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Greening Brown Sectors through Transition Finance

Financing not-so-green industries' environmental transition could really move the climate needle.

Directing capital away from carbon-intensive sectors and only financing green sectors may fail to achieve green transition targets.

Transition finance plays a critical role in addressing climate challenges.

Research suggests that the transition finance logic works and has promising potential.

Climate change is one of the most urgent challenges facing humanity today. According to the Intergovernmental Panel on Climate Change (IPCC), global temperatures in the past 50 years have risen at the fastest rate over two millennia.[1] To address this alarming trend, 196 parties at the 2015 United Nations Climate Change Conference adopted the Paris Agreement. This landmark treaty commits all signatories to actions aimed at limiting the global temperature rise to below 2°C above pre-industrial levels, with an aspirational target of 1.5°C. However, achieving these targets requires decarbonisation, with a critical focus on transforming 'brown' sectors, which are industries heavily reliant on processes or energy sources that are challenging to decarbonise, such as the fossil fuel-dependent energy sector.

In Asia, unique regional factors make this energy transformation particularly complex and slow-moving. Many economies in the region not only remain heavily reliant on fossil fuels, but they also suffer from having limited capacity to produce renewable energy due to geographic and climatic constraints. Additionally, the intermittent nature of renewable energy sources further complicates their role as a reliable and stable energy solution. For example, the Southeast Asia Energy Outlook 2024 by the International Energy Agency (IEA) projects that renewable energy demand in Southeast Asia under current policies will increase by 184 percent, from 6.2 exajoules in 2023 to 17.6 exajoules by 2050. If all announced energy

and climate targets are met, this demand could surge by 376 percent, reaching 29.5 exajoules by 2050.[2] However, as total energy demand continues to grow, reliance on fossil fuels remains significant. In some scenarios, combined demand for oil, natural gas, and coal is projected to rise by as much as 37 percent.[3] These findings underscore that while renewable energy is becoming a more viable alternative, achieving systematic energy transformation across Asia remains a complex and lengthy process.

In this article, we explain why the conventional approach to green finance may fall short of meeting green transition targets. We also highlight why it is critical to adopt transition finance as a new strategy to effectively engage brown sectors in our efforts to address climate change. We also take the opportunity to introduce new tools and approaches such as blended finance, which combines the use of public and philanthropic funds, and private capital to support decarbonisation initiatives. Insights from our research on Chinese firms also tell us that reducing debt costs can incentivise greener activities, suggesting the feasibility of transition finance.

WHY WE NEED TRANSITION FINANCE

Transforming brown sectors requires substantial financial resources. IEA estimates that achieving net-zero emissions by 2050 will demand annual energy sector investments of nearly US$4 trillion from 2030 onwards.[4] While the global financial sector is increasingly adopting sustainable investment practices to support the energy transition, one question remains: can these investments effectively deliver sustainable outcomes?

Traditionally, sustainable investment has focused on either divesting from or reducing investment in brown sectors like fossil fuel-driven ones, while channelling funds towards green sectors. By raising the cost of capital for brown firms, this approach aims to pressure them into adopting greener practices, while simultaneously providing green firms with more affordable financing. However, recent academic research indicates that such current sustainable investment practices may be ineffective, or even counterproductive, in reducing carbon emissions. For instance, providing funds exclusively to green firms has limited potential to significantly lower global emissions. This is because high-emitting firms not only produce 1,700 times more emissions than low-emitting firms, but their emissions are also far more sensitive to changes in capital costs.[5] As a result, by prioritising capital for green firms and restricting funding for brown firms, we may miss the opportunity to unlock the substantial emissions reduction potential of high-emitting industries if we only rely on sustainable investment.

In addition, the success of the green transition depends heavily on significant advancements in green technologies. As a United Nations Environment Programme (UNEP) report highlights, continued innovation to reduce the costs of renewable energy technologies such as solar and wind paves the way for renewable energy to potentially supply the majority of global electricity in the future.[6] Surprisingly, the primary drivers of green technology innovation are brown firms.[7] Analysis of green patents reveals that brown firms generate more, and often higher-quality, sustainability-related innovations, with many classified as 'blockbuster' patents. Without adequate funding support, these firms may face setbacks in advancing green innovation, ultimately delaying global decarbonisation efforts.

Moreover, restricting brown firms' access to affordable financing can unintentionally result in higher emissions. Evidence shows that financially-constrained brown firms often increase carbon emissions to boost short-term cash flow while scaling back efforts towards long-term carbon reduction.[8,9] As a result, diverting capital away from brown firms fails to provide them with the necessary incentives to adopt renewable energy or pursue greener practices. In fact, financial constraints may compel these firms to prioritise emissions over abatement, leading to even greater environmental damage.

Therefore, brown firms should not be entirely excluded from receiving financial support. As a result, a new investment strategy, specifically transition finance, has been introduced to facilitate the global green transition more effectively. First proposed by the Organisation for Economic Co-operation and Development (OECD) in 2019, transition finance aims to

support sectors that are not yet fully sustainable but are committed to progressing towards sustainability over time. This approach emphasises the dynamic process of transformation, focusing on long-term progress rather than a static evaluation of current practices.

According to the Glasgow Financial Alliance for Net Zero, transition finance includes "investment, financing, insurance, and related products and services necessary to support an orderly real-economy transition to net zero".[10] In essence, transition finance involves providing financial support to brown sectors to help them adopt greener practices through credible transition targets, taxonomy frameworks, and technology roadmaps. Successful implementation requires the development of credible transition plans with clear, time-bound targets for reducing greenhouse gas emissions. Despite its significant potential, transition finance remains in its early stages of development.

TRANSITION FINANCE INSTRUMENTS

Transition finance has garnered significant global attention, spurring the development of numerous frameworks, guidelines, and policies. A notable example is the Group of Twenty (G20) Transition Finance Framework (G20 TFF) unveiled at the 2022 G20 Summit. This framework outlines 22 high-level principles across five pillars, providing comprehensive guidance for countries to establish robust transition finance systems. It is widely regarded as the most comprehensive transition finance framework to date.

Before the launch of the G20 TFF, other influential guidelines were introduced by non-governmental organisations (NGOs) and governments, including the *Climate Transition Finance Handbook* by the International Capital Market Association, *Financing Credible Transitions* by the Climate Bonds Initiative, and the *Basic Guidelines on Climate Transition Finance* issued by the Japanese government. However, these frameworks and guidelines are still in their early stages of development, lacking comprehensive details and comparability, and requiring further refinement to address the complexities of transition finance. As the field matures, these initiatives are expected to evolve into more robust and actionable systems.

The financial market is evolving with innovative instruments designed to support green transition, particularly in the bond market. One prominent example is sustainability-linked bonds (SLBs), a groundbreaking debt instrument that ties interest payments to sustainability-related Key Performance Indicators or KPIs. This structure incentivises brown firms to adopt greener practices. Another example is transition bonds, whose proceeds are dedicated to funding green transition projects. Unlike traditional sustainable investment, which primarily focuses on already-green firms, transition bonds are specifically tailored for brown firms seeking to transform themselves. Additional instruments in transition finance include sustainability-linked loans or SLLs and labelled transition bonds or loans, each offering unique mechanisms to promote sustainable practices.

Transition finance instruments have seen remarkable growth since their introduction in December 2018. By the end of 2023, the cumulative issuance of SLBs reached US$48.6 billion. Although the SLB market is still smaller than that for traditional sustainability bonds such as green bonds, it has demonstrated rapid expansion in recent years. In 2023 alone, the issuance of SLBs increased year-on-year by 95 percent.[11] Notably, the utilities and industrial sectors—both crucial to global decarbonisation—are the leading issuers of SLBs.

Policymakers across Asia are increasingly emphasising transition finance to drive sustainable development. The Japanese government has taken a leading role by promoting transition finance to support industries in their shift towards sustainability. Japan currently leads the world in transition bond issuance, with plans to issue approximately 20 trillion yen (US$133 billion) in sovereign transition bonds over the next decade, which could unlock up to 150 trillion yen (US$1 trillion) of transition investments.[12] Similarly, in 2021, the People's Bank of China initiated research on transition finance and established foundational principles for its implementation.[13] The bank is developing transition finance standards for four critical sectors: steelmaking, coal power, construction materials, and agriculture. That same year, one of China's bond markets launched a pilot programme for transition bonds to provide financial support for high-emitting industries. Additionally, provinces and cities such as Hebei, Tianjin, and Guizhou have introduced tailored guidelines to advance transition finance in key sectors like steel, chemicals, construction materials, and non-ferrous metals. While still in its early stages in China, transition finance holds significant potential to become a cornerstone of the country's sustainable economic growth. These efforts provide valuable lessons for other countries seeking to establish their own transition finance frameworks.

Clear and well-defined transition plans are vital for transition finance, providing structured frameworks to steer investments into sustainable economic activities. The Singapore-Asia Taxonomy for Sustainable Finance (Singapore-Asia Taxonomy), launched by the Monetary Authority of Singapore in December 2023, marks a significant milestone as the world's first multi-sector transition taxonomy.[14] This comprehensive framework establishes detailed thresholds and criteria to define green and transition activities across eight key sectors, including energy, transport, and real estate. By introducing a 'transition' category, it acknowledges the gradual journey towards sustainability, enabling capital to flow towards activities that demonstrate credible progress to achieving environmental goals.

The importance of taxonomies like the Singapore-Asia Taxonomy lies in their ability to provide clarity and consistency in classifying economic activities. This clarity is essential for financial institutions, investors, and policymakers to make well-informed decisions aligned with sustainability objectives. The taxonomy uses a 'traffic light' system—green, amber, and red—to categorise activities based on their environmental impact and transition potential. This nuanced approach helps stakeholders distinguish between fully sustainable activities, those on a transition pathway, and those misaligned with sustainability goals. By doing so, it mitigates the risk of greenwashing and strengthens the credibility of transition finance initiatives.

Alongside transition taxonomies, technology roadmaps play a crucial role in steering industries towards decarbonisation. For example, Japan has developed technology roadmaps for key sectors such as iron and steel, cement, and chemicals, which form an integral part of its transition finance framework. These roadmaps identify viable technologies and establish clear pathways for reducing greenhouse gas emissions within each sector. By providing detailed guidance on technological advancements and investment priorities, they help companies design and

implement effective transition strategies. Additionally, they equip investors and financial institutions with the insights needed to assess the feasibility and credibility of transition plans, enabling the allocation of capital to projects that make meaningful contributions to a low-carbon economy.

LEVERAGING BLENDED FINANCE FOR TRANSITION

The immense financial resources needed for the green transition highlight the critical importance of mobilising private capital. However, transition finance often entails considerable risks for investors, particularly with regard to renewable energy adoption and concerns about below-market returns on such projects. Blended finance offers a strategic solution by combining public or philanthropic funds with private capital to support decarbonisation in high-emission sectors. One key advantage of blended finance is its ability to distribute returns from sustainable projects in line with the risk appetite of participating entities. For example, public and philanthropic capital can accept concessional (below-market) returns, enabling private investors to achieve more attractive risk-adjusted returns than would be possible through direct investments. By mitigating risks, blended finance encourages greater private sector participation in transition projects, unlocking the funding needed to accelerate the green transition.

According to Convergence, a specialised NGO focused on the blended finance market, 1,123 blended finance transactions have been recorded in its database, amounting to a total investment of US$213 billion.[15] Energy-related transactions, predominantly focused on renewable energy development, represent the largest segment of the blended finance market, encompassing 319 deals with a combined value of US$101 billion.[16]

Singapore has taken significant steps towards leveraging blended finance for the green transition. At the 28th Conference of the Parties or COP28 in 2023, Singapore introduced the Financing Asia's Transition Partnership (FAST-P), a blended finance initiative designed to accelerate the region's green transition. The initiative will draw concessional funds from governments, multilateral development finance institutions, and philanthropic organisations, including a US$500-million commitment from the Singapore government and US$50 million from the Australian government. These concessional funds, expected to total US$1 billion, aim to mobilise private capital, ultimately generating up to US$5 billion in total investments. The combined funds will be directed towards critical projects that include energy transition, clean technologies, sustainable infrastructure and so on.[17,18]

FEASIBILITY OF TRANSITION FINANCE: INSIGHTS FROM RESEARCH

While the concept of transition finance is logically sound and is gaining traction among policymakers worldwide, there is still no systematic empirical evidence to confirm its effectiveness. A key question remains: Does reducing the cost of capital incentivise green transitions, especially for high-emission firms? To address this, our study aims to empirically test the core premise of transition finance by analysing data from China.

In collaboration with the Central University of Finance and Economics in China, we gathered data on firm-level transition paths–or 'greenness'–for all listed companies in China. Greenness is defined as the percentage of a firm's revenue derived from green activities, offering a practical measure of green transition. This metric captures fundamental changes in business models and aligns closely with transition taxonomies. Moreover, it is more forward-looking and less susceptible to greenwashing compared to conventional measures like greenhouse gas emissions. Our analysis shows a significant correlation between lower costs of capital, measured by firms' debt costs, and higher revenue from green activities, particularly among brown firms. These findings indicate that reducing debt costs can incentivise firms to expand their green activities and transition towards greener business models.

We find consistent evidence that firms' green transitions are linked to lower equity costs when measured using the implied cost of equity, defined as the discount rate that equates future cash flows with the current stock price. To validate these findings, we expanded our analysis to a global sample of listed firms, measuring their greenness based on alignment with the EU Taxonomy. The global analysis confirms that lower capital costs are associated with wider-scale green transitions, suggesting that our findings are not unique to China but are broadly applicable to other countries.

Although the financing mechanisms examined in our study are not explicitly labelled as "transition finance", the empirical findings strongly support the theoretical foundations of transition finance and highlight its potential as a critical tool for accelerating green transitions. By demonstrating a strong correlation between lower capital costs and higher revenues from green activities, this study validates the core premise of transition finance. It emphasises the importance of providing financial support to brown firms to unlock their potential for significant emissions reductions and foster innovation in green technologies. Additionally, the findings underscore the risks of excluding brown firms from affordable financing, which could hinder global decarbonisation efforts.

UNLOCKING THE POTENTIAL OF TRANSITION FINANCE

Transition finance offers a groundbreaking pathway to address the dual challenge of reducing carbon emissions while maintaining economic growth. By strategically channelling financial resources to high-emission industries committed to change, we can unlock a powerful catalyst for decarbonisation and green innovation. As Asia grapples with its reliance on fossil fuels and the complexities of renewable energy adoption, transition finance emerges not just as an investment strategy, but as a transformative force for sustainable development. To fully realise its potential, various stakeholders, ranging from governments and financial institutions to businesses and NGOs, must collaborate to establish robust frameworks, credible targets, and clear accountability mechanisms. This collective effort can pave the way for a resilient and sustainable future, demonstrating that even the hardest-to-transform sectors can lead the charge towards a greener tomorrow. AMI

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