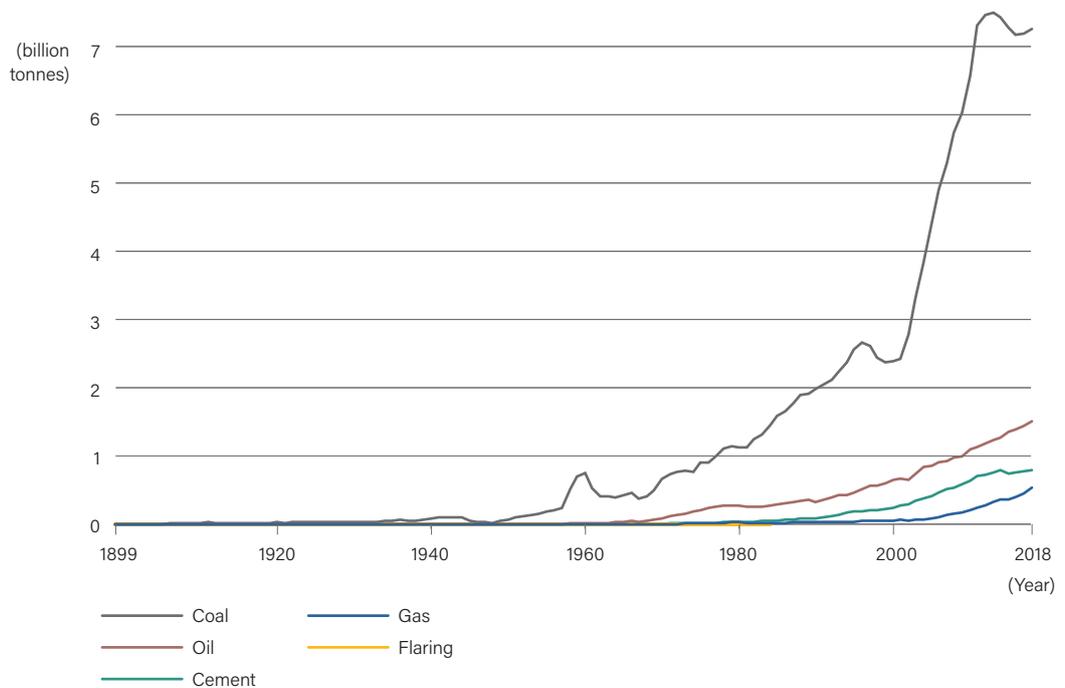


FIGURE 5 China CO₂ Emissions by Fuel Type

Source: <https://ourworldindata.org>



China's 13th FYP (2016–2020) introduced a ban on new coal-fired power plants and issued a cap of 1,100 GW on installed coal capacity. However, the ban on new capacity was lifted in 2018. The 14th FYP is likely to set new caps. In April 2020, the government issued a draft of the Energy Law¹⁵, emphasising the development of new energy sources and international cooperation on environmental protection.

Globally, coal power will need to decrease 97%, as compared to 2010 levels, by 2050 to be compatible with the 1.5°C pathway, unless large scale carbon capture and storage technology becomes available¹⁶. Under the Paris Agreement, compatible pathways for non-OECD Asia, coal power would need to be reduced by 63% below 2010 levels by 2030, leading to a phase-out by 2037¹⁷. For China specifically, coal power generation needs to be reduced by 68% below 2010 levels by 2030.

China's Oil Use: Oil is China's second largest energy source; China's demand for crude oil outpaces its domestic production. As the largest importer of oil worldwide, China's crude oil imports surpassed 10 million barrels per day in 2019¹⁸ and accounts for 13% of the world's total oil consumption.

As of September 2019, China National Petroleum Corporation (CNPC) expects the country's oil demand to peak between 2035 and 2040, at close to 4 billion tonnes oil equivalent (or 28 billion barrels of oil equivalent)¹⁹. As shown in Figure 5, approximately 15% of China's CO₂ emissions are from oil.

However, a reduction in oil consumption is not included in China's 2016 NDC. In addition, the 13th FYP outlines measures on infrastructure and energy mix development that imply an increased use of oil. Restrictions on oil use to promote climate action is mentioned only once in the "pollution prevention & control action plan" section of the 13th FYP and remains vague: "*We will establish a monitoring system to ensure that environmental protection standards for vehicles, watercraft, and fuel oil are achieved*".

China's Renewable Energy Use: The share of renewable energy in China's energy mix has increased slightly since 2015 (Figure 4), from 4.8% to 5.8% in 2018.

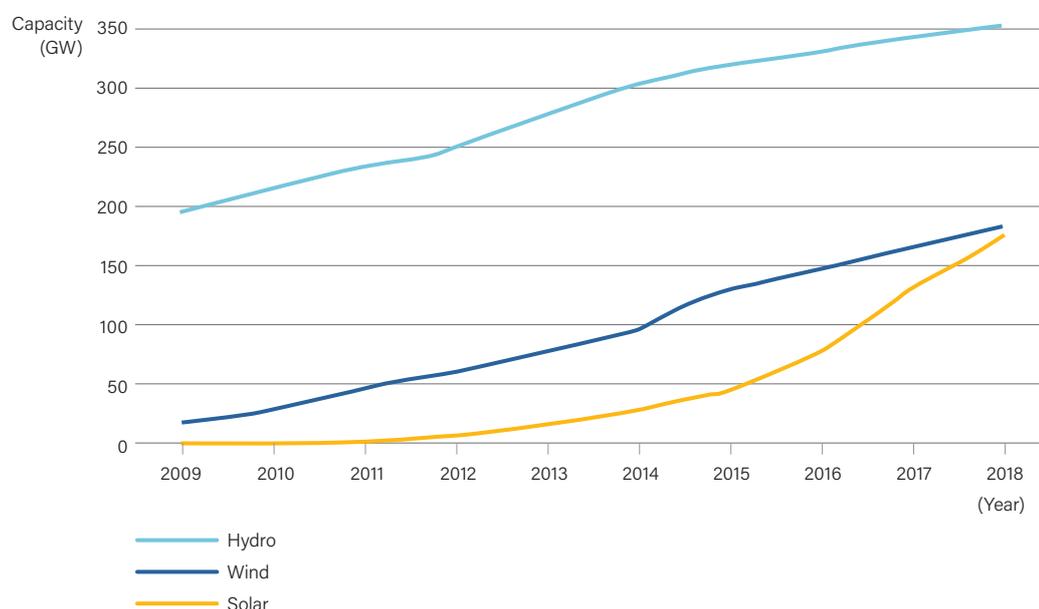
In 2018, 43% of the global renewable power capacity increase was in China²⁰. As shown in Figure 6, hydropower is the main source of renewable power in China. In 2018, one quarter of the electricity generated was from renewable sources, including 18% from hydropower. In 2019, wind, solar, and hydropower – including pump storage – capacities reached 210GW, 204.68GW and 356.4GW respectively²¹.

China has the third largest nuclear power fleet in the world, behind the United States and France. However, nuclear power still remains a small part of the energy mix, providing approximately 4% of China's electricity needs in 2018²².

In China's 13th FYP, various targets for renewable energy were set, including increasing the share of non-fossil energy in primary consumption to 20% by 2030 and increasing renewable power capacity to 680 GW by 2020. As of mid-2020, solar and wind energy represented approximately 8% of China's total primary energy supply.

FIGURE 6 Renewable Power Capacity in China (2009-2018)

Source: IRENA, Renewable Capacity Statistics 2019



China's Industry: This sector accounted for approximately 28% of energy-related CO₂ emissions in China in 2018. China has a strategic goal to modernise and improve the quality of its industrial sector, enshrined in the "Made in China 2025" action plan released in 2015. The strategy focuses on intelligent manufacturing across 10 sectors, with the priority to enforce green manufacturing.

In pursuit of these targets, the government implemented the Programme for the Construction of an Energy-Saving Standard System in 2017, with the goal of aligning 80% of China's energy efficiency standards with international standards by 2020. China also has an Industrial Green Development Plan (2016–2020), which promotes green manufacturing and green supply chains²³.

China's Transport: Over 1.25 million electric vehicles (EVs) were sold in China in 2018, meeting China's "one million by 2020" goal two years early. In January 2020, there were more than 3.81 million "new energy vehicles"²⁴ on Chinese roads, corresponding to 1% of all vehicle types²⁵. The Chinese government is promoting electric vehicles through several incentives including a zero-emission vehicle mandate (importers and manufacturers have to make at least 10% of their vehicles electric in 2019), and subsidies to electric vehicle manufacturers and tax exemptions. In 2018, the IEA estimates that electric vehicles helped save 30 MT of CO₂ emissions in China relative to a baseline scenario.

The Ministry of Industry and Information Technology (MIIT) issues standards regarding vehicle fuel efficiency. The MIIT estimates that China's 2020 fuel efficiency standards will reduce CO₂ emissions by 113 million tonnes compared to 2015 standards. The new fuel and emissions standards²⁶ for passenger vehicles came into effect on July 1, 2020. China is also developing fuel standards for heavy-duty commercial vehicles starting in 2021, with the goal of reducing fuel consumption by 15% below 2015 levels. When fully implemented, these standards will be in line with standards in the US, Canada, Japan, and EU.

Forests as Carbon Sinks: China's 2016 NDC pledged to increase forested area by 40 million hectares by 2020 compared to 2005 levels, equivalent to an area slightly larger than Norway. For some time, China has implemented forest conservation policies under the National Forest Protection Programme, including a focus on recovering native forests and a ban on commercial logging in native forests.

China also has established a "compensation fund for ecological benefit," and implemented the Ecological Protection Redline policy in 2017 to protect zones of high ecological importance²⁷. Reforestation and afforestation efforts have led Chinese forest cover to increase from 12% of the land area in 1981 to 23% in 2019. The Chinese Government has a target of 26% by 2035²⁸.

Hong Kong SAR

Hong Kong contributes to China's NDC through its 2030 targets²⁹ to reduce carbon intensity by 65% to 70% using the 2005 baseline. That implies a 26-36% absolute reduction, or 3-4% absolute reduction annually.

In June 2020, the HK2050isNow³⁰ climate report detailed the various pathways, actions, and policy options for Hong Kong's power, building, and mobility sectors to achieve alignment with the Paris Agreement. This has been discussed in Chapter 2 of this report and we encourage readers to refer to it for more details of Hong Kong's ambition and contribution towards the Paris Agreement.

The Intersection between Green Finance and Climate Finance

Finance is the flow of capital resources from the owner to the user, with the owner earning some return for the provisioning of capital resources. Today, finance takes many forms beyond the traditional loans, bonds, and equity.

In the publication "Sustainable Finance High-level definitions"³¹, the International Capital Market Association (ICMA) proposed high-level definitions based on current market usage and referencing other regulatory definitions for the most commonly used terms in the sustainable finance field. **Climate finance** is defined as "*financing that supports the transition to a climate resilient economy by enabling mitigation actions, especially the reduction of greenhouse gas emissions, and adaptation initiatives promoting the climate resilience of infrastructure as well as generally of social and economic assets.*" **It is a subset of green finance that seeks to support climate mitigation and adaptation actions. Green finance is "broader than Climate Finance in that it also addresses other**

environmental objectives such as natural resource conservation, biodiversity conservation, and pollution prevention and control". Given that sustainable water, ecosystems and biodiversity management, for example, are critical to resilience of societies and economies, most green factors are intrinsic to climate resilience.

In terms of implementing sustainable finance, there are some principles-based frameworks that were developed by existing market participants and stakeholders. These frameworks include:

- "Green Bond Principles" (GBP)³² & "Green Loan Principles"³³ (GLP): Frameworks to structure green bonds and loans. They focus on use of proceeds (UoP) and the management of proceeds by issuers and borrowers, but do not emphasise how users change overtime. While some countries have their own rules regarding green bonds and loans, these rules are usually similar in format with the GBP/GLP but differ in eligible UoP.
- "Sustainability-linked Bond Principles" (SLB)³⁴ & "Sustainability-linked Loan Principles" (SLLP)³⁵: SLB and SLL raise capital for general corporate purposes but with a structure that focuses on specific sustainability-related targets to be achieved within the lifetime of the bond or loan. Simply put, if the issuer or borrower meets the defined targets, they receive some form of financial benefit or alternative pre-defined and agreed benefit from the provider of capital.
- Specific to climate finance, the Climate Bonds Initiative (CBI) develops tools and standards to define and certify Climate Bonds, Loans and other debt instruments. CBI has established specific criteria for some sectors to ensure that the UoP are compatible with the Paris Agreement goals.
- Beyond debt instruments, Green & Climate equity is still nascent, but is starting to take form, evident with CICERO's Green Equity assessment³⁶.

Various regulators globally have initiated mandatory requirements and standards in terms of implementing sustainable finance. Notable examples include the European Taxonomy of Sustainable Economic Activities³⁷ and the accompanying European Green Bond Standard (EU GBS), and the People's Bank of China Green Bond Catalogue³⁸. Such regulatory standards and frameworks are likely to be the primary reference point for market stakeholders in implementing sustainable finance (e.g. when structuring green loans, green bonds, climate bonds). It is likely that regulators will play an even more active role in the future to determine the most relevant and applicable standards for their own context. This implies a greater need for market regulators to foster global collaboration and harmonisation via international platforms such as the International Platform for Sustainable Finance³⁹ or the International Organisation of Securities Commissions⁴⁰.

Green Finance in China and Hong Kong SAR

China promotes "green finance," which the People's Bank of China (PBoC) defines as "financial services provided for economic activities that are supportive of environmental improvement, climate change mitigation, and more efficient resource utilisation"⁴¹. Climate mitigation and low-carbon development are priorities in the guidelines.

In September 2016, PBoC published the "Guidelines for Establishing the Green Financial System" that promotes green finance. The Guidelines call for policies and actions in seven areas:

1. Green bonds
2. Green lending
3. Green development funds
4. Green insurance
5. Markets for pollution control rights
6. Local government initiatives
7. International cooperation

In 2019, Chinese green bond issuances reached RMB 386.2 billion (approximately US\$55.8 billion), representing an increase of around 33% compared to 2018. Corporations issued around 37% of Chinese green bonds. Of the US\$55.8 billion (RMB386.2 billion) in green bonds issued in 2019, US\$31.3 billion (RMB216.8 billion) was aligned with both Chinese & CBI definitions⁴².

Green loans also contribute to China's green finance market. The green loan balance in China increased 10.8% from beginning of 2020 to RMB 11 trillion at end of Q2.

Differences Between Climate Transition Finance and Green/Climate Finance

If a real economy company has credible intentions to decarbonise but is constrained by practicalities or technology, it might not have access to green/climate finance and the opportunity for transition is lost. To tackle this lost opportunity, some investment banks have structured "transition" bonds. However, there is no market consensus or official regulatory standard for such a framework or on the essential principles of a "transition" labelled bond/loan. In today's market, we have seen a few "transition" bonds using the existing format and transparency recommendations for green labelled, use of proceeds securities. In this case, however, bond proceeds were used for expenditures not typically associated with green.

Climate transition finance is about financing technologies and activities that produce lower carbon outcomes than business-as-usual and support transition to a climate resilient economy, but do not represent the best alternatives in that sector and remain inadequate in meeting decarbonisation targets. In other words, these technologies and activities are not considered compatible with a net-zero world in 2050, although they partially help towards this goal. Climate transition finance aims to address climate change mitigation or adaptation but does not aim to address broader environmental factors seen in green finance.

Our proposal of climate transition finance is to support technologies and activities that produce lower than business-as-usual carbon outcomes that may not be “net-zero compatible” or the best alternatives in the sector. These partially satisfactory technologies and activities will only partially support the transition to a climate resilient economy.

It is crucial to appreciate how partially satisfactory activities will be treated across different markets. For example, coal to gas transition technology for power generation will be more acceptable in non-OECD markets compared to OECD markets, because firm-specific constraints are tighter in non-OECD markets. Fundamentally, the Paris Agreement-aligned decarbonisation trajectory for non-OECD markets is less steep than for OECD markets. In principle, climate transition finance must account for country variations. However, in practice, this would add difficulty to the standardisation of defining what exactly is acceptable.

Safeguards to Minimise Harm

In our proposal for climate transition finance, we recognise that partially satisfactory technologies and activities can still emit levels of CO₂ that jeopardise climate change goals. Thus, we propose three safeguard measures to ensure effective and eventual contribution to emissions reductions:

1. Outlining a credible plan (by the issuer or borrower) to align with Paris Agreement goals within a precise timeline (issuer/borrower credibility in climate change ambition)
2. Minimising carbon emissions and other negative externalities during operation of partially satisfactory technologies and activities (doing least harm possible)
3. Setting a deliberate plan to phase out partially satisfactory technologies and activities to make way for net-zero compatible technology and activity (reducing emissions lock-in risk).

These three measures aim to help reduce “transition-washing”, and are supplemental to the existing regulations and frameworks such as the EU Green Bond Standard, the ICMA’s “Green Bond Principles”⁴³, “Green Loan Principles”⁴⁴, the “Sustainability-linked Bond Principles”⁴⁵, and the “Sustainability-linked Loan Principles”⁴⁶.

Regarding the first safeguard, there are various initiatives discussed that help issuers assess alignment with Paris Agreement. Issuers should make forward-looking commitments, secure approval under science-based targets and clearly disclose and explain, where applicable, how the selected targets relate to the company’s strategy. However, it is technically difficult to produce such plans without the appropriate expertise within a corporation. Governments need to provide some sectoral guidance, or at least offer resources for real economy actors to hire external help. There are also third-party initiatives that guide the process in producing targets and plans.

Regarding the second safeguard, borrowers must ensure that emissions are minimised, monitored, and verified. Beyond GHG emissions, borrowers will also need to implement plans, monitoring, and verification to mitigate other potential negative externalities (i.e. do no significant harm against water, air pollution, biodiversity, health & safety, etc.).

Although these partially satisfactory technologies and activities may not reduce emissions to the same extent as those low-carbon types, the extent of emissions reduction should still demonstrate meaningful significance. For example, if the emissions reduction required to be fully aligned with the Paris Agreement is 40%, what is the emissions reduction that will be gained by using the partially satisfactory technologies and activities? Is it 5%, or 10%? A 1% reduction will be extremely difficult to be considered meaningful.

Regarding the third safeguard, because these partially satisfactory technologies and activities are not compatible with the net-zero world in 2050, any deployment needs to be deliberately phased out when constraints are eased to make way for net-zero compatible technology.

Climate Transition Finance: How Do We Get There?

The aim of this principles-based proposal on climate transition finance is not to set an operational standard, but to propose what we believe are important principles that market authorities and market participants should consider when defining an operational framework for climate transition finance, particularly in China and Hong Kong SAR. The paper also aims to contribute to the wider debate on climate transition finance (e.g. CBI⁴⁷, ICMA⁴⁸, Transition Finance Study Group in Japan⁴⁹).

Firstly, we recommend adopting the format and transparency requirements of existing regulatory standards or market-accepted frameworks (e.g. EU GBS, GBP, GLP). The common requirements are:

1. Set eligible UoP categories and criteria
2. Define processes for project selection and evaluation
3. Document how proceeds will be managed
4. Disclose what will be reported on, including information regarding the allocation of proceeds and environmental (and potentially social) impact of projects (including indicative and quantitative indicators, such as avoided/reduced GHG/CO₂)
5. Regularly monitor progress and commit to independent external reviews

Secondly, in addition to the format and transparency requirements of existing regulatory standards or market-accepted frameworks, we propose that issuers/ borrowers:

1. **Explain their mid- and long-term plan to align with the Paris Agreement.** This plan might include, for example, capex shifts, revenue shifts and a credible plan for both as well as evidence that these are already in motion. China's real economy borrowers would have to set at least the same reductions targets as China's 2016 NDC, or higher, given China's new pledge for carbon neutrality by 2060.
2. **Explain the constraint(s) they face** when engaging in low-carbon activities, given sector, geographical, material, and technological considerations, **and provide evidence.** Actors should be transparent in explaining what, why, and how constraints prevent them from adopting low-carbon alternatives. For example, they can provide financial models with assumptions and sources cited to add credibility to real constraints faced.

3. **Elaborate on partially satisfactory technologies and activities that are considered eligible for the climate transition financing.** Example of useful information includes emissions reduction targets expected from these partially satisfactory technologies and activities, benchmarking against the target decarbonisation trajectory, and credibility of the technology and activity in the context of countries of operation.
4. **Explain the measures in place to ensure operations/activities/investments “do no significant harm” for non-climate related sustainability topics (including social ethics) and propose a “do least harm” strategy for when the partially satisfactory technologies and activities are deployed.** For example, a leakage monitoring and mitigation action plan may be necessary for a new technology in the natural gas sector. Local environmental and regulatory approval will serve as a baseline, but further contextualisation is encouraged.
5. **Explain a deliberate phase-out plan for these partially satisfactory technologies and activities in order to make way for net-zero compatible technologies and activities.** Actors who use climate transition finance for partially satisfactory technologies and activities must not hamper the development and deployment of lower-carbon alternatives. They must also plan to replace the partially satisfactory technologies and activities for a more net-zero compatible ones as constraints ease. This can mean setting aside a decommissioning fund for replacement, using the local and regional decarbonisation trajectory as an important reference.

4 Transition Outlook of High Impact Sectors: Steel, Cement, and Energy

In this chapter, we highlight the hard-to-abate steel, cement and energy sectors with relevance to China and illustrate possible pathways and technological solutions to achieve climate transitions.

Steel

Sector Overview

The steel sector is responsible for an estimated 7% to 9% of all direct emissions from global fossil fuel, with 1.85 to 2.3 tonnes of CO₂ emitted for every tonne of steel produced^{50,51}. In 2019, annual emissions from steel production amounted to 2.3 Gt CO₂⁵².

In 2018, an estimated 1.71 billion tonnes of steel was consumed globally. The IEA forecasts that steel production will increase around 30%⁵³, resulting in annual emissions of 3.3 Gt CO₂ by 2050⁵³. The majority of CO₂ is emitted during chemical reactions in the steelmaking process. Currently, about 72% of steel is produced via blast furnace (BF) or basic oxygen furnace (BOF) technology, and 28% via electric arc furnace (EAF) technology.

To be in line with the Paris Agreement targets, the CO₂ emissions from the steel sector will need to decrease by an average of 2.5% annually between 2018 and 2030. While energy intensity has fallen since 2009, total CO₂ emissions from the sector are rising due to expanded production⁵⁴.

Steel in China

China accounted for more than half of the world's crude steel production in 2019, at 996.3 million tonnes⁵⁵, 90% of which was produced using the BF method and the rest through EAF using scrap steel. When compared to the USA's 60% EAF share, it is clear that there is huge potential for China to increase its recycled steel production⁵⁶.

Decarbonising Steel

Organisations such as ResponsibleSteel⁵⁷ and Ultra-Low CO₂ Steelmaking (ULCOS)⁵⁸ aim to decarbonise the global steelmaking process. To date, three broad decarbonisation routes are available:

1. **Adopt decarbonisation technologies throughout the production process:** Including scrap-based EAF, green hydrogen-based direct reduction iron, carbon capture and storage, etc. Scrap-based EAF production reduces carbon intensity of steel production by using recycled steel, with up to 75% emission reduction compared to the BOF method.
2. **Energy efficiency improvement:** Especially in raw material preparation through heat recovery, waste gas reuse, pulverised coal or natural gas injection technologies.
3. **Material efficiency:** To develop an effective scrap steel recycling system. However, as a permanent material that can be economically recovered from various waste streams, steel is already the most recycled material globally⁵⁹.

The World Steel Association and the Energy Transition Commission have estimated the impact of specific initiatives within these three decarbonisation routes (Table 1).

TABLE 1 Impact of Various Steel Decarbonisation Routes

Source: World Steel Association and the Energy Transition Commission

	Decarbonisation routes	Maximum CO ₂ emission reduction potential	World Steel Association ⁶⁰	Energy Transition Commission ⁶¹
Decarbonisation technologies	Scrap based EAF (Electric Arc Furnace)	-100%	-	Yes
	Hydrogen as a reducing agent: Avoids carbon and uses hydrogen to reduce iron ore thereby averting the creation of CO ₂ , and producing H ₂ O (water) instead	-100%	Yes	Yes
	Carbon Capture and Storage (CCS): Generates a clean and concentrated CO ₂ stream that can be captured and stored. The process involves retrofitting steel plants with capture technology and requires the development of transportation networks and access to storage sites	-90%	Yes	Yes?
	Biomass as a reducing agent in BF/BOF: Can partially substitute coal for biomass such as charcoal in Blast Furnace or Basic Oxygen Furnace	100%	Yes	Yes
	Electrolysis of iron: Reduces iron ore using electricity	-100%	Yes	Yes
	Gas based DRI (Direct Reduced Iron)	-50%	-	Yes
	Use high-pressure gas leaving the furnace to power other equipment	-15/20%	-	Yes
Energy Efficiency	Coke dry quenching	-15/20%	-	Yes
	Redesigning products for materials efficiency and circularity	-38%	-	Yes
Material Efficiency	More intensive use of steel-based products (e.g sharing)	-38%	-	Yes
	Greater and better scrap recycling	-38%	-	Yes

Policies and Sector Outlook

In China, the government introduced an action plan in 2018 requiring 480 million tons of carbon capacity from steel production to meet “ultra-low emission” standards by 2020. In 2019, the Ministry of Ecology and Environment, the National Development and Reform Commission, and other ministries, jointly released a national announcement laying out the key directives to remove excess capacity in steel production⁶². Although the motivations behind the directives were air pollution prevention, they contribute to decarbonisation indirectly.

Cement

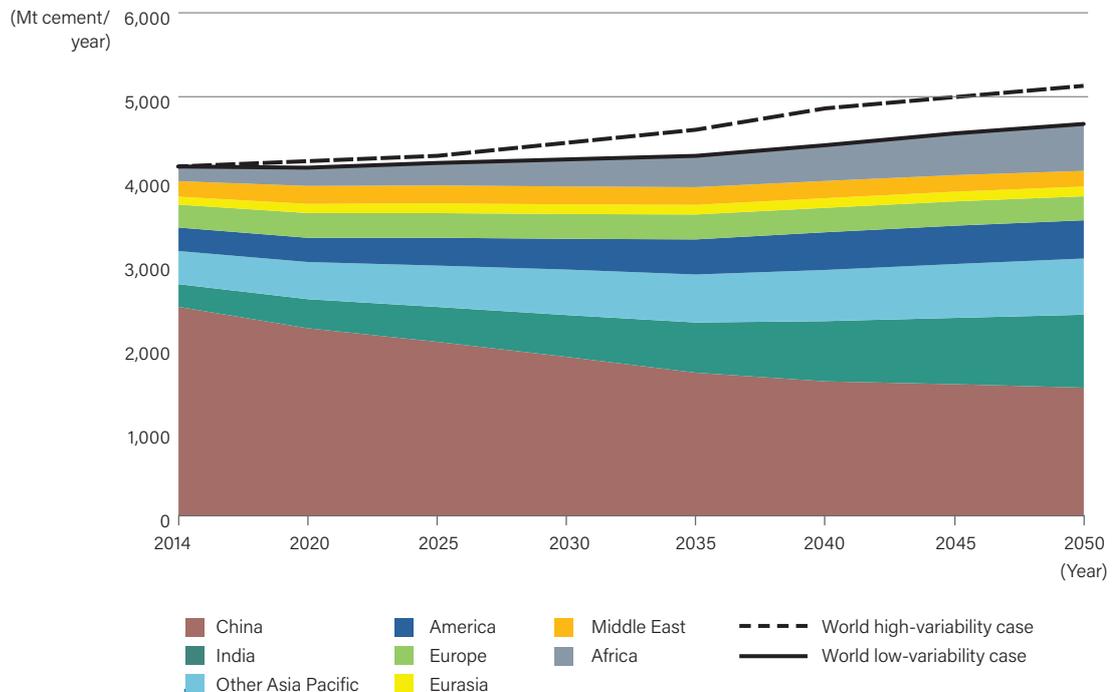
Sector Overview

The cement sector accounts for 7% of global industrial energy use and emits 2.2 gigatons CO₂ per year⁶¹. 8% of global CO₂ emissions in 2015 came from cement production, which was equivalent to the emissions of third-largest emitting country⁶³. In 2019, 4.1 gigatons of cement was produced according to the IEA and cement production is expected to grow between 12% and 23% by 2050 (Figure 7)⁶⁴.

It is estimated that the cement manufacturing industry will need to reduce emissions by 24% from current levels by 2050¹ in order to align with the Paris Agreement.

FIGURE 7 Cement Production Projection in Different Countries 2014-2050

Source: IEA



4.2.2 Cement in China

China accounts for 55% of global cement production⁶⁵. In 2016, cement-related CO₂ emissions contributed to about 11% of China’s total CO₂ emissions⁶⁶. Domestic real-estate investments have been rising by 1.9% year on year⁶⁷ and that can serve as a proxy indicator for cement demand. External demand for cement is also expected to increase. Chatham House estimates that the Belt and Road Initiative will stimulate additional demand across Asia by approximately 162 million tons annually⁶⁸.

Since 2016, China has implemented many measures with the backdrop of supply-side reform to tackle overcapacity, (Table 2).

TABLE 2 Measures to Diminish Production Capacity of Cement in China

Source: Ministry of Industry and Information Technology of the P.R. China, China Building Materials Federation, provincial government websites

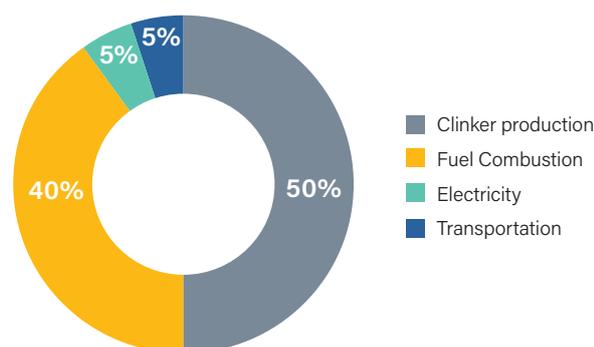
Measures to Diminish Production Capacity	Details
Tightening replacement measures	Production lines shut down for two years or with cumulative production time less than one year in last three years shall not be used as replacement Replacement with reduced capacity in all regions (except Tibet) ⁶⁹
Phasing out backward capacity	Areas with clinker capacity utilisation rate less than 70% will phase out cement clinker production lines with capacity below 2000 tons/day by the end of 2020 and 2500 tons/day by the end of 2021 ⁷⁰
Peak shifting production	More provinces proposed cement peak shifting production policies

4.2.3 Decarbonising Cement

Clinker production and fuel combustion account for 90% of total cement emissions⁷¹ (Figure 8).

FIGURE 8 Breakdown of CO₂ Emissions in Cement Production

Source: World Business Council for Sustainable Development



Clinker process emission: Clinker process emissions come from the chemical reaction that breaks down limestone into lime and CO₂⁷². A reduction in the clinker-to-cement ratio (also known as the “clinker factor”) reduces carbon emission intensity of cement production.

Fuel combustion emission: Generating thermal energy to heat up the kiln is the second largest source of CO₂ emissions in cement production. According to the Cement Sustainability Initiative (CSI), coal makes up over 80% of fuel consumption in the production of cement in China, while Europe is the leader in alternative fuels and biomass⁷³ (Figure 9).

We reviewed the decarbonisation initiatives of the top six cement companies in terms of capacity in 2019, three of which are Chinese (Table 3). These six companies account for 31.9% of global production capacity⁷⁴.

FIGURE 9 World Fuel Consumption in 2016 for Cement Production

Source: Sustainability Reports of Respective Companies

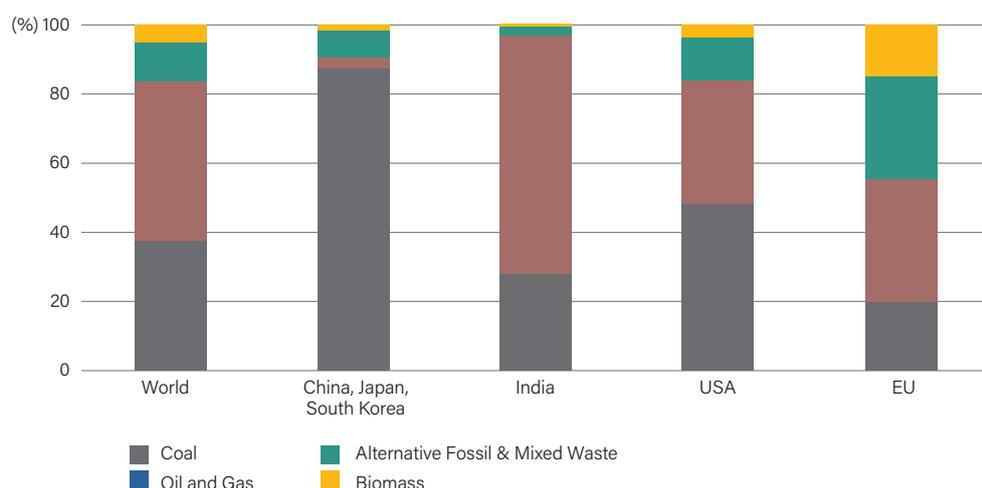


TABLE 3 Comparison of Carbon Reduction Performance

Sources: Companies’ 2019 Annual Sustainability Reports

Company	Country	Emission Reduction Target	Clinker Factor Decrease	Alternative Fuels Substitution	Biofuel Used	Renewable Energy Use	Carbon Capture
China National Building Material	China	Not disclosed	China Average 0.64 ²⁵	■	Not disclosed	Not disclosed	Not disclosed
Conch Cement	China			■	□	■	■
China Resource Cement	China			■	Not disclosed	Not disclosed	Not disclosed
Lafarge	France	■	■ 0.71	■	■ 7%	■	□
UltraTech	India	■	■ 0.76	■	■ 11%	■	Not disclosed
Cemex	Mexico	■	■ 0.79	■	■ 0.7%	■	Not disclosed

■ On-going □ Under R&D or Construction

The IEA estimates that renewable energy use and carbon capture and storage, when it is available, will account for 48% of carbon reduction in the industry⁷⁵. Without these, there is general agreement that emissions from chemical reactions in the clinker process will be hard to avoid.

Policies and Sector Outlook

In China, a number of policies are in place to directly and indirectly limit emissions from the cement sector, including:

- **13th Five-Year Plan** sets targets to cut excessive cement and clinker capacity by 20% and to reduce the main pollutant emissions by 30%⁷⁶
- **National Carbon Trading Market Quota Allocation Plan (Discussion Paper 2017)**⁷⁷ enables a planned national carbon trading scheme to be implemented in the near future. Seven pilot Provincial Emission Trading Schemes have been in operation since 2013
- **Air Pollution Prevention Implementation Plan for the Cement Industry (2019)**⁷⁸ developed by the China Building Materials Federation's targeted 30 million tons of carbon emissions reduction in cement in 2019
- **Emissions Standards for Air Pollutants: Cement Industry (GB4915-2013)**⁷⁹ sets limitations on non-CO₂ emissions such as NO_x, SO₂ and particulates. Some provinces have implemented even stricter regulations on pollutant emissions, such as Henan's *Ultra Low Emission Renovation Plan for Cement Industry*⁸⁰ and Anhui's⁸¹ new emission standards, both introduced in 2020

We observe that some of the top 6 companies from Table 3 have taken on decarbonisation initiatives (Table 4).

TABLE 4 Examples of Climate Financing in the Cement Industry

Source: Footnote 80-82

Cement Company	Year	Investment Scale	Investor	Activity
Lafarge	2019	N/A	Canadian Government	CCUS ⁸²
UltraTech Cement	2019	Rs 2500 crore (Rs 1000 crores = USD 0.150 billion)	Indian Government	An integrated cement plant, including clinker capacity of 4 million tons per annum (MTPA), 6 MTPA of cement, 60 megawatt of captive power plant and 15 megawatt of waste heat recovery-based power unit ⁸³ .
Cemex	2016	A loan of up to 120 million USD with an additional blended finance tranche of up to 50 million USD	International Finance Corporation	Supporting Cemex's 2020 Sustainability Enhancement Target to improve environmental performance of the company's operations. (Type: Renewable energy and energy efficiency ⁸⁴)

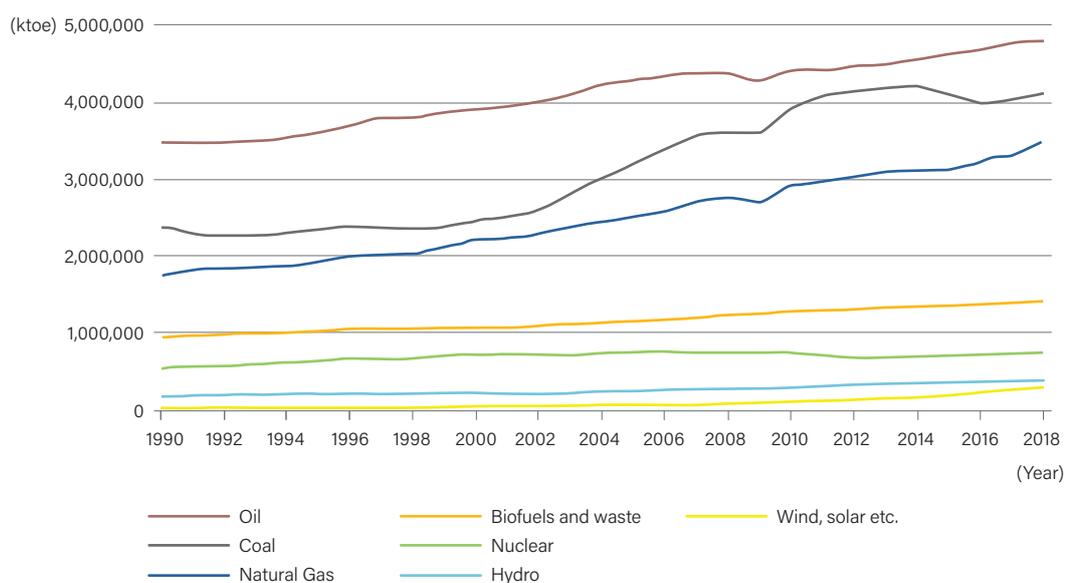
Energy

Sector Overview

In 2018, global energy-related CO₂ emissions rose to a historic high of 33.1 Gt, accounting for more than 70% of global greenhouse gas emissions^{85,86}. Oil, coal, and natural gas remained as the top 3 sources of energy, leading by a wide margin (Figure 10)⁸⁷.

FIGURE 10 Global Total Energy Supply by Source, 1990-2018

Source: IEA⁸⁸



Energy in China and Hong Kong SAR

As China's coal use is explained in previous sections, this section will focus on Hong Kong's energy use. As of 2018, Hong Kong's energy related activities accounted for 88.4% of Hong Kong's total GHG emissions, with electricity generation and town gas production accounting for 65.5%⁸⁹.

Hong Kong's energy supplies come almost entirely from external sources, either through direct import (oil and coal), or through intermediate transformation processes using imported inputs (electricity and gas)⁹⁰. Fossil fuel still dominates the electricity mix, with 45% of Hong Kong's electricity generated from imported coal and 28% from imported gas⁹⁷. Electricity imports from China have steadily increased over the past decade, up by 12.9% between 2009 and 2019⁹⁷. Hong Kong started to import nuclear electricity from Mainland China in 1994 and will continue until 2034 under the current agreement.

On the demand side, in 2019, commercial users account for two thirds (66.7%) of the total electricity consumption, and residential users 26.6%. For gas, residential usage accounts for 52.3%, while commercial usage comes in at 41.3%, and industrial usage at 6.4%⁹⁷.

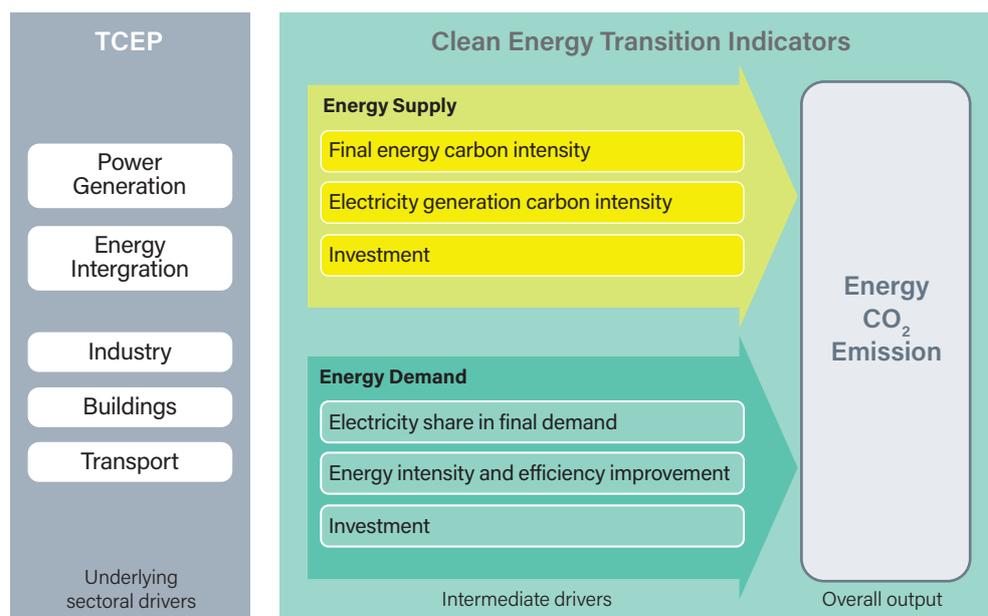
Decarbonising Energy

Renewable energy and energy efficiency measures can achieve up to 90% of the required CO₂ emission reductions⁹¹. The IEA developed "Energy Transition Indicators" to track transition progress (Figure 11), which include intermediate indicators underpinning changes in CO₂ emission such as⁹²:

- Information on changes in the economy's energy intensity and the carbon intensity of energy supply across industry, buildings, and transport end-use sectors
- Power generation decarbonisation and progress on energy integration technologies
- Cross-cutting drivers, such as investment in low-carbon technologies

FIGURE 11 Energy Transition Indicators

Source: IEA



Policies and Sector Outlook

"Energy transition" is embedded in China's national policies. For instance, the *13th Five-Year Plan for Energy Development* is regarded as a plan for "transition", and "*The Optimisation of the Energy System to Achieve Clean and Low-Carbon Development*" is also an urgent call for socio-economic transformation.

IEA forecasts that between 2019 and 2024, China is expected to account for 40% of global renewable capacity expansion, driven by improved system integration, lower curtailment rates and enhanced competitiveness of both solar PV and onshore wind. Meanwhile, it is also expected to account for almost half of global distributed PV growth, overtaking the EU to become the world leader in installed capacity by 2021⁹³.

According to the HK2050isNow report, 70% of Hong Kong's carbon emissions can be eliminated by switching to net-zero emission sources of electricity⁹⁴. Several guidelines and initiatives have been rolled out to promote building energy efficiency, such as the 2018 *Building Energy Code*⁹⁵ and the *Energy Efficiency Registration Scheme for Buildings*⁹⁶. In terms of mobility, the expansion of the city's already extensive railway system is expected to serve 75% of its local population⁹⁷. However, improvements such as shifting to low-carbon alternatives across transport modes and adopting more electric vehicles can move Hong Kong further along the trajectory towards a net-zero society.

In 2019, global energy-related CO₂ emissions flattened at around 33 gigatonnes (Gt) after two years of increases, which suggests that clean energy transitions are underway⁹⁸.

5 Science-Based Approaches to Assessing Climate Transition

In this chapter, methods to assessing climate transition are discussed in relation to the first safeguard element in our proposal on climate transition finance.

Science-Based Targets

Definition

To keep temperature increase under 2°C, total future carbon emission must be well below 1,000 Gt CO₂, our global carbon budget.

Science-Based Targets (SBTs) refer to greenhouse gas (GHG) emission reduction targets adopted by companies that are in line with the goals of the Paris Agreement.

Methodologies

The approach to SBTs largely depends on industry and geographical exposure. The three widely adopted approaches are: sectoral-based, absolute-based, and economic-based.

A sectoral-based approach is where the global carbon budget is divided by sector with emission reductions allocated to individual companies based on the sector's target.

An absolute-based approach is where the percent (%) reduction in absolute emissions required by a given situation is applied to all companies equally. This could be at the global level or sector level.

An economic-based approach can be used to set an intensity target where the carbon budget is equal to global GDP. China has set an intensity target of 60-65% reduction of CO₂ per unit GDP by 2030 (with base year 2005).

Science-Based Targets as a Tool for Climate Transition Finance

SBTs align corporations at the entity level to reach the goals of the Paris Agreement. Though not applicable on a project or activity level, they provide a high-level direction for entities to align with global emission goals in the transition process. Furthermore, entities with SBTs enjoy benefits, including:

Credibility: Transparency is key to green finance as it is to climate transition finance. Companies are more credible to investors when they disclose forward looking SBTs that can be subsequently verified or audited.

Availability of Reassessment: The Paris Agreement requests parties to submit Nationally Determined Contributions every 5 years. Companies that link strategy and financing to SBTs are also required to update the targets based on the latest scientific research to remain aligned with global climate goals.

Innovation: By linking a transition finance instrument to KPIs that are SBTs, companies can connect financial gains with environmental performance, compensating investors when targets are not met.

Science Based Targets Initiative (SBTi)

Science Based Targets Initiative (SBTi) is a collaboration between CDP, the United Nations Global Compact, World Resources Institute (WRI), and the World Wide Fund for Nature (WWF). To date, more than a thousand companies⁹⁹ have decided to take science-based climate action under the umbrella of SBTi, with more than 220 in Asia, 9 in Hong-Kong and a dozen in China.

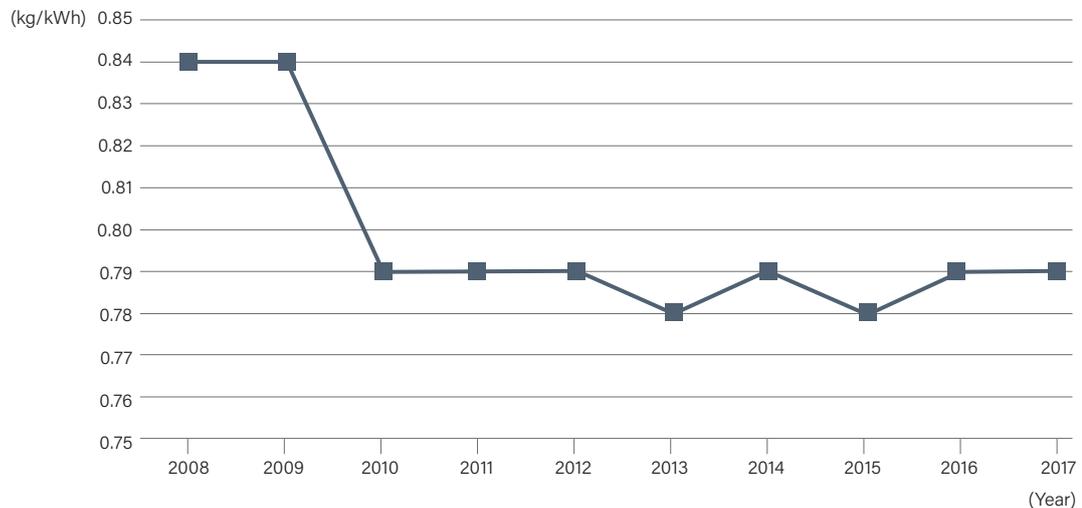
SBTi believes corporations should embed SBTs in their sustainability management objectives. Guidance on setting ambitious SBTs has been developed for various industries such as apparel, chemicals, financial institutions, oil and gas, transport, power, forest, land and agriculture, and ICT.

Case study: Hong Kong Electric Investments (Sector: Electric Utilities and Energy)

In 2017, Hong Kong based electricity generation company, HK Electric committed to reduce its production emissions by 30% by 2022 (2005 was set as the base year). This was consistent with reductions required to keep warming to 2°C. This means a reduction in CO₂ equivalent from 0.93 kg/kWh in 2005 to less¹⁰⁰ than 0.67 kg/kWh in 2022. Figure 12 illustrates HK Electric’s transition towards lower emissions since 2008.

FIGURE 12 Carbon Dioxide Equivalent Per Electricity Unit Sold, Hong Kong Electric 2008-2017

Source: https://www.hkelectric.com/en/CorporateInformation/Documents/HKE-Cl_eng_201718.pdf



HK Electric set its target based on the sectoral approach, where emissions intensity targets are linked to a specific business metric, in this case, per electricity unit sold. In 2018, HK Electric has set a more aggressive SBT to reduce emissions to less than 0.6 kg/kWh in 2023, as compared to its 0.67 kg/kWh in 2022 target.

Case Study: Italy's ENEL – Transition Transaction Linked to Science-Based Target

In October 2019, Italian electricity giant ENEL placed a "SDG-linked", 15-year, EUR500mn bond. Proceeds of the bond are for general corporate purposes, but ENEL has committed to reduce scope 1 GHG emissions 70% per kWh by 2030 from a 2017 base year, limiting them to 125g CO₂/kWh. ENEL pays a 1.125% coupon initially, but the company is subject to a 25-basis points penalty (mid-term 'coupon step-up') for the remaining term till maturity if ENEL fails to achieve the target by 2030.

Under the KPI-linked approach, ENEL does not need to provide details of the projects or allocation of proceeds, unlike other use-of-proceed bonds, nor does it have to provide detailed post-issuance disclosure on impacts.

Consideration of a bond's credibility as a transitional transaction hinges on whether the corporate targets are aligned to the net-zero trajectory. ENEL's decarbonisation target is approved by the Science Based Target initiative and puts the company in the 'in transition' category."

However, it is important to note that CO₂ emission from ENEL's facilities in Europe in 2018 was 401g CO₂/kWh on average, which is well above the do-no-significant harm threshold of 262g CO₂/kWh in the EU taxonomy¹⁰¹.

The Climate Bonds Initiative Transition Framework

To help mobilise global capital flows into Paris Agreement aligned activities, CBI proposed its concept of robust and viable transition finance in a paper jointly published with Credit Suisse.¹⁰²

The CBI paper, *Financing Credible Transitions*, described:

- **A Transition Framework** that categorised economic activities based on the nature of role in a global, economy-wide transition to the Paris Agreement targets, and described the corresponding transitions needed from entities practicing those activities.
- **Five Transition Principles:** Adherence to these principles signal a credibility of transition ambition.
- **Illustrative examples** of entities, economic activities and specific use-of-proceeds taken from across the brown-to-green spectrum that fall into each transition category.
- **A proposal on the use of a 'transition label'** applicable to entity-level and activity-level transitions.

The proposal builds on other work, particularly CBI's own taxonomy, the EU Sustainable Finance Taxonomy¹⁰³ and the GBP administered by ICMA.

In the paper, CBI argues only a minority of economic activities operate at zero or near zero emissions today. For some high-emitting activities, feasible low- or zero-emissions solutions are available or credibly envisaged within a reasonable timeframe. For other activities, low-emission substitutes exist or are in development. Hence, any transition should be towards the better alternatives.

To account for these differences, CBI has categorised economic activities based on: i) how long the product or service delivered by the activity will be needed (which depends on the availability of low-carbon substitutes); and ii) the viability of decarbonising the activity so that it aligns with the Paris Agreement (Table 5).

TABLE 5 Five Categories of Economic Activities

Source: Climate Bonds Initiative

Investor	Activity
Net-Zero	Activities already at or near net-zero emissions that may require some further decarbonisation but not a significant transition - e.g. wind power generation.
Pathway to Zero	Activities needed beyond 2050 and with a clear 1.5°C decarbonisation pathway – e.g. shipping.
No Pathway to Zero	Activities that are needed beyond 2050 but at present, do not have a clear 1.5°C decarbonisation pathway to 2050 – e.g. long-haul passenger aviation.
Interim	Activities currently needed but should be phased out by 2050 – e.g. production of energy from municipal waste.
Stranded	Activities that cannot be brought into line with global warming targets and have an alternative, low emissions substitute - e.g. electricity generation from coal.

Enabling Activities cut across all of the categories above. Within each category, there are activities where the biggest contribution is not their direct decarbonisation, but the decarbonisation they enable elsewhere. In other words, the goods and services they produce are essential in enabling other activities to follow decarbonisation pathways. Examples include manufacture of wind turbines, metals recycling, and carbon capture and storage.

Five Transition Principles to Avoid Greenwashing

CBI also proposes five transition principles that define credible transition pathways. The principles are consistent with the EU Taxonomy for evaluating transitional activities.

1. **In line with 1.5°C trajectory;** All goals and pathways need to be aligned with zero-carbon by 2050 and nearly halving emissions by 2030.
2. **Established by science;** All goals and pathways must be led by scientific experts and be harmonised across countries.
3. **Offsets don't count;** Credible transition goals and pathways do not count offsets but should count upstream scope 3 emissions.
4. **Technological viability trumps economic competitiveness;** Pathways must include an assessment of current and expected technologies. A viable technology, even if relatively expensive, should be used to determine the decarbonisation pathway for that economic activity.
5. **Action not pledges;** A credible transition is backed by operating metrics rather than a pledge to follow a transition pathway at some point in the future. In other words, this is not a transition to a transition.

CBI emphasises the need for science-based metrics and targets for transition finance, as the market needs science-driven guidance on which assets and activities are consistent with a rapid transition to a low-carbon economy, akin to the science-based Climate Bonds Taxonomy, which was developed based on the latest climate science including research from the Intergovernmental Panel on Climate Change (IPCC) and the IEA, and has benefited from the input of hundreds of technical experts from around the world.

CBI believes a line between activities that do not have a long-term role to play in a low-carbon economy (due to their high emissions) and those that do (despite their high emissions) provides the foundation of a transition label. In particular, CBI proposes that:

Green label can be used for eligible investments (i.e. that meet the Principles) in activities or entities that have a long-term role to play and are either already near zero or are following decarbonisation pathways in line with halving global emissions by 2030 and reaching net-zero by 2050. It can also be used for investments in activities and entities that enable those activities and entities.

Transition label can be used for eligible investments that are making a substantial contribution to halving global emissions levels by 2030 and reaching net-zero by 2050 but will not have a long-term role to play; or will have a long-term role to play, but at present the long-term pathway to net-zero goals is uncertain.

Transition Pathway Initiative (TPI)

The Transition Pathway Initiative (TPI)¹⁰⁴ is a global initiative led by asset owners and supported by asset managers that aims to evaluate what the transition to a low-carbon economy looks like for companies with a high impact on climate change, such as utilities and oil and gas. It also aims to assess how well-prepared these companies are for the low-carbon transition.

Companies' progress on low-carbon transition is assessed on two dimensions:

1. **Management Quality:** TPI evaluates and tracks the quality of companies' governance on GHG emissions and of risks and opportunities related to the low-carbon transition.
2. **Carbon Performance:** TPI evaluates how companies' carbon emissions compare with international targets and national pledges under the Paris Agreement. It compares companies in high-emitting sectors against each other and against sector-specific benchmarks.

TPI's Carbon Performance assessment is based on modelling by the IEA. This is used to translate international emissions targets to sectoral benchmarks, against which the performance of individual companies can be compared. This framework is known as the Sectoral Decarbonisation Approach (SDA).

Across most sectors, TPI adopts the following sectoral benchmark pathways and scenarios:

1. A 2°C scenario, consistent with the low-end target of the Paris Agreement
2. A Paris Pledges scenario, consistent with NDCs but currently insufficient to put the world on a path to limit warming to 2°C
3. A Below 2°C scenario, consistent with the high-end target of the Paris Agreement

6 A Comparison of China and EU's Green and Transition Finance Definitions

China and EU each proposed and launched their green finance standards in 2020 respectively.

The European Commission is set to reform its financial system to support and implement a climate and sustainable development agenda. The EU Sustainable Finance Taxonomy (EU Taxonomy) is formulated based on the climate change and environmental policies in EU. It aligns with SDGs and aims to meet the net-zero emission target by 2050. It provides policymakers, industries, and investors with practical tools to identify environmentally sustainable economic activities and investment opportunities. The EU Taxonomy consists of a list of economic activities that are aligned with the 6 environmental objectives: Climate Change Mitigation, Climate Change Adaptation, Sustainable Use and Protection of Water and Marine Resources, Transition to a Circular Economy, Waste Prevention and Recycling, Pollution Prevention and Control, and Protection and Restoration of Biodiversity and Ecosystems.

The technical screening criteria for economic activities in the EU Taxonomy are rooted in three performance thresholds—“Substantial Contribution”, “Do No Significant Harm”, and “Minimum Safeguards”. An eligible economic activity must make substantial contribution to at least one or more of the 6 environmental objectives. So far, technical screening criteria are only set for activities with contributions to Climate Change Mitigation and Climate Change Adaptation. Further criteria development work for the remaining 4 environmental objectives is scheduled to be completed before the end of 2021. The European Commission is also requested to consider expanding the EU taxonomy to cover activities that harm sustainability ('unsustainable' or 'brown' taxonomy) post-2021.

In addition to climate change, China also faces severe domestic environmental pollution, increased resource constraints and ecological degradation. In July 2020, PBoC, the National Development and Reform Commission (NDRC), and the China Securities Regulatory Commission (CSRC) jointly drafted the “*Green Bond Endorsed Project Catalogue (2020 Edition)*”, which follows the classification system of “*The Industry Catalogue*” and divides green projects into 6 categories: Energy Saving and Environmental Protection, Clean Production, Clean Energy, Ecology and Environment-Related, Green Upgrade of Infrastructure, and Green Services. The “*2020 Project Catalogue*” reflects policy goals that are more multidimensional and adaptive. This includes promoting structural adjustment and transformation, accelerating “ecological civilisation construction”¹⁰⁵, and facilitating sustainable development of the economy. The basic principle is to evaluate whether a project a) makes significant environmental improvement; b) addresses climate change; and c) conserves or efficiently utilises resource. These three environmental goals are not substantially different from the 6 environmental objectives of the EU Taxonomy.

In contrast to the EU Taxonomy, however, the “*2020 Project Catalogue*” does not include “brown-to-green” transition activities¹⁰⁶, nor does it explicitly mention enabling activities¹⁰⁷. However these are embedded in the catalogue under, for example, the Manufacturing of Energy Efficient Equipment, Manufacturing of Green Building Materials, and Manufacturing of Core Components of New Energy Vehicles within the Energy Saving and Environmental Protection Category.

Since 2018, the Ministry of Ecology and Environment of PRC ("MEE"), the government authority in charge of addressing climate change in China, has been optimising market operations and resource allocations to stimulate climate finance. MEE announced that the development of a Climate Investment and Finance Standard System will be a key focus in 2020¹⁰⁸. A Mid-term Report¹⁰⁷ on the development progress was released in mid-2020. This highlighted that investments for key climate projects with "additionalities" shall be prioritised to allow global private capital and policy resources to be efficiently utilised in decreasing the financing cost of key demonstration projects. Furthermore, pilot projects to develop a uniform methodology in translating NDCs into financial frameworks are underway.

EU Definition of Climate Transition

As highlighted in the Technical Expert Group (TEG)'s final report in March 2020, the Taxonomy is "a tool to help investors, companies, issuers, and project promoters navigate **the transition to a low-carbon, resilient, and resource-efficient economy**". The report clearly states that "to be sustainable, transition-related investments must be consistent with emissions-reduction pathways throughout their entire economic life"¹⁰⁹.

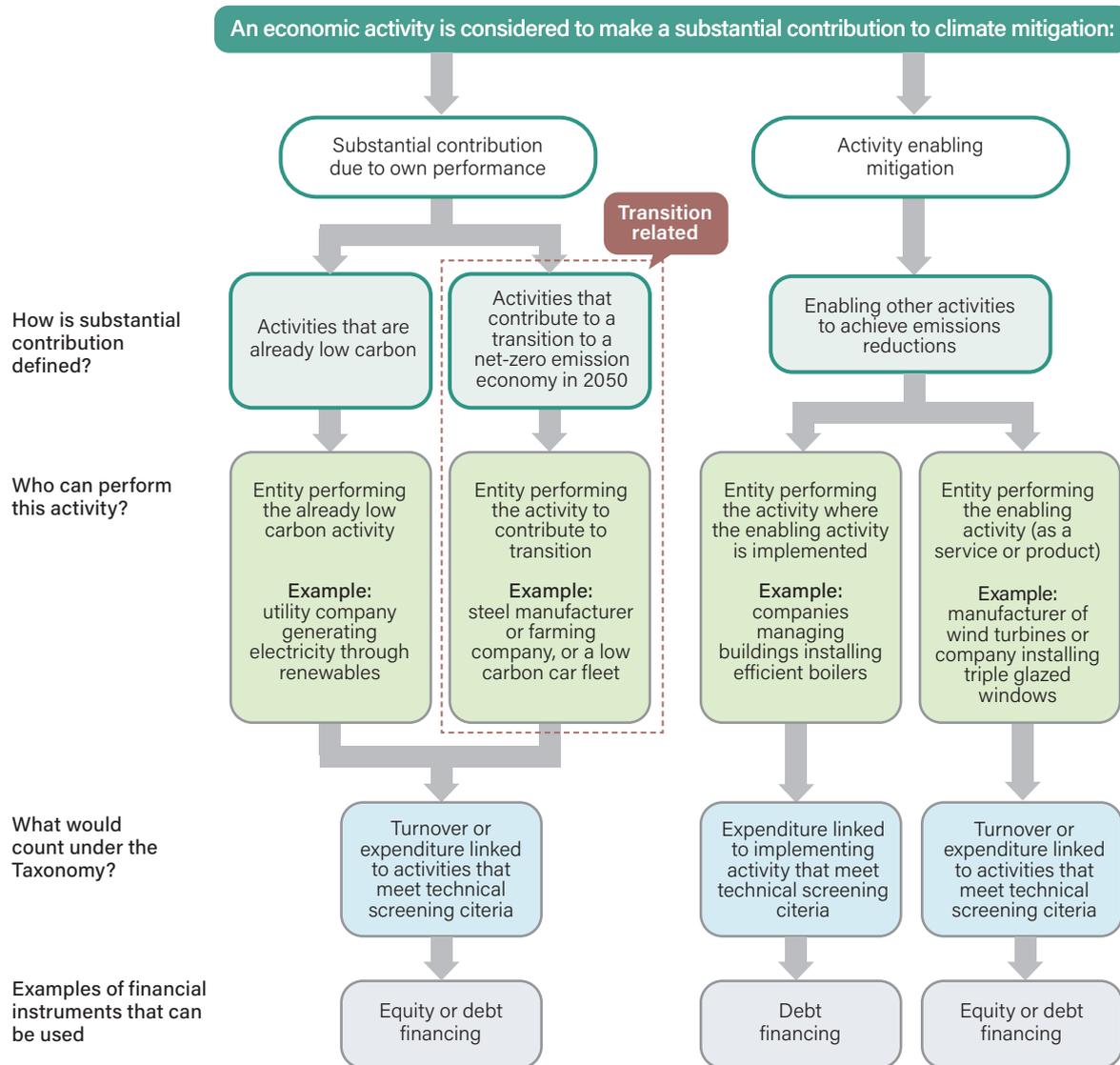
On 12 July 2020, EU's Taxonomy Regulation finally entered into force. The Article 10(2) in the agreed Taxonomy text published on 18 June 2020¹¹⁰ sets out the framework for evaluating transition activities (Appendix A).

The thresholds related to climate change mitigation are established based on EU's objectives to meet net-zero emissions by 2050 and a 50–55% reduction by 2030 against 1990 level.¹⁷⁷ These thresholds will be reviewed periodically to take into account technology evolutions and best practices. At the individual economic activity level, the regulation indicates that to avoid lock-in, environmental performance of the activity must not persist at levels incompatible with environmental goals over the economic lifespan of the activity¹¹¹. It is important to note that transition activities must also comply with the "Do No Significant Harm" criteria and the minimum social safeguards described in the regulation.

Figure 13 from the *TEG Taxonomy Report: Technical Annex*¹¹² demonstrates how transitional activities are still expected to substantially contribute to climate mitigation objectives and meet Taxonomy thresholds.

FIGURE 13 Illustration on Transition Activity in EU TEG Taxonomy Report

Source: EU TEG Taxonomy Report: Technical Annex (March 2020; page 16)



Examples of activities that are “transition” include manufacture of cement, aluminum, iron, and steel, cogeneration of heat/cool and power from gas, and passenger and freight rail transport. The full list of identified economic activities considered as “transition related” can be found in the Summary Tables of the Taxonomy¹⁷⁷.

The EU Taxonomy views “transitional activities to significantly contribute towards the objective of climate mitigation, as long as the activity meets the technical screening criteria”. As importantly is the pre-requisite “for which there is no technologically and economically feasible low carbon alternative”. This is because the activity is not yet low or net-zero but it is on the right pathway to net-zero by 2050.

The additional criteria for transitional activities will become stricter over time, in tandem with technology cycles and emissions reductions targets, and will be revised every three years. Thus, real economy actors whose "transition activities" were previously labelled as sustainable, can in fact become unsustainable if the actors fail to upgrade to be in line with updated technical criteria.

These European definitions of "transitional activities" are expected to become the main reference point for EU-based fund managers and European investors, who will be required to disclose not only on their overall alignment with the taxonomy but also "include details on the proportions of the [...] transitional activities [...] respectively, as a percentage of all investments selected for the financial product".

In addition to the Taxonomy, the *REGULATION (EU) 2019/2089 amending Regulation (EU) 2016/1011 as regards EU Climate Transition Benchmarks (EU CTB), EU Paris-aligned Benchmarks (EU PAB) & sustainability-related disclosures for benchmarks*¹¹³ was implemented (Appendix B).

Transition in the Hong Kong SAR & China Context

One objective of the draft version of the China Green Bond Endorsed Project is to "promote sustainable economic and social development as well as industrial green transformation and upgrades"¹¹⁴. With the exclusion of coal-related activities from the new Green Bond Catalogue, China's approach in green finance is becoming more aligned with international practices, including those of the EU. Currently, China's new 2060 carbon neutrality pledge has not yet been translated into actual policy, though these are likely to be revealed in the 14th FYP.

Comparing Frameworks

The EU Taxonomy state that transitional activities can significantly contribute to climate mitigation if they meet all technical criteria.

The EU Taxonomy does not set criteria at the real economy actor level, but only at the activity level. This distinction is important because a real economy actor can undertake different activities in its business (e.g. power generation from natural gas and natural gas distribution). This actor could be considered sustainable in one activity, but not the other per the criteria contained in the EU Taxonomy. The EU taxonomy is clear in that it does not aim to assess the actor level and leaves it to individual users to complement the taxonomy with tools of their own to achieve both the actor and activity level assessment.

The proposal put forward in this paper differs from the EU Taxonomy in three ways.

- First, the proposal of climate transition finance focuses on the partially satisfactory technologies and activities that may not be "sustainable".
- Second, the proposal of climate transition finance emphasises the real economy actor. The actor's commitments, targets, and disclosure on climate mitigation are important information that allows market participants to assess the meaningfulness of the actor's goals and the effectiveness of activities in achieving those goals.

- Third, the proposal acknowledges the unique constraints faced by each real economy actor independent from industry factors (i.e. 2 actors in the same industry can face different constraints in applying a technology). The EU Taxonomy does not consider how a technology can be accessed differently in different countries even within the EU. In China, an independent power producer could likely face geographical constraints in securing sufficient land to build solar PV or wind turbines to replace existing coal power capacity. Thus, natural gas may be a more viable option.

Our proposal's differences relative to China's concepts of green finance are also similar to the ones against the EU Taxonomy.

- First, the 2020 green bond catalogue does not contain a tangible definition of transitional activity, though the idea of "transition" is loosely embedded in China's policy documents. As long as a particular project helps China to "transition", regardless of the extent of contribution, that project is likely be considered "green".
- Secondly, China's green finance policies do not yet consider criteria at the real economy actor level.

There are, however, similarities in the various frameworks.

A crucial element in the EU Taxonomy regarding transition activities is that the technical thresholds will be tightened every three years in tandem with technology cycles and emissions reductions targets. For example, the current threshold for power generation is 100g CO₂e per kwh produced, and will decline over time towards 0g CO₂e per kwh produced. Hence, the implicit expectation is that real economy actors should also continue to improve to remain aligned with the EU Taxonomy's technical thresholds. In the same spirit, the proposal in this paper asks that real economy actors plan for partially satisfactory activities to be phased out with newer technology, converging towards the expectation that transition activities must seek planned improvements to contribute towards climate mitigation.

International Harmonisation

We note that global efforts are being made for "common design features for international taxonomy harmonisation", as proposed by the TEG of EU Taxonomy and the International Platform for Sustainable Finance (IPSF), of which both the EU and China are active members. The IPSF aims to facilitate policy dialogue "towards a coordinated approach ensuring coherence of the different frameworks and tools of the capital markets that are key for investors to identify and seize green investment opportunities". Ultimately, we expect greater convergence overtime on definitions related to transition finance.

7 Implications of Green Finance in Asia

Existing green finance tools and definitions have received market consensus with increased adoption rate. However, new tools are needed to unlock and mobilise more capital, more sectors with more participants. In order to align our economy with the urgent goals of the Paris Agreement, green finance, climate finance, and climate transition finance are needed at the same time.

For climate transition finance, transparency and contextualisation is key to robustness. Transparency and contextualisation are needed in areas highlighted in chapter 3.8.

What qualifies as the “best available, partially satisfactory” may differ among geographies and entities, due to the unique constraints. As the definition of transitional activities is not as straightforward as green activities, we should rely on rigorous, evidence-based, professional judgement to safeguard the robustness of transition finance.

Outlook for Transition Finance

The New Climate Economy states that the next 10–15 years are a unique ‘use it or lose it’ moment in economic history, where globally US\$90 trillion is expected to be invested in infrastructure before 2030, more than the total current stock. The sustainability of these infrastructure investments will be a critical determinant of future growth and prosperity¹¹⁵. The multi-trillion-dollar Belt and Road Initiative is expected to have a significant impact on the speed of growth in 60+ countries across Asia, Africa, and Europe. All of these new investments should ideally be green or at least transition-related.

While these large-scale transformative changes are necessary, the New Climate Economy also found that bold action and swift transitions could yield a direct economic gain of US\$26 trillion, conservatively estimated, through 2030. This economic gain is realised in the form of avoided premature deaths from air pollution, carbon revenues, savings from fossil fuel subsidies, higher global GDP growth, low-carbon jobs creation, and increased female employment.

In China, there are clear needs for transition financing, with a growing momentum for sustainability. For example, despite a 20% decrease between 2010 and 2015, China still has the second-highest carbon emission intensity in the industry sector, second only to South Africa and Russia. However, for the top 10,000 energy-consuming companies, a programme for energy conservation and low-carbon developments is in place. This is expected to mobilise the transition of carbon-intensive activities to lower carbon practices. Another example is that, currently there are nearly 3.5 million workers in coal mining in China. The Chinese government has allocated 30 billion yuan (US\$4.56 billion) between 2018 and 2021 to support the closure of small, inefficient coal mines and redeploy around 1 million workers¹¹⁶. Although this directive is partially motivated by safety concerns over small mines, it will also contribute to climate transition.

Overall, the need for transition financing is significant, and all market players can contribute. We explore the implications for banks, insurers, corporates, investors, and external reviewers below.

Implications for Banks

Banks will influence transition financing most directly through lending policies and as structuring advisors.

Some leading banks already have financing policies and restrictions aimed to safeguard sustainable development, typically referred to as "CSR lending policies". The objective of most CSR lending policies is to avoid financing brown sectors and activities. However, not all banks are applying these policies to their advisory and underwriting activities, and many of these policies will have to be upgraded to fully capture relevant 'do-no-significant' harm due diligence procedures.

As transition activities could, over time, be considered brown in nature, it is important for banks to evaluate the relevance and appropriateness of their CSR lending policies. Furthermore, often non-brown activities, those that pass through the CSR screening, still do not qualify as green or even transition. As such, CSR lending policies play an important but relatively passive role in fostering an economy aligned with a low carbon future. The ideal scenario would be for CSR lending policies to actively restrict financing only to sectors and activities that are aligned with a sustainable future. However, regulation support would be needed to create a level playing field and fair environment to enable the adoption of such approach.

For banks serving as structuring advisors in transition finance transactions, it is important to provide issuers with professional and impartial advice to uphold the integrity of green credentials in a transition finance deal. Since many contextual factors should be considered before classifying an activity as transitional, bank personnel must be equipped with the relevant expertise related to climate science to provide the best possible professional advice, and should also compile relevant data on potentially unintended consequences of an activity (i.e., do-no-significant harm).

Implications for Insurers

Insurers will influence transition financing, risk taking and risk management most directly through underwriting policies and as investors. It is important to note that the vast majority, if not all, of green financed project will require insurance.

The insurance industry plays a vital role in supporting banks in the financing and risk taking of large projects. Retrofitting buildings to green standards, for example, can only be accomplish with insurers bearing construction risks. Without insurers, out of pocket costs and potential loss will deter many entities from expensive decarbonising projects. As investors, insurance companies' large balance sheets are ideally suited to long term investments with stable return profiles.

In addition, Insurance Linked Securities (ILS) are unique 'bonds' that have underlying assets that are insurance policies providing coverage for a range of risks, typically environmentally linked, such as cover for windstorms, earthquakes and more. With ILS, it is possible to securitise green energy output coverage for solar farms with guaranteed pay outs if the installation cannot produce the required electricity due to reduced sunshine during the policy period. The same approach could be used for wind farms to remove the downside risk of lower than expected production due to lighter winds during a policy period. Through ILS, insurable risks can be transferred to investors and capital market participants. Such ILS bonds, if approved as qualifying ESG products, would create a new category for sophisticated investors.

Finally, insurers have the potential to speed up the transition by declining to cover certain risks. For example, coal fire power plants, from a certain date, will not be able to operate without the required insurance coverage for operations and staff. This approach can help incentivise owners to close businesses that are no longer insurable.

Implications for Corporates

Research, innovation, and development of new low carbon technologies, methods, practices and alternatives for high footprint sectors is paramount. Our ability to transition the hard-to-mitigate sectors relies heavily on the availability of viable solutions that can be adopted on a commercial scale. Thus, it is crucial for corporations in brown or transitional sectors to devote resources to R&D to "future proof" the business for climate transition. In the same vein, the recommendations of TCFD describes the imperative for all institutions to become climate resilient and provide high-level guidance on the risks and opportunities for corporations related to the climate transition.

In addition to whether specific corporate activities are in line with climate transition, investors and stakeholders will also consider whether corporations at the entity level are aligned with the climate goals. Specifically, whether corporations have relevant overarching business strategies and targets established, and whether internal processes cover relevant safeguards to avoid or minimise potential harm to the environment.

Implications for Investors

Investors are a diverse group with unique strategies and constraints, but with the same goal of earning an adequate risk-adjusted return on the capital allocated. Investors who incorporate ESG will naturally consider transition finance/bonds as part of their fixed income allocation as long as there is an adequate risk-adjusted return on capital and the contribution to the transition is credible.

However, investors must also calibrate expectations on the positive impacts from the use of proceeds of transition bonds. Investors must be ready to appreciate the contextualisation of each transition bond, since the journey varies across industries and geographies. What this means is that unlike the green label (to some extent) or even a credit rating, investors cannot accept nor reject solely based on the "transition label". Investors must be ready to give credit, where the transition story of the issuer is credible,

and the transaction is meaningful. Transition bonds will still generate positive impact, though to a lesser extent than their green counterparts. If the real economy actor has no better feasible alternatives despite credible intentions, then the worst outcome is a conventional bond in lieu of the transition bond. This is not to justify any transition labelled bond's existence or credibility. The point is that investors, while managing their own internal investment considerations, should balance their preferences with the transition story from the issuer's perspective.

Investors can contribute greatly to the transition bond space by publicly stating their desire to commit capital to such bonds, disclosing how they will tackle contextualisation of transition bonds, while accounting for privacy and confidentiality concerns, thereby building market consensus towards transition finance.

Investors will also need to report to their beneficiaries regarding capital allocation to transition bonds and the associated positive impacts. It is likely that such communication will be dictated by regulation. For European investors, this type of reporting will have to operate within the boundaries of the EU disclosure regulations and the EU taxonomy, which has its own definition of 'transition activities'¹¹⁷. Communicating such information in a diverse group of beneficiaries will be highly challenging. Thus, investors will have to be transparent on their capital allocation objectives and how the transition bonds contribute to those objectives.

Implications for External Reviewers

External review is used to confirm the alignment of an issuance—be it green, social or sustainable—with key features of a relevant international, regional or national standard¹¹⁸. In the context of climate transition, external reviewers will be relied on to make robust assessments on the transparency and validity of contextualisations.

The evolving nature of "transition" criteria could be challenging for issuers to navigate. External review providers, together with other market participants, such as standard setters, academics, green advisors and NGOs, could help bring more clarity by working to establish transition-specific guidelines and principles, and providing clear and evidence-based assessment in the delivery of opinions.

Because what qualifies as an acceptable transitional activity today may not qualify in 5- to 10-years' time, the timeframe of activities is critical; specifically, the time of the issuance, use of proceeds and the lifetime of the underlying assets. As such, issuance-based external review as opposed to framework-based external review may provide more accurate and reliable assessments for transitional activities.

Globally, external review is a recommended process, and in the case of the Climate Bonds Standard and the awaited EU Green Bond Standard, is mandatory and needs to be provided by an approved verifier. In places like Hong Kong SAR and Singapore, external review is also mandatory under government-led grant schemes for green or sustainable bonds (Appendix C). External review should be strongly encouraged.

8 Conclusion

Several green finance tools and definitions exist to promote climate transition, but in order to contextualise, we need to evolve new tools to further expedite and achieve greater mobilisation.

Particularly, sectors and industries that are historically high-emitting or that face constraints to decarbonise are arguably the players that require even greater resources and assistance. Due to the nature of the industries and constraints faced, however, these sectors may not have access to traditional green or climate finance. The steel, cement, and energy sectors are examples. These sectors are fundamental to our economy and demand for these products will remain for the foreseeable future. While they may be relatively high emitting today, they still have key contributions to make in the fight against climate change.

To capture this financing need, a new “transition” label is emerging to encompass activities that may not be able to become entirely green today, but their credible and ambitious improvements will be instrumental as steps toward a net-zero world. Clarity on the definition of transition would facilitate greater capital flows towards our climate goals.

In order to align our economy with the urgent goals of the Paris Agreement, green finance, climate finance, and climate transition finance are needed at the same time. Although climate policies in China and Hong Kong SAR are converging to international standards, the topic of transition finance remains vague. Successful transition finance strategies should be based on SBTs, include a clear framework for partially satisfactory activities, address the unique constraints of each economic actor, and has the ability to access climate contribution on both activity level and real economic actor level.

We hope this paper will inspire more global dialogue on transition finance, especially with a contextualising approach. In addition to governments, bankers, insurers, corporates, investors, and external reviewers all have important roles to play in safeguarding the robustness of this field. As technical thresholds and constraints evolve quickly, it is essential for all stakeholders to keep up with the newest industry updates, regularly reevaluate constraints, and plan ahead to phase out existing transitional activities.

Last but not least, we included a question-based framework (Appendix D) to help guide other Asian countries, sectors, and companies to propose their own transitions. Individually and in collaboration, we bear the responsibility to take urgent, decisive actions to accelerate transitions to reach our goals of limiting temperature rise below 2°C and achieving net-zero emissions by 2050.

Appendices

A Article 10(2) ‘Substantial contribution to climate change mitigation’ of the EU Taxonomy Regulation

Source: EU Taxonomy. REGULATION (EU) 2020/852 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 18 June 2020 on the establishment of a framework to facilitate sustainable investment, and amending Regulation (EU) 2019/2088. <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32020R0852&from=EN>

Article 10(2)

For the purposes of paragraph 1, an economic activity for which there is no technologically and economically feasible low-carbon alternative shall qualify as contributing substantially to climate change mitigation where it supports the transition to a climate-neutral economy consistent with a pathway to limit the temperature increase to 1,5 0 C above preindustrial levels, including by phasing out greenhouse gas emissions, in particular emissions from solid fossil fuels, and where that activity:

- (a) has greenhouse gas emission levels that correspond to the best performance in the sector or industry;*
- (b) does not hamper the development and deployment of low-carbon alternatives; and*
- (c) does not lead to a lock-in of carbon-intensive assets, considering the economic lifetime of those assets.*

For the purpose of this paragraph and the establishment of technical screening criteria pursuant to Article 19, the Commission shall assess the potential contribution and feasibility of all relevant existing technologies.

B EU Climate Transition Benchmarks

Source: Regulation (EU) 2019/2089 of the European Parliament and of the Council of 27 November 2019 amending Regulation (EU) 2016/1011 as regards EU Climate Transition Benchmarks, EU Paris-aligned Benchmarks and sustainability-related disclosures for benchmarks

EU Climate Transition Benchmarks

An **EU CTB** means a benchmark that is labelled as an EU Climate Transition Benchmark where the underlying assets are selected, weighted or excluded in such a manner that the resulting benchmark portfolio is on a decarbonisation trajectory and is also constructed in accordance with the minimum standards laid down in the delegated acts.³

An **EU PAB** means a 'benchmark that is labelled as an EU Paris-aligned Benchmark where the underlying assets are selected in such a manner that the resulting benchmark portfolio's GHG emissions are aligned with the long-term global warming target of the Paris Climate Agreement and is also constructed in accordance with the minimum standards laid down in the delegated acts'.

These two benchmarks pursue similar objectives but vary in their level of ambition¹²⁰:

- **EU CTB** can be perceived as tools to "accompany" the transition to a low-carbon economy.
- **EU PAB** can be perceived as tools for investors at the forefront of the transition, favouring today the players of tomorrow's economy.

Article 7 *Setting a decarbonisation trajectory* of Chapter II of the Delegated regulation - C(2020)4757 as regards minimum standards for EU CTB and EU PAB¹²¹:

"1. The decarbonisation trajectory for EU Climate Transition Benchmarks and EU Paris-aligned Benchmarks shall have the following targets:

- (a) for equity securities admitted to a public market in the Union or in another jurisdiction, at least 7 % reduction of GHG intensity on average per annum;*
- (b) for debt securities other than those issued by a sovereign issuer, where the issuer of those debt securities has equity securities admitted to a public market in the Union or in another jurisdiction, at least 7 % reduction of GHG intensity on average per annum or at least 7 % reduction of absolute GHG emissions on average per annum;*
- (c) for debt securities other than those issued by a sovereign issuer, where the issuer of those debt securities does not have equity securities admitted to a public market in the Union or in another jurisdiction, at least 7 % reduction of absolute GHG emissions on average per annum.*

2. The targets referred to in paragraph 1 shall be calculated geometrically, which shall mean that the annual minimum 7 % reduction of GHG intensity or of absolute GHG emissions for year 'n' shall be calculated based on the GHG intensity or absolute GHG emissions for the year n-1, in a geometric progression from the base year."

C External Review Requirements in Existing Principles, Guidelines, Standards and Policies

Organisation	Principles/Guidelines/Standards	Geographical coverage	Position on external reviews
ICMA	Green Bond Principles / Social Bond Principles / Sustainability Bond Guidelines / Sustainability-Linked Bond Principles	Global	Voluntary but recommended
CBI	Climate Bonds Standard V3.0	Global	Mandatory (by an approved verifier ¹²³)
European Commission	EU Green Bond Standard ¹²² (<i>under consultation by 2 October 2020</i>)	EU	Mandatory (by an approved verifier)
PBoC, China Securities Regulatory Commission (CSRC)	Interim Guidelines on the Assessment and Certification of Green Bond (December 2017)	Mainland China	Voluntary but encouraged
National Association of Financial Market Institutional Investors (NAFMII)	Guidelines on Green Notes of Non-Financial Enterprises (《非金融企业绿色债务融资工具业务指引》) (March 2017)	Mainland China	Voluntary but encouraged
CSRC	Guiding Opinions on Supporting the Development of Green Bonds (《中国证监会关于支持绿色债券发展的指导意见》) (March 2017)	Mainland China	Voluntary but encouraged
PBoC	Announcement on Matters concerning the Issue of Green Financial Bonds in the Interbank Bond Market (《银行间债券市场发行绿色金融债券有关事宜公告》) (December 2015)	Mainland China	Voluntary but encouraged
PBoC, NDRC & CSRC	Green Bond Endorsed Project Catalogue (2020 Edition) (Consultation Draft) (《绿色债券支持项目目录(2020年版)》(征求意见稿))	Mainland China	N/A
PBoC, China Banking and Insurance Regulatory Commission (CBIRC), CSRC, State Administration of Foreign Exchange (SAFE)	Opinions on Financial Support for the Development of the Guangdong-Hong Kong-Macao Greater Bay Area (《关于金融支持粤港澳大湾区建设的意见》) (May 2020)	Greater Bay Area (GBA)	Encouraged
Hong Kong SAR Government	Green Bond Grant Scheme (GBGS)	Hong Kong SAR	Mandatory (HKQAA certification)
Monetary Authority of Singapore (MAS)	Sustainable Bond Grant Scheme	Singapore	Mandatory
ASEAN Capital Markets Forum (ACMF)	ASEAN Green Bond Standards (October 2018) ¹²⁴	ASEAN	Voluntary but recommended

D Framework for Other Asian Entities to Propose Their Own Transition

Background

Whilst there are many governments and institutions already mobilising resources to formulate transitional pathways and investment plans, many others have not yet started or might have started but need guidance to progress.

To assist, this section outlines some key questions to envisage the current landscape and create a tailored approach for specific countries or sectors.

The questions are split into two sections: 1) Government and sector agnostic institutions; and 2) Corporates. These questions are in no way exhaustive, but are designed to help improve understanding, facilitate effective discussions, and guide the idea shaping process.

Guiding questions for governments and sector agnostic institutions

- What are the carbon intensive sectors significantly contributing to your country's emissions levels?
 - o Climate transition finance is most relevant for carbon-intensive sectors that lack access (technological, or financial, or other factors) to decarbonisation.
- Are these sectors economically significant, with no alternative replacement in the short or medium term (SMT)?
 - o If these carbon intensive sectors can be phased down easily (because of small size) and employment re-trained in the SMT, then climate transition finance to decarbonise the sector is less relevant
- Which of these sectors already have defined emissions targets / thresholds (national, regional or other local level)?
 - o If the carbon intensive sectors are significant and without alternative in SMT, then they should begin decarbonising. Existing frameworks, targets, etc. for the decarbonisation trajectory can be useful.
- Are there any international standards for greening /decarbonising these sectors that could be made relative to your geography?
- Are there any country level cross body agencies or industry organisations focused on the research and implementation of climate change or climate transition policy and efforts? What are the key initiatives or roadmaps of decarbonisation that contributes to the national targets / thresholds?
- Would it be possible to create a local standard / emissions threshold for your country or sector for corporates to implement in Near-term / Long-term?
- Would it be possible to refer to science (i.e., systematic reference to science-based scenarios, or absolute levels such as carbon budgets), to official country/regional/international targets (Paris Agreement, net-zero goals, SDGs, etc.), or to recognised Best-Available-Technologies or other proxies to determine relevant targets across environmental and social themes?
- Are there any ESG disclosure requirements for these high emitting sectors?
- Are there any databases or publicly available information on the ESG indicators that companies in these high emitting sectors should consider monitoring and reporting on
- Are there any incentive (both positive and negative) for institutions in your country that are best performers / laggards in regard to climate emissions level / ESG KPI monitoring and reporting?
- Is there an existing concept of green finance/ climate finance for you as a country? How can a concept of 'climate transition finance' build but not harm the development/uptake of 'green/climate finance'?
- Are you following the efforts of the International Platform on Sustainable Finance (IPSF), which facilitates policy dialogue between governments to promote best practices, compare different initiatives and identify barriers and opportunities of sustainable finance, while respecting national and regional contexts?
- Does the government have ownership along the value chain of the industry to make a change through incentivising or penalising?

- In the government's view are there any other noteworthy inhibitors in financing transition projects in these sectors?

Guiding Questions for Corporates

- Do you systematically assess environmental impacts of your company's operations (including minimising unintended side-effects), not only on climate change, but also on other environmental challenges (e.g., protection of ecosystems)?
- Do you capture GHG emissions data on your operations? Is this widely done in your sector? What about your peer group?
- Can you calculate the contribution of your emissions vs the total emissions from your sector?
- Does your sector already have defined emissions targets / thresholds (national, regional or other local level? Industry body,etc)?
- Are there any international standards for decarbonisation in your sector?
- Are you part of any industry organisation or working group focused on the research and implementation of climate change or climate transition policy and efforts in your sector? If so, what are their key initiatives and roadmap for greening /decarbonising your sector?
- Is your corporate strategy and operation aligned with those emission targets/thresholds/standards in the short term or long term?

- Do you have a "transition" sustainability target / strategy?
- How would you translate such strategy into actions plans?
- Do you already report on scope 1,2,3? What methodology do you use? Do you disclose the calculation methodology you use and your assumptions (if any)? If you do, do you get this sustainability/ ESG reporting audited?
- Would you link your CAPEX plan to the "transition" sustainability target / strategy?
- What are the obstacles for the sector to decarbonise / become cleaner?
- Would government involvement help encourage you / your sector (thorough incentivising or penalising) to decarbonise?
- In your views are there any other noteworthy inhibitors in financing transition projects?
- Do the ESG rating agencies capture GHG / emissions data for you or your sector?
- How do you rank in terms of sustainability in your industry?
- Is there is an existing concept of green finance/ climate finance for you as a corporate? How can a concept of 'climate transition finance' build but not harm the development/uptake of 'green/climate finance'?

Endnotes

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103. The **EU Taxonomy** is a classification tool aimed at investors, companies and financial institutions to define environmental performance of economic activities across a wide range of industries, and sets requirements corporate activities must meet to be considered sustainable.
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105. Ecological Civilisation is a term that describes the set of values and development concepts in China, which encompasses not only the environmental, economic and social components, but also the political and cultural elements. It places an emphasis on "Putting People First", which aims to improve people's quality of life within ecological limits. Therefore, the term is sometimes described as sustainable development with Chinese characteristics. (Hanson, A. 2019. "Ecological Civilisation in the People's Republic of China: Values, Action, and Future Needs". ADB East Asia Working Paper Series No.21.)
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116. <https://www.climate-transparency.org/wp-content/uploads/2019/01/2018-BROWN-TO-GREEN-REPORT-FINAL.pdf>
117. Article 5 of the EU taxonomy regulation
118. <https://www.icmagroup.org/assets/documents/Regulatory/Green-Bonds/Guidance-Handbook-April-2020-050620.pdf>
119. "Paragraph 1" refers to the first paragraph of Article 6, where it defines that "an economic activity shall be considered to contribute substantially to climate change mitigation where that activity substantially contributes to the stabilisation of greenhouse gas concentrations in the atmosphere at a level which prevents dangerous anthropogenic interference with the climate system by avoiding or reducing greenhouse gas emissions or enhancing greenhouse gas removals through any of the following means, including through process or product innovation, consistent with the long term temperature goal of the Paris Agreement".
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