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Enhancing Transition Finance via Blended Finance: A Landscape Review

Introduction

Transition finance (TF) is the financing of the transition to a low-carbon, climate-resilient economy and in this era, it plays a crucial role in driving sustainable development and addressing climate change. For instance, TF focuses on supporting companies in adopting more sustainable business models and practices. It also involves financing projects that contribute to environmental and social progress while maintaining financial viability. Hence, it can be used to finance a wide range of activities, including:

- Investing in renewable energy and other clean technologies
- Developing and deploying new climate-friendly products and services
- Retrofitting existing infrastructure to make it more efficient and sustainable
- Helping businesses and households to transition to a lower-carbon lifestyle, etc.

This article identifies and discusses the:

- Challenges and Opportunities of TF
- What we have learned in the Singapore context
- Examples of promising results from Blended Finance
- Conclusion on the importance of Public-Private-People partnerships to address climate related risks.

Challenges in TF

TF is essential to achieve the goals of the 2015 United Nations (UN) Paris Agreement, which aims to limit global warming to well below 2 degrees Celsius above pre-industrial levels. However, there are several challenges that need to be addressed first in order to scale up TF, as illustrated in Table 1.

Despite these challenges, TF is potentially a growing market with significant opportunities for investors and other market participants. The global transition to a low-carbon economy is expected to generate trillions of dollars in investment opportunities over the next couple of decades.[1,2,3] Effective TF, though, requires the integration of Environmental, Social and Governance (ESG) factors into investment decisions. This ensures that investable projects align with ESG criteria, driving positive impact alongside financial returns.

Addressing These Challenges

For TF to take off, there are a few ways to address some of the challenges above, namely:

- Developing a common definition of TF: This would improve transparency and comparability of TF products and services.
- Improving data and disclosure: Financial institutions (FIs) and other market participants are encouraged to disclose more information about their climate performance and their exposure to climate risks. This

Table 1: Challenges in TF

Lack of a Common Definition	There is currently no universally accepted definition of TF. This makes it difficult for investors and other market participants to identify and assess TF finance opportunities.
Data and Disclosure Gaps	There is a lack of comprehensive and reliable data on the climate performance of companies and other borrowers. This makes it difficult for investors to assess the risks and opportunities associated with TF investments.
High Transaction Costs	The costs of developing and structuring TF transactions can be high. This is particularly true for smaller and less experienced companies, emerging markets and investors.
Limited Market Liquidity	The market for TF instruments is still relatively new and illiquid. This can make it difficult for investors to buy and sell these instruments when they want to.
Regulatory Uncertainty	There is some regulatory uncertainty around TF. This can make it difficult for financial institutions to develop and offer TF products and services.
Risk of Greenwashing	There is a risk that some companies and investors may use TF to "greenwash" their activities, i.e., to make them appear more climate-friendly than they are actually. This can undermine the credibility of the TF market.

Source: Transition Finance: New Opportunities and Challenges for Financial Institutions. Baker McKenzie, 2023; Three Key Challenges in Transition Finance. Organisation for Economic Co-operation and Development (OECD) iLibrary, 2023; Transition Finance: Challenges and Opportunities. World Economic Forum, 2022

would help investors to make more informed decisions about TF investments.

- Reducing transaction costs: Governments and FIs can work together to reduce the transaction costs associated with TF projects, perhaps through a blended finance or small-scale and mini- or small-scale public-private partnership (mini-PPP) approach. This would make TF more accessible and palatable to smaller and less experienced companies and investors by reducing the investment risks at various stages of the lifecycle of the projects, for example.

- Increasing market liquidity: Governments and FIs can work together to increase the liquidity of the market for TF instruments. This would make it easier for investors to buy and sell these instruments when they want or need to.

- Reducing regulatory uncertainty: Governments should provide clear and predictable regulatory guidance on TF. This would incentivise FIs to develop and offer TF products and services.

- Addressing the risk of greenwashing: Governments and regulators should develop mechanisms to prevent greenwashing in the TF market. This would help to maintain the credibility of the market.

Opportunities in TF

Despite the challenges it faces, TF is a growing market with significant opportunities for investors and other market participants. While TF presents opportunities for sustainable growth, it also faces challenges such as measurement and reporting of impact and the misplaced perception that it must involve the financing of megaprojects. Overcoming these obstacles can lead to significant positive environmental and social outcomes. In addition, the global transition to a low-carbon economy is expected to generate trillions of dollars in investment opportunities over the coming decades.

Here are some of the key opportunities of TF:

- Investment in new technologies: TF can be used to invest in the development and deployment of new clean technologies, such as renewable energy, energy storage, and electric vehicles. These technologies are essential for reducing greenhouse gas emissions and achieving the goals of the Paris Agreement.

- Retrofitting existing infrastructure: TF can be used to retrofit existing infrastructure, such as buildings and transportation systems, to make them more efficient and sustainable. This can help to reduce energy consumption and greenhouse gas emissions.

- Helping businesses and households to transition: TF can also be used to help businesses and households transition to lower-carbon emissions. This can include financing investments in energy efficiency measures, renewable energy systems, and electric vehicles.

FIs could grow their green asset base while catalyzing TF through issuing green bonds and investing the proceeds in climate solutions and sustainable companies and address the transition assets, thus recognizing their importance in the net zero pathway. Furthermore, retail and institutional investors could also subscribe to these green bonds thus widening the investor base, indirectly enhancing blended finance with the diversified investor base.

In addition, FIs could still purchase higher emissions investments, but through their stakeholder engagement approach and efforts, help the owners of these brown assets to decarbonize faster than planned and that is an important pathway towards net zero.

With so much focus on emissions reduction, the easiest way to meet a target is to just sell an asset. But, for true TF, the sale of an asset may not reduce emissions

immediately because it might involve taking on a high-emission investment which would be taken down intentionally in future years. Most importantly, these transition efforts would lead to real-world emission reductions.

In addition to these specific measures, it is also important to create a supportive environment for TF to succeed or catalyse TF activities. These include:

- Raising awareness of TF: Governments, FIs, and other stakeholders should work together to raise awareness of TF among investors and other market participants.
- Building capacity: Governments and FIs should provide training and support to help market participants to develop the skills and knowledge they need to engage in TF.
- Promoting collaboration: Governments, FIs, and other stakeholders should work together to promote collaboration and knowledge-sharing on TF and to finance prototype smaller-scale projects which have the potential to expand, making such financing more palatable for other investors.

TF in Singapore

In Singapore, the Monetary Authority of Singapore (MAS)[4,5] has adopted a few plans to support TF. These include:

- Developing a regulatory framework for TF: MAS is working to develop a regulatory framework that will support the development and deployment of TF products and services. This framework will set clear expectations for FIs on how to manage climate risks and support their customers in the transition to a low-carbon economy.
- Promoting innovation in TF: MAS is working to promote innovation in TF by supporting the development of new TF products and services, and by creating a sandbox environment where FIs can test and deploy new innovations.
- Building capacity in TF: MAS is working to build capacity in TF by providing training and support to FIs and other stakeholders. This will help them to develop the skills and knowledge they need to engage in TF.
- Promoting collaboration on TF: MAS is working to promote collaboration on TF between FIs, governments, and other stakeholders. This will help to accelerate the development and deployment of TF products and services including transition credits.

In addition to these plans, MAS is also working to support TF through its own investments and operations. For example, MAS has committed to aligning its own portfolio with net zero greenhouse gas emissions by 2050. MAS is also working to reduce the environmental impact of its own operations.

By supporting the development and deployment of TF, MAS can help to accelerate the transition to a low-carbon economy and create a more sustainable future for Singapore. Further details can be found on MAS website.

In addition, Singapore is introducing new measures and enhancing existing ones to help businesses decarbonise and strengthen sustainability capabilities. They include:

1. The Energy Efficiency Grant (EEG), first launched in 2022, that co-funds businesses in energy-efficient equipment will be expanded to more sectors, including manufacturing, construction, maritime, and data centres and their users.
2. Enterprise Singapore (EnterpriseSG) will extend the Enterprise Financing Scheme-Green (EFS-Green) by two years, to support Singapore enterprises embarking on their sustainability journey. The scheme will enable better access to green financing for Singapore companies that develop green technologies and solutions.
3. Singapore Economic Development Board (EDB) will enhance the Resource Efficiency Grant for Emissions (REG[E]) by lowering the carbon abatement threshold from 500 tonnes per annum to 250 tonnes per annum, allowing more industrial facilities to access to the grant to undertake projects that improve their energy efficiency and reduce carbon emissions.
4. EDB and EnterpriseSG will launch a Sustainability Reporting Grant to support companies on their sustainability performance reporting journey. This is in view of increasing demand for companies to publish climate-related disclosures. Further details will be shared later this year.

Promoting TF in the ASEAN Region and Beyond via Blended Finance[6,7,8,9,10]

Around the region of southeast Asia, blended finance has also been proposed as a form of capital to actualize climate transition in emerging and developing economies. Innovative instruments and equity finance are needed to enhance risk-sharing through mini-PPP projects.[11] These smaller (in terms of funding) projects serve to reduce the risk of the projects being financed and make them more palatable to the risk appetite of private sector investors, including family offices and philanthropies, while at the same time, maximizing the impact of scarce public funds, e.g., in financing solar micro-grids, etc.[12]

As emerging market and developing economies account for two-thirds of global greenhouse gas (GHG) emissions, and many are highly vulnerable to climate hazards, these economies will need significant financing in the coming years to reduce emissions and adapt to the physical effects of climate change.

Many of these economies also have high debt and constrained budgets because of the pandemic and face higher government borrowing costs amid rising global interest rates, making it especially challenging for public finance to meet pressing climate financing needs. Given the current weak outlook for growth, and constraints on the public purse, especially in developing economies and countries where climate change is likely to have the greatest impact, increasing the number of private

investments in these regions is an urgent priority.

Mobilizing private capital on a large scale will be key to achieving developing countries' climate objectives. Financial markets alone cannot do the job, but combining public and private capital offers unique advantages by reducing investment risk and attracting greater funding. Multilateral development banks and international FIs can provide support through creating blended financing structures to alter the risk-return profile for the climate transition in emerging economies, e.g., distributed green solar micro-grids or small-scale PPP investments.

Regarding the promotion of TF markets, there are several ways that governments, FIs and Non-FIs like philanthropies and family offices can work together to reduce the transaction costs and increase the market liquidity associated with TF transactions through blended finance or scalable mini-PPP approaches similar to what the Daya Selaras Group in Indonesia has done to enhance and finance circular businesses in the informal waste sector, etc.[13]

Blended finance is a type of financing that uses a combination of public and private capital to support sustainable development projects and businesses. Blended finance structures typically combine concessional financing (such as grants and loans with low interest rates) with commercial financing (such as equity and debt investments).

Hence, blended finance can be used to support a wide range of TF projects, for example,:

- Finance the early stages of development of new clean or sustainable resource technologies and ecosystems such as Innovate 360's achievement with a platform for nurturing sustainable food startups[14]
- Support the construction of renewable energy projects in emerging markets (EMs)
- Help businesses to adopt energy and process efficiency measures including building up the operational and business resilience of the operating companies with government support as in the case of Mewah International[15]
- Provide financing for climate and environment proofing projects

Specifically, blended finance is being used to support TF in the following ways:

- The Green Climate Fund (GCF) has a few blended finance programs that support climate action in developing countries. For example, the GCF's Private Sector Facility provides blended finance to support private sector investment in climate-friendly projects.
- The World Bank's Climate Investment Funds (CIFs) are a group of five funds that support climate action in developing countries. The CIFs use blended finance to support a wide range of climate projects, including TF projects.
- The Global Innovation Fund (GIF) is a blended finance fund that invests in early-stage clean technology companies. The GIF provides concessional financing to help these companies to develop and deploy their technologies.

Case Study 1: H2 Green Steel

H2 Green Steel is a Swedish company developing what would be the world's first large-scale green steel plant.[16]

Steelmaking, essential for building everything from bridges to utility-scale solar arrays, is one of the most carbon-intensive processes on the planet. It accounts for somewhere between 7 and 9 percent of global carbon emissions. The sector relies heavily on coal-fired blast furnaces and is notoriously tough to de-carbonise.

One potential path to removing fossil fuels from the process of making steel is to use clean hydrogen instead of coal. But this approach has not yet been demonstrated at an industrial scale.

H2 Green Steel aims for a different path with its in-progress facility in Boden, in northern Sweden. According to the company, construction of the green steel plant is now well underway, and it has locked down supply contracts, electricity power-purchase agreements and, most importantly, binding customer agreements for "half of the initial yearly volumes of 2.5 million tonnes of near zero steel."

If construction goes as planned, the facility will begin churning out green steel by the end of 2025 or early 2026.

The firm recently announced that it has achieved a "massive milestone," finalizing a 4.75-billion-euro investment. The mostly debt financing comes just months after the firm announced a EUR1.5 billion equity round. The debt portion of the financing, amounting to EUR4 billion, comes from a group of more than 20 lenders that includes government entities such as the European Investment Bank and major banks such as BNP Paribas. H2 also added nearly EUR300 million in new equity funding from a group of both new investors, like Microsoft Climate Innovation Fund, and existing shareholders, such as Just Climate. The company signed a EUR250 million grant agreement with the European Commission's Innovation Fund as well.

Total funding for the facility is now EUR6.5 billion, a significant sum for a novel project.

"The sheer size and innovative structuring of the financing package matches the scale and complexity of this landmark project," Shravan Bhat, a senior associate with RMI's Center for Climate-Aligned Finance, said. "The way H2 Green Steel has raised and de-risked this first-of-its-kind financing is a template for others to study."

The private equity firm behind the H2 project, Vargas Holding, has managed to pull together this much money in large part because it has already locked in a few credible customers for green steel. In 2022, the firm announced preorders from blue-chip companies like BMW and Mercedes-Benz as well as from primary steel suppliers like Bilstein Group. The Swedish National Debt Office has also agreed to provide a "green credit guarantee" to backstop billions of dollars of debt financing.

"If I'm a banker giving money for this first-of-a-kind thing, if anything goes wrong, the Swedish government is on the hook—and I have confidence that they will repay," Bhat told Canary Media, an independent affiliate of RMI, in September.

This assurance, together with the array of buyers H2 Green Steel has lined up, has likely eased investor concerns about the risks of the project's unproven approach. Such an approach to reducing risk will help transform and promote TF to a higher level.

In addition to pioneering a new way to produce steel at an industrial scale, the firm is also planning to secure access to clean hydrogen by building out an unprecedented number of electrolysers, the machines used to produce carbon-free hydrogen from water and electricity. The facility's 700 megawatts-electrolyser capacity is a major undertaking in itself, representing one of Europe's largest clean hydrogen commitments to date.

In the case of EMs, however, foreign private investment will be essential for them to achieve net zero objectives, especially in countries with small domestic investor bases and limited fiscal capacity. There is significant potential for EMs to attract green investment, at a time when sustainable investing is on the increase. Capital markets, and in particular investment funds, can play an important role in financing the green transition in EMs.

One recent example from the ASEAN region is Gunung Raja Paksi (GRP), Indonesia.[17,18]

Case Study 2: Gunung Raja Paksi—Decarbonising a Steel Company

GRP was listed in 2019, undergoing significant management changes (with family members transferring control to a professional team), while embracing digital transformation and sustainability. It recently signed a Memorandum of Understanding (MOU) with the European group, SMS Group, to drive green steel development initiatives in Indonesia. This MOU is partly a result of significant investment by Japanese (Yamato Kogyo) and Thai (Siam Yamato Steel) partners, and a testament to the success of the group's transformation. In addition, a member of Gunung Steel Group and one of the largest private steelmakers in Indonesia, has become the first steelmaker in the country to secure a USD2 million sustainability-linked loan from Bank Negara Indonesia (BNI, the national bank). The five-year bilateral credit would be used to fund GRP's sustainability initiatives, which include the recently commissioned Light Section Mill (LSM).

While EMs face sizeable opportunities to leverage global capital markets, they will need to manage potential risk associated with the growth of green finance. Geographic rebalancing of portfolios - due to regulations, benchmarking, geopolitics or investor preferences - towards countries with lower climate risk or better green investment opportunities, and away from riskier countries or countries with larger fossil fuel sectors, may affect capital flows.

At present, in several EM regions, a large proportion of catalytic capital is provided by Development FIs (DFIs), governments and Non-Governmental Organisations (NGOs) with specific targeted missions, e.g., removing plastic waste, etc. Family offices could be the catalyst that ESG investing needs, e.g., local foundations and family businesses could initiate and incubate green pioneering initiatives to decarbonise their operations across business lifecycles with the aim to attract more private capital by reducing the risk in these projects early upstream based on, say, achieving impact milestones at earlier stages. If these new private investors can insert themselves into that capital flow and pick up a few basis points, that's a lot of potential returns with less risk as illustrated by some earlier case studies.[19]

Examples of how blended finance at the macro-level can be used to promote TF are discussed briefly below:

- To provide concessional financing to cover the costs of developing and structuring TF transactions and attract private capital: This can help to make TF more accessible to companies and other borrowers, particularly in developing countries.
- To support the development of new TF products and services: Blended finance can be used to provide risk capital and technical assistance to financial institutions to help them develop new TF products and services.
- To scale up existing TF initiatives: Blended finance can be used to scale up existing TF initiatives by providing additional financing and support as well as technical assistance to help companies and other borrowers to prepare and submit TF proposals. This assistance could include help with developing financial projections, identifying potential investors, and structuring transactions.

Overall, blended finance is a powerful tool that can be used to promote TF and accelerate the transition to a low-carbon economy. These are just a few examples of how blended finance is being used to support TF. As the transition to a low-carbon economy accelerates, we can expect to see even more investment in TF projects through blended finance structures.

Governments and FIs can also work together to create and operate platforms that streamline the process of developing and structuring TF transactions, through incubators, accelerators and sustainability funds. These platforms could provide companies and other borrowers with access to information on potential investors, financing sources, and transaction templates.

Concluding Remarks

In summary, addressing the challenges and creating a supportive environment can accelerate the transition to a low-carbon, climate-resilient economy. Even at the time of writing this article, transition credits and just transition[20] are gaining traction in incentivizing positive change and accelerating the shift towards a more sustainable and resilient future.

Finally, governments and FIs can continue to work together to develop risk-sharing mechanisms that can help to reduce the risk of TF transactions for investors. This could include mechanisms such

as partial guarantees and credit enhancements to make TF more accessible to companies and other borrowers, accelerating the transition to a low-carbon economy. This article should encourage a movement towards public-private partnerships to build a better world for all.

Notes

1 Transition Finance: New Opportunities and Challenges for Financial Institutions. Baker McKenzie,2023.

2 3 Key Challenges in Transition Finance. OECD iLibrary, 2023.

3 Transition Finance: Challenges and Opportunities. World Economic Forum, 2022.

4 www.mas.gov.sg/publications/consultations/2023/consultation-paper-on-proposed-guidelines-on-transition-planning-for-asset-managers#:~:text=This%2consultation%20sets%20out%20MAS,physical%20effects%20of%20climate%20change.&text=This%20consultation%20closes%20at%2011.59%20PM%20on%2018%20December%202023

5 www.mas.gov.sg/news/media-releases/2023/mas-proposes-guidelines-for-financial-institutions-on-transition-planning#:~:text=Regulators%20must%20support%20financial%20institutions,proposals%20by%2018%20December%202023.

6 Blended Finance for Transition Finance: A practical guide. International Finance Corporation, 2023.

7 Promoting Transition Finance through Blended Finance: A review of existing initiatives and lessons learned. World Resources Institute, 2022.

8 The Role of Blended Finance in Promoting Transition Finance in Developing Countries. Climate Policy, 2021.

9 Blended Finance for Transition Finance: An overview of the potential and challenges. OECD iLibrary, 2020.

10 Blended Finance for Transition Finance: A case study of the Green Climate Fund's Private Sector Facility. Global Innovation Lab for Climate Finance, 2019.

11 https://www.thegpsc.org/sites/gpsc/files/26_feb_small_scale_municipal_0.pdf

12 https://www.energy.gov/eere/solar/solar-integration-distributed-energy-resources-and-microgrids

13 https://www.businesstimes.com.sg/wealth/wealth-october-2023/circular-economy-pioneer-more-sum-its-parts

14 https://singaporeglobalnetwork.gov.sg/stories/business/3rd-gen-sugar-maker-helps-food techs-make-global-impact/

15 https://www.businesstimes.com.sg/events-awards/singapore-business-awards-2021/leadership-crisis-mewah-way

16 https://www.canarymediacom/articles/clean-industry/worlds-first-major-green-steel-project-locks-down-5b-in-funding

17 https://www.eco-business.com/news/a-matter-of-survival-why-indonesian-steel-giant-gunung-raja-paksi-is-going-net-zero/

18 https://www.gunungrajapaksi.com/newsroom/gunung-raja-paksi-champions-sustainability-initiatives-in-southeast-asia-with-usd-32-million-sustainability-linked-loan-from-bni

19 Please refer to the previous footnotes13,14,15, 17,18.

20 https://www.mas.gov.sg/development/sustainable-finance/transition-credits

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Dr. Guan Seng Khoo has over 30 years of experience in the design and implementation of enterprise-wide investment, banking and risk management models, systems and processes including Environmental, Social and Governance (ESG) / Responsible Investing. His career spanned financial institutions in the USA, Canada, UK and Singapore, including the UK-listed Man Group where he was the Principal Scientist while still at Nanyang Technological University (NTU), designing and running an algorithmic, AI-based hedge fund, at American Bourses Corporation which provided robo-based analytical solutions and financial info-utilities to traders and investors in the USA and North Asia, at ATOS Origin, RHB Capital, Singapore Exchange, Standard Chartered Bank, Temasek Holdings, Alberta Investment Management Corporation (AIMCo), CAI, the global airport investment arm of Changi Airport Group (CAG) and AEPW (Alliance to End Plastic Waste). In all these organizations, he was in charge of the enterprise and portfolio risk management functions including the sustainability finance, investment and operational due diligence process at the deal level.

He holds a PhD in Computational Physics (Material Science) from the National University of Singapore, with post-doc R&D in AI-based data mining and applications in Japan and America. He was also a co-founder of the NTU Centre for Financial Engineering and the MSc in Financial Engineering programme in collaboration with Carnegie Mellon University, Pittsburgh in 1999, when he was an academic at NTU from 1993 to 2000.

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