



GLOBALISING GREEN FINANCE

TURNING GREEN MOMENTUM INTO ACTIONS

Interim Report 2017
by UK-China Green Finance Taskforce





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Edited by Simon Horner, Rongrong Huo,
Michael Sheren, Wang Yao and David Shih





TABLE OF CONTENTS

Foreword	6
Executive Summary	8
1 Assessing Environmental Risk	14
1.1 A Chinese Case Study on Stress Testing	15
1.2 A UK Case Study on Scenario Analysis	17
1.3 Key Recommendations	18
2 Green Loans and Securitisation	20
2.1 Green Infrastructure (PPP)	21
2.2 Green Commercial Real Estate Mortgages	22
2.3 Key Recommendations	22
3 Impact of ESG Factors on the Cost of Capital	28
3.1 Market Level – Key Issues	29
3.2 Market Level – Key Solutions	30
3.3 ESG Impact Analysis Across Asset Classes	31
3.4 Key Recommendations	36
4 Greening the Belt and Road	40
4.1 Defining the BRI for Green Finance Planning	42
4.2 Linking Green Financing to the BRI Project Lifecycle	44
4.3 Geopolitical Risk on the BRI	45
4.4 Creating a Financial Market for BRI	46
4.5 Key Recommendations	47
5 Facilitating Cross-Border Capital Flows to Grow China’s Green Bond Market	50
5.1 The State of China’s Green Bond Market	51
5.2 Challenges to Green Bond Issuance from China	52
5.3 Challenges for International Investors Participating in the Onshore Green Bond Market	53
5.4 Key Recommendations	55
Appendices	60
Acknowledgements	68

FOREWORD

This report, authored by a taskforce set up by the Green Finance Committee(GFC) of China Society for Finance and Banking and Green Finance Initiative (GFI) of City of London, is the latest contribution from the burgeoning partnership between China and the UK on green finance development. Our two countries are coming together again to provide much needed global leadership to help turn green momentum into actions. We are delighted to continue the work, on the back of the G20 Green Finance Study Group (GFSG) , China's Green Finance Guidelines, and Governor Carney's Taskforce on Climate Related Financial Disclosure, helping to build bridges between west and east especially when it comes to green capital market integration. Globally the green finance agenda is facing many common challenges such as the lack of policy signals, risk analysis tools and innovative products, but the pioneering efforts from the UK and China should help both the developed and emerging markets to overcome some of these challenges.

We recognise that the green finance market is developing very fast and responsible investors are becoming a key driver towards wider adoption of practices to incorporate ESG principles into investment decision making. Therefore we are listening actively to market feedback, to see what is needed to help the private sector better prepare for this trend. We think these practical solutions will drive changes particularly with respect to implementing the G20 GFSG proposal on environmental risk analysis and the TCFD taskforce recommendation on climate related information disclosure. Their implementation by Chinese and UK financial institutions and market participants, as well as the many innovative products that the two countries are promoting, could take green finance to a new level, and could demonstrate to the rest of the world that it is possible for the global financial system to meet the environmental and climate challenges as well as grasp untapped commercial opportunities.

Hence we set up this taskforce, made up of experts and leaders in the field in sustainable finance, from across the financial services ecosystem. Collectively they have produced this report which provides concrete recommendations that will not only help develop the domestic and international green finance markets, promote cross-border green capital flows, but also help narrow the knowledge gap between public and private sector globally.

The recommendations in this report will only progress further if they are actioned. This report is therefore the beginning not the end of the taskforce's activity. Its members will continue their hard work throughout the 2017 China UK Economic and Financial Dialogue and Cop 23, and beyond that, to provide ideas to guide bilateral green finance collaboration between the two countries in the coming years. Many members of this taskforce will be responsible for implementing the recommendations in their respective institutions and for disseminating these new ideas to the industry, governments and regulators. We hope that through the collective efforts of the taskforce and the two governments, real progress will be made to mobilize more green capital, drives further green business growth, and ultimately helps the world build a more sustainable future.



Dr Ma Jun,
GFC Chairman



Sir Roger Gifford,
GFI Chairman

EXECUTIVE SUMMARY



To meet environmental, social and governance (ESG) challenges and to mitigate those material risks associated, a wide range of stakeholders (including national governments, regulators, the financial sector, investors and corporates) must work together to design, develop and finance sustainable economic growth for the future.

The Paris Agreement that followed COP21 and the work of the Group of 20 nations has established a clear political and economic mandate that the threats posed by climate change must be eliminated. The United Nations is vigorously promoting the adoption of its Sustainable Development Goals (“SDGs”) to drive the global transition to a low carbon economy. The G20 Green Finance Study Group, which has been co-chaired by China and the UK, developed a set of options for scaling up green finance to meet the demand for environmentally sustainable investment globally. To meet environmental, social and governance (ESG) challenges and to mitigate those material risks associated, a wide range of stakeholders (including international organizations, national governments, regulators, the financial sector, investors and corporates) must work together to design, develop and finance sustainable economic growth for the future.

The financing gap to address the transition to an environmentally sustainable and lower carbon economy is estimated to be in excess of \$90 trillion by 2030.¹ The risks associated with environmental degradation and climate change are enormous, however, the opportunities that come with sustainable economic development in the form of quality jobs and technological innovation could be truly transformative. Despite the emergence of many global initiatives looking at how best to mobilise the trillions of dollars of capital required and drive the opportunities offered by sustainable development, significant challenges remain.

The UK and China have been at the forefront of these global efforts. By releasing its Green Finance Guidelines, introducing policy incentives and new green finance products, and establishing many regional pilot programs, China is committed to creating a vibrant and comprehensive green financial system as part of its 13th Five Year Plan. In the UK, The Bank of England has been pioneering research into the effects of environmental risk, while the UK government has worked with the industry to leverage the financial expertise residing in London and positioning it as the leading international green finance centre.

The UK-China Green Finance Task Force, organised by Green Finance Initiative (GFI) of City of London and the Green Finance Committee (GFC) of China Society for Finance and Banking, has brought together a group of leading industry and policy experts to develop market-led solutions to help scale up green finance in both countries and globally. The Report has identified five key research topics related to sustainable finance and investment and aims to provide actionable recommendations in each area.

¹ New Climate Economy, The Sustainable Infrastructure Imperative: Financing for Better Growth and Development [2016]: http://newclimateeconomy.report/2016/wp-content/uploads/sites/4/2014/08/NCE_2016Report.pdf

During the joint research efforts across the five work streams, a number of key challenges have been identified. These include:

1

Many investors and banks are not yet adequately equipped to assess and price ESG risks consistently and accurately within their current investment and financing processes. This can create barriers to unlocking private sector capital into green and sustainable initiatives.

2

The lack of clear definition, identification and tagging of 'green' loans, as well as a number of legal barriers, pose difficulties to the development of green loan securitisation.

3

Methodologies for analysing the correlation between ESG factors, investment/credit risks, and cost of capital (specifically, to show better ESG performance is positively correlated with lower credit risk and funding costs) are not yet widely available, thus restraining the market potential for green financing and investment.

4

As for financing green infrastructure in the 'Belt and Road' region, key obstacles remain which include the lack of green finance principles and standards for BRI projects, heightened political risks, and limited access to debt capital markets.

5

China has the vast potential to grow and open its green bond market, but several barriers have so far constrained the wider participation of foreign investors. These barriers include the lack of commonly agreed green bond definitions and certification schemes, lack of market education and English information, market access issues, and underdevelopment of risk hedging instruments.

To address the challenges identified above, the UK-China Green Finance Taskforce has developed recommendations at both policy and industry level, which are laid out in detail within the Report. A summary of the key recommendations is as follows:

GOVERNMENTS/POLICY MAKERS/CENTRAL BANKS

- Deliver stronger market signals on the importance of environmental risk analysis, as proposed by the G20 Green Finance Study Group, as well as assess ESG financial impact on multi asset classes. Examples include:
 - Regulators should request material ESG related risks to be analysed and disclosed both at company and investor level.
 - Encourage the development of positive and negative lists of entities and products based on the green rating results, to encourage “green” performance and discourage “brown” activities.
 - Drive efforts to define ESG fiduciary duty, in particular for long-term institutional investors such as social security, insurance, pension and annuity institutions.
 - China to formulate specific rules for compulsory disclosure of environmental information by listed companies and bond issuers.
 - Building of ESG rating system (industry and institutional level) with combination of ‘unification’ and ‘differentiation/flexibility’.
- Continue to develop innovative regulatory proposals to unlock banks’ capital at scale in order to drive further the issuance of green loans and other green finance/investment products. Initiatives that regulators and central banks could pursue to promote growth in green lending activities by commercial banks include:
 - Allowing green credit assets meeting ESG rating standards in the scope of eligible collateral under the monetary policy of the central bank.
 - Lowering capital requirements for green loans/bonds to the enterprises with superior ESG performance.

BANKS

- Banks should be more proactive in managing ESG risks and opportunities and develop ESG frameworks and tools to allow sensitivity analysis across different maturities and asset classes.
- Stress testing models and scenario analysis could also be used to proactively inform risk analysis and help

integrate ESG assessment into portfolio construction and performance measurement.

- Increase business development efforts towards sectors aligned with the SDGs and the transition to a low carbon economy, and drive product innovation to fulfil investors' increasing appetite to deploy capital more sustainably.

INSTITUTIONAL INVESTORS

- Investors should invest in capacity building in order to fully embrace ESG considerations into their investment processes. This should include reviewing their existing portfolios to identify ESG related risks and opportunities, when comparing their portfolios' ESG scores/weighting versus the relevant benchmarks.
- Maintain active engagement with corporates to ensure that the growing importance of ESG factors is clearly understood by the investees.
- Collaboration with policymakers on developing forward-looking environmental risk assessment, and promote the inclusion of longer time horizons. This could include development of stress testing pilot models to identify systemic risks arising from environmental exposure, improve management of material environmental risk factors, and promote investor use of scenario analysis.
- Develop market education programs to introduce the benefits and challenges of green bond issuance and to help improve international investors' understanding of China's green bond market.
- The GFC and PRI to support Chinese and UK investor capacity-building in forward-looking environmental analysis, including use of scenario analysis and stressing testing for environmental and climate-related risk and opportunities.

CORPORATES

- Companies should continue to engage in dialogue and explore with capital providers (including investors and banks) on how integrating ESG considerations into their strategy could lead to a lower cost of capital.
- Companies should think about strategically repositioning themselves to capture green investment opportunities (e.g. electric vehicles, battery storage, greener real estate, and green infrastructure supply chain) with the help of innovative green financial products.

- 
- Implement TCFD recommendations to provide investors with fuller details on environmental information and climate impacts of their business.

GREEN LOANS AND SECURITIZATION

- Establish a green loan initiative between UK and Chinese banks to help facilitate green loans securitization and green covered bonds via improving on green loan definitions, clarifying eligible assets for green securitisation, developing credit enhancement mechanisms, and standardizing key documentation.

ESG

- Establish a common approach for industry classification standards led jointly by rating agencies and investors to achieve harmonisation in ESG assessment and ratings methodologies, initially between UK and China.
- Building on the current TCFD work, identify and agree for each of the ESG components appropriate industry specific key ESG considerations.

GREENING THE BELT AND ROAD

- The Corporation of London is forming a BRI Investor Alliance (including a majority of multilateral development banks) to agree a set of harmonised standards for green funding across BRI countries.
- The BRI Investor Alliance should explore the possibility of working with Chinese Industrial Associations (led by GFC), which are developing a set of voluntary guidelines for environmental risk management for China's overseas investment, on extending the coverage of green finance principles to both Chinese and foreign investors.

FACILITATING CROSS-BORDER CAPITAL FLOWS

- Harmonise green definitions and certification standards for green bonds, so that to reduce the “search costs” for foreign investors investing in Chinese green bonds.
- Improving international investors' understanding of China's green bond market through investor roadshows, engagement platforms, and green bond database and indices.

WORK STREAM 1

ASSESSING ENVIRONMENTAL RISK



INTRODUCTION

An efficient, resilient financial system requires identification, pricing and management of material risks.² As pointed out by the 2017 G20 Green Finance Synthesis Report, environmental risks can be material, with financial impacts on a company's revenues, expenditures, asset valuation and cost of financing.³ The Bank of England's assessment of financial risks associated with climate change is based on two risk factors; physical risks and transition risks arising from the process of adjustment to a lower carbon economy.⁴ The Green Finance Committee of China Society for Finance and Banking has also emphasized that by better use of environmental risk analysis, banks and institutional investors could develop stronger preference for green assets and reduce their allocation to "brown" and high-carbon assets.

This chapter specifically aims to contribute to forward-looking environmental risk assessment through examining Chinese and UK innovation in stress testing and scenario analysis; it also includes recommendations on how accelerating the adoption of environmental risk analysis, as proposed by the G20 Green Finance Study Group.

1.1 A CHINESE CASE STUDY ON STRESS TESTING

The empirical results show that a rise of the carbon price risk will push down the returns of the CSI 300 Index.

The CSI 300 Index will suffer an impairment of up to RMB2.6 trillion at maximum.

A stress test involves analysing possible financial impacts from a given set of conditions, drawing on a range of tools including bottom-up or top-down approaches and scenario (multi-factor) or sensitivity (single factor) analysis. This case study from China focuses on environmental stress testing of the asset management industry.

International Institute of Green Finance (IIGF) at Central University of Finance and Economics developed the methodology. It highlights that a market price mechanism can internalise environmental costs, and that environmental and climate risk factors will affect the return on assets, bringing a rise in the return of green stocks and a decline in the return of brown stocks. The empirical findings of environmental stress testing could help promote market price mechanisms to stimulate green investments, guiding China's asset management industry to monitor and consider environmental risk factors in investment decisions.

The empirical results show that a rise of the carbon price risk will push down the returns of the CSI 300 Index, and that if the carbon price rises once, twice or three times, returns will fall down 1%, 2%

² The G20 Green Finance Synthesis Report 2017's options for encouraging voluntary adoption of environmental risk assessment include: policy signals, awareness-raising among public and financial institutions, better quality and effective use of environmental data – including publicly available environmental data – and capacity-building.

³ The Task Force included ICBC, Barclays and Aviva Investors. See <https://www.fsb-tcfd.org>

⁴ <http://www.bankofengland.co.uk/Pages/reader/index.aspx?pub=qbl7q2article2&page=1>

This empirical study found that a rise in environmental penalties will bring down the returns of the CSI 300 Index and result in a market value decline of the index.

and 3% respectively. If the carbon price rises once and an extreme risk scenario of 5% happens, the market value of the CSI 300 Index will suffer an impairment of up to RMB2.6 trillion at maximum, representing about 10% of its total current market value of RMB25 trillion. This means that if the carbon price rises once, the CSI 300 Index will have a probability of 5% to incur a market value impairment of RMB2.6 trillion, representing about 10% of its total current market value of RMB25 trillion. However, such carbon price increases may not be sufficient to reach global warming targets. In 2016 the World Bank estimated that the carbon price should reach \$80-120 to provide sufficient discouragement. Based on such estimate, the second table below hypothesizes a ten-fold increase in the Chinese carbon price from RMB 20 to 200 (approximately \$30). While this is still a very conservative number it is used simply to show a trend. At this level, the outcome is calculated at 20%, 30% and 40% value at risk. The results of these scenarios are shown in the tables below. In the scenario where the carbon price increases once, twice, and three times the market value loss ratio is 10, 76%, 7, 84% and 4, 92% respectively. In the tenfold increase scenario the market value loss ratio at 20% is 12, 70%, at 30% is 10, 35%, and at 40% is 8, 35%.

Furthermore, this empirical study found that a rise in environmental penalties will bring down the returns of the CSI 300 Index and result in a market value decline of the index. Finally, this research assessed water resource risk; finding that this risk will lead to a decline in returns of the CSI 300 Index together with market value shrinkage, although this will benefit some stocks in the water resource-related industries through a rise in returns.

RESULT OF CARBON PRICE ON CSI 300 INDEX

Average Return Change			LOSS FROM: CARBON PRICE RISES ONCE, VAR AT 5% (BILLION RMB)	LOSS FROM: CARBON PRICE RISES TWICE, VAR AT 5% (BILLION RMB)	LOSS FROM: CARBON PRICE RISES THREE TIMES, VAR AT 5% (BILLION RMB)
CARBON PRICE RISES ONCE	CARBON PRICE RISES TWICE	CARBON PRICE RISES THREE TIMES			
-0.0088	-0.0176	-0.0253	2638.09	2854.05	3070.01



RESULT OF TENFOLD INCREASE IN CARBON PRICE ON CSI 300 INDEX

CARBON PRICE INCREASES 10 TIMES, VaR AT 20% (BILLION RMB)	CARBON PRICE INCREASES 10 TIMES, VaR AT 30% (BILLION RMB)	CARBON PRICE INCREASES 10 TIMES, VaR AT 40% (BILLION RMB)	CARBON PRICE INCREASES 10 TIMES, VaR AT 20%, MARKET VALUE LOSS RATIO	CARBON PRICE INCREASES 10 TIMES, VaR AT 30%, MARKET VALUE LOSS RATIO	CARBON PRICE INCREASES 10 TIMES, VaR AT 40%, MARKET VALUE LOSS RATIO
3122.80	2546.70	2054.40	12.70%	10.35%	8.35%

RESULT OF ENVIRONMENTAL PENALTIES ON CSI 300 INDEX

Average Return Change			LOSS FROM: ENVIRONMENTAL PENALTIES RISE ONCE, VAR AT 5% (TRILLION RMB)	LOSS FROM: ENVIRONMENTAL PENALTIES RISE TWICE, VAR AT 5% (TRILLION RMB)	LOSS FROM: ENVIRONMENTAL PENALTIES RISE THREE TIMES, VAR AT 5% (TRILLION RMB)
ENVIRONMENTAL PENALTIES RISE ONCE	ENVIRONMENTAL PENALTIES RISE TWICE	ENVIRONMENTAL PENALTIES RISE THREE TIMES			
-0.0016	-0.0031	-0.0047	3.3122	3.3457	6.3793

RESULT OF WATER CONSUMPTION INCREASES ON CSI 300 INDEX

Average Return Change			LOSS FROM: WATER CONSUMPTION RISES ONCE, VAR AT 5% (TRILLION RMB)	LOSS FROM: WATER CONSUMPTION RISES TWICE, VAR AT 5% (TRILLION RMB)	LOSS FROM: WATER CONSUMPTION RISES THREE TIMES, VAR AT 5% (TRILLION RMB)
WATER CONSUMPTION RISES ONCE	WATER CONSUMPTION RISES TWICE	WATER CONSUMPTION RISES THREE TIMES			
-0.0171	-0.0342	-0.0514	1.7204	1.7991	1.8778

1.2 A CASE STUDY ON SCENARIO ANALYSIS

Company-level exposure varies from under 10% to over 60%.

Scenario analysis aims to understand how a business might perform under different future states. This UK case study illustrates how it is feasible to apply scenario analysis to provide investment decision-useful information on the oil and gas sector.

Legal & General Investment Management,⁵ the Principles for Responsible Investment and the Carbon Tracker Initiative, developed new research on transition risk for oil and gas companies using a fossil fuel demand scenario consistent with delivering a 2° limited global warming outcome.

Many fossil fuel projects are likely to create production capacity that exceeds the demand consistent with the 2° scenario. Therefore, a large portion of their investments are likely be

⁵ Other investor partners include: PKA, PGGM, AP7, FRR. See: 2degreeseparation.com

wasted. This case study shows that overall, projects outside the 2°C demand scenario (61 Gt of CO₂) are associated with an aggregate investment of US\$2.3 trillion in the period 2017-2025, which will probably be wasted capex. Company-level exposure (% of wasted capex) varies from under 10% to over 60% when considering the largest 69 publicly traded companies, with some company portfolios highly resilient compared to others.

COMPANY RANKINGS: TOP AND BOTTOM TEN

Company	Country of Headquarters	2017-2025 potential capex (\$bn)	2017-2025 potential capex outside 2D budget (\$bn)	% of capex outside 2D budget (% band)	2017-2035 carbon budget (GtCO ₂)	Potential CO ₂ outside carbon budget (GtCO ₂)
Southwestern Energy	United States	19	12	60-70%	1.0	0.6
Apache	United States	62	38	60-70%	1.1	1.0
Cabot Oil and Gas	United States	9	6	50-60%	0.6	0.4
Energen	United States	12	7	50-60%	0.2	0.1
Murphy Oil	United States	22	12	50-60%	0.4	0.3
Concho Resources	United States	21	12	50-60%	0.4	0.3
Imperial Oil (Public Traded Part)	Canada	8	4	50-60%	0.4	0.2
Vermilion Energy	Canada	5	3	50-60%	0.1	0.1
Oil Search	Papua New Guinea	7	4	50-60%	0.2	0.1
Encana	Canada	27	14	50-60%	1.0	0.6
Tatneft	Russia	11	1	0-10%	1.1	0.0
Range Resources	United States	18	1	0-10%	2.0	0.0
Saudi Aramco	Saudi Arabia	214	10	0-10%	30.2	0.4
Novatek	Russia	31	1	0-10%	2.8	0.1
Arc Resources	Canada	6	0	0-10%	0.5	0.0
Gulfport Energy	United States	10	0	0-10%	0.8	0.0
Tourmaline Oil	Canada	9	0	0-10%	1.0	0.0
Diamondback Energy	United States	10	0	0-10%	0.4	0.0
Antero Resources	United States	17	0	0-10%	1.3	0.0
Seven Generations Energy	Canada	9	0	0-10%	0.7	0.0

Source: 2degreesseparation.com

1.3 KEY RECOMMENDATIONS

Stress testing pilot models could prompt policymakers and investors to improve their management of material environmental risk factors, while scenario analysis could assist in forward-looking environmental risk assessment methodologies.

Good practice could be accelerated through adopting the following options:

Stress testing pilot models could prompt policymakers and investors to improve their management of material environmental risk factors.

1.3.1 STRESS TESTING MODELS AS A TOOL TO RAISE AWARENESS

China and the UK could encourage more countries to develop and pilot stress testing models, informed by the Chinese pilot, such as ICBC and IIGF, with a view to a harmonisation of approaches.

1.3.2 INVESTOR CAPACITY-BUILDING IN SCENARIO ANALYSIS

Investor capacity-building in scenario analysis China and the UK should undertake investor capacity-building in China and the UK, focusing on improving incorporation of scenario analysis into investment analysis.

Over 2017-18, the GFC, IIGF and PRI will support Chinese and UK investor capacity-building in forward-looking environmental risk assessment, including use of scenario analysis for climate-related risk and opportunities. The GFC and PRI will also convene collaborative investor engagement with companies to encourage better corporate disclosure.

1.3.3 FSB TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES (TCFD)

FSB Task Force on Climate-related Financial Disclosures (TCFD) China and the UK should collaborate on building local company and investor capacity to implement the TCFD disclosure recommendations. They could also review the extent to which the TCFD framework could be applied to other material environmental risks such as pollution and water.

Over 2017-18, the GFC and PRI will support China and the UK in building regulatory and investor capacity to implement the TCFD. This will include the PRI updating its annual Reporting and Assessment Framework so that from January 2018, PRI signatories in China and the UK can disclose how they assess and manage climate-related risks and opportunities, based on the TCFD's guidance for asset owners and investment managers. In September 2018, the PRI will share findings from investor disclosure through its Reporting and Assessment Framework, enabling Chinese and UK regulators to monitor investor adoption of the TCFD's recommendations.



WORK STREAM 2

GREEN LOANS AND SECURITISATION



INTRODUCTION

There is a wide number of market, legal, structural and regulatory obstacles associated with originating, repackaging and distributing green loans and other forms of private green credit via green asset-backed securities (ABS), so that they can be widely accessed by the public debt capital markets.

This chapter has drawn upon market and policy professionals to identify challenges to structured green securities in the areas of green infrastructure and green commercial real estate mortgages. Additionally in this chapter, recommendations will be made to mitigate challenges as well as detailing commercial and operational recommendations that can be executed to advance the transformation of private green credit into structured green asset supported securities.

2.1 GREEN INFRASTRUCTURE (PPP)

Green and sustainable infrastructure projects will be vital to China, the United Kingdom and the rest of the world over the next thirty years and beyond.

21

major Chinese banks had a collective 7.26 trillion RMB, or approximately 1.07 trillion USD of green credit assets on their balance sheets.

Green and sustainable infrastructure projects will be vital to China, the United Kingdom and the rest of the world over the next thirty years and beyond. The New Climate Economy Report estimated the world will need to finance c. \$94 trillion of sustainable infrastructure projects between now and 2030. Hence, it is essential to develop securitised and asset supported solutions to infrastructure projects for domestic and international markets. These green structures could be applied to the assets of strategic Public Private Projects within China and as part of the Belt and Road initiative.

Green credit has seen rapid development over the past years in China encouraged by policies from the China Banking Regulatory Commission (CBRC). By June 2016, 21 major Chinese banks had a collective 7.26 trillion RMB, or approximately 1.07 trillion USD of green credit assets on their balance sheets. This represents great potential for the securitisation of green credit assets as banks would be able to free up credit loans and reinvest for green corporates and projects.

Industrial Bank of China issued the first green credit assets securitisation product in China in 2014, totalling 3.5 billion RMB from 48 green projects and used the raised proceeds for green purposes.

As China looks to gear up investment for green infrastructure, an increasing amount of projects has been financed through public-private partnerships (PPPs). PPPs are typically of a long-term nature and generate stable, estimable cash flow, which makes them good underlying assets for ABS and covered

bonds. As PPP gradually becomes the leading form of financing arrangement for green infrastructure projects, financial and industry regulators in China (Ministry of Finance, National Development and Reform Commission) are actively promoting the ABS of PPPs, including environmental (wastewater treatment, solid waste incineration) and public utility (heating/water supply) projects.

2.2 GREEN COMMERCIAL REAL ESTATE MORTGAGES

Transitioning the UK's inefficient commercial and residential building stock to highly efficient stock will meaningfully reduce the amount of fossil fuel generated energy required in the UK. By originating green mortgages, banks will be able to make old buildings more energy efficient while at the same time developing an important new product that can be aggregated and sold into the ABS market. There are examples of successful issuance of bonds supported by green mortgages and most recently a highly oversubscribed green covered bond populated by commercial real estate mortgages.

In addition to meaningfully reducing fossil fuel consumed, a wide scale energy efficiency program would drive sustainable jobs in the areas of finance, technology and construction. Further, reduction in home energy costs would allow families to redirect household funds towards other areas of the economy. Finally, a move to an energy efficient economy that is less dependent upon fossil fuels would enhance the UK's energy security.

2.3 KEY RECOMMENDATIONS

Green ABS and covered bonds could unlock finance in the debt capital markets for many green assets.

Based on input from the work stream stakeholders, the key finding is that green ABS and covered bonds could unlock finance in the debt capital markets for many green assets. However, there are meaningful obstacles to scaling up green structured debt products.

Below is a list of the findings in relation to the challenges to issuing green structured products in scale and the recommendations to help overcome these obstacles (each lists whether it is an obstacle for China and/or the UK).

2.3.1 IMPROVING “GREEN” DEFINITIONS

At this time, Green ABS is a label but not a legally identified class of assets. A lack of legal definition for green is one of the main reasons there is a lack of real financial support or tax saving from central government. Without a legal definition, Green ABS will

remain a conceptual rather than legal financial product. From a wider legal point of view, general confidence needs to build around rule of law when it comes to international investors perfecting and liquidating onshore assets.

- China could consider the establishment, along with the Green Bond catalogue, of a broader recognised and legally defined ‘green’ definition for ABS and covered bond securities.
- The UK to consider a jurisdictional specific legal definition of green for green debt securities issued in the United Kingdom.

2.3.2 INTRODUCING RULES ON COVERED BONDS

For cross border ABS, a key obstacle is the foreign exchange control issue. Issuing ABS abroad may be categorised as ‘capital’ flow of foreign exchange; therefore, directly issued ABS into overseas markets is difficult under current foreign exchange regulations and rule.

- It may be advisable to further study the covered bond approach and other intermediate ways to mitigate the constraint by capital control, and to attract international liquidity for onshore asset supported asset based green bonds. As part of this approach, it may be valuable to introduce a covered bond rule that could provide this financial product with a legal status and framework.

Standardised legal documentation is important to develop and grow green ABS issuance.

2.3.3 STANDARDIZING KEY DOCUMENTATION

Standardised legal documentation is important to develop and grow green ABS issuance. Standardising the key terms and covenants of the agreements under which green loans are made, can often make for less over collateralisation and better distribution. The most successful securitisations are those collateralised by mortgages, credit card receivables and leases, as these assets all have standardised documentation with good historical performance data. That said, even lumpy, large denominated debt such as participations in green PPP infrastructure loans would be significantly aided by standardised loan documentation (at least key terms and conditions within the documents).

- Develop and encourage collateralised loan obligation (“CLO”) structures that are better suited to large lumpy asset pools such as infrastructure and commercial mortgages but still provide institutional investors access to the underlying assets via their investment in the liabilities.

- Using successful examples, such as residential mortgages and auto leases, develop documents for CRE and PPP infrastructure that standardise key elements of documentation.

2.3.4 DEVELOPING A GREEN PRODUCT TAGGING PROGRAM

The disequilibrium between supply and demand within the global debt capital markets also affects green bonds. ABS and covered bonds could unlock the markets if banks pool green assets currently on the balance sheet as well as new transactions they underwrite going forward. For markets to accept a larger volume of green debt securities, they will need to further develop ways for investors to access the bonds and measure their performances.

- A green loan tagging program between market leading UK and Chinese banks could be developed and initiated. By identifying green loans at their point of origination would make it much easier to pool them and securitise them and thereby increasing green DCM volume.
- Further development of green ETF's and indices focused on green ABS and covered bonds.

2.3.5 IMPROVE CREDIT RATINGS OF GREEN ABS PRODUCTS

The credit risk relating to new asset classes is typically high due to lack of historic data on bond performance and default rates.

- Both China and the UK should encourage key market information players (such as Bloomberg, Thompson Reuters and WIND) to track performance data on green debt assets. This will be useful for rating agencies as well as investors and a key way to advance a new market.
- To encourage credit rating companies to provide green credit ratings for ABS products, taking into account their “green credentials”.
- To develop and encourage credit enhancement tools, such as first risk loss tranches and guarantees as a further method to improve credit ratings and to crowd in private sector senior secured investors.

Green ABS remains a new asset class and cannot be proven until there are deals available in the market.

2.3.6 ENHANCING INVESTOR DEMAND

Although there is demand for green bonds, the ultimate depth of the global liquidity for green is unknown. In large scale, green

ABS remains a new asset class and cannot be proven until there are deals available in the market and historical data collected.

- To ‘prime the pump’ of the markets, it may necessary to incentivise investment in the nascent phase to ensure there is sufficient market appetite to allow green securitisations to be scaled up to the levels needed. Hence, policy actions should consider the allowance of ‘eligible green’ asset warehousing to be transferred off bank’s balance sheet to a green government agency (which is to be set up). Further, green assets could be encouraged for beneficial market treatment to make it more attractive than being part of the Term Funding Scheme.

2.3.7 RE-DESIGNING THE GREEN MORTGAGE SCHEME (UK)

Should green mortgages be catalysed by policy makers, it must be noted that past government-led initiatives to drive green lending (e.g. Green Deal initiative) have failed due to poor design/ implementation and resulting in limited take up.

- Establish a working group made up of a full set of stakeholders from industry, markets and policy making bodies to design an executable green mortgage scheme that would provide long term confidence in the program.

2.3.8 DEVELOPING A GREEN REPORTING SYSTEM

There are no established standards for Green Impact Reporting and Monitoring post issuance of green ABS or covered bonds.

- Develop a comprehensive reporting system to specifically deal with the reporting demands of a green securitisation.

2.3.9 FACILITATING INVESTOR KNOWLEDGE EXCHANGE

There is a diverse level of investors’ sophistication, especially around understanding the infrastructure and CRE technologies underpinning the asset pools.

- Develop capacity through ICMA, PRI, GFC and other market players to foster knowledge in China and the UK among institutional investors around the technical and sector complexities of ABS and covered green bonds.

2.3.10 ASSESSING ORIGINATOR/RETENTION RULES (UK AND CHINA)

Originator/retention rules do not necessarily sit well with

Develop a comprehensive reporting system to specifically deal with the reporting demands of a green securitisation.

Investors and issuers do not fully understand how domestic as well as international ABS and covered structures will be treated in China.

developers with light balance sheets and develop a sell model.

- Initiate a working group in ICMA to understand the effect that retention rules could have on a developing green ABS market.

2.3.11 CLARIFYING CHINESE TREATMENT OF COVERED STRUCTURES (CHINA)

Investors and issuers do not fully understand how domestic as well as international ABS and covered structures will be treated in China. Alongside RMBS the EU recognises asset back securities backed by commercial loans, auto loans and other assets as eligible for HQLA (High Quality Liquid Assets) status. Certain kinds of covered bonds are also considered Level 2B HQLA by the EU. A similar understanding would be useful in China.

- Request guidance from relevant Chinese regulatory and tax authorities for the treatment of on-shore and off-shore (HK) ABS and covered green securities.





WORK STREAM 3

IMPACT OF ESG FACTORS ON THE COST OF CAPITAL



INTRODUCTION

ESG financial impact is still largely overlooked by many participants in the global financial markets.

Currently, environmental, social and governance (ESG) are often referred to as the three values-based factors assessed by investors and corporations when considering a firm's governance and transparency; treatment of employees and customers; and the environmental impact from managing their businesses and investment activities.

Increasingly ESG factors are being recognised by a few market leaders as extra financial factors rather than just 'non-financial' ones. Despite their growing importance however, ESG financial impact is still largely overlooked by many participants in the global financial markets. There needs to be a better understanding of the implications that strong ESG credentials can have on pricing of physical assets, financial securities, cost of capital and ultimately the investment strategies.

This work stream aims to analyse some of the leading work being carried out by market participants (including by a number of the contributors to this Report) in relation to the correlation between ESG performance and the financial impact on companies and cost of capital, and looks to build on this work by proposing practical solutions and analytical guidelines for investors and companies.

3.1 MARKET LEVEL – KEY ISSUES

3.1.1 THE UNDERSTANDING OF ESG FACTORS SUFFERS FROM A LACK OF NORMATIVE DEFINITIONS

While there are several widely referred principles referencing ESG, there are no clear definitions or a basis for normalised ESG analysis. Further work needs to be done to agree the specific core components for ESG based on the elements that UN PRI has already set out, as summarised below:

Environmental: Climate change; greenhouse gas (GHG) emissions; resource depletion, including water; waste and pollution; deforestation.

Social: Working conditions and practices, treatment of customers/employees; local communities; conflict; health and safety; employee relations and diversity.

Governance: Executive pay; bribery and corruption; political lobbying and donations; board; diversity and composition; tax strategy.

We therefore often see that a corporate's cost of capital does not reflect the sustainability of the firm.

3.2 MARKET LEVEL – KEY SOLUTIONS

3.1.2 MARKET INEFFICIENCIES AND FAILURE (AT ECONOMIC/COST LEVEL)

Despite promising developments in recent years, environmental and social costs are not yet adequately embedded into companies' profit and loss statements. The effect of this failure is that capital markets do not consistently incorporate companies' full social and environmental costs, and in turn companies acting in a sustainable way are not always rewarded for doing so. In relation to sustainable development, we therefore often see that a corporate's cost of capital does not reflect the sustainability of the firm. The market is therefore arguably not pricing ESG externalities accurately, distorting both allocation and cost of capital in detriment of more sustainable companies.

3.2.1 ESTABLISH THE CONNECTION BETWEEN ESG FACTORS AND COST OF CAPITAL

Cost of capital is typically defined as the cost of a company's funds (both cost of debt and equity) from a company's perspective, but also as the required rate of return on a portfolio company's existing securities from an investor's perspective.

As described in more detail in this report, there is an increasing body of evidence linking both a company's fundamentals, ESG factors and its cost of capital (company's perspective), but also a company's ESG practices and the returns of that company's securities (investor perspective).

A historical barrier to improving ESG performance has been the perception that it could result in raising either operating or capital costs for companies in the short term. As more work is carried out to establish the correlation between ESG costs/benefits and how it will eventually impact financial performance and affect cost of capital/funding, and also to establish the correlation between ESG performance and solvency and default risks, an increasing number of companies will be able to take a longer term view and adopt more robust ESG practices in the expectation that it will improve financial performance and reduce both volatility in and cost of capital.

In addition, there is an increasing number of both sustainability-oriented and mainstream investors that have a preference and are prepared to potentially pay a premium for investments in so-called 'green' projects, given their expectation of superior risk adjusted returns and the softer benefits. The PRI believes there is as much as \$70 trillion to be invested in this way across the globe (as at 08/2017).

One of the challenges and where remaining debate is focussed on seems to be agreeing which time horizon should apply.

3.2.2 UNDERSTAND THE IMPACT FROM CREDIT RATINGS AGENCIES' (CRA) ESG MOVE

S & P Global Ratings (SPGR) conducted a review of corporate rating actions and surveillance reports from Nov 19 2013 to Oct 21 2015 to establish the impact that ESG risks had on its ratings.

- The research identified nearly 300 cases in which these factors either contributed to a rating revision or were an important factor in the rating.
- Fifty-six of these cases resulted in a rating action, CreditWatch placement, or outlook revision, 44 of which (close to 80%) were negative in direction.
- The subsectors with the greatest exposure thus far have been oil refining and marketing, regulated utilities, and unregulated power and gas subsectors.

Despite the claim by most rating agencies that they are already incorporating ESG considerations into credit risk analysis, it is a subject of significant debate in terms of what ratings can and should accurately measure, and it is accepted that incorporating ESG considerations into ratings is not an easy task that requires further work. Investor expectations are now predicated on the notion that ratings need to be calibrated to capture risks extraneous to the traditionalist understanding of purely financial and default risks.

One of the challenges and where remaining debate is focussed on seems to be agreeing which time horizon should apply. ESG analysts tend to be more long-term oriented than most portfolio managers, while CRAs time horizon vary.

CRAs will need to join and be a key participant in the debate around establishing ESG industry classification standards to encourage better ESG disclosure, impact and metrics.

3.3 ESG IMPACT ANALYSIS ACROSS ASSET CLASSES

3.3.1 BONDS

For credit investors, it has been challenging to date to incorporate the pricing of ESG risks in a similar way to more traditional core credit risks such as operating and financial risks. A number of credit investors and financial institutions are looking to develop methodologies to price ESG risk accurately. Below we provide examples covering corporate and sovereign bonds.

Hermes Investment Management has developed a proprietary measure of ESG risk, the QESG Score, for companies in four credit-default swap (CDS) indices. Drawing on external specialist research

and the proprietary insights of Hermes EOS, the QESG Score combines a company's current and future expected levels of ESG risk. They then compared each issuer's QESG Score with the spreads on their CDS to identify persistent correlations. Major findings are as follows:

- Companies with the lowest QESG Scores tend to have the widest CDS spreads and broadest distributions of average annual CDS spreads (see figure 1).

FIGURE 1: IMPLIED CDS SPREADS AND CORRESPONDING QESG SCORES

For illustrative purposes only



- There are correlations between companies' QESG Scores and their credit ratings despite there being a wide dispersion of QESG Scores within each rating band. This implies that credit ratings do not perfectly reflect ESG risks and thereby do not serve as a sufficient proxy for ESG risk.

MSCI has carried out analysis in the sovereign bonds context. MSCI finds that countries with wider spreads between ESG performance and financial performance were most likely to be downgraded by S&P in the coming years. In fact, in many cases better ESG performing countries have been shown to yield higher returns than ESG distressed countries as illustrated in the table below (from PRI report).

FIGURE 7: RETURNS FROM PORTFOLIOS BASED ON THE BEST AND WORST ESG RATED COUNTRIES



Sources: AXA IM, JP Morgan, Citigroup, Thomson Reuters

Corporate Bonds example: Breckinridge Capital Advisors found that ESG is an important indicator for financial sustainability by applying ESG scoring to corporate fixed-income investments with two case studies: Harley-Davidson and Peabody Energy. In the Harley Davidson case they found that despite macro-economic factors (recession) and different industry specific challenges, there was a positive correlation between the companies' ESG score and the stable improvement of the OAS (option adjusted spread). Correlation does not equal causation but in this case Harley investors appeared to be rewarded by management's ESG efforts.

3.3.2 EQUITIES

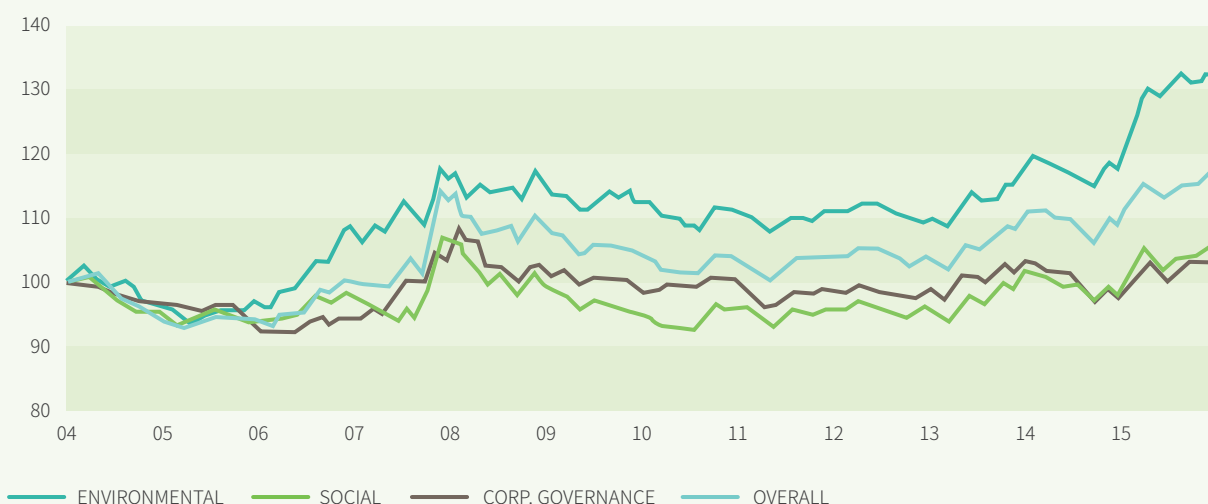
ESG factors matter in relation to cost of equity and investors' expectations. There is increasingly robust evidence showing that positive performance in ESG factors can have a positive effect on equity performance (OECD 2017 study).

US equities - quantitative analysis

ESG metrics have been strong indicators of future volatility, earnings risk, price declines and bankruptcies according to Bank of America Merrill Lynch whose analysis (US S&P500 data from 2005 to 2015), states that, "ESG-based investing would have offered long-term equity investors tremendous benefits in mitigating price risk, earnings risk and even existential risk for US stocks".

CHART 1: RELATIVE PERFORMANCE

Highest third of universe vs. lowest third of universe by ESG scores.
2005 to 2015, based on BofAML coverage universe with ESG ranks available.



Sources: Thomson Reuters, BofAML, Goba Research

The better the ESG performance of enterprises, the better the financial status and performance in the stock market.

China context – equities

A recent ICBC study analysing the correlation based on IPE environment information, Bloomberg's listed enterprise social responsibility reports and corresponding ESG rating model results observed "a positive connection between enterprises' ESG performance and financial performance" and concluded that:

- Strong relation between financial indicators of CSI 300 Constituents and number of enterprise environment punishments.
- The better the ESG performance of enterprises, the better the financial status and performance in the stock market.
- In assigning ESG ratings to the SSE 180 Stock Index, ICBC also found a positive correlation between enterprises' ESG performance and financial performance. It shows that the performance of the green investment index marked by the blue dotted line is better than that of the SSE 180 Stock Index (at most times), proving the potential of ESG investment in China (see appendix 1).

3.3.3 LOANS

The key question being asked by many corporates is whether a positive ESG performance/score could be translated into financial benefits when it comes to debt funding.

30%

Certified green buildings can command higher sale prices of up to 30% and increased rental rates of up to 24.9%,

There are a growing number of cases where the price of corporate lending has been linked to the corporate's ESG/ sustainability performance. For example, Philips agreed in April 2017 a pioneering €1bn loan with an interest rate dependent on the year-on-year changes of the firm's sustainability performance. In the low interest rate environment however, banks may not always be willing to provide even cheaper funding to just reward good behaviours, especially in the absence of strong policy/ regulatory support (see appendix 2, green loans – market information) or a clear demonstrable link to lower default rates.

This is a key area where specific guidance needs to be provided on how to classify 'green' companies and use of proceeds for companies and for financial institutions to conduct scenarios analysis – especially to support the recent recommendations from the Taskforce for Climate Related Financial Disclosure (TCFD).

There are also visible opportunities evolving with a sector specific approach – e.g. in the green real estate sector, Lloyds Bank, working with Trucost (part of S&P Dow Jones Indices), has made a £1bn commitment for commercial real estate green lending to support its clients' sustainability investments, aimed at reducing CO2 emissions from their real estate assets. The fund is used to incentivise clients' adoption of energy efficiency measures and provide margin improvements of up to 20bps on new borrowing requirements of £10m and above (Trucost, 2016).

3.3.4 REAL ESTATE

Empirical research (An, X.D., Pivo, G., 2015) suggests that certified green buildings in the US are outperforming non-certified properties in terms of higher debt service coverage ratio, lower loan to value and thus lower default rates in securitisation.

Commercially, certified green buildings can command higher sale prices of up to 30% and increased rental rates of up to 24.9%, compared to 'business-as-usual' code compliant buildings. Resilient, future-proofed buildings can also reduce operation risks and maintenance costs for owners and developers (see Appendix 3, BREEAM 2016 – case study).

3.3.5 'SUSTAINABLE' INFRASTRUCTURE

Market still needs to define what 'sustainable' infrastructure is and what clients need to do for both construction (Greenfield) as well as for the operational phases (brownfield).

The key question is whether sustainable infrastructure can be more cost effective. There are many live cases already showing hard evidence of cost savings derived from adopting a more sustainable approach. Examples include Highbury Substation, which uses 1000 litres less oil and 820MWh of heat reclaim and 20 Old Bailey, an energy efficient design which reduced 70% of energy. In the case of airports, a key infrastructure asset class, Stansted Airport is committed to carrying out its activities at the lowest Whole Life/Whole System Cost. Advised by Arup, it has converted to an energy-efficient baggage handling system which reduces the whole life cycle cost by £14.4 million, as well as significant reduction in costs from the outset (see Appendix 1: Case Study 2).

3.4 KEY RECOMMENDATIONS

Improve existing or create new market price mechanisms that adequately reflect ESG related externality costs.

To address and correct some of the challenges, market inefficiencies and failures, and to facilitate wider awareness and integration of ESG factors into capital allocations, will require more specific actions from policy makers (government, central banks, regulators), investors and wider market participants. Below we outline some potential recommendations for consideration:

3.4.1 GOVERNMENTS/CENTRAL BANKS AND POLICY MAKERS

In order to address one of the key issues identified in this chapter (capital markets failure at economic level), governments and policy makers globally should consider:

- Delivering stronger market signals on ESG risks and their financial impact. Examples include:
 - Regulators should consider requesting material ESG-related risks disclosure;
 - More ratings agencies to incorporate ESG factors into traditional credit assessment;
 - Develop a consistent and comparable approach to corporate disclosure of sustainability performance in stock exchanges;
 - Create a responsible investment standard for asset managers who invest pensions or savings sustainably;
 - Clarify that taking sustainability factors into account in their investment strategies is in line with investors' fiduciary duty;
 - As suggested by a number of investors, policy makers could consider making TCFD, adoption mandatory, if not widely adopted.

- Improve existing or create new market price mechanisms that adequately reflect ESG related externality costs (e.g. recent efforts by the European Commission to rebalance pricing signals under the EU ETS).
- Provide specific guidance on scenarios analysis (specifically on scenarios settings and methodologies) for financial institutions.
- Explore innovative ways to unlock banks' capital at scale through regulatory innovation and support.
- Encourage/ fund publically available ESG benchmarks to provide the public and investors with consistent/comparable information on corporate ESG performance.

3.4.2 FINANCIAL INSTITUTIONS: BANKS

- Assuming clearer guidance can be given on how to conduct forward looking scenario analysis, financial institutions need to be proactive in managing ESG risks and should therefore be incorporating into frameworks that assess ESG-related risks and opportunities with defined maturity and asset sensitivity.
- Scenario analysis could also be used to proactively inform risk budgeting and help integrate ESG into portfolio construction and performance measurement.
- To date there have been attempts to incorporate sustainability/ ESG performance in financial projection and traditional risk measurement but results have been varied due to some key challenges, such as an inherent uncertainty in scenario setting, particularly around climate risks, methodologies and tools tailored for different investors.

3.4.3 INVESTORS

Investors have a key role to play in addressing some of the market inefficiency related challenges identified in this chapter.

- Investors should continue to maintain active engagement with corporates to ensure that the growing importance of ESG factors in investors' capital allocation is clearly understood.
- Investment managers should review their existing portfolios and look for ESG-related vulnerabilities and price them appropriately.
- Investment managers should analyse their portfolios' ESG weighting and compare to the respective benchmarks and fully integrate ESG into their investment process and analysis.

Companies should actively engage with providers of capital to think long-term and to fully integrate ESG into their strategies.

Investors/capital providers should work closely with rating agencies in developing consistent definitions and assessment methodologies.

3.4.4 CORPORATES

There is still a large body of companies that are not fully aware of how ESG factors are growing in importance for the investor community and the positive impact on their long-term prospects, valuations and cost of capital if they integrate ESG strategies more effectively into their organisations.

- Companies should actively engage with providers of capital to think long-term and to fully integrate ESG into their strategies.
- Capture sector specific opportunities to gain first mover advantages in certain segments e.g. in electric vehicles, battery storage, and greener real estate.
- Follow TCFD recommendations to provide investors with fuller details on climate impacts of their business.

3.4.5 SPECIFIC RECOMMENDATIONS ON ESG

Given the potentially broad range of interpretations, definitions and weightings of environmental, social and governance factors across different sectors:

- Investors/capital providers should work closely with rating agencies in developing consistent definitions and assessment methodologies. These efforts should also be identifying on a sector by sector basis the key ESG factors/assessment pillars (and categories of risks relevant to each sector).
- Development of a sector by sector methodology might be a more pragmatic starting point given the relative infancy of the development of ESG ratings methodologies.
- To establish industry classification standards led by industry-wide rating agencies committee and investors.

3.4.6 SPECIFIC RECOMMENDATIONS – CHINA CONTEXT

- Formulate rules for compulsory disclosure of ESG information by listed companies and bond issuers.
- Strengthen policy support for green enterprises and projects.
- Regulators and central banks to encourage and guide commercial banks to drive green growth via:
 - Green credit assets meeting ESG rating standards in the scope of eligible collateral under the monetary policy of the central bank

- Lower capital requirements for green credits to the enterprises with excellent ESG performance.
- Create a corresponding negative list based on the green rating results.
- Definite ESG fiduciary duty for long-term institutional investors as social security, insurance, pension and annuity institutions.
- Building of ESG rating system (industry and institutional level) with combination of ‘unification’ and ‘differentiation/flexibility’.



WORK STREAM 4

GREENING THE BELT AND ROAD



INTRODUCTION

Effective deployment of capital to this initiative to ensure green financing principles are prioritised is globally important.

Given the scale and ambition of the BRI, it is impossible to rely only on public finance to meet global needs.

The Belt and Road Initiative (BRI) is an ambitious project that can improve the connectivity, infrastructure and trade opportunities touching at least 65 countries and affecting 69% of the world's population and 29% of the world's economy. Effective deployment of capital to this initiative to ensure green financing principles are prioritised is globally important.

The IEA estimates that \$89tn in infrastructure investment is required by 2030 along with \$4.1tn in incremental investment for transitioning to a low-carbon economy.⁶ Despite the creation of some new players backed with c\$200bn of public funds so far, such as AIIB (\$100bn), China's Silk Road Fund (\$40bn), New Development Bank (previous BRIC bank –\$50bn from a \$100bn goal), UN Green Climate Fund and the UK's GIB (c £3.4bn committed), given the scale and ambition of the BRI, it is impossible to rely only on public finance to meet global needs. Private capital must be 'crowded in' to projects and align with other sources of financing including government finance, guarantees, multilateral development banks (MDBs) and policy banks.

This 'crowding in' not only increases the amount of capital available for funding the BRI, but it also results in greater efficiency of capital. Releasing capital that is willing to take higher risks at the early stage of an infrastructure project allows that capital to be reinvested in a new project that requires this risk appetite. Thus an efficient engine for financing BRI projects is created.

In order for this efficiency to drive forward investments in the BRI, investors must plan for the financial sustainability of a project through its lifecycle. This sustainability must not be limited to structuring financial obligations, but must also have green finance principles at their core. This will ensure that projects are defined as environmentally sustainable from the outset in a way that meets a common definition of green financing for all the investors that may be involved during a multi-decade long project. This will serve to minimise the risk of stranded assets and aborted projects, maximise financial efficiency and secure our environment's future. This is why Greening the Belt and Road is so important.

⁶ Energy Technology Perspectives, IEA 2012



4.1 DEFINING THE BRI FOR GREEN FINANCE PLANNING

*A BRI project itself
reflects a long term
infrastructure investment.*

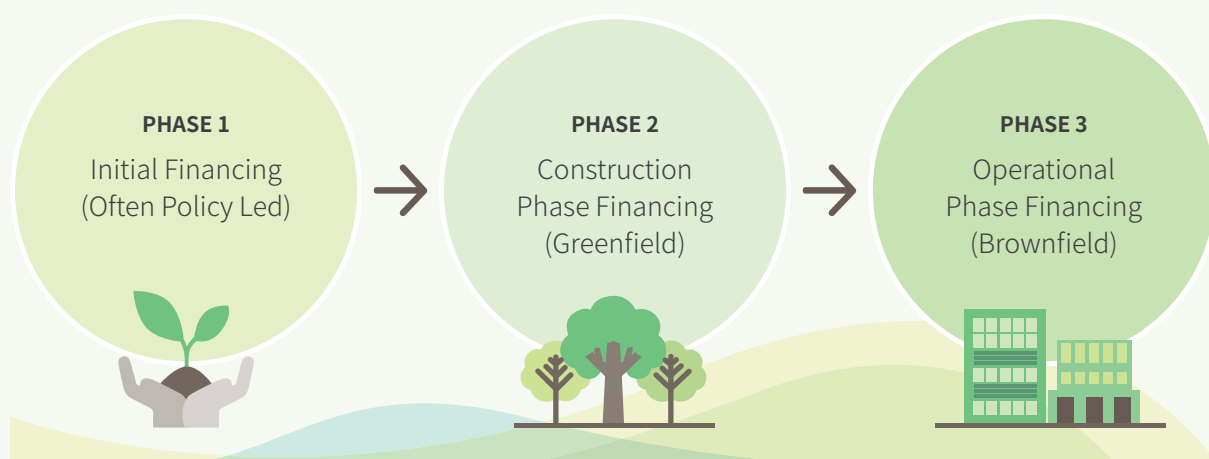


The BRI's scope is astounding. The countries included (see Appendix 2) share a common history as part of the ancient silk roads and maritime trade routes but do not share common risks for infrastructure projects. Many of the countries are developing countries that are in particular need of infrastructure investment, but also have the highest geopolitical risk. Other countries are more developed and have a more secure risk profile. Even the types of infrastructure projects in each country vary widely. These differences impact the ability for investors to categorise BRI projects as an asset class and compare investment opportunities efficiently.

An important difference between countries and projects in the BRI are the standards and principles of green finance being applied in different jurisdictions. Currently, BRI projects are being defined primarily by geography (i.e. is the project in a country identified in the BRI) and if they are an infrastructure project (see Appendix 2). In a majority of BRI projects, the investors include multilateral development banks (MDBs), policy banks, and Chinese and international commercial banks.

A BRI project itself reflects a long term infrastructure investment. This can be broken down into phases: initial financing (often policy-led), construction phase financing (Greenfield), and operational phase financing (brownfield). In developing economies, initial financing is particularly speculative and is often deemed essential to include a public sector de-risking party such as an MDB, government or policy bank in order to start the project. Other interested parties for BRI infrastructure investments include commercial banks, asset managers, pension funds, insurance companies and corporate investors.

A LONG TERM INFRASTRUCTURE INVESTMENT



PHASES OF INFRASTRUCTURE PROJECTS AND THEIR CHARACTERISTICS ⁷

PLANNING	<i>Economic And Contractual Issues</i> Contracts are written in the planning phase and are crucial to the success of the projects. The planning phase can take a long time (10 to 30 months) and the involved parties may attempt to renegotiate contract commitments. Ratings from rating agencies are important to secure interest from debt investors, as are credit insurance or government guarantees.	<i>Financial Characteristics</i> The procuring authority needs to find equity investors. The equity sponsor needs to secure commitments by debt investors (mostly banks). Given the long planning period, early commitments by debt investors come at a high cost. Leverage can be high (10:1 or more).	<i>Potential Investors</i> Equity sponsors need a high level of expertise. They are often construction companies or governments. In rare cases, infrastructure funds (Australia, Asia) or direct investments by pension funds (Canada) may be involved. Debt investors are mostly banks through syndicated loans. Bond financing is rare, as projects carry high risks in the initial phases.
CONSTRUCTION	<i>Economic And Contractual Issues</i> Monitoring incentives are essential. Private involvement (as opposed to purely public investment) can ensure this.	<i>Financial Characteristics</i> This is a high risk phase. Unexpected events are likely due to the complexity of infrastructure projects. Default rates are relatively high. Initial commitments by debt-holders must extend far beyond this stage, as a project does not generate cash flows in this phase.	<i>Potential Investors</i> Refinancing or additional financing is very difficult and costly at this stage. Equity sponsors may have an incentive to provide additional finance if risks materialise.
OPERATIONAL	<i>Economic And Contractual Issues</i> Ownership and volatility of cash flows due to demand risks are key. Models such as flexible-term present value contracts and availability-based fees reduce volatility, risk and financing cost, but have adverse incentive effects.	<i>Financial Characteristics</i> Positive cash flows. The risk of default diminishes considerably.	<i>Potential Investors</i> Refinancing of debt (bank loans) from the initial phase. Bonds are a natural choice, but they are not very common. Refinancing with bank loans or government funds is common.

⁷ BIS Working Paper 454, Understanding the Challenges of Infrastructure Finance, 2014

4.2 LINKING GREEN FINANCING TO THE BRI PROJECT LIFECYCLE

We need MDBs to crowd-in private capital, rather than crowd it out with concessional financing.

The challenge is that not all investors wishing to participate in the BRI have a single set of principles they all agree as the definition of a green investment.

The role and status of an MDB is crucial here.

First, we need to have a consistent, ideally standardised, and harmonised approach for credit support and scalable credit enhancement programs that have global appeal.

- MDBs should act to cover risks that the private sector is not realistically able to cover (i.e. credit enhancement, guarantee programmes, FX, etc.).

Second, we need MDBs to crowd-in private capital, rather than crowd it out with concessional financing. We need therefore to:

- Foster the complementarities (rather than create competition) between different sources of capital.
- Increase the number of national projects eligible for Project Bonds Credit Enhancement (PBCE) in order to develop investor appetite for infrastructure asset.

Third – homogenise and also scale up risk mitigation products such as political risk, regulatory risk and in particular develop scalable products around long-dated FX risk.

Furthermore, environmental risk is central to assessing a BRI project from inception particularly from the perspective of an MDB or government whose policy is to adhere to green financing principles. MDBs consider a range of environmental factors including policy, market and technological (what the Financial Stability Board (FSB) has termed transition risk) and environmental factors such as force majeure events (physical risk), all of which can impact the financing of BRI projects.

There are various green metrics and benchmarks utilised to certify bonds as green, notably the Green Bond Principles,⁸ managed by the International Capital Market Association (ICMA) and the Green Bond Standards⁹ run by the Climate Bonds Initiative (CBI). China has a Catalogue for green bonds which is used for the vast majority of Green bond issuances in China. These are all accepted by various market players and indeed ICMA's standards have project categories that include clean transportation and sustainable water management which are particularly applicable to BRI.

The challenge is that not all investors wishing to participate in the BRI – even within the investor categories listed above – have a single set of principles they all agree as the definition of a green investment. A case in point is a clean coal project in Pakistan which is invested in by a Chinese MDB, policy bank or commercial

⁸ See <https://www.icmagroup.org/Regulatory-Policy-and-Market-Practice/green-social-and-sustainability-bonds/green-bond-principles-gbp/>

⁹ See <https://www.climatebonds.net/standards>

With a common green BRI language, principals and criteria investors will be able to focus on the project pricing and financing.

bank. This would be considered Green by Chinese Catalogue standards, but would not be considered Green under international standards (e.g. CBI or ICMA standards). The potential risk may not be understood at the initial phases of the investment, but as the project moves through its lifecycle, the opportunity to crowd in international private capital and release MDB or government led funds may be impeded should later investors apply CBI, ICMA or other international green standards as a requirement for investment.

In addition, there are also specific standards pertaining to green infrastructure finance such as the Equator Principles¹⁰ for project finance. Similarly, the China City Development Foundation is keen to develop their Green Infrastructure Finance Accreditation (GIFA) principles, which could be a mechanism for aligning on standards specific to BRI projects.

Therefore to increase standardisation, help lower costs and increase transparency and certainty, there is a need to triangulate between these various standard setters to agree a common framework for green BRI infrastructure finance. These should recognise the needs of international, national and municipal level projects and their typical investors. With a common green BRI language, principals and criteria investors will be able to focus on the project pricing and financing rather than time spent on rationalising green finance definitions.

4.3 GEOPOLITICAL RISK ON THE BRI

The size and breadth of the BRI funding requirements are too big for Sinosure alone to underwrite.

In addition to vanilla risks such as construction, completion and financing, a key challenge to BRI projects remains the political risk in the developing countries along the BRI. These risks often require a government guarantee or policy bank approach to initiating projects.

Sinosure (China Export & Credit Insurance Corp) is currently the primary vehicle for underwriting these risks but the size and breadth of the BRI funding requirements are too big for Sinosure alone to underwrite. For example, in 2016, Sinosure underwrote \$42.6bn of risk as against \$159.4bn of construction completed.¹¹ This mismatch will have to be mitigated if capital is to be mobilised. Moreover, Sinosure is focused on insurance for overseas investment for Chinese banks, and does not easily cover syndicated debt. More needs to be done to create options that sit alongside Sinosure and create opportunity for significant market development in geopolitical risk insurance.

¹⁰ See <http://www.equator-principles.com/>

¹¹ China City Development Foundation, private presentation, 2017

4.4 CREATING A FINANCIAL MARKET FOR BRI

In order to manage liquidity risk and lower the cost of capital for investors, it will be essential to create a market for BRI debt. Public markets will be needed for capital origination, given the scale of what is required, but more significantly they are needed for recycling and securitisation. At present, it is often the case that capital markets are not conducive to refinancing infrastructure debt.

However more could be done such that once a project is completed and is performing and yielding cash flow, equity financing of infrastructure companies and assets as well as bond financing can be encouraged. For example, an SPV could be created to issue debt and equity securities and use the proceeds to purchase infrastructure loans from the original lender. This process of securitisation allows further injections of finance without impacting the balance sheet of the originator and would even tend to reduce debt-to-equity ratios allowing it to borrow more in future. Combined with green standardisation of BRI infrastructure, it could be used to attract asset managers and infrastructure funds who want to increase their exposure in this field.

Making a decision to invest in an infrastructure project is complicated. A public market instrument needs to create an opportunity to normalise some of the variables in order to make the investment decision making process more efficient. Green standardisation is one of these elements. However, it needs to also consider other factors to make a green BRI financing market successful.

It is essential that in addition to green standardisation, investors in BRI projects have access to the requisite credit ratings data.

To further develop the market for BRI finance, it is essential that in addition to green standardisation, investors in BRI projects have access to the requisite credit ratings data and sufficient transparency to assess the risk in projects. Ideally all project data should be transparent, credible and assessable. In reality, however, this will only become common practice when governments and regulatory bodies enforce disclosure of such data. This means a pan-BRI country approach is required.

ICBC Standard Bank has recently launched a set of Belt and Road Economic indices¹² to offer investors a standardised framework to compare the investment climates and economic and political risks of individual countries across the 'Belt and Road' region. These will need to be complemented by credit ratings from globally respected rating agencies that have the capability to incorporate bespoke analysis on infrastructure and sustainability factors.

The ultimate aim of a market for green BRI financial instruments is to further develop the market for crowding in much needed private finance as efficiently and transparently as possible. It will result in more opportunity to price BRI projects at all phases and lower financing costs by providing liquidity options to investors at all stages.

4.5 KEY RECOMMENDATIONS

Agree to a set of harmonised standards for efficient green BRI funding across BRI countries.

To address some of the above-mentioned challenges, we developed the following recommendations:

4.5.1 LAUNCHING A BRI INVESTOR ALLIANCE TO DEVELOP STANDARDS FOR GREEN BRI FINANCE

MDB's are critical in beginning the funding lifecycle of many BRI projects. A BRI Investor Alliance including a majority of MDB's should agree to a set of harmonized standards for efficient Green BRI funding across BRI countries. This would need to be agreed with consultation from all interested investor groups to ensure harmonized Green standards throughout the lifecycle of BRI projects.

In China, seven industrial associations (led by Green Finance Committee and China Investment Association) are in the process of drafting a set of voluntary guidelines for environmental risk analysis for China's overseas investment, which will be released on Sept 5 2017. The BRI Investor Alliance should explore the possibility of working with these Chinese Industrial Associations on extending the coverage of green finance principles to both Chinese and foreign investors.

A recommended first step for the BRI Investor Alliance is creating a subset of similar risk profile geographies and infrastructure types to assess Green BRI risks.

It would also be beneficial to build out a series of case studies to highlight best practice for how sustainability can be achieved in both environmental and financing across different geographies and infrastructure types across the Belt and Road.

4.5.2 IMPROVING TRANSPARENCY OF GREEN BRI ASSETS

Building directly on Recommendation 1, the BRI Investor Alliance should scope the requirements for a monitoring body to help add transparency to the Green BRI asset class. It should draw from existing best practice in existing standards but be bespoke to the needs of BRI investors and issuers.

¹² ICBC, Belt and Road Economic Health Index and Belt and Road China Connectivity Index, 2017, see <https://www.icbcstandardbank.com/CorporateSite/BRIThoughtLeadership>

4.5.3 EXPANDING THE DIVERSITY OF RISK GUARANTEES

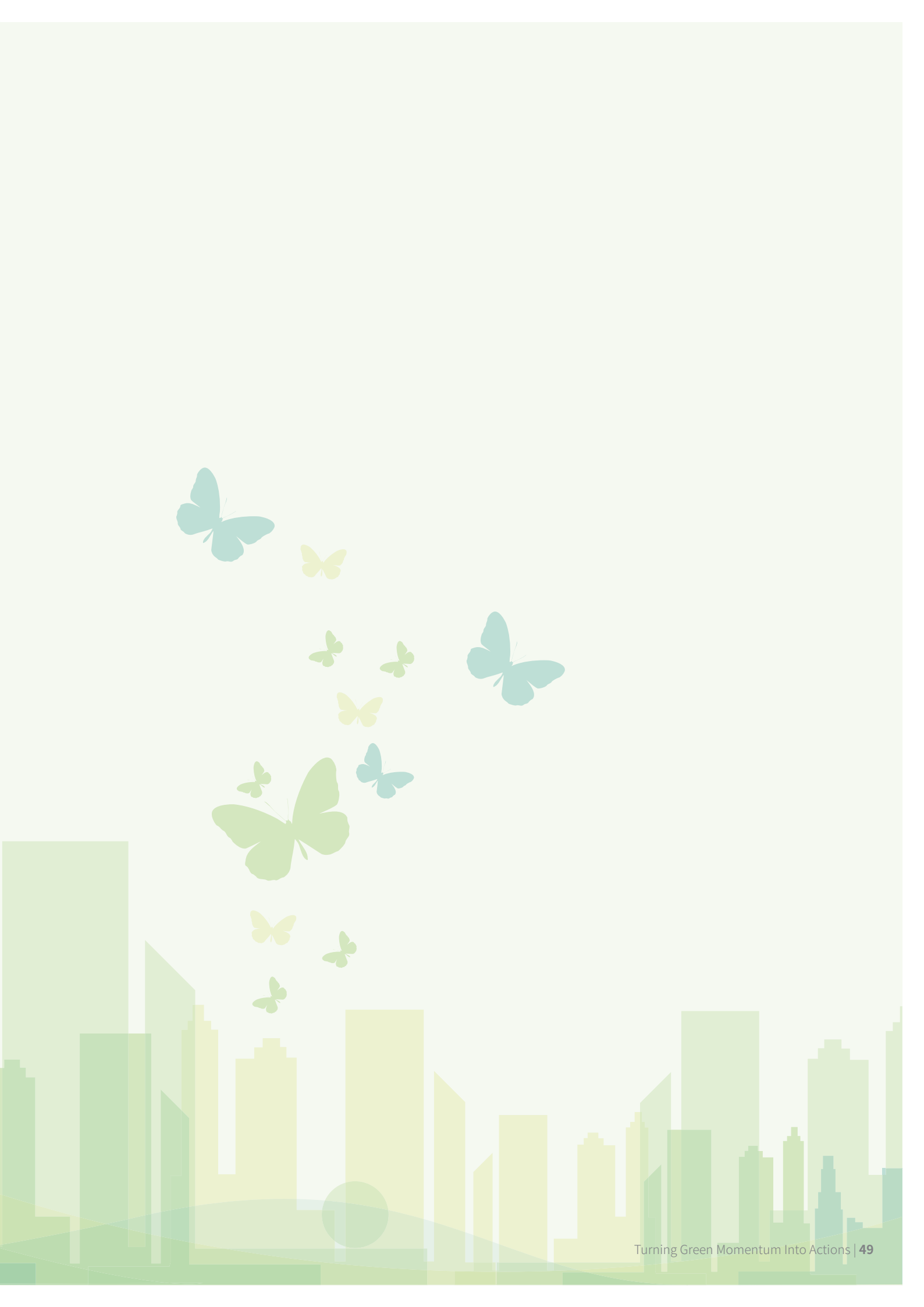
BRI project risks are critical to address in order to drive volumes of project success. As a dominant player, Sinosure policy should be revised to relax the 70% lower limit on Chinese bank participation in BRI infrastructure finance to allow further expansion of the diversity of risk guarantees available and appropriate.

4.5.4 DEVELOPING POLITICAL RISK INSURANCE

A new political risk insurance vehicle needs to be developed that can work with both Chinese and foreign banks to help mobilize sufficient capital. Given the scale, these instruments should have the potential to be listed to create liquidity in the market and generate the necessary scale in political risk underwriting.

4.5.6. DEFINING GREEN BRI FINANCE INSTRUMENTS

Capital markets can play a role in making Green BRI financing more efficient. It is recommended that a definition of Green BRI Finance Instruments be developed to help build a transparent market for primary and secondary issuance against a defined criteria driven by investor demand.



WORK STREAM 5

FACILITATING INTERNATIONAL CAPITAL FLOWS TO GROW CHINA'S GREEN BOND MARKET



INTRODUCTION

China has provided strong policy signals around their intent to develop a green bond market and to achieve a rapid transition towards a green economy. International investors with relatively low interest rate requirements can be an important source of capital to finance China's green transition.

However, challenges to scale up green bond issuance overseas and barriers for international investors to enter China's green bond market need to be addressed.

This chapter explores the challenges and also puts forward potential measures and solutions to facilitate cross-border capital flows to support the expansion of China's green bond market.

5.1 THE STATE OF CHINA'S GREEN BOND MARKET

Green bonds can be clearly observed with total issuance now of RMB 324bn (USD 48bn) from early 2016 to July 2017, representing 30% of the total green bonds launched globally during the period.

2%

Green bonds already now represent 2% of total issuance of the Chinese bond market, which is substantially higher than the global figure of 0.2%.

5.1.1 CHINA GREEN BOND MARKET - CURRENT STATUS

China has clearly demonstrated strong leadership support to build and further develop a green bond market as a key constituent of accelerating the transition towards a green economy. With this support the growth of green bonds can be clearly observed with total issuance now of RMB 324bn (USD 48bn) from early 2016 to July 2017, representing 30% of the total green bonds launched globally during the period.

The majority of green bonds were issued on the China Interbank Bond Market (CIBM) with banks responsible for 71% of issuance and the corporate sector for 29%. Within this issuance there is still some difference in the underlying green definitions with 70% of the issuance meeting internationally defined norms but 30% not fully satisfying. Clearly the move towards fully recognized criteria on green credentials should allow greater expansion of this important market.

Green bonds already now represent 2% of total issuance of the Chinese bond market, which is substantially higher than the global figure of 0.2%. Furthermore the market specialists believe that the rate of growth of most green finance products, including green bonds in China, will be aggressively maintained.

5.1.2 CHINA INTERBANK BOND MARKET (CIBM)

China has the third largest bond market with the majority of bonds being issued and traded in the CIBM. The Chinese authorities have introduced a range of planned and structured market opening measures to facilitate greater overseas involvement to match the growing demand for RMB assets and support investor diversification objectives. Moreover, the internationalization of the RMB and inclusion into the SDR has

increased and may further increase demand for domestic market opportunities from long term investors.

From initial access via approved QFII/RQFII schemes the PBoC has further facilitated international investor participation by the introduction of 'Direct Access to CIBM' in 2016¹³ and importantly the very recently announced 'Bond Connect Programme' launched in Hong Kong.¹⁴ Each of these initiatives demonstrates the strong commitment and support given for overseas investors to have confidence to participate in the domestic bond market from the Chinese authorities.

5.2 CHALLENGES TO GREEN BOND ISSUANCE FROM CHINA

A number of domestic Chinese issuers are not fully aware of the total process and requirements that must be met for international investors.

Although well recognised in domestic market a number of issuers (particularly SOE's) are less well understood by some international investors thereby paying a premium against global peers in the same sector in spite of sharing the same international credit rating.

To meet the aim of increased issuance of green bonds offshore by Chinese issuers there are a number of challenges identified.

5.2.1 LACK OF AWARENESS AMONG POTENTIAL GREEN BOND ISSUERS

Although there is benefit of lower funding costs if issuing green bonds offshore in traditional currencies (USD, Euros), a number of domestic Chinese issuers are not fully aware of the total process and requirements that must be met for international investors. And to increase interest in issuing green bonds offshore, Chinese issuers need to have a better understanding of the benefits of green bonds compared to standard bond issuance in international markets.

5.2.2 CAPITAL COSTS FOR CHINESE ISSUERS MAY NOT BE AS LOW AS EXPECTED

Although well recognised in domestic market a number of issuers (particularly SOE's) are less well understood by some international investors thereby paying a premium against global peers in the same sector in spite of sharing the same international credit rating. Overseas investors need to be fully confident in the green issuers meeting all requirements to satisfy their investment mandates. With a lack of knowledge, and sometimes trust, in some Chinese issuers there may be a bias to invest in an international competitor in their own market. Therefore, the cost of funding to issue offshore might not be attractive for potential Chinese green bond issuers.

5.2.3 APPROVAL PROCESS AND QUOTA LIMITATION

Approval for offshore bond issuance requires formal registration with domestic regulators such as the National Development and

¹³ <http://www.pbc.gov.cn/tiaofasi/144941/144959/3021203/index.html>

¹⁴ <https://www.ft.com/content/41a9eedc-5f97-11e7-91a7-502f7ee26895>

Chinese issuers are also subject to a quota on the size of the bond they can issue.

5.3 CHALLENGES FOR INTERNATIONAL INVESTORS PARTICIPATING IN THE ONSHORE GREEN BOND MARKET

Amongst some investors in two ways: the investor may have invested in projects that their respective clients do not consider as green by their own definition and possibly conflicts with their own specific mandate; doubts as to whether this green issuance will satisfy the criteria of eligibility to green index inclusion.

Reform Commission (NDRC). In achieving this approval, it is uncertain as yet to the time it will take for authorisation to be formally communicated.

5.3.1 DIFFERENCES BETWEEN CHINA'S GREEN DEFINITIONS AND INTERNATIONALLY ACCEPTED GREEN DEFINITIONS

As stated earlier the majority of domestic green bonds meet green definitions covered by international guidelines and standards. However, there are some differences, notably the inclusion of fossil fuel projects including coal-powered generation, 'clean' coal and high-efficiency transport fuel (petrol and diesel) production. These differences create concern amongst some investors in two ways: the investor may have invested in projects that their respective clients do not consider as green by their own definition and possibly conflicts with their own specific mandate; doubts as to whether this green issuance will satisfy the criteria of eligibility to green index inclusion.

5.3.2 LACK OF INFORMATION ON CHINA'S GREEN BOND MARKET

Other than undertaking detailed and therefore costly due diligence and analysis, investors rely on the integrity of issuer reporting and external review to make investment decisions. Without long term experience of investing in China, some investors are less confident or inherently cautious about increasing their exposure. Specifically in green bond investment the lack of information on use of proceeds, post issuance disclosure requirements and external review may restrict the potential funds that could be allocated.

5.3.3 DOMESTIC MARKET ACCESS

Although the Chinese authorities have promoted greater access to the domestic bond market through different channels, there are varying requirements to be met depending on the method chosen. These differing requirements and possible approval processes may act to the detriment of boosting overseas participation. For example, QFII/RQFII require investors to apply for a license and quota limit before entering the domestic market. The 'Direct Access to CIBM' needs investors to register with PBoC

initially and then identify a qualified onshore agent bank to invest through. The ‘Bond Connect Programme’, which was launched in July this year, seeks to facilitate smoother access, however many foreign investors are not fully aware of the technical details of its operation.

5.3.4 CAPITAL FLOW CONTROLS

Although cognizant that the Chinese government has the authority to monitor and control capital flows international investors clearly view this as significant challenge given the need to remit interest payments and redemptions that may be made. With possible uncertainty in the direction of capital controls this may restrict both the maturities of bonds held and the overall level of investment.

5.3.5 HEDGING TOOLS

It is important to international investors that they could hedge the currency risk when they choose to invest in RMB-denominated bonds. Many investors still have the concerns that the available access to China domestic FX market is still limited which could negatively affect the efficiency or cost of hedging. With the continued development of the RMB FX market it will be important to continue to offer an increased range of hedging tools to allow the overseas investor to manage their currency risk. Clearly actions taken recently relating to the formation of exchange rate and measures taken to support stability will still be beneficial to increase the range of derivatives available.

5.3.6 DOMESTIC CREDIT RATINGS

International investors are not as familiar with methodologies utilized by domestic rating agencies in China, nor do they fully understand the potential credit risks relating to green bonds assigned by these agencies compared to their comfort with international credit rating companies. From this it is conceivable that:

- To avoid unforeseen credit risks international investors may not invest in green bonds issued in the domestic market.
- They may choose to undertake their own due diligence and analysis on the domestic issuer.

Possibly demand that an international credit rating agency undertake their own due diligence to meet their respective green investment mandate.

5.4

KEY RECOMMENDATIONS

Programs can be introduced to inform and educate issuers about the benefits and challenges of green bond issuance compared to standard bond issuance and how to issue.

Having identified the current status and challenges faced in further developing increased capital flows to the domestic market we have sought to identify a number of areas where access could be improved and increased.

5.4.1 MARKET EDUCATION AND INFORMATION SHARING

Raising Chinese issuers' awareness through market education activities and demonstration issuance

Programs can be introduced to inform and educate issuers about the benefits and challenges of green bond issuance compared to standard bond issuance and how to issue. By formalising each step in green bond issuance, and identifying how the domestic process differs from international markets it may be possible to converge upon an agreed and accepted market practice. Underwriters who have been active in the green bond market are expected to actively promote market awareness on green to potential issuers. This could be done by hosting market education workshops with potential Chinese green bond issuers.

In 2016, Bank of China issued two green bonds with six tranches in total, listed in London, Luxembourg, Frankfurt, Berlin, and Hong Kong – a good example of demonstration issuance that helps investors in various jurisdictions learn more about Chinese green bond issuers.

Improving international investors' understanding of China's green bond market through investor roadshows and engagement platforms

To support greater understanding from an investor perspective it would be beneficial to facilitate improved and increased methods of communication with the potential domestic issuers. The establishment of regular roadshow meetings between investors and issuers, which are well recognised in global debt markets, would allow issuers to showcase their green bond issuance plans. Equally investors can achieve a greater level of understanding of the domestic client and hopefully consider investment with a greater level of confidence.

For example, in December 2016, the Climate Bonds Initiative in partnership with London Stock Exchange hosted an investor forum for Brazil in London, with Brazil's companies and financial institutions presenting on green investment opportunities. Similar forum can be hosted for Chinese issuers, as well. PRI, as the world's leading proponent of responsible investment who is well connected with the global investor community, can also play an important role here.

Developing green bond database and indices

By providing access to a well-recognised database of Chinese green bonds international investors could identify information needed from an easily accessible source which may allow a greater level of confidence to invest. Moreover, consideration could be given to this database differentiating those issuers that fully meet international green definitions and those that do not by providing different fields. As with other financial products leading market data providers such as Bloomberg, Thomson Reuters and Wind could play a key role in developing such a database. Such database can be used by the Hong Kong Stock Exchange to establish a green bond segment which allows international investors to invest in Chinese green bonds through the Bond Connect Programme, i.e. developing a “Green Bond Connect Programme”. The provision of indices is also seen as positive for market development as investors can benchmark the performance of the Chinese issued green bonds. A number of indices have been developed including the China Climate aligned Bond Index and the Luxembourg Stock Exchange-Shanghai Stock Exchange Green Bond Index.

Harmonising and gaining convergence of green definitions and standards in China and those in the international market would assist Chinese issuers in complying with common practice in the global green bond market satisfying the requirements of international investors.

5.4.2 POLICY, GUIDANCE AND INCENTIVES

Establishing and using internationally accepted green bond standards and certification scheme

Harmonising and gaining convergence of green definitions and standards in China and those in the international market would assist Chinese issuers in complying with common practice in the global green bond market satisfying the requirements of international investors. In March 2017, the PBoC and the EIB established a joint green finance initiative to harmonise the green definitions across different markets. International investors could also use the Climate Bonds Standard & Certification Scheme as a tool to identify green bonds that meet both domestic and international green definitions.¹⁵

Simplifying approval process

In the domestic market, regulators have already established a fast track approval process for green bond issuance. Regulators in China have simplified the approval process for green bond issuance to make it more efficient. For example, in the green bond guidelines published in March 2017, China Securities Regulatory Commission has promised they will continue improving the approval process for domestic green bond issuance.

The National Development Reform Commission (NDRC) has launched a pilot scheme for a selected number of Chinese SOEs to have the flexibility to raise USD debt internationally at any time and be able to use the proceeds onshore or offshore. Consideration should be given for a similar scheme for green bond issuers to both encourage greater issuance and equally have flexibility on timing where investment appetite for green bonds may be higher.

Providing clearer policy guidance on market entering schemes

As stated investors can access the domestic market through QFII, CIBM and Bond Connect. A simpler procedure for application to access CIBM directly and clearer guidance/procedures on Bond Connect will further encourage overseas participants. Consideration should be given to publicise this operational details of the Bond Connect initiative further.

And simpler procedure for application to access CIBM directly and clearer guidance/procedures on Bond Connect will further encourage overseas participants.

Providing clear policy signal and guidance to reduce investor perception on capital controls

Giving a clear policy signal on capital flow controls, and putting detailed policy guidance on capital inflows/outflows in place, can reduce investors' perception that they may not be able to exit the market if they need to due to policy actions on capital flow controls. This is important for both the bond and green bond markets and it is seen as one of the most important factors for foreign investors both in the domestic and in the offshore markets.

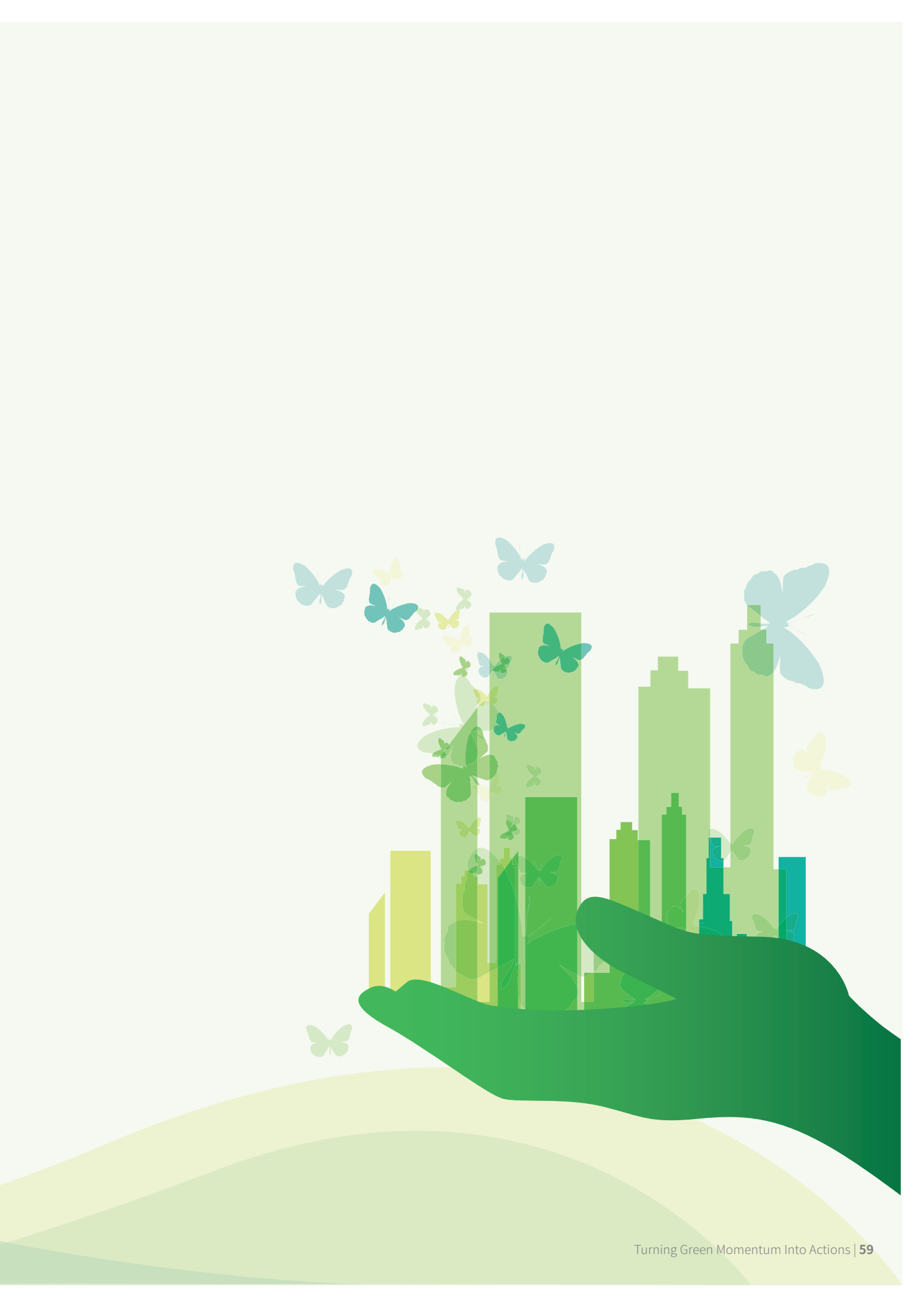
5.4.3 MARKET INFRASTRUCTURE

Developing RMB hedging instruments

China domestic market infrastructure is expected to keep improving to support mitigating counterparty credit risk which could facilitate international investors to better access to the market liquidity with setting up bilateral trading lines for all market participants they would like to trade with. With the growth of overseas participation in domestic bond and equity markets there may be a point in the future whereby the onshore CNY and offshore CNH merge which would boost liquidity and reduce the cost of hedging – particularly in the cross currency swap market – given the limited liquidity in the offshore market.

Improving domestic credit ratings practice

Improved transparency and understanding of the methodologies utilised by the domestic ratings agencies in how they appraise companies, and the criteria for the ratings applied would allow greater international investor confidence for investments made in domestic green bonds. Moreover, specific information on how government support for the underlying issuer affects their rating assessment would be of strong value. International credit rating agencies such as Moody's and S&P can share their experience and provide support, given that they already have shareholdings of some of the biggest domestic credit agencies. In May 2017, the Government announced that they will open the market for international credit rating agencies to provide services in China,¹⁶ though more details and guidance on rules of applying for a rating licence are needed.



APPENDICES



APPENDIX 1: WORK STREAM 3

1) CHINA EQUITIES - FIGURE 180 - ESG INVESTMENT INDEX



2) GREEN LOANS: MARKET INFORMATION

The first labelled corporate green loan from ABN Amro in 2016. BBVA recently provided Spanish utility Iberdrola with a €500 million (\$533 million) green loan to help it finance its renewable energy investment and a \$25 million ‘green loan’ to Italian energy company Terna to help it connect renewable energy projects in Uruguay to the national grid, this loan sitting alongside a \$56 million loan from the Inter-American Development Bank (IDB) to the same company for the same project. This is believed to be the first green loan to be structured as project finance. HSBC Malta has a green loan product for retail customers thinking of investing in PV panels or a solar water heater - allowing them to finance the full cost of the purchase and installation of photovoltaic panels and solar water heaters over up to seven years and benefit from a preferential interest rate and zero processing fees.

3) CASE STUDY: BREEAM 2016 (THE VALUE OF SUSTAINABLE BUILDINGS)

BREEAM, one of the world’s leading sustainability assessment method for the built environment, published a briefing paper in 2016, highlighting the tangible benefits of sustainable buildings for developers, owners and tenants.

The report shows that achieving green certification, ranging from a ‘Pass’ to an ‘Excellent’ rating, incurs an increase in capital

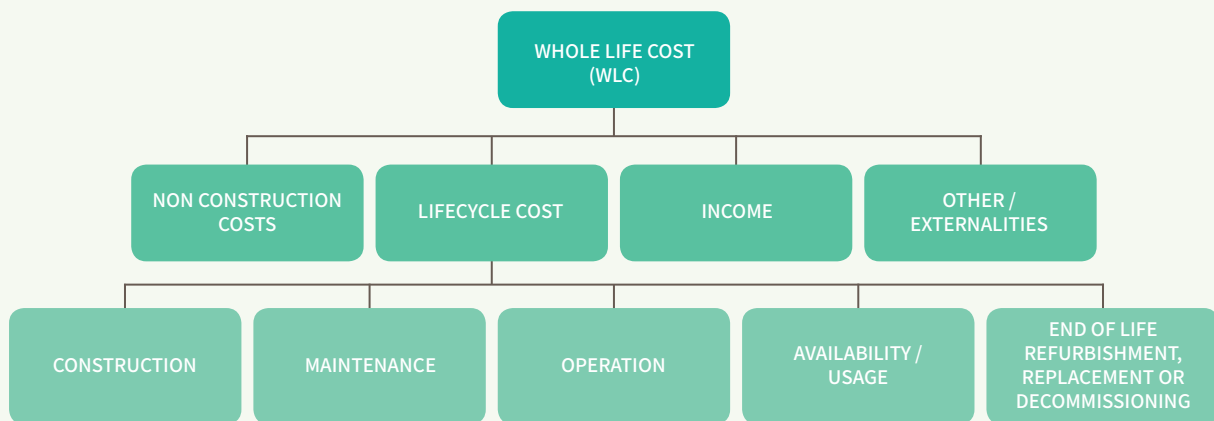
costs from 0% to 1.71% for commercial buildings. However, related research conducted by BRE and Sweet Group, also shows that savings in operational costs for certified buildings, can pay back the higher capital costs within 2 to 5 years, with further operational saving accruing from that point.

Commercially, certified green buildings can command higher sale prices of up to 30% and increased rental rates of up to 24.9%, compared to 'business-as-usual' code compliant buildings. Resilient, future-proofed buildings can also reduce operation risks and maintenance costs for owners and developers.

From the tenant's perspective, the World Green Building Council in 2014 found that 90% of costs for offices are related to staff expenses. A sustainable building with improved acoustic performance or daylighting, for example, are proven to increase staff productivity, which will contribute to reduced effective operational costs for office tenants.

4) CASE STUDY: STANSTED AIRPORT

An energy-efficient baggage handling system which reduces the whole life cycle cost by £14.4 million, as well as significant reduction in costs from the outset.



STANSTED HBS REPLACEMENT: WHOLE LIFE CYCLE COST SUMMARY				
OPEX	YEAR 1 COSTS		WHOLE LIFE CYCLE COST	
	V1	BUK	V1	BUK
Power Consumption	556,261	489,322	16,687,824	14,679,666
Preventative Maintenance	46,418	43,990	1,392,534	1,319,690
Baggage Operations Team	1,302,438	1,302,438	39,073,145	39,073,145
Baggage Technicians Team	2,003,480	1,602,784	60,104,400	48,083,520
Spares and Consumables	167,400	156,420	5,022,000	4,692,600
Table 3. Cumulative Present Costs	556,261	3,594,954	122,279,903	107,848,621

NB: The BUK solution allows for single sorter operation for approximately 50% of the operational day. This operational capability enables cost reduction due energy saving, reduced maintenance and potentially for day time maintenance. Only the cumulative present costs above take into account discounted values.

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- http://mitsloan.mit.edu/actionlearning/media/documents/s-lab-projects/Breckinridge_Capital-Report-2016.pdf

APPENDIX 2 WORK STREAM 4

1) LIST OF BRI COUNTRIES (CHINA INTERNATIONAL TRADE INSTITUTE)

East Asia (2)	Central Asia (5)	Southeast Asia (11)	South Asia (8)	Europe (24)	Middle East and North Africa (15)
China Mongolia	Kazakhstan Kyrgyzstan Turkmenistan Tajikistan Uzbekistan	Brunei Cambodia Indonesia Laos Malaysia Myanmar Phillipines Singapore Thailand Timor-Leste Vietnam	Afghanistan Bangladesh Bhutan India Maldives Nepal Pakistan Sri Lanka	Albania Armenia Azerbaijan Belarus Bosnia and Herzegovina Bulgaria Croatia Czech Republic Estonia Georgia Hungary Latvia Lithuania Macedonia Moldova Montenegro Poland Romania Russia Serbia Slovakia Slovenia Turkey Ukraine	Bahrain Egypt Iran Iraq Israel Jordan Kuwait Lebanon Oman Palestine Qatar Saudi Arabia Syria United Arab Emirates Yemen

2) CATEGORIES OF INFRASTRUCTURE PROJECTS

In terms of category of project, they could include but are not limited to:

- railways, high-speed and freight;
- telecommunication networks;
- port infrastructure, including cargo hubs and “dry ports”;
- rural infrastructure and agriculture development;
- urban development and logistics;
- clean energy infrastructure; and
- water supply and sanitation.

The latest International Finance Corporation (IFC) report on green finance including the following categories, as prioritised by respondents:

- Adaptation (conservation, biosystem adaptation).
- Carbon capture and storage.
- Energy efficiency (cogeneration, smart grid).
- Environmental protection (pollution control, prevention, and treatment).
- Green buildings.
- Green products and materials.
- Renewable energy (solar, wind, hydro).
- Sustainable land management (sustainable agriculture, forestry).
- Transport (urban rail/metro, electric, hybrid).
- Waste management (recycling, waste management).
- Water (water efficiency, wastewater treatment).

3) CHARACTERISTICS FOR PROJECT FINANCE DEBT

The Bank for International Settlements (BIS) has set out five characteristics for investors in project finance debt that have applicability to BRI financing.

1. Financial strength of project company.
2. Political and legal environment.
3. Transaction characteristics (including design and technology risk).
4. Strength of sponsor.
5. Security package (contracts, accounts, escrow accounts, covenants, reserve funds etc).



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We would like to thank the following organisations for sharing their experience, case studies or other content for these chapters.

(The views expressed do not necessarily represent the views of these organisations).



**WORK STREAM 1:
ASSESSING THE
ENVIRONMENTAL RISK**

Principles for Responsible Investment (UK Chair)
International Institute of Green Finance, Central University of
Finance and Economics (China Chair)
China Asset Management Co
Aviva Plc
Environment Agency Pension Fund
HSBC Global Asset Management and Global Banking & Markets
Legal & General Investment Management
Willis Towers Watson

**WORK STREAM 2:
GREEN LOANS AND
SECURITISATION**

Bank of England (UK Chair)
Industrial Bank of China (China Chair)
Bank of China
Agricultural Bank of China
HSBC Global Banking & Markets
Barclays
Lloyds Bank
Goldman Sachs
Generation Investment Management LLP
Shanghai Stock Exchange
London Stock Exchange
ICMA
ReedSmith
Zhong Lun
PBoC
Hogan Lovells

**WORK STREAM 3:
IMPACT OF ESG FACTORS
ON THE COST OF CAPITAL**

HSBC Global Banking & Markets (UK Chair)
ICBC (China Chair)
S&P Global
Trucost, S&P Dow Jones Indices
Aviva Plc
Generation Investment Management LLP
Hermes Investment Management
Investec Asset Management/UN SDSN

ARUP
Bank of America Merrill Lynch
TruValue Labs
Principles for Responsible Investment

**WORK STREAM 4:
GREENING THE
BELT AND ROAD**

The City of London Corporation (UK Chair)
Renmin University (China Chair)
Agricultural Bank of China
ARUP
Clifford Chance
HSBC Global Banking & Marks
ICBC Standard
ICMA Group
IFC

**WORK STREAM 5:
GREENING CROSS
BORDER CAPITAL FLOW**

Climate Bonds Initiative (UK Chair)
Bank of China (China Chair)
Central University of Finance and Economics
China Cheng Xin International Credit Rating (CCXI)
Qianhai Financial Holdings
HSBC Global Banking & Marks
Affirmative Investment Management (AIM)
London Stock Exchange
Golden Credit Rating International Co., Ltd
China Central Depository and Clearing (CCDC)



