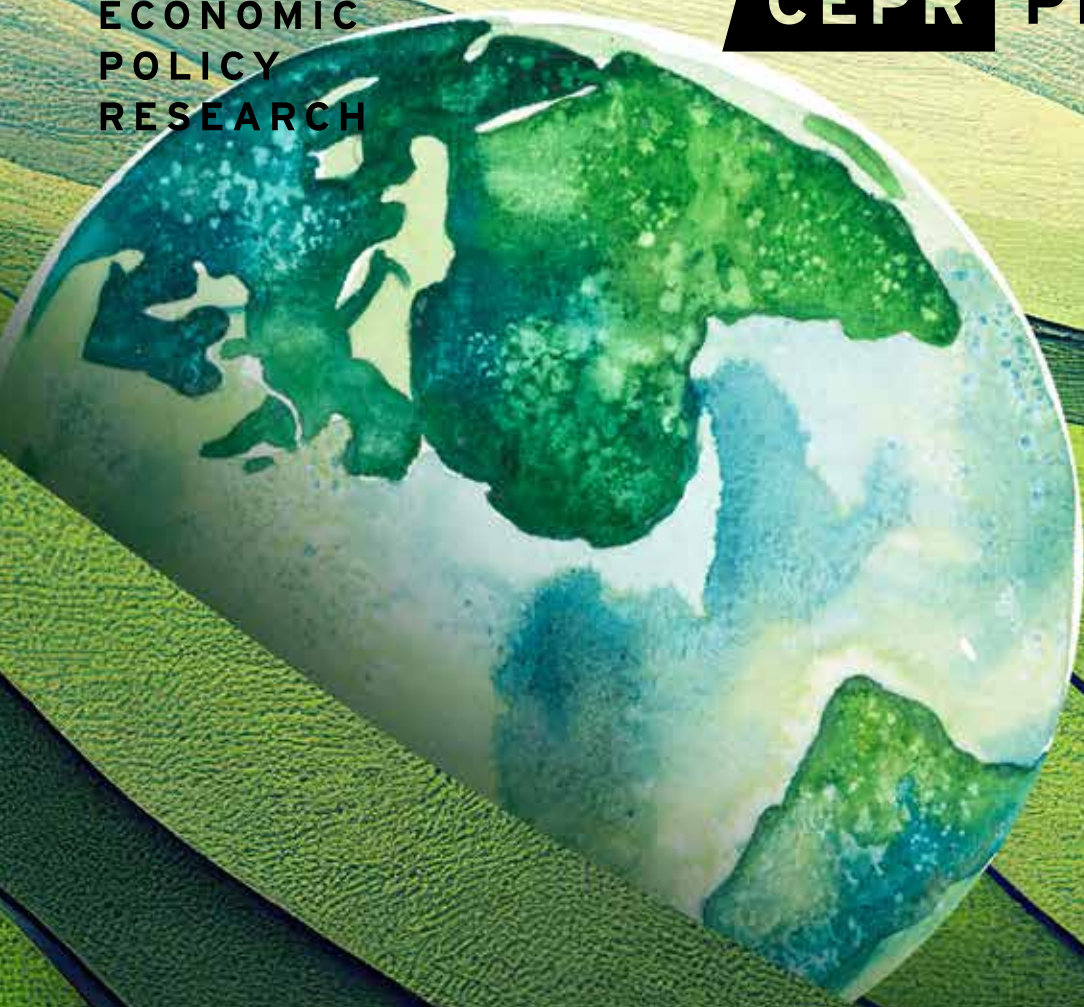


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Edited by Dirk Schoenmaker and Ulrich Volz

Scaling Up Sustainable Finance and Investment in the Global South

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CEPR PRESS

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Foreword

Creating economically and politically legitimate solutions to tackle climate change is one of the most pressing and challenging issues of our time. For emerging and developing economies, the task is made more difficult due to a lack of financing, increasing debt accumulation and the need to address domestic socioeconomic issues.

This eBook provides a comprehensive overview of the financing gap that emerging and developing countries face to meet the Sustainable Development Goals and Paris climate goals. It provides detailed country- and region-level analysis of the challenges and opportunities of scaling up sustainable finance and investment and discusses the range of instruments that could be used to reach these climate and development objectives.

The authors point to the central role of monetary and financial authorities in addressing sustainability risks and scaling up sustainable lending and investment. They also stress the need to mobilise domestic financial resources through local banking systems and capital markets and channel them into domestic investments. Efforts can be undertaken to attract more international capital and governments should explore ways to use digital technologies to develop new, creative fundraising approaches.

It is clear that a substantial financing gap exists in developing countries, which will not be easily overcome. However, the policies proposed in this eBook provide innovative and sustainable solutions for policymakers to make meaningful progress.

CEPR is grateful to the editors of this eBook, Dirk Schoenmaker and Ulrich Volz. Our thanks also go to Anil Shamdasani for his skilled handling of its production.

CEPR, which takes no institutional positions on economic policy matters, is delighted to provide a platform for an exchange of views on this important topic.

Tessa Ogden
Chief Executive Officer, CEPR
October 2022

Introduction

Ulrich Volz and Dirk Schoenmaker

SOAS, IDOS and LSE; Erasmus University Rotterdam and CEPR

1

Emerging market and developing economies (EMDEs) have enormous investment needs in climate mitigation and adaptation, and other areas to attain better and more inclusive economic, social and ecological conditions and to achieve the Sustainable Development Goals (SDGs). Most countries in the Global South also face significant impacts and risks from climate change and nature loss that need to be accounted for by the financial sector. Monetary and financial authorities, as well as banks and other financial institutions, in developing and emerging economies are increasingly seeking to address sustainability risks and scale up sustainable lending and investment.

The financing gap for climate mitigation is estimated at US\$2.4 trillion annually between 2016 and 2035, while adaptation finance needs are estimated at \$180 billion annually between 2020 and 2030 (IPCC 2018, Richmond and Hallmeyer 2019). Before Covid-19, the UN estimated that developing countries were facing an annual financing shortfall of \$2.5 trillion for advancing the SDGs and the Paris climate goals.¹ The pandemic has widened this financing gap substantially. There clearly is a need to scale up financing for development, and to make sure that all financial flows are aligned with climate and other sustainability goals.

The trajectory to date suggests that international private capital flows are unlikely to fill the gap, despite new ambitious initiatives like the Glasgow Financial Alliance for Net Zero (GFANZ) that aim to mobilise private climate finance to emerging and developing economies. Likewise, official development assistance (ODA) from the member countries of the Organisation for Economic Co-operation and Development's Development Assistance Committee (DAC) – which accounted for \$179 billion in 2021 (OECD 2022) – and from other donors can provide important impetus to further economic development and help to leverage private international finance, but it will not be nearly enough to meet climate investment needs and the SDGs. To address the climate investment and SDG financing gap, mobilising domestic financial resources through the local banking system and capital markets and channelling them into domestic investments will be crucial. The successful implementation of low-emission development strategies and National Adaptation Plans or National Adaptation Programmes of Action can only be achieved if domestic resource mobilisation is strengthened.

¹ According to the latest edition of Climate Policy Initiative's Global Landscape of Climate Finance, global climate finance flows amounted to \$632 billion on average in 2019 and 2020 (Buchner et al. 2021).

Currently, a large portion of EMDEs savings is invested – often at low or negative returns – in financial centres in advanced countries. These capital exports are often channelled back to EMDEs in the form of high-yielding, short-term debt or portfolio investments, which increase financial vulnerabilities. Over the past decades, many EMDEs, particularly in Asia and the oil-producing Middle East, have been running current account surpluses and building up foreign currency reserves as well as overseas assets. Between 2000 and 2021, EMDEs excluding China accumulated current account surpluses of \$892 billion (\$4.8 trillion including China).² These are only net capital exports; gross capital exports are much larger. In other words, while capital should be flowing from advanced countries, where it is abundant, to developing economies, where investment needs are much larger, aggregate capital flows are going in the other direction – they are flowing ‘uphill’. Even in countries that are net capital importers (including most countries in sub-Saharan Africa), significant amounts of domestic savings are invested abroad in safe, hard-currency assets, instead of the local economy.

There are various reasons why developing countries may export capital, including a desire to build up foreign exchange reserves to build buffers and cushion against shocks; the repayment of old debt; a diversification of investments; domestic financial and macroeconomic instability; political instability; illicit flows; and a lack of long-term investment opportunities at home due to underdeveloped capital markets. Going forward, efforts need to be reinforced to strengthen domestic financial resource mobilisation for scaling up local climate-friendly, sustainable investments and reducing capital exports from developed to advanced economies. A key element here is the development and strengthening of local currency bond markets. Digital technologies – including artificial intelligence, distributed ledger technologies, and the internet of things – provide an opportunity for emerging markets to develop new, innovative fundraising approaches and reinvent how capital market infrastructure and instruments are built to serve the specific financing needs of companies in emerging markets, as well as the needs of the local investor base (Chen and Volz 2021, Dikau et al. 2022). Fintech and blockchain-based solutions can facilitate domestic resource mobilisation for sustainable investments and at the same time improve the implementation of infrastructure projects throughout the entire life cycle by facilitating processes and enhancing transparency (Chen and Volz 2021). Fintech can help to complement conventional capital markets and help to mobilise financial resources for sustainable infrastructure investments.

The tokenisation of bonds and shares can enable citizens in emerging markets to become investors with smaller amounts of savings, while digital aggregation of these micro-investments helps to raise additional sustainable investment capital. For instance, the Government of Kenya has raised money for infrastructure projects by issuing retail bonds that could be bought by small-scale individual investors on their mobile phone. Such approaches have the added benefit of not only unlocking more local currency

2 Calculations made with data from the International Monetary Fund's World Economic Outlook Database, April 2022.

capital, they also help to diversify the investor base with local investors (Dikau et al. 2022). This also helps to shift accountability and interest payments from often being a relationship between the government (for government securities) and foreign creditors to also becoming a relationship between the government and the national population.

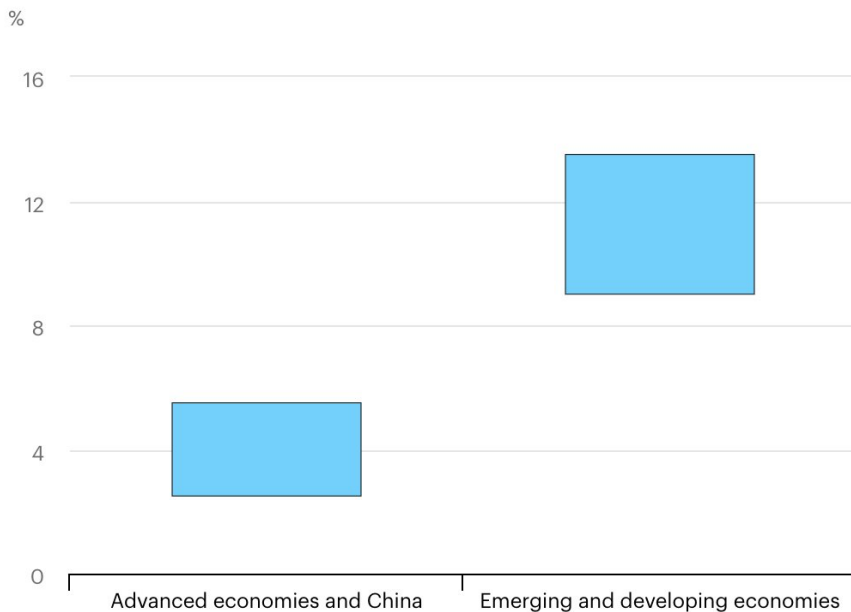
While tokenisation helps to attract a new investor base, there is also a need for aggregation to entice institutional investors, both domestic and foreign, who usually have minimum investment requirements (Schoenmaker and Schramade 2019). Aggregation is needed as many renewable energy and energy efficiency projects are small in scale. Through standardisation and aggregation, smaller loans and assets can be bundled to reach the size institutional investors are demanding. Efforts should thus be undertaken to grow aggregation facilities to enable smaller borrowers (including corporations and municipalities) to tap capital markets. For example, municipal finance agencies, modelled on those in Europe and North America, could be set up to borrow on wholesale markets – supported in an establishment phase by guarantees from the government or multilateral development banks (MDBs) – and channel funds to small and medium-sized cities.

MDBs as well as national development banks (NDBs) need to assume a much greater role in financing infrastructure development and in advancing a just transition to a low-carbon, climate-resilient economy than they have done so far. To achieve the Paris climate target of limiting global warming to well below 2°C and pursuing efforts to limit it to 1.5°C, high upfront investment is needed. This constitutes a big problem for EMDEs given that they face much higher cost of capital (Figure 1), a problem that is further aggravated by their climate vulnerability (Buhr et al. 2018, Kling et al. 2018). Concessional finance by MDBs is even more important at a time when interest rates across the major advanced economies are rising, a large number of EMDEs are facing severe debt problems, and private capital flows to EMDEs are drying up.

Because MDBs can refinance themselves cheaply, they can provide much-needed concessional financing to EMDE governments. Importantly, both MDBs and NDBs – whose missions should be updated with the goal of supporting a just, net-zero transition – can use a tried-and-tested method of leveraging private sector finance for development: they can issue (sustainable) bonds and borrow from markets. MDBs in particular can absorb large amounts of private domestic and international capital at cheap rates and on-lend it to developing country governments at low rates, or directly finance projects through equity or loans.³ By doing so, they can also create safe, investable local currency assets that can attract domestic savings. This is a much more effective way of leveraging private sector capital than project-based blended finance approaches. As pointed out by Kenny (2022), evidence has been mounting that “project-based ‘mobilisation’ as a way to leverage small amounts of public money to achieve trillion-dollar transformations” is inadequate.

3 For instance, since 1944, the International Bank for Reconstruction and Development has leveraged the total paid-in capital of OECD DAC countries by a factor of ten (Humphrey and Prizzon 2020).

FIGURE 1 COST OF CAPITAL FOR A SOLAR PV PROJECT, 2021



Source: IEA (2022).

As recently highlighted by the Independent Review of Multilateral Development Banks’ Capital Adequacy Frameworks (*Boosting MDBs’ Investing Capacity 2022*), MDBs could unleash hundreds of billions of dollars in new lending if they were to adjust their capital adequacy frameworks and maximise the impact of their capital. Moreover, the firepower of MDBs can be strengthened by general capital increases and a rechanneling of Special Drawing Rights (SDRs) from advanced economies that don’t need them. However, a strengthening of MDBs should be accompanied by meaningful governance reforms so they can fulfil their potential (e.g. Chakrabarti et al. 2022).

MDBs and development finance institutions, along with global funds such as the Green Climate Fund, the Global Environment Facility and the Climate Investment Funds, can also capitalise existing or new NDBs and make sure they have high governance standards. They can thus improve the standing and credit ratings of NDBs in capital markets and help them raise further capital in private markets more cheaply. As mission-oriented institutions, national and international public development/climate banks can finance activities with uncertain returns and positive externalities that private finance is unwilling to fund (Griffith-Jones and Ocampo, 2018). Importantly, key areas of development such as physical infrastructure, education, and healthcare will (and should) never generate the returns that private investors are looking for, creating a gap that NDBs and MDBs need to fill.

While domestic resource mobilisation needs to be a priority for most emerging economies, efforts should also be undertaken to attract more patient international capital. Country platforms, which are now being explored by GFANZ, could act as aggregation facilities that attract international private capital. However, expectations need to be set straight. Whereas targeted public subsidies can be catalytic for financing development, limited amounts of ODA must be employed carefully and should not be used to de-risk private investment and guarantee double-digit returns for international banks and asset managers. If public guarantees are involved, the public should also reap the benefits and not merely take potential losses to safeguard private returns.

The availability of capital at affordable cost is just one precondition to unleash the potential for long-term sustainable investment. A critical factor for any kind of private investment, be it national or international, is to get the broader framework conditions right. Besides political and macroeconomic stability, investors need predictable and transparent national laws and administrative procedures for investment operations.

Finally, it will be important to address the looming debt crisis in the Global South that is impeding much-needed investment. Governments that are overindebted cannot invest, and countries facing a sovereign debt crisis will not attract private investment either. Many EMDEs will need to have their debt restructured before public and private investment can resume. The G20 should therefore reform the Common Framework and turn it into a useful structure for delivering speedy and efficient debt relief for all EMDEs (and not just low-income countries) that need it. Debt relief should not only provide temporary breathing space; it should empower governments to lay the foundations for sustainable development by investing in strategic areas of development, including health, education, digitisation, cheap and sustainable energy, and climate-resilient infrastructure (Volz et al. 2020, 2021). Debt relief should hence be linked to reforms that align the policies and budgets of debtor countries with the Agenda 2030 for Sustainable Development and the Paris Agreement.

Concerted efforts are needed to scale up sustainable finance and investment in the Global South. There are no silver bullets, but a host of measures that can help to generate much-needed investment in climate action and other areas needed for achieving the SDGs. There is an urgent need to take stock of current approaches to mobilising and scaling domestic and international climate and development finance; assess the successes, limitations, and failures of these approaches; and put forward policy recommendations for development cooperation for helping partner countries in strengthening domestic financial resource mobilisation and attracting patient international capital.

This eBook brings together a group of eminent scholars and practitioners who examine the challenges and opportunities of scaling up sustainable finance and investment in the Global South, and who review existing practice. The first part of the eBook comprises thematic chapters discussing the role of different stakeholders and instruments. The second part comprises regional and country case studies. Tackling climate change is a

global and urgent issue, and so is the Agenda 2030. We need to join forces, and learn from each other, to scale up sustainable finance and investment in the North and the South.

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PART I: MITIGATING RISKS AND HARNESSING OPPORTUNITIES

CHAPTER 1

Firms and finance during the green transition

Ralph De Haas, Ralf Martin, Mirabelle Muûls and Helena Schweiger

EBRD, CEPR and KU Leuven; Imperial College Business School, CEP, and CEPR;

Imperial College Business School and CEP; EBRD

1 INTRODUCTION

There now exists incontrovertible evidence that human activity, mainly in the form of carbon emissions, is warming up the Earth at a rate that has been unprecedented for at least 2,000 years (IPCC 2021). The day-to-day impact of global warming is becoming increasingly apparent. Extreme temperatures, droughts, floods, and storms are already causing substantial human, ecological, and economic losses.

In the absence of scalable technologies to remove carbon dioxide from the biosphere, mitigating climate change will require a drastic reduction of new emissions. For this reason, more and more countries aim to reduce greenhouse gas emissions to net zero by 2050 at the latest (Millar et al. 2017). Achieving this will require large-scale public, private, and public–private investment to develop and implement cleaner technologies, and to make firms’ existing production methods more energy efficient.

This green transition may pose particular challenges for firms in emerging markets and developing countries. In these poorer parts of the world, organisational constraints tend to hold back corporate investment in the development and adoption of new technologies. A lack of external finance (Aghion et al. 2005, Bircan and De Haas 2020), deficient management practices (Bloom et al. 2013), and misaligned incentives within the firm (Atkin et al. 2017) often impede technological progress in the Global South. This is worrying given that most of the growth in energy demand and carbon emissions over the next three decades will come from this part of the world (Wolfram et al. 2012).

Against this background, this chapter discusses the emerging evidence on the nexus between firm-level financial constraints, managerial capabilities, and carbon emissions. We make three main points. First, we show that bank credit can help firms to reduce toxic emissions and, to some extent, improve the energy efficiency of their current production technologies. Second, we argue that other organisational constraints, especially weak firm management, often hold back green investment more than credit constraints do. Third, we claim that green innovation flourishes more where and when the financial sector is more equity-based and less bank-based.

2 BANK LENDING, TOXIC EMISSIONS, AND INVESTMENTS IN ENERGY EFFICIENCY

In particular during the early stages of the green transition, substantial emission reductions can be achieved by making corporate production (and buildings) more energy efficient. Energy efficiency measures could account for over 40% of the carbon abatement required by 2040 to remain in line with the Paris Agreement (IEA 2018). However, many smaller firms lack sufficient internal as well as external funding to invest in energy-efficiency measures. When financial constraints bite, climate investments may suffer.

An emerging literature shows that when firms get better access to bank credit, the amount of toxic pollution they emit locally often falls. This is presumably because bank credit allows them to invest in, and hence clean up, their production processes. For example, Levine et al. (2018) show how positive credit supply shocks in US counties help to reduce local air pollution. Likewise, Götz (2019) finds that financially constrained firms reduced toxic emissions once their capital cost decreased because of the US Maturity Extension Program. Xu and Kim (2022) also find that financial constraints increase firms' toxic releases. Their evidence suggests that firms trade off pollution abatement costs against potential legal liabilities: the impact of financial constraints on toxic releases is stronger when regulatory enforcement is weaker.

To what extent does access to bank credit allow firms to reduce their emissions not only of locally polluting toxins but also of globally harmful greenhouse gases? Recent evidence suggests that while access to bank loans can help firms to limit carbon emissions, credit constraints may not be the most binding organisational constraint. Several other factors directly affect firms' choices regarding climate investments. Because carbon emissions are less visibly harmful at the local level, they tend to expose firms to less legal risk. This, in turn, means that firms tend to deprioritise investments to reduce such emissions. Indeed, a recent survey of firm managers in a large number of emerging markets shows that despite the potential environmental and efficiency benefits of green investments, many firms refrain from implementing such measures (EBRD 2019). Close to 60% of all interviewed managers, mostly of domestic firms, see investments in energy efficiency as low priority relative to other investments. A lack of financial resources is the second-most cited reason not to do so, but this answer is only given by about 15% of all interviewed managers.

In De Haas et al. (2022), we investigate these data in more detail and focus in particular on the relative importance of credit constraints versus managerial constraints. We measure a firm's green management practices by using standardised data on strategic objectives concerning the environment and climate change. This includes whether there is a manager with an explicit mandate to deal with environmental issues as well as how the firm sets and monitors targets (if any) related to energy and water usage, carbon emissions, and other pollutants. In addition, we track what green investments firms made in the recent past. Green investments include machinery and vehicle upgrades;

heating, cooling and lighting improvements; the on-site generation of green energy; waste minimisation, recycling and waste management; improvements in energy and water management; and measures to control air or other pollution.

Our analysis shows that *both* credit constraints and green management influence the likelihood of green investments in many emerging markets. Credit constraints hinder green investments that are embodied in regular ones, such as the purchase of more energy-efficient machinery or cleaner vehicles. They do not, however, significantly reduce the likelihood of investing in more exclusively green investments, such as on-site generation of green energy or recycling. In contrast, firms with good green management practices are more likely to invest in *all* types of green investment. The effect of green management is larger for investments more typically thought of as green: waste and recycling, energy or water management, air and other pollution controls.

Furthermore, as shown by Kalantzis et al. (2022), credit and managerial constraints also impact the scope of emerging market firms' green investment strategies (measured by the total number of distinct green investments). Better green management practices positively impact the transition strategy of firms to a sustainable future. The results indicate that firms with the best green management practices overcome information barriers and adopt more mitigation measures. In contrast, the more financially constrained firms are, the less likely they are to pursue a multipronged mitigation strategy to reduce energy costs and their carbon footprint.

Climate-friendly management practices have also been shown to affect how responsive firms in emerging markets are to climate policy. Yong et al. (2022) explore the impact of the pilot Emissions Trading System (ETS) in China through both manager interviews and firm-level data. They find that well-managed firms taking part in the ETS reduced their coal use following the introduction of the policy. Their results suggest that the reduction in coal consumption, and hence in emissions that resulted from the policy, would have been four times smaller if firms with managers of above-median quality had been managed by below-median managers.

If credit constraints and weak green management reduce firms' green investments, then this may eventually also hamper decarbonisation efforts. To investigate this, De Haas et al. (2022) use the European Pollutant Release and Transfer Register (E-PRTR) and focus on a sample of Eastern European countries. The E-PRTR contains data on pollutant emissions for a large number of industrial facilities. The estimates indicate that, although there were emissions reductions during 2007–17, this decline was smaller in localities where banks had to deleverage more after the global financial crisis and where, as a result, more firms were credit-constrained.

In sum, a growing body of evidence indicates that when emerging market firms have better access to bank credit, they may invest more in cleaner production technologies. This may not only reduce (local) toxic emissions but also (global) carbon emissions. At the same time, for many important energy-efficiency measures that firms can take,

access to credit is less of a constraint than the quality of firms' (green) management. Better-managed firms in emerging markets tend to produce more cleanly, and this is often unrelated to their ability to access bank credit.

3 BANKS AND GREEN INNOVATION

The previous section shows that banks can help, to some extent, with funding investment in tried-and-tested technologies that enhance firms' energy efficiency. Yet, the steep emissions decline needed to achieve net zero by 2050 also requires developing entirely new production technologies. There are at least three reasons why banks may be less willing (or able) to finance R&D into such innovative, greener technologies.

First, many banks tend to be inherently technologically conservative. They fear that funding new – including clean – technologies will erode the value of collateral that underpins their existing loans, and which firms used to finance older technologies (Minetti 2011, Degryse et al. 2022). Second, green and general innovation often involves assets that are intangible and highly firm-specific, while the majority of banks tend to be more willing to fund tangible and easily collateralisable assets. Third, banks often have a shorter time horizon through the loan maturity than equity investors. This means that they are less interested in the longer term's value of assets or whether these could even become stranded. For example, banks have only very recently started to price some of the climate risk related to firms with large fossil fuel reserves (Delis et al. 2018). Even then, many large banks continue to provide syndicated loans to fossil fuel firms at spreads that under-price the risk of stranded assets – as compared to bonds issued by those firms. As a result, carbon producers are gradually switching from bond to bank funding (Beyene et al. 2021). Moreover, banks continue to actively exploit international differences in carbon taxation by relocating lending flows to oil, gas and coal companies from countries with a carbon tax to countries without such a tax (Laeven and Popov 2021).

4 EQUITY AND GREEN INNOVATION

Public and private equity (including venture capital) may be better suited to fund climate innovations. By their nature, equity contracts are more appropriate to finance projects characterised by both high risks and high potential returns. If stock prices rationally discount future cash flows of polluting industries, equity investors may, in fact, be more sensitive to the costs and risks of pollution – even if these may only materialise in the future.

A key question is therefore to what extent equity investors take carbon emissions into account when assessing longer-term corporate risk. A growing body of research suggests that institutional investors in particular are increasingly doing so. Survey evidence by Krueger et al. (2020) shows that almost 40% of surveyed investors aim to reduce the carbon footprint of their portfolios, including through active engagement with management.

Because institutional investors are taking carbon emissions into account when assessing corporate risk, Bolton and Kacperczyk (2021) find that stocks of US firms with higher carbon emissions earn higher returns. Moreover, investors appear to shun carbon-intensive companies, although this effect is limited to direct emissions from production and to the most carbon-intensive industries. Recent evidence shows that *private* equity providers can also help to clean up production processes. Bellon (2020) finds that private equity investors have helped to reduce pollution in the oil and gas industry.

5 REDUCING CARBON EMISSIONS: BANKS VERSUS EQUITY

The above discussion raises the question of whether, in the aggregate, emerging markets with deeper stock markets relative to banking sectors may end up following steeper decarbonisation trajectories. To help answer this question, De Haas and Popov (2022) compare the role of banks and equity markets as potential financiers of green growth. Using a panel data set covering 48 countries and 16 industries over 26 years, they assess the impact of both the size and the structure of the financial system on industries with different levels of carbon intensity. In particular, they distinguish industries on the basis of their inherent, technological propensity to pollute, measured as the carbon dioxide emissions per unit of value added. The authors then investigate two channels through which financial development and financial structure (the relative size of equity markets relative to banking sectors) can affect pollution: between-industry reallocation and within-industry innovation.

This empirical framework yields three main findings. First, industries that pollute more for technological reasons emit relatively less carbon dioxide where and when stock markets expand. Second, there are two channels that underpin this result. Most importantly, stock markets facilitate the development of cleaner technologies within polluting industries. Using data on green patents, the authors show that deeper stock markets are associated with more green patenting in carbon-intensive industries. This patenting effect is strongest for inventions to increase the energy efficiency of industrial production. In line with this positive role of stock markets for green innovation, carbon emissions per unit of value-added decline relatively more in carbon-intensive sectors when stock markets account for an increasing share of all corporate funding. There is also more tentative evidence for another channel: holding cross-industry differences in technology constant, stock markets appear to gradually reallocate investment towards more carbon-efficient sectors. This is in line with the aforementioned tendency of (some) institutional investors to avoid the most carbon-intensive sectors. Polluting firms in these sectors then find it more difficult to access external finance, putting them at a competitive disadvantage compared with cleaner companies.

Third, the domestic green benefits of more developed stock markets ‘at home’ may be offset by more pollution abroad, for instance because equity-funded firms offshore the most carbon-intensive parts of their production to foreign pollution havens. Analysis

shows that the reduction in emissions by carbon-intensive sectors due to domestic stock market development is indeed accompanied by an increase in carbon embedded in imports of the same sector. However, the domestic greening effect dominates the pollution outsourcing effect by a factor of ten. This means that stock markets may have a genuine cleansing effect on polluting industries and do not simply help such industries to shift carbon-intensive activities to foreign pollution havens.

6 CONCLUSIONS

This chapter has discussed recent evidence on the nexus between firm-level financial constraints, managerial capabilities, and carbon emissions in emerging markets. This evidence shows that while bank lending can help firms to improve the energy efficiency of their current production processes, other organisational constraints, in particular weak firm management, often hold back green investments more than credit constraints do. While policy measures to ease access to bank credit – such as credit lines that are contingent on the adoption of state-of-the-art energy-efficiency technologies – may be useful, this might just be one element of a broader policy mix needed to stimulate green investments to boost firms' energy efficiency.

Governments and development banks in emerging markets may also consider measures to directly help strengthen firms' green management practices. Advisory services, training programmes, and other consultancy-related firm-level interventions can help managers to become better green managers. Such interventions effectively teach managers how to not leave money on the table by postponing much-needed investments in energy efficiency.

Efforts to increase green investments by reducing credit constraints and by enhancing firms' managerial skills will only pay off when the broader institutional framework is supportive. This means in particular that highly distortionary fossil fuel subsidies need to be eradicated. Recent evidence reveals that better-managed firms in emerging markets tend to reduce the fossil-fuel intensity of their production *unless* they can exploit high fuel subsidies (Schweiger and Stepanov 2022). Moreover, the introduction of carbon pricing – either through a carbon tax or through a cap-and-trade system – can incentivise firms to stop procrastinating and instead invest in measures to make their production more energy efficient. The role of the financial sector is then a complementary one: it mobilises the funding for investments in energy-efficiency improvements and new technologies as firms respond to price signals.

A second lesson from recent research is that green innovation tends to flourish more where and when finance is more equity-based and less bank-based. Emerging markets and developing countries with a bank-based financial system that are on the transition path towards net zero carbon emissions may therefore also consider measures to stimulate the development of conventional equity markets. This holds especially for middle-income countries where carbon dioxide emissions may have increased almost

linearly during the development process. There, stock markets could play an important role in making future growth greener, by stimulating innovation that leads to cleaner production processes within industries.

One way of doing so, especially in smaller countries, is through the regional integration of shallow equity markets. Such integration could target cross-border market infrastructure (such as links between stock exchanges and securities depositories), the harmonisation of regulations, as well as capital market accelerator funds with regional mandates. An example is the successful consolidation of national stock markets in the Baltic region. Nasdaq Baltic operates the stock exchanges in Estonia, Latvia and Lithuania, as well as a common Central Securities Depository. It provides capital market infrastructure across the whole value chain, including listing, trading and market data, as well as post-trade services including clearing, settlement and safekeeping of securities. This makes it easier for investors to transact cross-border and, ultimately, for firms to raise equity. Similar efforts are ongoing to integrate several stock exchanges in the Balkans.

Another way to help develop equity markets that can provide firms with the equity needed for green innovation is to level the playing field between the cost of equity and the cost of debt. Countries that want to limit the negative environmental externalities stemming from a financial system that is overly reliant on bank credit (and debt more generally) can reduce tax-code favouritism towards debt (such as the deductibility of interest payments and double taxation of dividends).

In parallel, countries can take measures to counterbalance the tendency of banking sectors to (continue to) finance relatively ‘dirty’ industries. Examples include the green credit guidelines and resolutions that China and Brazil introduced in 2012 and 2014, respectively, to encourage banks to improve their environmental and social performance and to lend more to firms that are part of the low-carbon economy. From an industry perspective, adherence to the Carbon Principles, Climate Principles, Equator Principles, UN Principles for Responsible Banking, as well as the Collective Commitment to Climate Action should also contribute to a greening of bank lending. Strict adherence to these principles can potentially make governmental climate change policies more effective by accelerating capital reallocation and investment towards low-carbon technologies.

To incentivise and enable banks to adhere to these principles in a meaningful way, supervisory climate stress tests, such as currently being undertaken by the ECB, can be useful. Moreover, a growing number of banking supervisors – as part of developing a Pillar 3 framework on ESG risks and in line with the Financial Stability Board’s Task Force on Climate-related Financial Disclosures – are moving towards mandatory disclosure of climate-related financial risks. The meaningful disclosure of climate risks will allow depositors, investors and other stakeholders to make more informed decisions and hence to enhance market discipline. Relatedly, the meaningful disclosure of climate risks by companies is a precondition for banks and other providers of capital

to understand and manage climate-related risks. This work is likely to be facilitated by that of recently announced International Sustainability Standards Board, which aims to create a global, comparable set of sustainability standards.

Lastly, the Net-Zero Banking Alliance (NZBA), a United Nations initiative, brings together banks that are committed to align their portfolios with net zero emissions by 2050. A useful aspect of this alliance is that it helps banks to set (and publicly commit to) an intermediate target for 2030 or sooner, thereby accelerating their decarbonisation strategies and making them more credible. Even then, voluntary commitments may not suffice, as evidenced by the fact that many global banks that signed up to the NZBA and similar initiatives continue to finance fossil-fuel extraction at scale. Banks looking for more credible decarbonisation strategies may choose to have their strategies validated by the Science-Based Targets initiative (SBTi), an independent body that assesses whether banks strategies are aligned with the Paris goal of limiting global warming to 2°C.¹

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CHAPTER 2

Mobilising long-term finance in the Global South: Lessons from the 'South' and 'North'

Richard Mark Davis, Aaron Levine, Robert Rusconi and Fiona Stewart

World Bank; World Bank; Independent consultant; World Bank

The magnitude of additional investment needed in the Global South is significant. The financing gaps to meet the Sustainable Development Goals (SDGs) are estimated to reach US\$4.2 trillion per year (OECD 2020). Given this magnitude of need, it will be necessary for international sources of financing to play a large role, as more than 80% of financial assets are held in OECD countries (OECD 2020). However, this type of financing can be prone to unhelpful variability. During the first part of 2022, investors have withdrawn more than \$50 billion from emerging market bond funds – the worst outflows in more than 17 years (Asgari 2022). Additionally, research focused on the financial crises of the 1990s has shown that currency mismatches in the issuance of sovereign debt combined with maturity mismatches have made developing economies even more vulnerable to these types of capital outflows (Hofmann et al. 2020). Given these factors and concerns with international funding, there is an important role to play for local institutional investors alongside domestic governments, international financial institutions and international capital sources in helping to fund the financing gaps.

Pension funds and insurance companies, typically the most significant of such local institutional investors, may initially appear small with relatively low coverage. But these investors are growing steadily, and their total size is likely underestimated. Typically, pension savings rates are correlated with GDP, and income levels and will grow over time. Indeed, the OECD's data regarding non-OECD country pension savings have shown growth over time, with the most recent reading indicating that pension savings have accumulated to 8.6% of GDP as of 2020 for non-OECD countries (OECD 2021a). Some non-OECD countries have considerably more than that average, with Peru at 23.1% of GDP, Croatia at 34.6% and South Africa at 92.1% (OECD 2021a), among many others. Table 1 shows the ten-year trend for the non-OECD countries as a whole and select others, along with comparable insurance asset data by country where available.

TABLE 1 PENSION AND INSURANCE ASSET TREND DATA, SELECT NON-OECD COUNTRIES

Pension assets as a % of GDP (OECD)			Ins. co. assets as a % of GDP (World Bank)		
	2010 (or first year available)	2020 (or latest year available)		2010	"2019 (* = 2018 data)"
Namibia	77.4	101.8	Namibia	33.0	34.7
South Africa	80.0	92.1	South Africa	58.5	64.5
Malta	0.5	55.4	Malta	..	103.8
El Salvador	30.8	50.6	El Salvador	3.4	3.4
Trinidad and Tobago	24.0	37.7	Trinidad and Tobago	13.9	21.6
Croatia	11.6	34.6	Croatia	9.1	11.3
Jamaica	22.5	33.5	Jamaica	19.4	19.8
Uruguay	15.3	30.8	Uruguay	4.1	10.0
Kosovo	14.2	29.3	Kosovo
Brazil	18.9	28.2	Brazil	8.9	16.4
Maldives	8.0	27.1	Maldives
Peru	20.7	23.1	Peru	4.1	7.0
Malawi	8.8	16.4	Malawi	6.9	14.0
Suriname		16.2	Suriname*	4.9	11.0
Dominican Republic	10.5	15.5	Dominican Republic*	1.4	1.7
Bulgaria	5.4	14.8	Bulgaria	3.9	5.3
North Macedonia	2.9	13.5	North Macedonia	2.7	3.5
Kenya	13.6	13.3	Kenya	6.4	6.6
Mauritius	2.0	11.1	Mauritius	28.8	20.3
India	4.0	9.3	India	19.5	19.3
Total non-OECD	8.2	8.6	n/a		
Tanzania		8.3	Tanzania*	0.8	0.7
Thailand	5.3	8.1	Thailand*	13.3	23.7
Nigeria	3.6	8.0	Nigeria*	1.1	1.0
Uganda		7.7	Uganda	0.7	1.3
Romania	0.9	7.4	Romania	3.2	2.0
Guyana	4.6	6.4	Guyana	5.8	9.2
Russia	5.3	6.1	Russia	1.7	2.7
Armenia	0.3	6.0	Armenia*	0.7	0.9
Ghana	1.7	5.7	Ghana	1.5	..
Zambia	2.8	2.9	Zambia	1.1	1.4
Indonesia	1.8	2.0	Indonesia	3.4	4.7
Angola	1.3	1.6	Angola*	1.8	1.3
Egypt	1.9	1.5	Egypt	2.9	1.9
Panama	0.5	1.2	Panama	4.7	5.0

Source: Pension data from OECD (2021a), insurance from World Bank Global Financial Development Database.

Based on the trend since 2010, pension savings have doubled for non-OECD countries, from \$1 trillion to \$2 trillion as of 2020 (OECD 2021a). Beyond what these data indicate, there are other pension savings that are not captured by the OECD reporting. In the explanatory notes regarding data coverage, there are numerous instances of ‘missing’ data or only ‘some’ data (OECD 2021a). Additionally, there are countries with known funded pension systems not included in the reporting, such as Bangladesh. In short, there are more assets than the data would make clear.

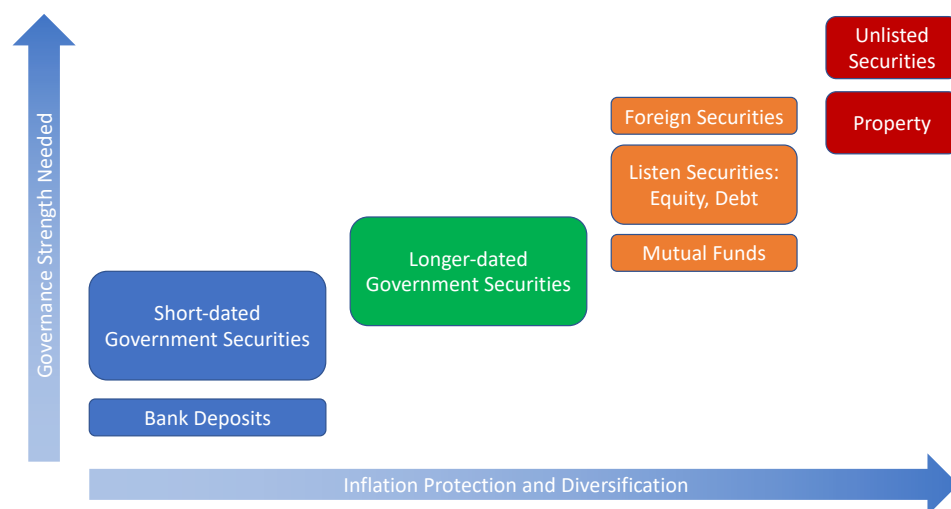
Expanding the role of local institutional investors can provide benefit both for their own portfolios as well as those of international investors in their domestic market. Existing local investors are often not well diversified. OECD data point to a high proportion of investments in government bonds in some countries as well as a significant share of cash and deposits (OECD 2021a). Improving this type of overly conservative asset allocation will drive improved returns. Additionally, international investors can benefit from the active participation of local investors with greater knowledge of local conditions. This chapter will also include examples of investment ‘pooling’, which often include investment by local entities alongside global partners.

To best capitalise on the role of local pension funds, we focus on the important pre-condition of strong governance and institutional capability. We then look at the value of creating new instruments and/or vehicles and a supportive regulatory environment, and the increasing practice of embedding sustainability principles into investment decision-making. Finally, we discuss an enabling factor – the pooling of assets and expertise to provide further diversification, scale and expertise.

1 STRONG GOVERNANCE AND INSTITUTIONAL CAPABILITY AS A CRITICAL PRE-CONDITION

Critical to local institutional investors making a difference is the need for strong governance and institutional skills that can match an increasing investment complexity. The type of investment instruments needed to drive fulfilment of the SDGs will often include a significant allocation to infrastructure. Infrastructure, as an asset class, can take the form of either listed or unlisted investment, but many markets with significant financing gaps have underdeveloped capital markets and unlisted instruments are often the only realistic option in that environment. However, investing in such options requires true independent decision-making and extensive technical due diligence, devoid of political interference. Figure 1 illustrates this dynamic, showing the trade-offs between investment instruments better suited for diversification, inflation protection and growth being ones that in some cases require more governance capability.

FIGURE 1 INVESTMENT VEHICLE CHOICES DEPENDING UPON GOVERNANCE CAPACITY



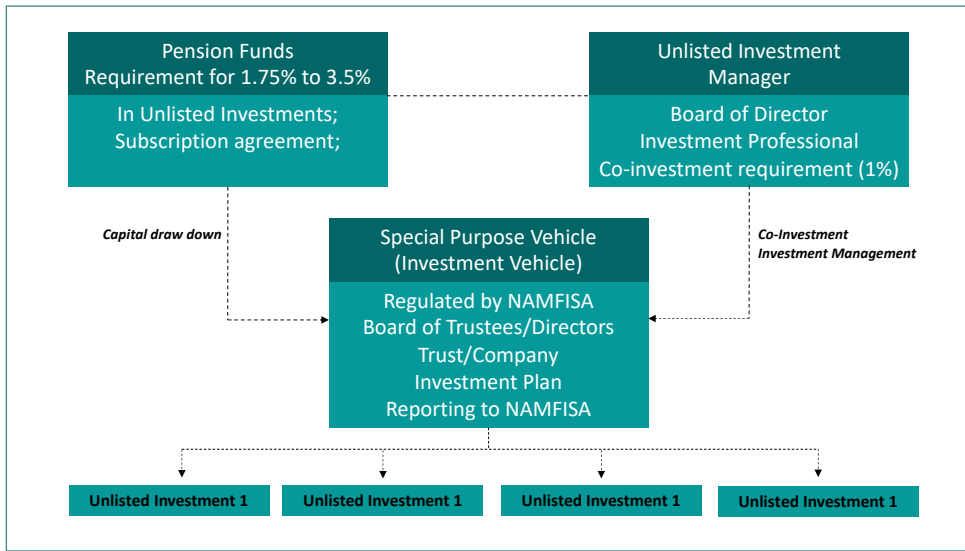
Source: Guven et al. (2021)..

The case of Namibia's largest pension fund, the Government Institution Pension Fund (GIPF), provides an example of the opportunity to improve governance and ensure appropriate skill sets, based on past failures. The GIPF is the largest pension fund in Namibia, with assets of 64% of GDP (IMF 2018). Between 1996 and 2010, the country directed GIPF investments into development projects via the Development Capital Portfolio. This effort focused on investment in unlisted companies and was done without a regulatory framework or supervision. Despite positive intentions, governance failures, skill and capacity constraints led to the DCP writing off 84% of its investments by 2010 (World Bank 2020b, IMF 2008).

In response, the government implemented Regulation 29, which provided a governance framework to allow local direct investment via regulated special purpose investment vehicles, with regulated investment managers overseen by the Namibian Financial Institutions Supervisory Authority (NAMFISA). GIPF and other local pension funds were then mandated to invest a small percentage of funds. While the idea of a minimum investment mandate is not in line with international good practice (e.g. the OECD Core Principles of Private Pension Regulations), early results have shown that the reformed market structure has contributed to improved governance of and within pension funds, improved due diligence of unlisted investments, the investment process and active management, and reduced perception of corruption.

Such a structure, as shown in Figure 2, has resulted in GIPF becoming a key driver of the private equity market in Namibia and can potentially pave the way for other potential investors, including foreign investors, to co-invest through such structures alongside Namibian pension funds.

FIGURE 2 NAMIBIA'S REGULATION 29 STRUCTURE



Source: World Bank (2020b).

The example of Canadian pension funds from their formative years also demonstrates the role of strong governance as a key enabler for what pension funds can achieve. Thirty to forty years ago, the Canadian funds were not known for either their asset diversity or their strong governance. However, beginning in the 1980s, and most notably with the Ontario Teachers’ Pension Fund as a key prototype for a much stronger institution (Ambachtsheer 2021), there have been significant reforms in these funds, with several transforming from simple buyers of government debt to sophisticated asset owners who today are some of the most significant investors in global infrastructure, helping to drive growth throughout the world.¹

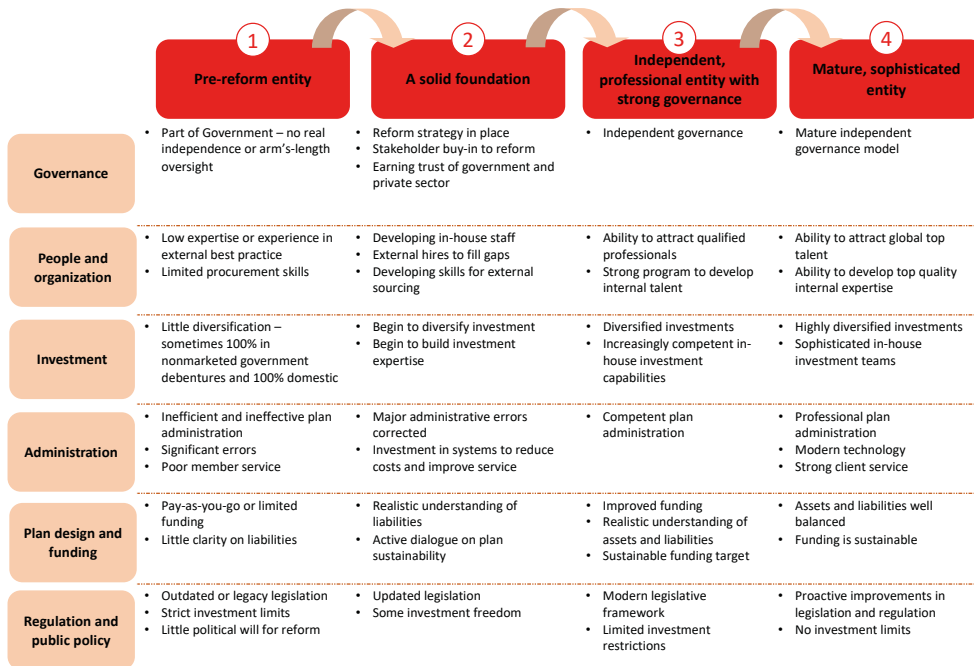
To get to this place, these funds had to evolve into much stronger institutions with robust independent governance sufficient to make well considered decisions regarding complex asset classes such as infrastructure and other private, unlisted assets. For this governance to be optimal, it needed to focus on the interest of principals, not those of agents or ‘agents of agents’ (Lipshitz and Walter 2020). Figure 3 depicts the type of transformation these entities went through. The transformation includes the beginnings as a ‘pre-reform entity’ and moves all the way to maturity, where many of these funds are today.

The large Canadian funds are viewed as role models in this area in terms of how they deal with risk and structure deals. Collectively, they have an allocation of 5.2% to infrastructure in their portfolios, the highest rate globally, with some having twice that

¹ Importantly, the Canadian funds largely invest globally in infrastructure, not just in domestic market infrastructure. However, the example they provide in ensuring strong governance first is helpful to show what is needed to be most successful in infrastructure investing.

amount (PwC 2016). Importantly, though, the ability to invest wisely in such asset classes requires a number of preconditions to be in place, such as strong governance and a strong organisational culture (World Bank 2017: xiv) – the types of capabilities possessed by a ‘mature sophisticated entity’ as portrayed in Figure 3. Without these preconditions in place, there is risk of political interference, poor oversight of investment selection processes and monitoring of performance, and subpar return prospects to beneficiaries given the risk of deal structuring issues.

FIGURE 3 FOUR-PHASE FRAMEWORK FOR THE EVOLUTION OF PENSION ORGANISATIONS



Source: World Bank (2017).

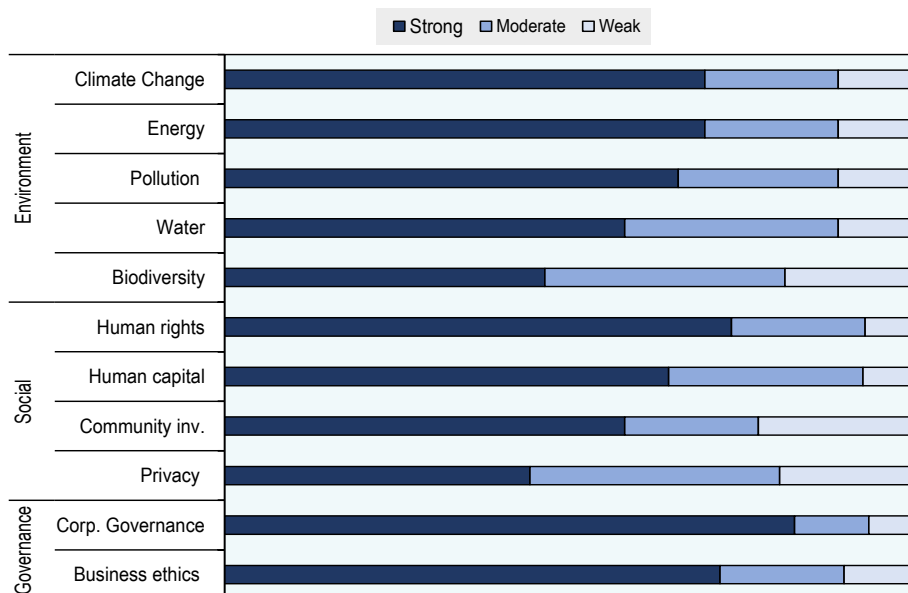
2 OBJECTIVES: MEMBER RETURNS, DEVELOPMENT, ‘SUSTAINABILITY’, OR A COMBINATION OF ALL OF THESE?

It is important in a discussion of pension fund involvement in bridging financing gaps to remain clear on the primary duty of a pension fund – that of providing sufficient returns to members. There are, however, good examples globally of pension funds that have delivered on that primary objective while also contributing to sustainable growth locally and being attentive to emerging sustainability concerns. Pension funds will often be able to play a unique role in assisting as local institutional investors in attainment of the SDGs. Additionally, pension funds may uniquely be able to take a leading role in the work to incorporate environmental, social and governance (ESG) factors into their

investment decisions. In an OECD survey of the largest pension funds of both developed and developing economies, representing over \$10.3 trillion in assets (OECD 2021b), ESG factors feature, for the most part strongly or moderately, when considering infrastructure investments (see Figure 4).

FIGURE 4 CONSIDERATION OF ESG FACTORS IN INFRASTRUCTURE INVESTMENT BY PENSION FUNDS

As a percentage of total respondents that indicated to consider the relevant ESG aspect



Note: In total 28 LPFs and PPRFs responded to the question: "Which of the below (or other) ESG aspects do you mainly consider in infrastructure investments? Please provide a ranking from 0-3, 3=strong, 2=moderate, 1= weak, 0=not considered.

Source: OECD (2021b).

A strong example of a pension fund from the Global South that has been able to drive both development and pension member outcomes is the Employees' Provident Fund (EPF) of Malaysia. The EPF is a globally significant institution, ranking 12th in the list of the world's largest pension and sovereign wealth funds (Thinking Ahead Institute 2021). It is similar to many of the national-level provident fund arrangements in Asia but was one of the first, launching in 1951. Its assets were reported at the end of 2019 at 990.8 billion Malaysian ringgit (EPF 2020), approximately \$240.9 billion, representing nearly 62% of national annual GDP.² At that time, the fund recorded more than 14.5 million members, of whom 7.6 million, working for more than 520,000 employers, were active contributors.

² GDP figures are from <https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?locations=MY> (accessed on 10 January 2021).

In 1960, roughly 97% of EPF assets were allocated to debt securities issued by the government. More recently, however, extensive diversification has occurred into many different asset classes, both domestic and overseas. Since 2010, the EPF has shifted into equity, real estate and infrastructure in particular. Throughout this period of diversification, the EPF has been committed to strong, independent governance (World Bank 2018a). Returns throughout this period have been solid, delivering 3.7% annually in real terms from 2009–2018 (Jackson and Inglis 2021). In summary, with sound governance and effective operations, the EPF has played a significant part in the development of Malaysia’s capital markets, initially in government debt and more recently in infrastructure financing and corporate debt (World Bank 2020a).

One key enabling factor in the EPF’s transition to new instruments was the ‘proactive policy’ on the part of government to expand the allowable capital market instruments into which the fund could invest (World Bank 2018a). Specifically, in 1991 amendments were passed that reduced the requirement for investment in government debt, allowed the EPF to invest in ‘land matters’ and gave power to the EPF to specifically invest in privatisation projects, joint ventures and new financial market instruments. (World Bank 2018a).

The EPF includes specific statements about ESG considerations in its public documents. The EPF Statement on Corporate Governance, included in its 2020 Annual Report, states that the fund “strive[s] to be at the forefront in championing sustainable investments by incorporating ESG principles in their investment considerations” (EPF 2020). Further, to adopt the six principles in the UN’s Principles for Responsible Investment (PRI), to which the EPF is a signatory, the EPF established a Sustainable Investment Centre (SIC) in February 2020. The SIC leads the sustainable investment agenda for EPF across the organisation and focuses on incorporation of ESG principles. The EPF has also developed its own Sustainable Investment Policy and Framework.

Going forward, the EPF has indicated it will incorporate sustainability considerations into all new investment proposals. The sustainability review process will require SIC evaluation of proposals, which will include assessment of all material ESG risks and opportunities. During the first year of implementation (2020), more than 30 sustainability reviews, spanning all asset classes, were already conducted on proposed investments. Beyond the leadership and oversight of the SIC, the EPF Investment Division envisions further development of its own capabilities in this area, as it looks to further strengthen internal ESG capability (EPF 2020).

3 POOLING FOR EXPERTISE, CAPITAL AND DIVERSIFICATION OF RISK

Pooling both expertise and capital and achieving diversification while avoiding being overweight on more complex asset classes has recently been emerging as a key strategy. Some examples come from South Africa, where pension funds have generally been enthusiastic to consider asset classes that are expected to provide long-term development

in addition to strong returns. Aside from those classes that are well-understood, such as renewable energy, understanding of the opportunities and their associated risks is typically limited, however. Even large funds often do not have the resources or expertise to consider these possibilities with confidence. Furthermore, those that attract the most attention may well have the lowest returns, as the prices of assets are bid up.

Pooling has been helpful in this regard. Following the example of the Pension Infrastructure Platform in the United Kingdom, South Africa's pension funds have announced the establishment of the Asset Owners Forum South Africa to invest in infrastructure and other development assets. The initiative was established by the funds themselves, through the Batseta Council of Retirement Funds for South Africa, together with USAID and the World Bank. The investment opportunities identified are not expected to be limited to the founding members as it is hoped that small and medium funds will also contribute to the intended pool of 3.75 billion South African rand (\$234 million) in available assets (Property24 2021).

The approach is akin to that of other universal owners, such as CDPQ in Canada. CDPQ pools the assets of several asset institutional owners to take advantage of the available scale, deliver more sustainable returns and help develop the Province of Quebec (CDPQ 2020a, 2020b). IFM Investors in Australia, described further below, has successfully pooled assets (for member funds and now other institutional investors) and built expertise while maintaining a low-cost base, charging low fees of 0.5–0.6%.

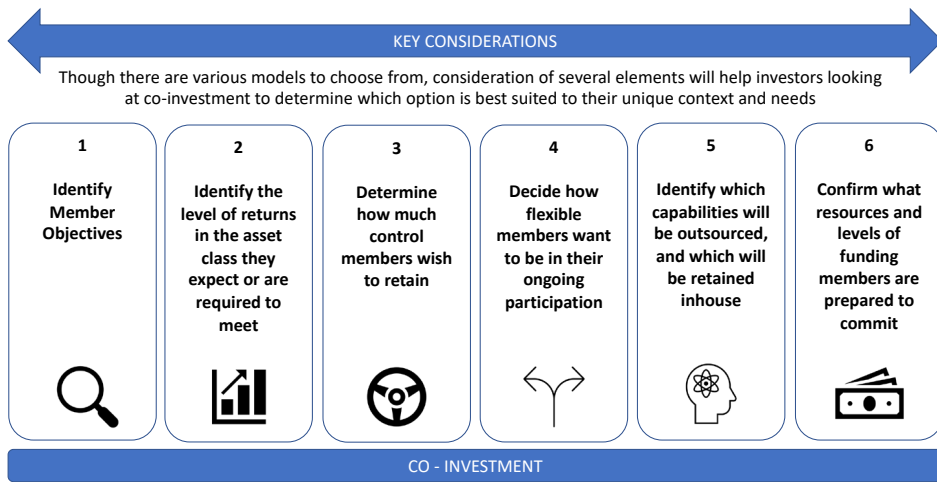
Elsewhere in Africa, the Kenya Pension Funds Investment Consortium (KEPFIC) is a group of Kenyan retirement funds working collectively to make long-term investments in infrastructure and other alternative assets in the region. With recent changes to the pension investment guidelines in Kenya, funds can invest up to 10% of their assets into infrastructure, potentially unlocking over \$1 billion of possible investment into these asset classes. The World Bank has been an active supporter of this effort and has also helped to enable linkages with overseas pension funds alongside the local pension fund group. The consortium in Kenya has been particularly promising given vast infrastructure needs, solid commitment from the Kenyan government, and a strong public–private partnership (PPP) programme pipeline based on work started originally in 2012.³

In the Pacific, the Pacific Islands Investment Forum has also begun work to collaborate on key regional infrastructure projects (IFC 2021). This network of 18 funds from 12 countries, with approximately \$8 billion under management, has the potential to help meet a substantial set of infrastructure needs for the widely scattered small independent states represented by its member funds. It is estimated that between 2016 and 2030, these nations will need \$46 billion in investment to overcome their infrastructure deficits. However, given the small size of the funds and difficulty in obtaining the skills needed to effectively oversee complex investments in infrastructure, this need has not

3 Source: <https://kepfic.co.ke/about-us/>.

been well addressed to date by these funds. For this reason, the funds have recently begun a collaboration effort, supported by the International Finance Corporation (IFC), in which they are studying six various possible approaches to co-investment. These approaches range from simple information and collaboration platforms to co-owning a listed company that undertakes a full range of investment activities to meet the needs of various stakeholders. Following a rigorous assessment of the factors outlined in Figure 5, the funds agreed to take a collaborative platform approach, where funds pre-agree on investment criteria and governance arrangements and agree to share early co-investment opportunities, but then co-invest on a case-by-case basis.

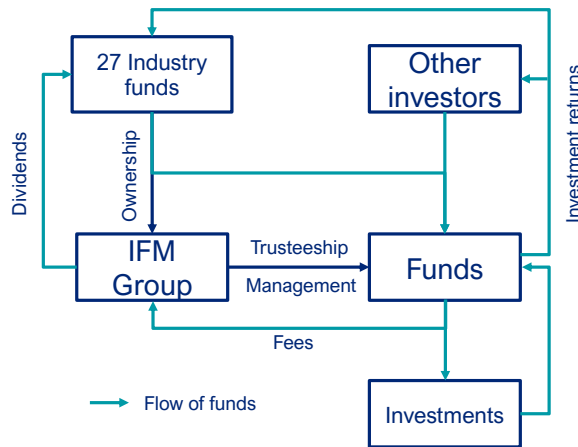
FIGURE 5 FACTORS WHEN CONSIDERING CO-INVESTMENT MODELS



Source: IFC (2021).

A case which demonstrates an alternative evolution for domestic pension funds is Industry Funds Management (IFM) Australia. This began as a grouping of pension funds seeking long-term infrastructure investments, but initially lacked internal skills. Members agreed on its investment strategy but relied on external advisors and investment managers for execution. After 15 years, it established a holding company owned by various industry funds, brought investment functions in-house, and set up a regulated pooled trust used to make investments. It was able to establish the scale and skills to provide a low-cost model, segmenting its funds across infrastructure, debt, listed equities and unlisted equities, with \$129 billion in assets under management (IFC 2021) (see Figure 6).

FIGURE 6 IFM INVESTORS: SIMPLIFIED STRUCTURE



Source: IFC (2021)

4 POOLING BEYOND BORDERS

Pooling of funds with international financial institutions (IFIs) and foreign institutional investors can assist in achieving the various goals of investment returns, development impact, strong governance and risk mitigation. Local investors can provide expertise on the domestic political economy and institutional environment, as well as local currency, patient domestic capital and potentially earlier access to new investment opportunities. Partnering with IFIs, in turn, provides access to foreign currency, project structuring expertise, long-term international capital, adherence to globally recognised standards, beneficial financing terms and a range of risk mitigation tools. A particular tool which has been rarely used but could be leveraged further in emerging economies is the guarantee, which can serve to improve credit ratings not only of specific projects, but also at a fund level (G7 Impact Taskforce 2021). With an IFI entrenched in a project or fund structure, as well as more favourable financing terms and risk mitigation, this can provide the confidence to attract other international institutional investors.

For example, the Ninety-One Africa Credit Opportunities Fund 2 is a senior private credit fund, focused on African corporate debt capital markets. It was seeded initially by IFIs. Once it had built a track record through its publicly listed fund manager, it crowded in local pension funds and international institutional investors, including Allianz, the global insurer. It follows IFC’s performance standards for ESG reporting. The \$200 million HIS Fund II in South Africa targets affordable housing opportunities and applies IFC’s green building standards, EDGE, on all housing projects. Eskom Pension and Provident Fund, one of the largest South African pension funds in terms of assets under management (\$10 billion), invested \$6 million – the largest investment in their development impact portfolio. The fund, in local currency, includes equity from multiple

development finance institutions (including KfW and IFC), grant capital from the Global Environment Facility and a loan guarantee from the Development Finance Corporation (G7 Impact Taskforce 2021).

There will often be occasions in which local pension funds can deliver on secondary goals, including helping their local markets better attain delivery of the SDGs – a key element required to attract IFI capital. Nevertheless, decision-makers for local pension funds will need to remain focused on their primary mission of delivering against the key objectives of their beneficiaries.

5 CONCLUSION

Local pension investors have the opportunity to increase their contribution to long-term capital requirements of emerging economies, particularly in the light of significant foreign capital outflows from emerging markets. However, in order to fully capitalise on these opportunities, they need strong governance to avoid the kind of pitfalls that have befallen other emerging market pension investors that have attempted investment efforts in this space. They can also benefit from the pooling of assets and expertise to provide further diversification, scale and expertise. Finally, while maintaining the ultimate objective of providing financial returns to their members, they can fulfil their development mandate through increased adoption of sustainability principles and practices in their governance and operations.

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CHAPTER 3

Unleashing climate investment in Africa

35

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1 INTRODUCTION

Africa has been a relatively small contributor to climate change. The continent is a small source of greenhouse gas (GHG) emissions, accounting for about 3.8% of global carbon emissions.¹ The development gap between Africa, advanced economies and emerging markets explains the relatively low carbon footprint of the continent. Only 48.3% of the population in sub-Saharan Africa has access to electricity.² But emissions in Africa have been rising steadily over the past decades, due to rapid urbanisation and population growth in the continent.

That means that Africa, home to 60% of the world's poor, needs investments that will not only improve living standards – including expanding access to electricity – and create good jobs, but also help build climate resiliency and address other environmental concerns. For that, it needs to mobilise massive investments financed from domestic sources, but also importantly from foreign sources considering relatively low saving rates in the continent. To that end, African economies need to tackle the longstanding issues of absorptive capacities to tap into the growing interest of global investors in climate-friendly investments. This chapter explores the needed interventions and financing options to catalyse climate investment in the continent.

The dramatic drought and ensuing famine in Madagascar and in the Horn of Africa are stark reminders of how vulnerable the continent is to extreme weather events. These events worsen living conditions, especially for economically marginalised groups. Beyond the effect on weather systems, climate change will have far-reaching consequences in the continent in terms of global health, mass migration and security. It is therefore essential for Africa to formulate policies and explore financing options to invest massively in both 'addition' and 'transition' for its energy systems.

The remainder of the chapter is structured as follows. Section 2 argues that both adaptation and mitigation efforts are essential in Africa's struggle against climate change. Section 3 presents climate investing as an infrastructure financing problem

1 See <https://ourworldindata.org/co2-emissions>.

2 See <https://ourworldindata.org/grapher/share-of-the-population-with-access-to-electricity?tab=chart&country=Sub-Saharan%20Africa>

involving development finance actors. Section 4 explores complementary policies to address bottlenecks and catalyse climate investment. Section 5 discusses climate finance options. Section 6 concludes.

2 ADAPTATION AND MITIGATION EFFORTS

Both adaptation and mitigation efforts are essential to Africa's response to climate change. Adaptive efforts such as planting drought-resistant crops, building up flood and wind defences or redesigning communications systems generally are not capital intensive. But mitigation involves, among other things, major changes to infrastructure that require substantial greenfield investment. A combination of adaptation and mitigation policies are needed to shape Africa's response to climate change and its consequences.

On the adaptation front, efforts should be concentrated in agriculture, which employs a large segment of Africa's poor. Agriculture in the continent should orient towards drought-resistant varieties, crop diversification, and changes in cropping patterns to limit the effect of climate change on crop yields. Climate change has increased the occurrence of extreme events, including floods and droughts, in the continent. What is more, climate change is worsening the living conditions of economically marginalised groups, especially youths, who are at risk of falling prey to radicalisation. Adaptation will help lessen the dramatic consequences of climate change for Africa and beyond.

On the mitigation front, energy systems, which are underserving Africa's population, need to be transformed. This transformation will both help power Africa and reduce emissions by leading to a move away from coal and fossil fuels. Africa has a large potential to 'green' its energy sector, including by using solar, hydro and wind to power generate electricity. For example, according to the World Bank, solar radiation is amongst the highest in large parts of Africa (ESMAP 2020). This huge potential in renewable energy generation can substitute for subsidised fossil fuel consumption.³ The technological changes driving the transition from fossil fuels to renewable sources present sizable economic opportunities for Africa, especially as the cost of renewables such as solar and wind is now lower than that of fossil alternatives, according to the International Energy Agency. Authorities in Africa should tap the region's vast pool of renewable resources to accelerate the transformation of their energy systems, which would have the double benefit of reducing CHG emissions while keeping energy costs from rising. In isolated and lagging regions, promoting decentralised energy systems could also help economically empower local communities. Yet, the continent has a pervasive lack of needed capital, technology and governance (Collier and Venables 2012). The high upfront investment costs, combined

3 Overall, installation of new renewable capacity in Africa lags the rest of the world though so it has been rising steadily in the continent (IRENA 2020).

with higher cost of capital, are a big hurdle for investment in African countries. Unless this situation is rectified, Africa will continue to rely on its abundant oil, gas and coal reserves both for domestic energy and as a source of foreign exchange receipt.

The transformation of energy systems in Africa is also paramount because of the risks associated with stranded assets. If we are to meet our climate goals, a large fraction of the world's fossil fuel reserves will need to be kept underground. Africa's known reserves of hydrocarbon and other minerals have been growing amidst large discoveries in the past decades (Arezki et al. 2019). McGlade and Ekins (2015) estimate that world reserves of fossil fuels are much larger than the 'carbon budget'. In other words, the billions of barrels of oil and other fossil fuel deposits in Africa cannot be burned. In addition to reserves, the structures and capital used in extraction and in exploitation of fossil fuels are also at risk of becoming stranded.

Energy consumption in Africa is heavily subsidised and also needs reform. These subsidies introduce a range of distortions, including wasteful consumption, misallocation and harmful effects on the environment from local air pollution and traffic congestion (Coady et al. 2019). But reforming them has proven difficult. Because the region has few functioning social welfare systems, subsidised energy prices are an important part of an inadequate social safety net.⁴ Several oil-importing countries in the region have phased out fuel subsidies, but not without difficulties. For the region's oil- and gas-exporting countries, low domestic energy prices have also historically formed an important element of the social contract, in which political elites capture riches from the extraction of hydrocarbons and compensate citizens through a variety of direct and indirect channels, including energy subsidies.

Consequently, it is not uncommon for subsidy reform efforts to be abandoned when governments are faced with street protests or if tensions build up when domestic energy prices increase. Evidence from Indonesia and Nigeria indicates that the perception of corruption in the implementation of targeted transfer programmes increases public resistance to fuel subsidy reform among poor citizens, who consume the least fuel and who stand to lose the most from any reductions in targeted programmes (Kyle 2018, McCulloch et al. 2021b). These challenges to removing subsidies raise important question about the political acceptability of carbon pricing as a policy tool to address climate change (Klenert et al. 2018). Appropriate steps are needed to build trust in government and quality of basic public services, including transportation, electricity, water and health, to wean off citizens off fuel subsidies.

4 See <https://social-assistance.africa.undp.org/data>

3 CLIMATE INVESTMENT AS AN INFRASTRUCTURE FINANCING PROBLEM

Many of the mitigation efforts will be in the form of infrastructure. A potential source of funding for infrastructure projects such as those required for energy companies are institutional investors that are on the lookout for higher-yielding investment projects that help build climate resiliency. One of the big challenges to channelling global savings into infrastructure investment is the need for a pipeline of potential projects that can be securitised with the cooperation of the public sector. Building a pipeline for projects requires building capacity in the public sector for project preparation, appraisal and design to eventually turn them in bankable projects, including through the use of guarantees.

Beyond this important domestic capacity consideration, Arezki et al. (2017) identify the main institutional obstacles that prevent the flow of savings towards infrastructure investment and propose a key institutional fix to unlock the current savings glut and reverse the trend of secular stagnation. The authors argue that the solution is to reshape public-private partnerships (PPPs) in infrastructure and the classic model of multilateral development bank (MDBs). Traditionally, PPPs have been bilateral contracts between a private concession operator and a government agency, while development banks offer financing to projects that could not attract private funding but have a high development impact. Arezki et al. (2017) propose a model in which PPPs can involve three, or even four, partners, with the additional partners being a development bank and long-term institutional investors. The new model for development banks is to transform them into 'originate-and-distribute' banks for PPP infrastructure projects. This approach aims to maximise much-needed private sector financing.

4 POLICIES TO CATALYSE CLIMATE INVESTMENT

Fighting climate change requires more than just spending on infrastructure projects. It also requires policies to foster technological breakthroughs and appropriate tax and trade policies to incentivise sustainable activities – especially in logging and land management.

Sovereign borrowing cannot be the exclusive driver of climate-friendly investment; Africa needs to massively attract private investors. A big problem is that the sovereign debt situation of many African countries has deteriorated considerably over the last two years. This has an impact on the willingness of international investors to go into countries, given that potential sovereign defaults may impact their investment even if it doesn't involve any lending to the government. Timely debt restructuring and relief, championed by the international community where appropriate, will help unlock the potential for private-sector climate investment. Beside efforts by the international community to help fix the debt situation, the authorities on the continent need to do their part and address absorptive capacity issues both upstream and downstream of the energy sector.

On the upstream front, the lack of disclosure and the scarcity of data on the environmental impact of investments in Africa discourage investors. This lack of disclosure is in stark contrast to the rising demand for more information among shareholders in advanced economies. International shareholders are demanding to evaluate the environmental and social consequences of their investments. In addition, governments must take steps to modernise and broaden their thin financial sectors to permit the kinds of financing activity needed to support global investment.

Domestic financial systems in the continent are ‘clogged conduits’ for foreign investment. Too often, domestic financial sectors are too thin and are subject to a form of ‘financial repression’, channelling savings away from the private sector. Sovereign borrowing cannot be the exclusive driver of climate-friendly investment.

Specifically, most countries lack currency convertibility and have strict capital controls, limiting the prospects for investment and ability to borrow. These restrictions and lack of currency swap instruments affect banks that borrow in foreign currency. In turn, these obstacles make it difficult to fund projects which generate receipts in local currency, making these projects not bankable.

The production and distribution of electricity is largely overregulated in many African countries. Electricity tariffs are tightly controlled and are too low for the sector to be viable. The sector suffers from a chronic lack of investment, with resulting power outages. To make the power sector efficient and attractive to investment, there is a need for unbundling of the generation segment, which is competitive, and the distribution sector. In other words, the generation segment should be separated from the non-competitive distribution segment.⁵ Promoting competent and independent regulators at the national and regional levels is crucial to achieve efficiency and attract needed investments.

On the downstream front, transport is another sector that needs investment to reduce its carbon emissions. In Africa, inefficient public transportation blocks emissions reforms and is the main reason for pervasive fuel subsidies. Developing decarbonised transportation assets – including railways and other mass transit options – will help ensure energy demand predictability and stimulate investment in the electricity sector.

But high financing costs and tight caps that preclude companies from raising tariffs to cover those costs make it difficult to enable bankable power purchasing agreement. The tightening of global financing conditions is adding to rising financing costs and may cut most African countries off from capital markets, making it difficult to borrow for climate investment. What is more, the thirst for energy security in Europe and beyond following the invasion of Ukraine has triggered a resurgence in deals on fossil fuel assets in the continent. This may derail Africa’s trajectory towards decarbonisation.

5 See <https://fsr.eu.eu/unbundling-in-the-european-electricity-and-gas-sectors/>

There are several other barriers to investment, including the lack of domestic climate and social standards, that governments must address to encourage climate finance in Africa. Economic and societal goals need to come into focus. There is a need to develop local firm capabilities over and beyond foreign direct investment and needed transfer of technology. Over and above environmental goals and standards, the focus should also be on creating good green jobs, especially for the large pool of youth that constitute a large majority of the population in the continent.

5 CLIMATE FINANCE

In many respects, the Paris Accord was a breakthrough in terms of global climate governance, with the goal of limiting global warming to below 2°C, and preferably to 1.5°C, compared to pre-industrial levels. Countries have agreed to nationally determined contributions with national plans highlighting their climate actions. But rich countries are failing to live up to their promises in terms of financial support to help poorer countries develop cleanly and adapt to climate change. The pledges by rich nations amount to \$100 billion per year in funding from 2020 onwards. Arguably, we are well below this \$100 billion per year. Indeed, it is still unclear whether the \$100 billion will come from concessional funding, the private sector or technology transfers.

Climate finance offers a variety of instruments that need to be used accounting for absorptive capacities in the continent. Carbon credits, for example, allow companies to offset their GHG emissions in return for investments in carbon reductions made elsewhere, such as in a developing country. Investors that make carbon-reducing investments in, say, Africa, receive credits that they can sell to an enterprise in an advanced economy that needs to offset its emissions. Use of carbon credits, each worth a tonne of carbon, needs to be scaled up, especially for Africa. As an illustration, only 77 projects for ‘reducing emissions from deforestation and forest degradation’ (REDD) in Africa were registered under the Verified Carbon Standards (VCS) and 185 million credits were issued by the end of 2020.⁶

Other types of instruments can attract needed funds to Africa. **Green bonds** are fixed income instruments that specifically support climate- or environment-related investment. Africa currently accounts for only a tiny fraction of the global issuance of green bonds.⁷ While green bonds may be more appropriate in more mature markets where there is less demand uncertainty, they and other nature and blue bonds may be an important substitute for resource-backed loans granted by China, which have tended to be opaque. **Blended finance** combines public or philanthropic interventions such as guarantees with private money on a development project. As argued by Garbacz et al. (2021), the advantage of guarantees in blended finance is that they do not immediately require

6 See <https://verra.org/datainsights/data-and-insights-january-2021/>

7 See <https://www.stockholmsustainablefinance.com/publication/green-bonds-in-africa/>

outflows of funding, including from donors or public entities. Guarantees are also useful to mitigate commercial, credit and political risks, and help shift the risk-return profile of investments and alleviate credit restrictions for underserved borrowers. A top priority to scale up climate investments in the continent is definitively guarantees, including from development banks. Insurance markets, which are severely underdeveloped in the continent, are also important instruments to help create markets. **Impact investing** is another source of climate investment which could be particularly appropriate for Africa. Impact investors provide capital to companies and organisations to achieve social and environmental goals. The relatively small size of the private sector in Africa and the multiple obstacles make this form of investment appropriate for the continent, and it can also help avoid the pitfalls of the sovereign as the sole conduit of private investment.

6 CONCLUSION

The transformation of Africa's energy systems will require large investments. Luckily, there is growing interest in climate-friendly investments among the global financial community. To tap into this interest, African economies must tackle longstanding issues that constrain the ability of their energy systems to absorb investment. Sovereign borrowing cannot be the exclusive driver of climate-friendly investment. The private sector, both domestic and foreign, should be part of the solution for climate finance on the continent. Traditionally, high financing costs and caps that preclude companies from adjusting tariffs to cover these costs make it difficult to develop bankable purchasing power agreements. Developing decarbonised transportation assets – including railways and other mass transit options – will also help reduce GHG emissions, ensure energy demand predictability and stimulate investment in the electricity sector.

It won't be easy. There are problems related to the economic governance of the energy sector, and also complementarities between the energy sector and other sectors that hamper the ability of African economies to absorb investment. In turn, these problems discourage the global investor community. However, if authorities can force the right changes, African economies – especially those with little available capital – will be able to tap into the growing interest of global investors in making climate-friendly investments in a socially acceptable manner. And a beneficial side effect would be that the investments would help fix the increasingly onerous and unreliable access to energy and other public services that have exacerbated social tensions.

What is more, the new investor preferences in advanced economies for climate-friendly investments can promote green investments in developing countries in Africa. Shareholders wish to protect the environment and create societal benefits, and demand more disclosure and transparency from companies operating on the continent. Instilling more transparency and disclosure could lead to long-lasting governance gains for the continent and narrow the gap between the ultimate stakeholders in Western countries

(such as pensioners) and African stakeholders (such as nature workers). By embracing disclosure standards, African authorities would help attract more investments and ensure these investments have the intended societal and environmental impact.

One development that may abet the greening of Africa's energy system is the recent opening of the Africa Continental Free Trade Area. Regionalised energy markets are bigger and can attract and catalyse investments. Moreover, regionalising regulators and other institutions could provide comfort to investors, as it would allow them to rise above the domestic politics that plague national regulators. Regionalising institutional arrangements, including tenders and the regulatory apparatus, is thus paramount. The European Union provides an interesting model for the regionalisation of energy markets and networks industries such as transport. Capital market integration is an important avenue to fund large-scale, cross-border climate-related projects, as well as to help the region to integrate into the global financial economy and promote inclusive development.

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CHAPTER 4

Bridging green infrastructure and finance

45

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1 GREEN INFRASTRUCTURE GAPS IN EMERGING MARKET AND DEVELOPING COUNTRIES

The world faces a huge shortage of infrastructure investment relative to its needs. With few exceptions, such as China, this shortage is even greater in non-advanced countries.

The G20 Infrastructure Investors Dialogue estimated the volume of global infrastructure investment needed by 2040 to be \$81 trillion, \$53 trillion of which is needed in non-advanced countries (OECD 2020). The Dialogue projected a gap – in other words, a shortfall in relation to the investments foreseen today – of around \$15 trillion worldwide, \$10 trillion of which is in non-advanced economies.

Julie Rozenberg and Marianne Fei from the World Bank have estimated that, for emerging market and developing economies (EMDEs) to reach the Millennium Development Goals set for 2030, their infrastructure investment needs would have to correspond to 4.5% of their annual GDPs (Rozenberg and Fay 2019). Gross spending on sustainable infrastructure in EMDEs, excluding China, corresponded to 3.5% of GDP in 2019, and needs to ramp up to 4.8% and 5.7%, respectively, in 2025 and 2030 (Bhattacharya et al. 2022).

EMDEs will be where the bulk of new physical capital is to be added in the next decades. The world population is projected to increase by 1.9 billion between 2020 and 2050, with that growth happening mostly in EMDEs other than China – especially in sub-Saharan Africa and South Asia. How that addition of new physical capital will be undertaken will be fundamental to success in reaching very low emissions by mid-century, building climate resilience, restoring natural capital where applicable, and accumulating human capital.

In addition to the need for infrastructure investment, there is therefore a need for its ‘greening’ as fast and as extensively as possible, in order to minimise greenhouse gas (GHG) emissions (World Bank 2021). That requires decarbonising the energy sector by expanding the use of renewable sources instead of coal. Increases in use-efficiency and the elimination of subsidies for the use of fossil fuels would also be part of this agenda.

Transport is now responsible for 25% of the world's GHG emissions. The load must be shifted to low-carbon alternatives, in addition to investments in energy-efficient equipment and support for the transition to electric vehicles and fleets.

An important part of the 'greening' will be in cities, involving improved water supply and sanitation services, as well as changes to energy supply, waste recycling, and greater energy efficiency through better building standards and/or renovation of existing buildings. This transition, as in the case of manufacturing and agricultural activities, will require investments in infrastructure, as well as changes to the whole chain of services.

A major obstacle to such investment is the lack of fiscal space for public spending in EMDEs, a problem made worse by the fiscal packages adopted in response to the Covid-19 pandemic (Canuto 2022a). The multiple, overlapping shocks faced by EMDEs in 2022 have worsened the situation (Canuto 2022b). While the largest advanced economies can afford to increase their public debt, with a low risk of facing deteriorating financing conditions, this does not apply to most emerging economies, let alone low-income countries currently grappling with debt on unsustainable trajectories. To the greatest extent possible, domestic infrastructure investment must be ringfenced in fiscal adjustment endeavours.

Cooperation with advanced economies will be fundamental. These countries need to comply with their climate financing pledges made at the climate negotiations. Technology transfer will also be crucial.

2 BUILDING A BRIDGE BETWEEN INFRASTRUCTURE IN EMDES AND PRIVATE FINANCE

Cooperation with advanced economies should result in bridges being built to expand the presence of private financing to infrastructure projects in EMDEs. Indeed, according to data from the Institute of International Finance (IIF), over the past 15 years, institutional investors with long time profiles in their assets, such as pension funds, have been gradually increasing their allocations to infrastructure investment and alternatives to fixed-income instruments, equity, and other traditional instruments (IIF 2021).

Stable and long-term returns from infrastructure projects dovetail well with the long-term commitments of those financial institutions, particularly in the context of excess financial wealth relative to investment opportunities in advanced economies – one of the factors behind declining long-term real interest rates on public and private bonds in recent decades in those economies (Canuto 2021). Surveys carried out by the private equity database Preqin¹ show fund managers already pointing to the decarbonisation of energy as a factor in attracting private investments in infrastructure.

1 www.preqin.com/data/private-equity

Abundant financial resources in world markets have been facing very low long-term real interest rates, lowered by around two percentage points over the past 30–40 years, whereas opportunities for higher returns from potential infrastructure assets are missed. The ongoing monetary policy regime change in advanced economies, with rising interest rates accompanying ‘stagflation’ (Canuto 2022b), will not erase the mismatch between relative scarcity of investment opportunities and financial savings.

According to the OECD, institutional investors (investment funds, insurance companies, and pension funds) in its member countries held over €180 trillion of financial assets in non-money market funds in 2017. A substantial impact on infrastructure finance might be obtained if institutional investors and other private-sector players could increase allocations to infrastructure assets. The question then becomes how to create the conditions for that to happen.

Not by chance, the ‘green revolution’ has been suggested as a trigger for a virtuous cycle of rising investment and economic growth, curbing climate change, and attending to the asset needs of financial portfolios. And, as remarked in the previous section, in the decades ahead, for demographic, climatic, and development reasons, this story must unfold increasingly on the side of EMDEs, with sub-Saharan Africa and South Asia as special cases.

The biggest challenge is to extend the bridges between, on the one hand, green infrastructure investment in non-advanced countries and, on the other, private sources of finance abundant in dollars and other convertible currencies with few opportunities to obtain returns compatible with their requirements on their liability side.

Building such a bridge requires the fulfillment of two tasks (Canuto and Liaplina 2017). First, the development of properly structured projects, with risks and returns in line with the preferences of the different types of financial intermediation, would help to close the private financing gap in infrastructure.

Investors have different mandates and competencies regarding the management of risks associated with types of projects and phases of investment project cycles. They demand coverage of risks whose exposure is not adequately covered by market instruments. The absence of complementary instruments or investors is one of the most frequently identified reasons for failure in the financial completion of projects. Table 1 provides a snapshot of the diversity of instruments and vehicles through which private finance can participate in infrastructure projects.

TABLE 1 TAXONOMY OF INSTRUMENTS AND VEHICLES FOR INFRASTRUCTURE FINANCING

Asset category	Instrument	Infrastructure project	Corporate balance sheet	Market vehicles-capital pool
Fixed income	Bonds	Project bonds	Corporate bonds, Green bonds	Bond indices, bond funds, ETFs
		Municipal, sub-sovereign bonds	Subordinated Bonds	
	Loans	Direct/co-investment lending to infrastructure project, syndicated project loans	Direct/co-investment lending to infrastructure corporate	Debt funds (GPs)
			Syndicated loans, securitized loans (ABS), CLOs	Loan indices, loan funds
Mixed	Hybrid	Subordinated loans/bonds, mezzanine finance	Subordinated bonds, convertible bonds, preferred Stock	Mezzanine debt funds (GPs), hybrid debt funds
Equity	Listed	YieldCos	Listed infrastructure and utilities stocks, closed-end funds, REITs, IITs, MLPs	Listed infrastructure equity funds, indices, trusts, ETFs
	Unlisted	Direct/co-investment in infrastructure project equity, PPP	Direct/co-investment in infrastructure corporate equity	Unlisted infrastructure funds

Source: IIF (2021).

The limited fiscal space in EMDEs can be used to mainly cover such risks and enable the build-up of investment, rather than replacing private investment – crowding in private finance instead of crowding it out. National and multilateral development banks may also favour this action instead of financing total investments.

Defining attractive investment opportunities for different types of investors and combining these perspectives more systematically around specific projects or asset pools is a promising way to fill the infrastructure financing gap. The planning and integrated issuance – with different time profiles – of fixed-income securities, bank loans, credit insurance, and others for the different moments from project preparation to operation make that combination possible.

The second task relates to the reduction in legal, regulatory, and political risks. Transparency and harmonisation of rules and standards can increase the scale of comparable projects and make it possible to build project portfolios. Non-banking financial institutions often highlight the absence of ample project portfolios as a reason not to set up business lines focused on the area. This is a particularly weak point in smaller countries.

The contrast between the scarcity of investments in infrastructure – particularly in non-advanced economies – and the excess of savings invested in liquid and lower-yield assets in the global economy deserves to be confronted.

While EMDEs are grouped based on income, they are not homogeneous when it comes to the potential political risks that costly infrastructure investments in them may entail. Beyond political stability, other variables affecting investment risks are grounded in the way their public finance systems are organised. For instance, the green transition will require changes, and investments, not only at the national level, but mainly at the city and regional levels (Schoenmarker and Schramade 2019). In turn, providing loans to subnational governments directly presents an additional risk. Higher levels of political fragmentation of subnational governments in an EMDE, for example, will negatively affect public finance management if fiscal decentralisation is high. Fiscal performance incentives of subnational borrowers may also be compromised if they expect bailouts from central governments in case of a default (Rodden 2005). Thus, it is essential that creditors and syndicates keep these variables in mind when deciding on the configuration through which investments will be injected.

Let us develop some additional points about the features of the demand and supply sides of infrastructure-related finance.

3 DEMAND FOR INFRASTRUCTURE-RELATED FINANCE

In order to design effective tools to channel private investment to infrastructure projects, one needs to recognise that infrastructure investments have specific characteristics that create particular challenges for investment. They are typically long-lived assets, they usually carry low technological risk, and their operation typically occurs with high entry barriers (and hence they are usually strongly regulated assets with predictable and stable revenue streams).

Furthermore, in order to provide an overview of the available products to fund infrastructure projects, two generic categories can be identified: project and corporate finance.

Corporate finance is the traditional channel for infrastructure projects, especially private ones. Firms in charge of the infrastructure (i.e. construction and operating projects) either issue shares or borrow on capital markets to obtain the required funding. Such firms often tend to have portfolios of projects. In energy markets, utilities typically have portfolios of energy projects with different risk profiles.

Project finance is a relatively recent trend (compared to corporate finance). It builds on the idea that financing does not depend on the creditworthiness of sponsors but only on the ability of the project to repay debt and remunerate capital. In that sense, it deals with the financing of a precisely defined economic unit. Typically, because cash flows are more stable, project finance tends to allow a higher level of debt.

Table 2 shows a schematic representation of financing alternatives (see also OECD 2015a). The main financing instruments in infrastructure projects are loans and bonds. Debt markets are the deepest markets in the world so they can be structured to form long-maturity products coherent with the long lives of infrastructure projects. Moreover, such debt instruments may benefit from the existence of players in debt markets with a preference for long-term investments. Insurance companies or pension funds tend to prefer long-maturity products to hedge their long-lived liabilities. Consequently, a large part of the project is typically financed through debt instruments (predominantly loans).

TABLE 2 BASIC FINANCING INSTRUMENTS

Category	Instrument	Project finance	Corporate finance
Debt	Bonds	Project bonds Green bonds	Corporate bonds Green bonds
	Loans	Syndicated loans Direct lending (to project)	Direct lending (to corporate) Syndicated and securitized loans
	Hybrid	Subordinated debt Mezzanine finance	Subordinated bonds Convertible bonds
Equity	Listed	YieldCos	Listed stocks, etc.
	Unlisted	Direct investment in project (SPV) equity	Direct investment in corporate equity

Source: Arbouch et al. (2020).

A significant part of debt instruments corresponds to ‘subordinate debt’ and, in general, instruments for both project (as mezzanine) and corporate finance that have characteristics between debt and equity (OECD 2015). Subordinated debt can be seen as

an instrument designed to absorb credit losses before senior debt. Thus, the main effect is that it increases the quality of such senior debt. In that sense, subordinated debt can be designed to have different risk/return ratios, constituting a bridge between traditional debt and equity.

Finally, equity finance may be seen as the risk capital of the project (usually required to begin the project or refinance it). Listed shares would be traded on public markets, whereas unlisted shares would provide direct control over the project. Project equity finance may be placed closer to debt instruments in the sense that infrastructure contracts may impose relatively low risk/return ratios. In any case, we understand equity investment as receiving residual claims on cash flows, thus being the highest-risk investments.

4 SUPPLY OF INFRASTRUCTURE-RELATED FINANCE

The other part of the finance ecosystem is the supply side. The role of equity in the funding of an infrastructure project has implications in terms of the finance offer.

There are two basic modes of governance for infrastructure projects, involving two different environments for the project and corresponding different roles of equity. The first mode can be organised around the infrastructure project. In general, this means that the return on the project investment will be associated exclusively with project outcomes (project finance). The second mode of governance is through a company that implements a portfolio of projects. The return on investment in these cases, from a financial point of view, depends on the risks associated with the firm's portfolio, not just a particular project. This classification means that projects associated with project finance (typically with secured income streams) will allow the unlocking of a greater amount of debt instruments.

4.1 Equity investors

Corporates

Corporates' profiles may be different (as the role of equity varies) depending on whether they participate by adding the project to their balance sheet or through project finance. Traditionally, utilities have been the main corporates with interest in infrastructure. But in recent years, with the increasing importance of green infrastructure in various social and political contexts, other investors have become interested in infrastructure investment. One example is the interest from oil and gas companies in green infrastructure, such as offshore wind, energy storage, and potentially carbon capture and storage (CCS).

Institutional investors

Dedicated funds are growing in importance but are still not such a large part of the investment. Sovereign funds, infrastructure funds, insurance and pension funds, and exchange-traded funds, may be financing sources under certain conditions. However, these funds are not typically interested in exposure to relatively high risks.

4.2 Debt investors*Commercial banks*

Lending from commercial banks comes with specific constraints. Additionally, it is important to consider that Basel III, while addressing solvency problems in markets, has increased considerably the costs of lending.

Institutional investors

One finds similar institutional investors to those in equity investments. In particular, insurance and pension funds have increased their interest in infrastructure investment, as this type of asset matches well their portfolio profiles.

Governments and development banks

These institutions have been important sources of finance for infrastructure projects. Moreover, their role has consisted of providing various important functions to enhance financial conditions for infrastructure investment, including de-risking of projects, and being an early mover in risky undertakings.

Investing in global infrastructures is a risky business for institutional investors because of infrastructure-specific kinds of risks during long project life cycles. However, such long-term investments can yield real returns. This type of investment is characterised by long periods of construction of facilities. The lengthy periods of construction and the number of decades during which the facility is expected to operate is a common characteristic of infrastructure investments. Thus, payment for the produced service should be pegged to inflation. This protects the facility's revenue stream from fluctuating price levels and ensures a predictable cash flow.

Ideally, direct private investment would be the quickest way to fill unmet infrastructure needs through public-private partnerships (PPPs). In this financing model, governments grant concessions to private entities to finance and construct infrastructure facilities. However, PPPs requires high levels of capital that very few institutional investors can allocate by themselves. They also typically entail partnering with a construction firm or other similar corporates to deliver actual physical assets. And even for institutional investors with enough assets for direct investment, evaluating the financial feasibility of infrastructure projects can be difficult, because investors generally lack the in-house expertise for this.

For smaller institutional investors with little or no experience in infrastructure, asset pooling would make more sense to increase investing capability. And by investing in such infrastructure funds, institutional investors can access unlisted infrastructure even if they lack the internal expertise or resources to assess projects unilaterally.

This type of in-house expertise can be found at the level of social entrepreneurs and small impact investors, who possess the appropriate skills to set up and manage projects from scratch. However, given the significant difference in terms of size between social entrepreneurs and small impact investors who are highly skilled but considerably lack funding on the one hand, and institutional investors who dispose of large funding capabilities but not the required expertise to bundle different components of an infrastructure project on the other, a need for aggregator funds emerges, to bridge the gap between the small and the big stakeholders in the project. The main role of the aggregator funds is to address the asymmetry of information between small investors and institutional ones by identifying valuable expertise at the level of the former, which can respond to the needs of the latter (Schoenmaker and Schramade 2019: 37).

A more common but even less direct manner of investing is through listed infrastructure. Becoming a shareholder of a publicly listed infrastructure company allows investors to gain exposure to the sector, while enjoying relative liquidity and committing a relatively minimal level of investment. However, a weakness of listed infrastructure products is that they tend to perform similarly to other asset classes, especially equities, as they are exposed to stock market volatility.

5 RISK MITIGATION MEASURES TO ATTRACT PRIVATE-SECTOR FINANCING

Based on the ecosystem of investors described above, let us outline a map of possible functions to be performed by governments and development banks. We suggest some tools designed to de-risk infrastructure projects and mobilise private investment in infrastructure (Arbouch et al. 2021).

One way of mitigating the financial risks stemming from infrastructure projects is certainly to adopt some additional credit enhancement. Infrastructure projects, which require considerable financing amounts and present high financial risks, often need some sovereign support in the form of default guarantees. If any political changes or natural disasters compromise a project's construction or operation, investors will need recourse in the form of such sovereign guarantees.

Government guarantees can also be essential in financing cross-border projects, such as transport infrastructure, which requires specific instruments to cover the varying risks in participating countries. Credit guarantees can also reduce the cost of borrowing by covering losses in the event of a default.

Finally, since infrastructure projects are often financed through foreign debt, special attention should be paid to mitigating currency risks through medium and long-term swap arrangements. Of course, to the greatest extent possible, more should be done to encourage finance from local investors, thus avoiding currency risks at the source.

In order to map the tools that can be designed to improve investment conditions in infrastructure projects, we may think of a typical infrastructure project as made up of two phases:

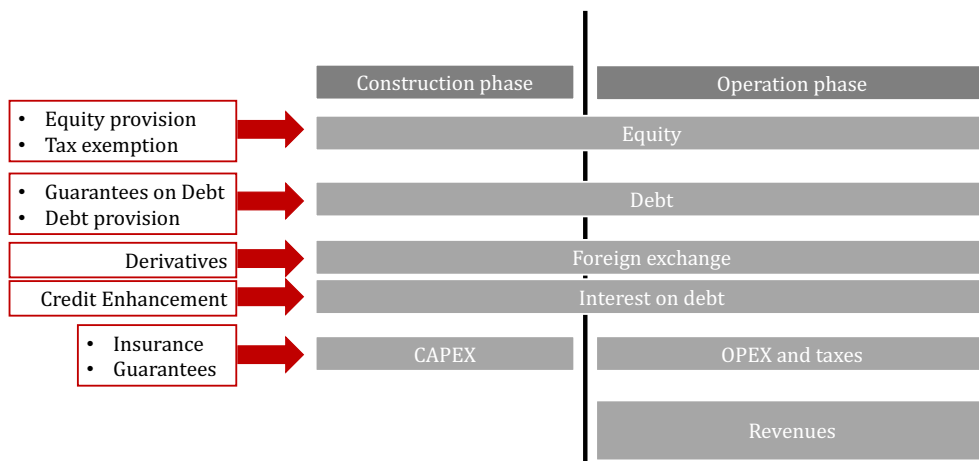
1. The construction phase, in which most of the costs need to be faced upfront and normally no cash flows are obtained.
2. The operation phase, in which costs are lower and income streams begin to be earned, so cash flows become increasingly positive.

These two phases have very different risk profiles. The construction phase normally bears most risks, while the operation phase is normally exposed to less-risky cash flows. This is especially true in project finance-type investments, where expected income streams are usually agreed before construction begins for the whole life cycle of the infrastructure.

Risks that are integral to infrastructure projects peak during the construction phase. During that phase, the private sector tends to be very reluctant to engage in a project without appropriate guarantees.

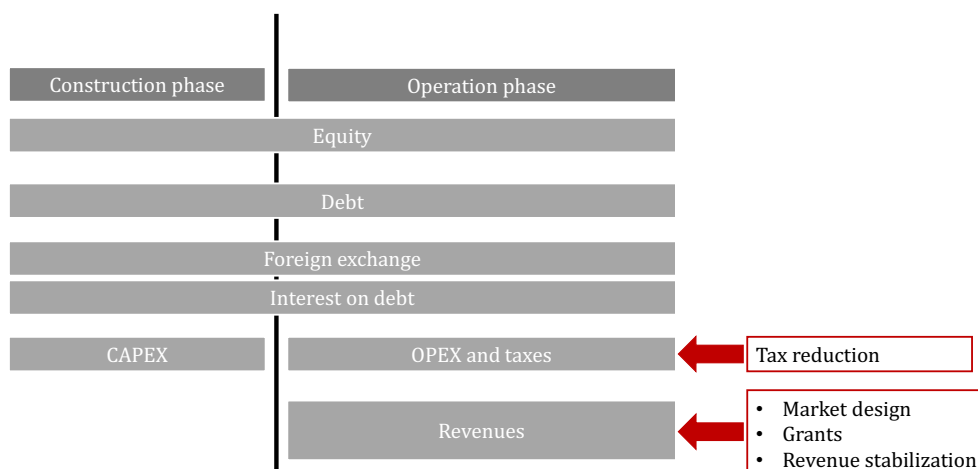
Figures 1 and 2 summarise the tools available to enhance investment conditions. In particular, Figure 1 shows possible tools associated with the construction phase, while Figure 2 depicts tools designed for the operation phase.

FIGURE 1 CONSTRUCTION PHASE: POTENTIAL FINANCIAL INSTRUMENTS TO MITIGATE RISKS



Source: EULAC Foundation (2018).

FIGURE 2 OPERATION PHASE: REVENUE-ENHANCING INSTRUMENTS TO MITIGATE RISKS



Source: EULAC Foundation (2018).

6 SUMMING UP

A bridge between private sector finance and infrastructure in EMDEs can be built if properly structured projects are developed, with risks and returns distributed in accordance with the different incentives of stakeholders. Institutional investors, like all other types of debt and equity investors, have their own incentives, constraints, and objectives when it comes to selecting countries, types of projects (greenfield versus brownfield), and at what stage of the investment project cycle (development, construction, or operation) to invest. Inadequate coverage of risks is one of the reasons for projects often not being financial closed. Defining ‘attractive investment opportunities’ and matching investors to these opportunities in a more systematic way might make a difference.

‘Heterogeneity in the setup of projects’ is often cited as a reason why it is so difficult to push more allocations to infrastructure. Lack of data, different contractual structures, different regulatory environments – all these aspects are part of the puzzle and are addressed by different players. But also, the breadth of products tailored specifically for different types of institutional investors with their respective risk and return profiles is where greater effort can pay off. For instance, prospects for institutional investors (e.g. a pension fund) to participate at earlier stages prior to operations become more favourable when refinancing risks are covered and the construction risk is addressed.

Currency risk is a major factor faced by international investors in emerging markets. Export credit agencies can help with that challenge, although often at higher cost. Other challenges frequently named are the unavailability of financial instruments, and their respective costs and complexity in terms of difficulty of use.

Fixed-income instruments including bonds (in the context of infrastructure projects: project bonds, municipal, sub-sovereign bonds, green bonds, and sukuk) and loans (direct/co-investment lending to infrastructure project, syndicated project loans) are likely to be a better fit for the appetite of a broad range of institutional investors in EMDEs.

Development finance institutions can offer a core financial additionality by playing a key role as a catalyst, drawing private capital into long-term projects in countries and sectors where significant development results can be expected, while the market perceives high risks. Those institutions contribute their own funding (loans, equity) and/or guarantees, providing partners with an improved creditor status. Bringing partners into specific deals through syndications also generates additional financing.

Several mechanisms to mitigate and manage risks are at the disposal of the private sector. Companies can leverage financial markets to assign part of their risks to third parties through risk transfer and credit enhancement instruments. These mechanisms are currently being piloted by national and multilateral development banks. These instruments include guarantees, insurance policies, and hedging mechanisms under which, for a fee, the provider agrees to compensate the concessionaire (or its lenders) in case of default and/or loss arising from some specified circumstance. More specifically, political risk insurance is one of the most suited mitigation tools available to curb investors' exposure to either financial or political risks. Some sectors are more prone to regulation volatility or political pressure, where pricing for instance is more politicised. These sectors should be assessed with greater scrutiny by the infrastructure operators and require specific and customised risk mitigation mechanism (e.g. telecommunication or electricity sectors) (Müllner and Dorobantu 2022). The financial set-up of the project can serve as an efficient lever for the private sector to mitigate risks. A diversified mix of funders, including domestic banks, international banks and multilateral banks and owners – locals and foreigners – has proven to be effective in deterring political intervention and smoothing shocks. Indeed, strategic alliances with non-local entities provides another layer of hedge against political intervention, while partnering with local companies can enable an infrastructure operator to be viewed as more than just a 'foreign investor' (WEF 2015).

Institutional investors and other financial intermediaries complain about the lack of pipelines of investable projects, the scarcity of which is often highlighted as an impediment to greater commitment to infrastructure on the part of non-banking financial institutions. The labour division between public and private sectors might include an extra effort by the former to take care of basic design in cases of greater complexity and regulatory risks, where risks are harder to pre-identify and measure. The expenses of such project design can be to a great extent be reimbursed at the time concessions or other types of PPP become concrete. That of course assumes public-sector planning and priority setting.

The contrast between the dearth of investment in infrastructure in EMDEs, and the savings-liquidity glut that marks the contemporaneous global economy can be reduced. Lowering legal, regulatory, and policy risks is essential. And the private sector has at its disposal a handful of tools to manage them and strike a balance between returns and risks. The availability of sophisticated, developed financial markets and instruments will help, as they facilitate partnerships between different financial agents to allow each to bear the risks that are closest to their appetites and capacities.

The burden of increasing the transparency of the legal framework and achieving political and regulatory stability falls on the public sector. High transactions costs for the private sector seeking to channel financial resources to EMDEs are ultimately borne by the public sector and taints the attractiveness of the host country. But the greater involvement of private investors and the design of economically rational financing structures will boost the funding of infrastructure investments and thereby improve the efficiency and success of infrastructure projects. Building such a bridge is within reach.

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CHAPTER 5

Inspiring sustainable recovery through sustainable bond markets in ASEAN+3

Kosintr Puongsophol, Shu Tian and Satoru Yamadera

Asian Development Bank

1 FEATURES OF ASEAN+3 SUSTAINABLE BOND MARKETS

Recent years have witnessed an increasing awareness of sustainable development, which leads to a shift in the financial market to allocate more resources towards investments with positive environmental and social outcomes. One of the most pronounced changes is the surge in the sustainable bond market, which mobilises a large amount of public and private sector capital to environmental and social projects via direct access to the global capital markets. The sustainable bond market can provide access to huge amounts of capital from a more diversified investor base to foster risk sharing in investments with positive impacts.

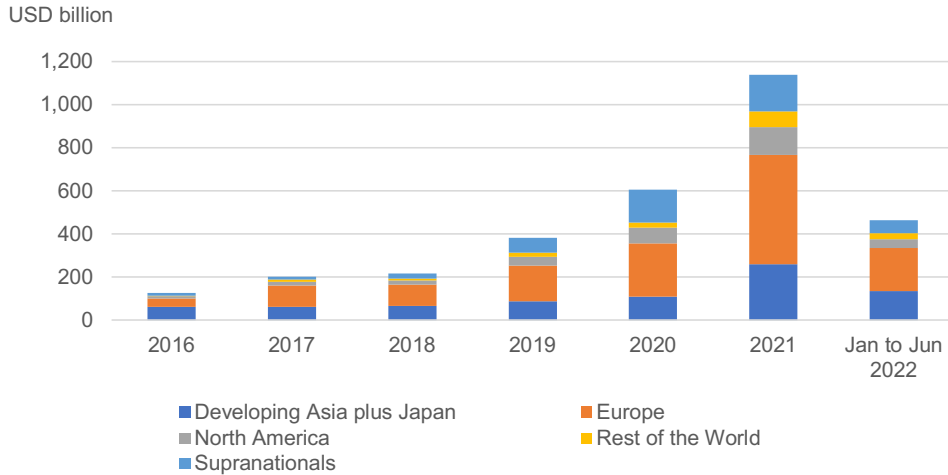
Sustainable bonds are fixed-income securities, normally with a label, that directly finance sustainable projects with positive environmental and social impacts. The sustainable bond family has been expanding with innovative instruments and currently includes green bonds, social bonds and sustainability bonds (the three of which are also known as ‘sustainable bonds’), as well as innovative instruments such as transition bonds and sustainability-linked bonds. These sustainable bonds differ from conventional bonds in that the use of the proceeds from these instruments targets projects with environmental and/or social impacts and the issuers need to monitor, measure, and disclose the related impacts during the life of the investments.

The global sustainable bond market formally started to take off after the International Capital Market Association (ICMA) released the first version of the Green Bond Principles in 2015. Between 2016 and 2021, annual global issuance of sustainable bonds surged from US\$125.3 billion to \$1,138.3 billion. Asia follows Europe as the second largest regional sustainable bond market in the world, accounting for around 20% of global issuance. (Figure 1). According to Asia Bond Monitor June 2022, ASEAN+3¹ markets dominate the

1 ASEAN+3 consists of the ten members of the Association of Southeast Asian Nations plus the People's Republic of China, Japan and the Republic of Korea.

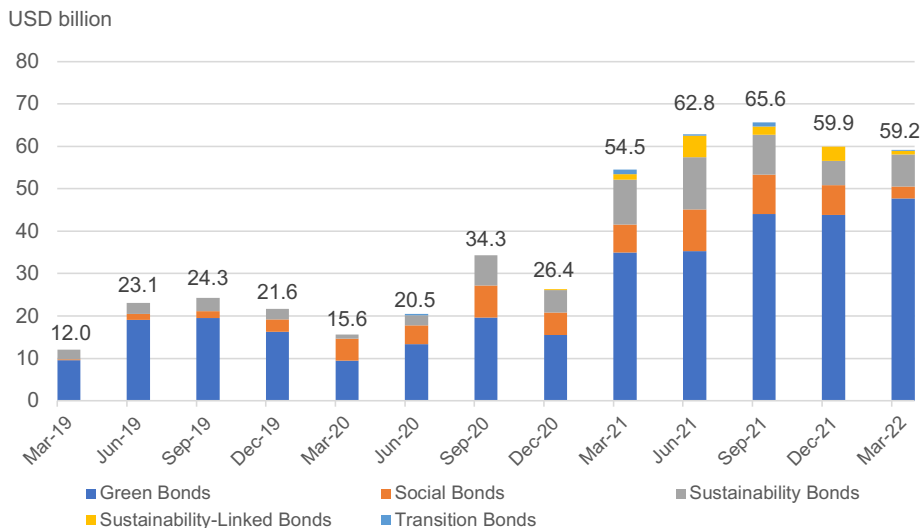
Asian sustainable bond markets, with \$478.7 billion outstanding sustainable bonds as of Q1 2022, and \$59.2 billion sustainable bond issuance in Q1 2022.² Green bonds are the major sustainable bond instruments used in ASEAN+3 (Figure 2).

FIGURE 1 GLOBAL SUSTAINABLE BOND ISSUANCE BY REGION



Source: AsianBondsOnline computations based on Bloomberg LP data.

FIGURE 2 SUSTAINABLE BOND ISSUANCE IN ASEAN+3 MARKETS

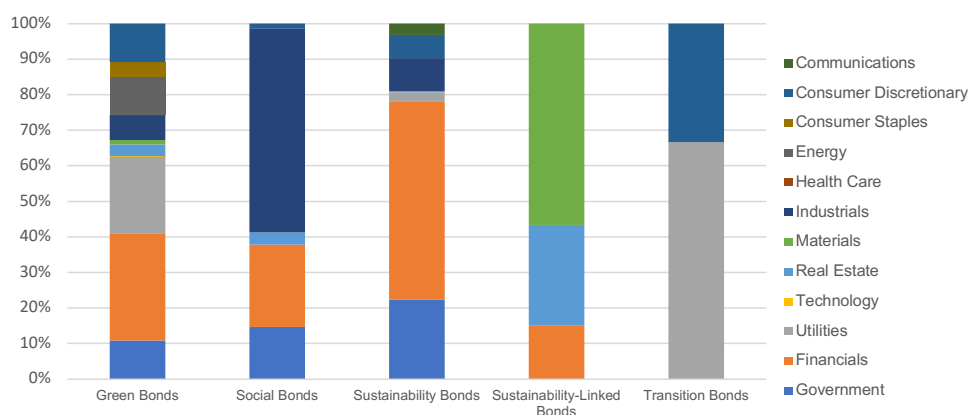


Source: AsianBondsOnline computations based on Bloomberg LP data.

² <https://asianbondsonline.adb.org/abm.php#abm-2022-jun>

The ASEAN+3 sustainable bond markets are dominated by private sector issuers. As shown in Figure 3, private sector issuers accounted for 87.7% of total issuance in ASEAN+3 sustainable bond markets in Q1 2022, with green bonds seeing more diversified sectors distribution compared to other theme bonds. The financial sector is a key player in most types of sustainable bonds, accounting for 32.8% of total sustainable bond issuance in Q1 2022. Meanwhile, sovereign sustainable bond issuance in ASEAN+3 remained relatively limited. By the end of June 2022, Hong Kong, China, Indonesia and Singapore had issued sovereign green bonds, while Korea and four ASEAN markets – Indonesia, Malaysia, Philippines, Thailand – had issued sovereign sustainability bonds. Compared to private sector issuers, sovereign issuers need more coordination and work to be institutionally ready to issue sustainable bonds. While their size remains limited, the sovereign issuances serve as a show case in domestic markets to guide private sector ESG investments. One interesting phenomenon to note is that, while ASEAN+3 has witnessed fast expansion in local currency bond markets, most of the sovereign sustainable bond issuances in ASEAN+3, except for in Singapore and Thailand, are in G3 currencies, which also hints at some demand-side constraints.

FIGURE 3 ISSUANCE OF SUSTAINABLE BONDS IN ASEAN+3 BY SECTOR IN Q1 2022 (SHARE OF TOTAL)



Source: AsianBondsOnline computations based on Bloomberg LP data.

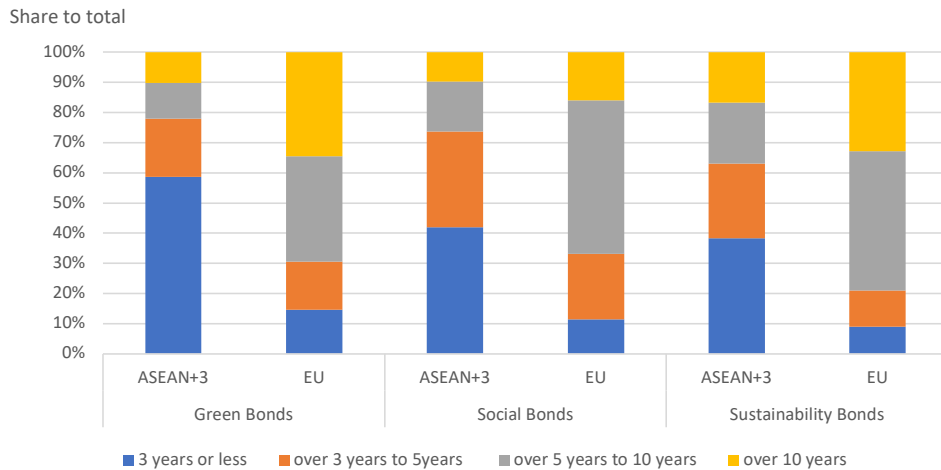
As a regional development bank, the Asian Development Bank (ADB) has issued various Sustainable Development Goal (SDG)-aligned theme bonds, including green bonds, to raise funds to finance ESG investment in developing Asia and the Pacific. More importantly, ADB serves as a knowledge and development partner to help developing member countries develop their own sustainable bond markets. Under the Asian Bond Markets Initiative (ABMI), for example, ADB helps issuers in ASEAN+3 to build readiness for sustainable bond issuance, supports market ecosystems in ASEAN+3 by building capacity of rating agencies to perform green bond verification and related

financial intermediaries to understand the necessary process of issuance for sustainable bonds, and communicates and locates potential investors for regional sustainable bonds. Moreover, ADB has also set up various sustainable finance facilities, such as the ASEAN Catalytic Green Finance Facility (ACGF), to de-risk and leverage private sector funding for ESG investments.

1.1 Comparison of the ASEAN+3 sustainable bond markets with EU markets

Compared to the EU sustainable bond markets, ASEAN+3 sustainable bond markets have a shorter maturity. According to Asia Bond Monitor June 2022, ASEAN+3 sustainable bond markets have a high concentration of short-tenor financing, with 76.3% of sustainable bonds outstanding having a tenor of five years or less by Q1 2022. Figure 4 shows that, as of November 2021, 78.0% of green bonds in ASEAN+3 carry a maturity of less than five years, while the corresponding share is only 30.6% in EU markets.

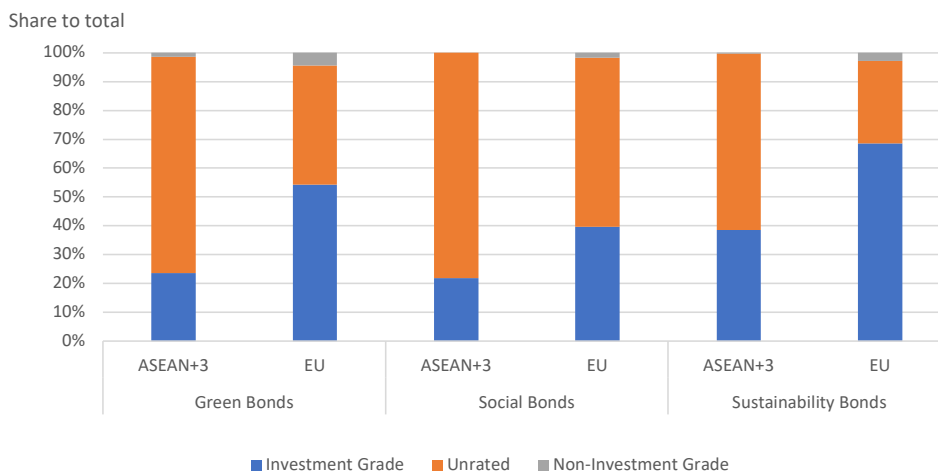
FIGURE 4 MATURITY PROFILE OF OUTSTANDING GSS BONDS IN ASEAN+3 AND EU MARKETS (AS OF NOVEMBER 2021)



Source: AsianBondsOnline computations based on Bloomberg LP data.

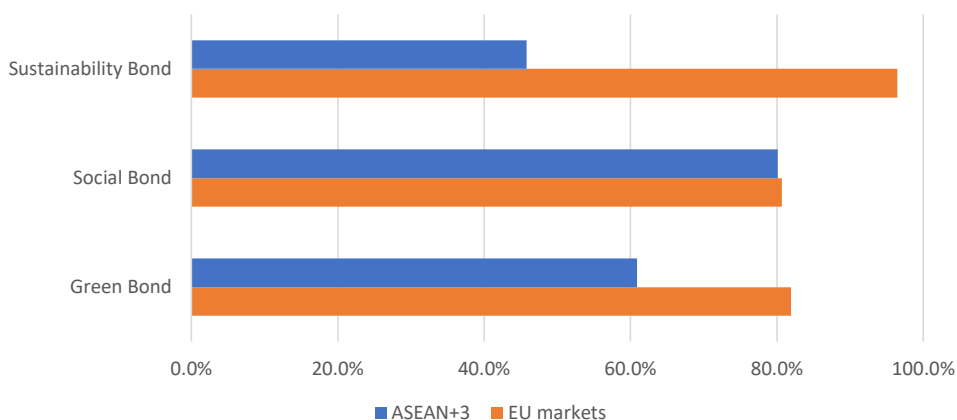
In addition, compared to EU markets, ASEAN+3 sustainable markets have a higher share of unrated bonds, but more investment grade bonds among rated bonds. As of November 2021, unrated green, social, and sustainability bonds accounted for 75%, 78%, and 61%, respectively, of outstanding green, social and sustainability bonds in ASEAN+3, while the corresponding shares in EU markets were 41%, 59% and 29% (Figure 5). This is consistent with the limited international bond rating participation in ASEAN+3 bond markets in general. However, amongst rated sustainable bonds, the share of investment grade (i.e. rated BBB and above) bonds in ASEAN+3 is higher than that in EU.

FIGURE 5 RATING PROFILE OF OUTSTANDING SUSTAINABLE BONDS IN ASEAN+3 AND EU MARKETS AT ISSUANCE (AS OF NOVEMBER 2021)



Source: AsianBondsOnline computations based on Bloomberg LP data.

FIGURE 6 SHARE OF OUTSTANDING LOCAL CURRENCY SUSTAINABLE BONDS IN ASEAN+3 AND EU MARKETS (AS OF NOVEMBER 2021)



Source: AsianBondsOnline computations based on Bloomberg LP data.

Finally, compared to EU markets, ASEAN+3 sustainable markets have a lower share of local currency-denominated bonds. As of November 2021, the shares of outstanding local currency green, social, and sustainability bonds in total green, social, and sustainability bonds in the ASEAN+3 were 60.9%, 80.1%, and 45.8%, respectively. (Figure 6). This is lower than EU markets, where the corresponding shares were 81.9%, 80.7% and 96.5% for green, social, and sustainability bonds, respectively. One may argue that there is stronger demand for euro-denominated bonds than local currency-denominated bonds

in ASEAN+3. However, this may not necessarily be the case. The share of local currency bonds is also much lower than the share of local currency bonds in the total bond market in ASEAN+3. As of September 2021, 91% of bonds outstanding were dominated in local currency in ASEAN+3,³ which is much higher than the share of local currency sustainable bonds in ASEAN+3 markets. This phenomenon underscores the importance of developing a larger domestic investment base for local currency sustainable bonds.

1.2 Changing supply and demand landscape in sustainable bond markets in ASEAN+3

The rapid development of sustainable bond markets in ASEAN+3 has been driven by structural changes on both the demand and supply sides.

On the demand side, there is an increasing awareness of sustainable investments amongst public and private sectors around the world. Bfinance's (2021) survey reveals that around 95% of surveyed asset managers in Asia and the Pacific rated ESG considerations as of high or moderate importance in their investment decisions, while the corresponding numbers were 91% and 70% for their European and North American peers. Moreover, there is also an increasing need for global investors to manage and mitigate sustainability risks, ranging from acute physical risks under various shocks to changes in regulations. Willis Towers Watson (2021) indicated that 57% of surveyed Asian institutions expected greater pressure from regulators and stakeholders on ESG practice disclosure and practice in 12 months' time. This shift in investment interest towards sustainable assets, driven either by stakeholders' preference or sustainability risk management, helps form a strong demand base for sustainable financial assets in Asia.

Nevertheless, the current ESG market practice in Asia remains relatively modest, with some awareness-readiness gap. According to Willis Towers Watson (2021), while there is high awareness, only 31% of surveyed Asian investors have an ESG policy statement in place and Asian asset owners only allocate an average of 10% of their portfolio to ESG-related strategies. This is not only related to weaker capacity in ESG investment in the region, but also reflects weak market standards and ESG market ecosystems, as well as a relatively small supply of sustainable assets in Asian markets.

On the supply side, sustainable investments help gain positive investor recognition and broaden the potential investor base for sustainable projects, which boosts the supply of sustainable projects pipelines and sustainable bond issuance in the region. Evidence indicates that green bond issuance helps sovereigns and corporates attract new investors with long-term investment horizons and ethical mandates around the world and in Asia (Flammer 2021). Persistent capital flows and positive investor recognition help deliver greater resilience for sustainable investments, particularly during periods of market turmoil (ADB 2021a). Positive investor recognition and a broader investor base also help

3 Asian Bonds Online: https://asianbondsonline.adb.org/documents/abm_nov_2021.pdf?src=spotlight

lower the cost of funds (Ghoul et al. 2011, Chava 2014). According to CBI (2021), there is continuing evidence that during first half of 2021, one-third of green bonds studied were issued with a ‘greenium’ in the primary market, meaning the bonds were sold at a higher price or at a lower yield, which saves the cost to their issuers. The cost benefit also continued in the secondary bond market, as 46% and 57% of green bonds’ yield spreads narrowed more than their corresponding conventional vanilla bond basket within 7 and 28 days after pricing, respectively. The strong performance of green bonds is normally related to oversubscription in the market, largely due to the relatively small supply of such bonds.

Despite the benefits of issuing sustainable bonds, Asia still lags behind the EU in the supply of sustainable bonds. Although ASEAN+3 has a larger bond market than the EU, the region has fallen behind the EU in sustainable bond market development, which accounts for only 1% of the total ASEAN+3 bond market, compared to 4% in EU. The lack of supply in Asia is partly driven by corporates’ capacity to identify, manage and report related sustainable investments.

2 FINANCING SUSTAINABLE RECOVERY THROUGH THE BOND MARKET

A capital market can play an important role in mobilising private capital to support inclusive and sustainable economic recovery. While the People’s Republic of China (PRC), Japan, and the Republic of Korea have led the development of sustainable bond markets in ASEAN+3, as discussed in the previous section, the majority of sustainable bond markets in ASEAN, with the exception of Singapore, are still in the early stages of development. Currently, the share of outstanding local currency-denominated sustainable bonds in the total local currency-denominated bond market in all major ASEAN markets is less than 2% (Figure 7).

However, when considering only those bonds issued by corporates in the Philippines, this proportion is much higher at nearly 10% of the total outstanding local currency-denominated corporate bonds – by far the highest proportion among major markets in ASEAN (Figure 8). On average, the size of sustainable bonds issued by corporates in other major ASEAN markets ranges from 2% to 4% of the total outstanding local currency-denominated corporate bonds. This indicates that there are significant opportunities for the sustainable bond market to expand, thereby playing a larger role in supporting the recovery from the Covid-19 pandemic.

FIGURE 7 SHARE OF LCY SUSTAINABLE BONDS IN TOTAL LCY BONDS OUTSTANDING

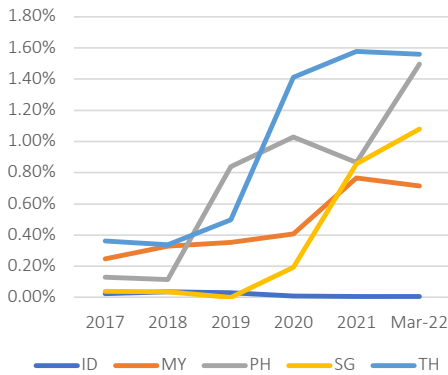
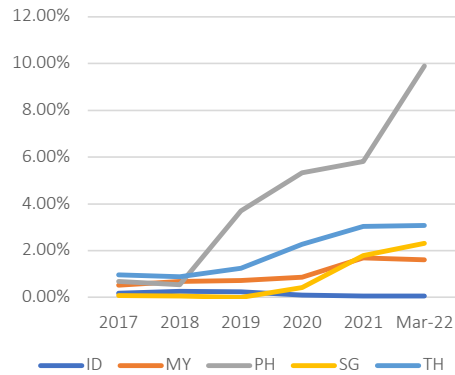


FIGURE 8 SHARE OF LCY CORPORATE SUSTAINABLE BONDS IN TOTAL LCY CORPORATE BONDS OUTSTANDING



Source: AsianBondsOnline computations based on Bloomberg LP data.

Note: LCY = local currency; ID = Indonesia; MY = Malaysia; PH = Philippines; SG = Singapore; TH = Thailand.

2.1 Significant interest from both issuers and investors

ADB, in collaboration with the Global Green Growth Institute, conducted a survey between November 2021 and June 2022 among local institutional investors – including fund managers, financial institutions and insurance companies – and local underwriters and advisors across Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, the Philippines, Singapore, Thailand and Viet Nam. A breakdown of respondents can be found in Table 1.

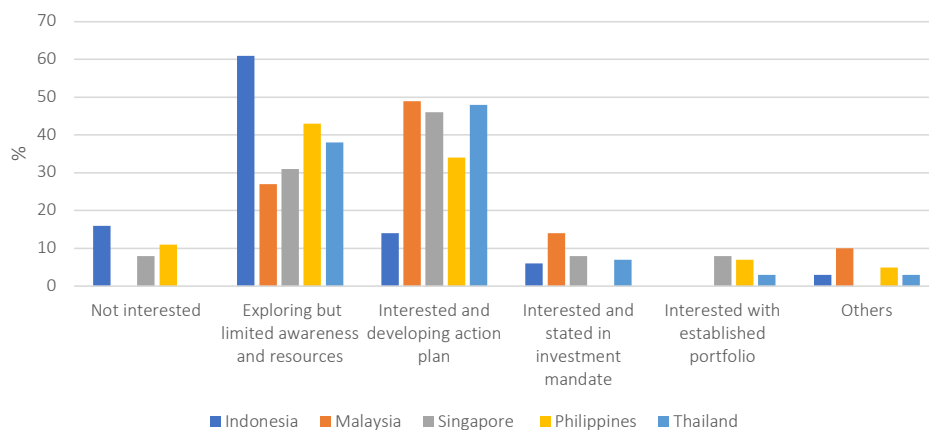
TABLE 1 RESPONDENTS TO ADB SURVEY

Country	Investors	Underwriters
Brunei Darussalam	8	1
Cambodia	26	6
Indonesia	108	46*
Lao PDR	5	4
Malaysia	58	7
Philippines	45	3
Singapore	13	4
Thailand	29	12
Viet Nam	22	13
Total	314	96

Note: * include securities issuers.

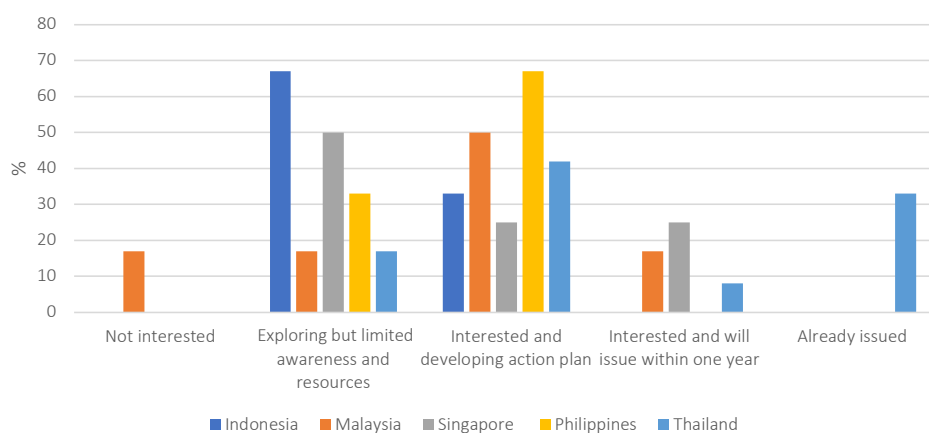
The survey shows that a significant proportion of local capital market participants expressed significant interest in the investment and issuance of green bonds. However, the majority of respondents indicated that, while they are interested in investing in green bonds, their knowledge and resources are limited, particularly in Indonesia, the Philippines, and Thailand. Few respondents indicated that they have incorporated sustainable investments into their investment mandate or created green portfolios (Figure 9).

FIGURE 9 INTEREST IN INVESTING IN GREEN BONDS



Source: Asian Development Bank.

FIGURE 10 INTEREST IN ISSUING GREEN BONDS



Source: Asian Development Bank.

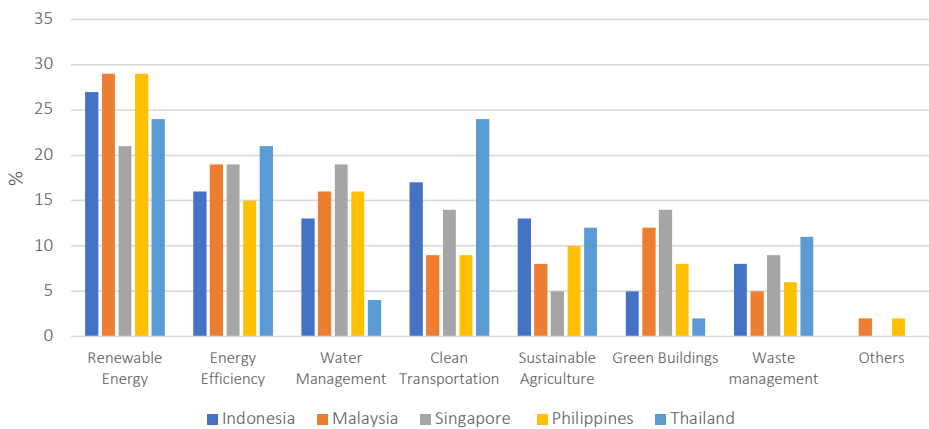
Similarly, the underwriters' responses indicated that the majority of their clients are exploring or interested in issuing green bonds (Figure 10). However, they lack the knowledge and resources to do so. It is important to note that the majority of respondents

from Malaysia, the Philippines, and Thailand indicated that they are in the process of developing an action plan. This is consistent with the level of sustainable bond market development in their respective markets. A small proportion of Malaysian respondents indicated that they have no interest in issuing green bonds.

2.2 Renewable energy clearly stands out as one of the most promising sectors

From the perspective of both investors and underwriters, the renewable energy sector is the sector that stands most (Figure 11 and Figure 12). This may be because the ASEAN Plan of Action for Energy Cooperation (APAEC) 2016–2025 has set an aspirational target of increasing the proportion of renewable energy in ASEAN's total primary energy mix to 23% by 2025 (ASEAN Centre for Energy 2018). As commodity prices rise and the cost of renewable energy installations decreases, corporates are increasing their use of renewable energy sources to reduce operational expenses.

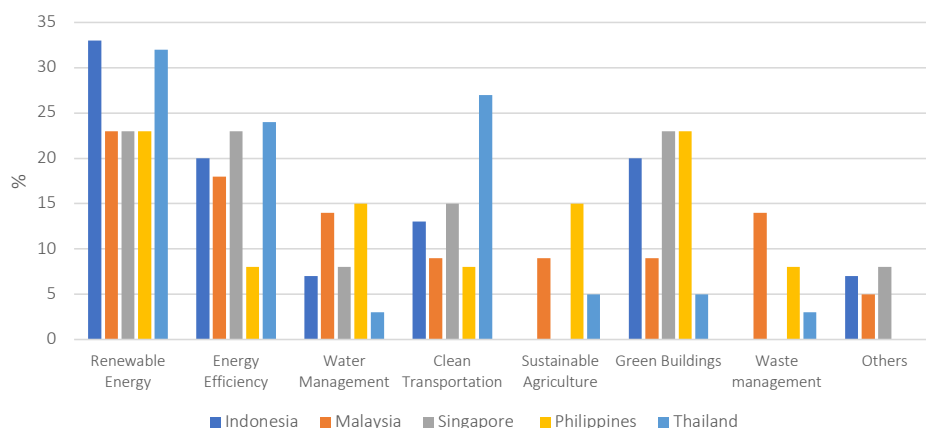
FIGURE 11 MOST PROMISING SECTORS FOR GREEN BOND INVESTMENTS



Source: Asian Development Bank.

The majority of respondents indicated that, after renewable energy, energy efficiency is the second most promising sector in ASEAN. At the same time, some Thai respondents indicated that clean transportation is an important sector for both investors and issuers. This is consistent with the existing market landscape, in which the operators of low-carbon transportation (subways/metros) are regular green bond issuers in Thailand. Similarly, the majority of Singaporean issuers invest the majority of their bond and loan proceeds in the buildings sector.⁴

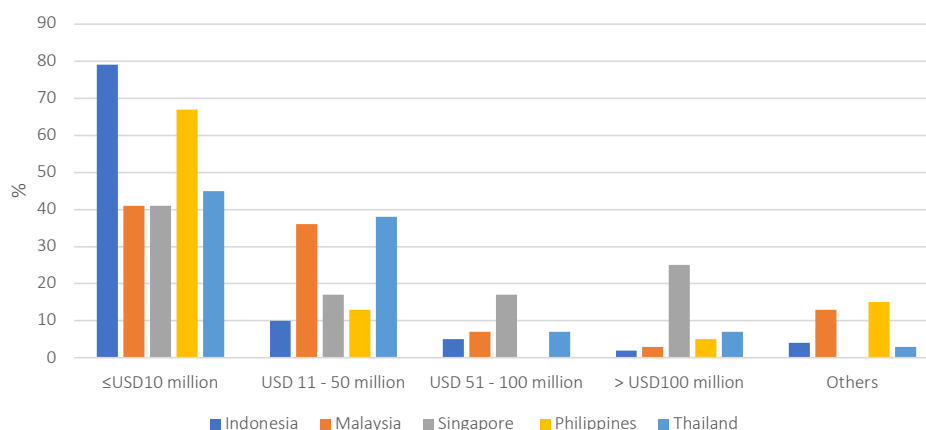
4 www.sustainablefinance.hsbc.com/-/media/gbm/sustainable/attachments/asean-sustainable-finance-2021.pdf

FIGURE 12 MOST PROMISING SECTORS FOR GREEN BOND ISSUANCE

Source: Asian Development Bank.

2.3 Investors still prefer low ticket size

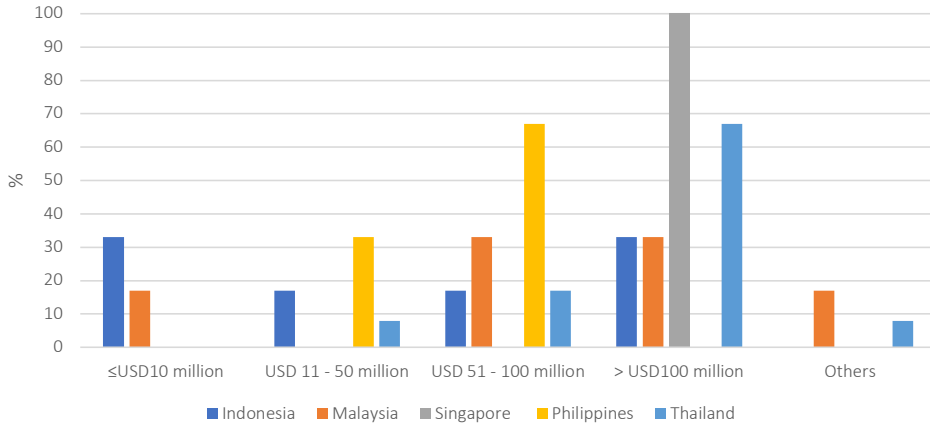
While both local institutional investors and potential issuers have a strong interest in green bonds, the majority of local institutional investors still prefer smaller ticket sizes (i.e. investments of \$10 million per transaction or less). Only a small proportion of respondents indicated that they are willing to invest up to \$50 million, while others indicated that their investment decisions depend on a variety of factors, such as credit quality, issuer profile, and total issue size (Figure 13).

FIGURE 13 OPTIMAL INVESTMENT SIZE

Source: Asian Development Bank.

On the supply side, contrary to investors, the majority of underwriters indicated a preference for larger transaction sizes, ranging from \$50 million to over \$100 million. Notable is the fact that all Singaporean respondents indicated interest in issues with a size greater than \$100 million (Figure 14).

FIGURE 14 OPTIMAL ISSUANCE SIZE

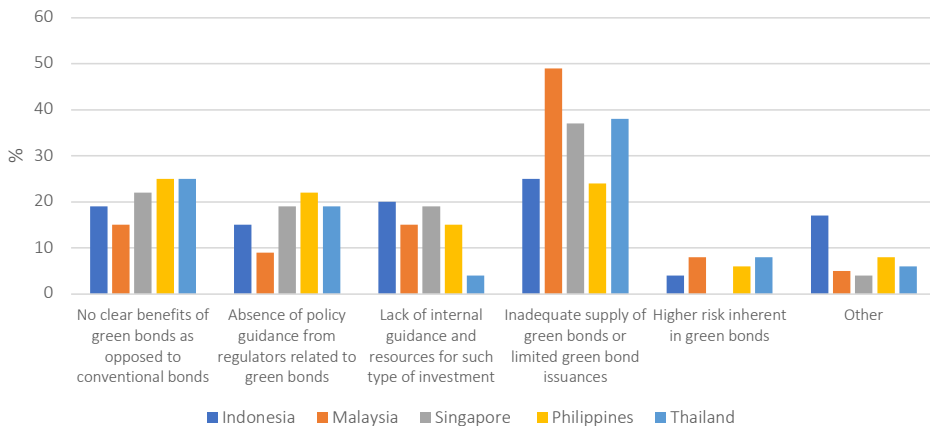


Source: Asian Development Bank.

2.4 Inadequate supply of green bonds and lack of eligible project pipelines are major obstacles

The majority of institutional investors stated that the insufficient supply of green bonds is one of the main barriers preventing the development of green bonds in the region (Figure 15). Another significant barrier, according to some investors, is the lack of clear benefits of green bonds over conventional bonds. Even more developed markets like Singapore, Malaysia, and Thailand are facing these barriers.

FIGURE 15 MAIN OBSTACLES TO INVESTING IN GREEN BONDS



Source: Asian Development Bank.

CASE STUDY 1: GOVERNMENT SAVINGS BANK, THAILAND

Government Savings Bank (GSB) is a legal entity under the supervision of the Ministry of Finance. Its business operations are authorised under the Government Savings Bank Act (No. 4) B.E. 2560. According to GSB's statement of direction, the bank will focus on (i) adding value to Thai communities and the grassroots economy, and (ii) promoting savings among the population, both of which will be supported by an efficient information system that will allow GSB to carry out its operations efficiently.

On 24 June 2022, GSB issued a 10 billion Thai baht (\$295 million) social bond with a maturity of three years, becoming Thailand's first state-owned financial institution to do so under the ASEAN Social Bond Standards.

GSB will use the proceeds to support its social agenda, aimed at eradicating extreme poverty and reducing inequality. In particular, the proceeds will be used to support government policies such as providing low-interest loans to grassroots customers to improve their living conditions and address informal debt; developing occupational capabilities, especially among the unemployed and vulnerable groups impacted by Covid-19; and supporting entrepreneurs and communities through loans and other remedial measures targeting small and medium-sized businesses affected by the pandemic.

The issuance of the social bond occurred in the midst of market volatility and a possible global interest rate increase due to unanticipated inflation. Consequently, GSB decided to issue a social bond with a shorter tenor of three years, targeting only local institutional investors and high-net-worth investors. Despite market volatility, GSB was the first specialised financial institution to issue a social bond with a face value of THB 10 billion, the highest amount for a social bond ever issued in Thailand. While Thai investors have a strong preference for smaller ticket sizes, the credit quality and issuer profile can increase investor demand.

As a state-owned financial institution, GSB plans to continue issuing social bonds to local investors, including retail investors, with varying maturities to meet investment demand and contribute to the development of the domestic sustainable bond market.

In addition, GSB acknowledged that the assistance of development partners, such as the ADB, contributed to an increase in investor demand. GSB and ADB have worked closely together to develop a social finance framework that conforms to international and regional social bond standards. This transaction demonstrates that development partners can play a significant role in accelerating market development by providing hand-holding assistance to interested entities that wish to issue sustainable bonds. As the survey shows, it is crucial for ASEAN to increase the supply of sustainable bonds on the market to meet investors' rising demand.

Source: ADB.

CASE STUDY 2: THAIFOODS GROUP, THAILAND

Thaifoods Group (TFG) is the first nonfinancial corporate social bond issuer in ASEAN under the ASEAN Social Bond Standards (ADB 2021b). TFG is a complete food manufacture (feed, farm, and food) specialising in poultry and pig production.

Totalling 1 billion Thai baht (\$30.5 million) and with a maturity of five years, the bond was issued on 11 November under the ASEAN+3 Multicurrency Bond Issuance Framework, which facilitates cross-border issuance of debt securities in participating markets. The Credit Guarantee and Investment Facility, a trust fund of ADB, guaranteed 100% of the bond, which was sold to leading Thai institutional investors. TFG will use the proceeds from the bond to lend money to subsidiaries, for the purpose of financing and refinancing projects and assets associated with job creation and economic advancement in local communities. Since the first issuance, TFG has issued two additional social bonds in July 2022, making it the only Thai company to issue social bonds in Thailand.

As the first non-financial corporate social bond issuer in the region, TFG faced several challenges, which can be summed up as follows:

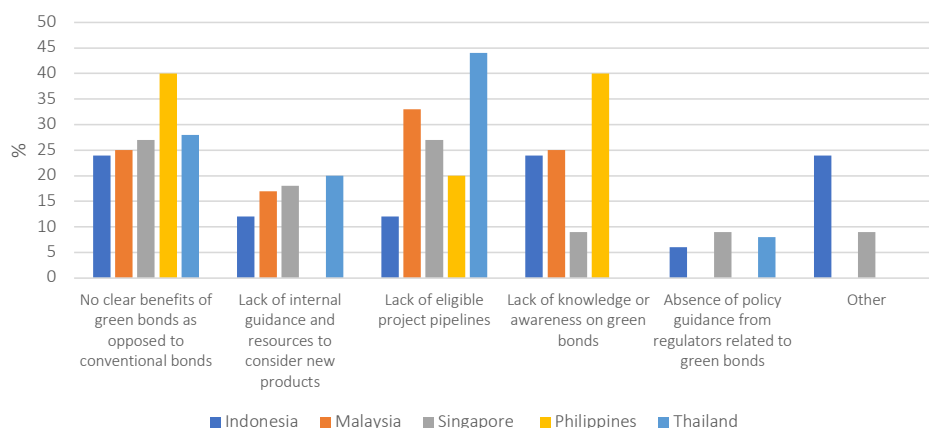
First, it was difficult to compile a list of eligible expenditures that complied with the ASEAN Social Bond Standards and Social Bond Principles. The finance division was instrumental in coordinating the efforts of the business' various departments to ensure that the eligible projects listed in the framework make a quantifiable contribution to positive environmental and social outcomes.

Second, it was challenging to put together the sustainable finance framework, which explains to investors the company's sustainability policy and how it is being applied throughout its operations. In order to report on the impact of their social projects, TFG also needed to set up procedures for tracking the relevant data. Close coordination between the company's various divisions, from senior management to factory managers, was necessary for this process.

Third, it was discovered that choosing an external reviewer who is familiar with the local social context can help speed up the external review process. Unlike developed countries, a third of Thailand's workforce is employed in the low-income agricultural sector, and the majority of these workers rely on government loans or handouts to help them cope with falling farm prices (World Bank 2020). The majority of Thailand's bottom 40% live in poverty (on roughly \$1,000 per year), with many of them being urban workers and rural farming families. This is in stark contrast to farmers in more developed countries, where the majority earn significantly higher annual incomes. As social needs vary from country to country, choosing the right external reviewer is critical and could make a big difference for social bond issuers going through external review processes.

Source: ADB

In terms of the issuance, underwriters agreed with institutional investors that the pricing benefits are unclear from a capital-raising standpoint. In addition, some indicated that issuing sustainable bonds involves additional procedures and higher issuance fees without immediate clear benefits, so they are hesitant to do so (Figure 16).

FIGURE 16 MAIN OBSTACLES TO ISSUING GREEN BONDS

Source: Asian Development Bank.

In the case of Indonesia, a number of underwriters indicated that the local regulation's mandatory buy-back requirement if the bond is no longer green discourages them from issuing green bonds. Investors also view this as an obstacle because it makes it more difficult for them to mark to market.

3 POLICY RECOMMENDATIONS

As highlighted in the previous section, the sustainable finance market in the ASEAN+3 region has significant potential to mobilise private capital to support inclusive and sustainable economic recovery, despite a number of obstacles.

Domestic regulators, in collaboration with development partners, may play a variety of roles in fostering the growth of sustainable finance. In ASEAN+3, ADB has been trying to address the challenges by focusing on the following areas:

3.1 Expand the issuer base and increase local demand for sustainable bonds

To meet the demand of investors, the region must increase the number of issuers of sustainable bonds and project pipelines. Development partners can play a crucial role in enhancing the technical capacity of potential issuers, financial advisors, and underwriters of sustainable bonds. As the Secretariat of the ABMI, ADB is providing technical assistance (TA) to establish the ecosystem required for the development of sustainable finance in the ASEAN+3 region (ADB 2020).

Under this TA, ADB is working closely with a number of potential issuers and underwriters to provide hand-holding support throughout the process of issuing sustainable bonds. As highlighted in the survey, companies may be interested in issuing bonds, but they frequently lack the knowledge and capacity to identify eligible projects, assets, and

expenditures that meet the requirements of applicable sustainable bond principles and standards. Further, ADB recently published a handbook on green bond issuance (ADB 2021c), which is available in several ASEAN member languages and explains the process and critical factors to consider when issuing green bonds. Medium-sized issuers will have greater access to the sustainable bond market as more underwriters become familiar with these products

Local financial institutions can play an important role in mobilising private capital and expanding the accessibility and affordability of sustainable financing products for small and medium-sized enterprises (SMEs). Financial institutions can provide ‘green loans’ or ‘social loans’ to SMEs to support their environmentally and socially responsible investments. Financial institutions can raise funds for this purpose by issuing sustainable bonds and by offering green or social deposit schemes, thereby increasing the availability of sustainable products and making them more inclusive and accessible to relevant stakeholders (e.g. borrowers, depositors, and/or investors). Global investors, particularly insurers operating in ASEAN+3 markets, can play a significant role in promoting the mainstreaming of climate and social finance by prioritising investments in sustainable finance products issued by domestic issuers, especially in countries with a limited domestic investor base. This would allow them to not only fulfil the ESG investment mandate established by their headquarters, but also contribute to the development of local sustainable bond markets in emerging markets.

On the demand side, development partners can act as anchor investors in sustainable bond transactions, especially those involving local currency. These investors will have more capacity and experience in the future to independently assess the ESG aspects of underlying securities. For example, ADB has invested 3 billion Thai baht (\$98.7 million) in Energy Absolute’s first green bond issuance, out of a total issue size of 10 billion Thai baht (ADB 2019).

Development partners can also issue local currency-denominated bonds sustainable bonds to finance a pool of eligible projects in member countries. Local institutional investors would have more opportunities to invest in credible sustainable bonds issued by multilateral institutions as a result of this. The education bond issued by ADB in February 2021 to fund education-related projects such as technical and vocational training is one example; Dai-ichi Life Insurance Company of Japan purchased the entire 10-year bond.

3.2 Increase bankability of projects

Developed countries can provide concessional financing to reduce the risk associated with ESG-themed infrastructure projects and make them more financially viable to attract private capital.

ADB estimates that between 2016 and 2030, ASEAN will require \$210 billion per year, or 5.7% of members’ aggregate annual GDP, to support investments in climate-resilient infrastructure (ADB 2017). Clearly, the region’s infrastructure financing requirements far

exceed its regional governments' annual budgets, and private capital must be mobilised to meet these needs. To enable the financial viability and bankability of infrastructure projects, mechanisms such as a de-risking facilities and credit enhancements are necessary. The establishment of the ASEAN Catalytic Green Finance Facility (ACGF) in April 2019, an initiative of the ASEAN Infrastructure Fund, is one example of how developed countries can accelerate green infrastructure investments in emerging countries. Development partners such as Agence Française de Développement, the European Investment Bank, the KfW Development Bank, and the Government of the Republic of Korea have already pledged their support to ACGF. In 2021, four additional partners – the EU, the Green Climate Fund, Italy's Cassa Depositi e Prestiti, and the UK Foreign, Commonwealth, and Development Office – pledged \$665 million towards the ACGF's activities as part of a Green Recovery Platform launched at the 26th United Nations Climate Change Conference of the Parties in Glasgow (ACGF 2022). This model can be replicated in other regions, as needed.

3.3 Create enabling ecosystem for sustainable finance

With the right policies and a healthy domestic sustainable finance ecosystem, the process of issuing sustainable bonds could be streamlined, issuance costs could be reduced, and time to market could be shortened to enable greater pricing certainty.

The presence of local green bond verifiers with in-depth knowledge of local contexts, regulations, and market practices could be a key driver for sustainable bond issuance. Local reviewers who operate in the same country, work in the same time zone, and speak the same language as issuers will help reduce issuance costs as their fees are generally lower than those charged by international reviewers. This would make it more accessible and affordable for smaller issuers as they progress on their sustainable finance bond journey. Currently, ADB is collaborating with several local green bond verifiers in the region and assisting them on pilot verifications of green bonds issued under the Climate Bond Standards.

To facilitate greater issuance of sustainable bonds, the availability of a standardised bond documentation that enables the issuance of sustainable bonds to professional investors in multiple jurisdictions would significantly streamline the issuance process and promote intraregional bond issuance and investment. One example is the use of the ASEAN+3 Multicurrency Bond Issuance Framework (AMBIF), a policy initiative under the ABMI. Under this framework, an issuer from AMBIF-participating markets can issue local currency-denominated sustainable bonds in other participating markets using the same bond documentation. As AMBIF targets only professional investors, AMBIF bonds can be issued in a more flexible and timely manner because professional investors do not require the same level of investor protection as retail investors.

While some countries have implemented green bond grant programmes, others might not have the financial resources to offer comparable subsidies. Instead, regulators may offer so-called ‘green lanes’ or ‘sustainable lanes’ without financial subsidy. This scheme can also be implemented to streamline the cross-border issuance of financial instruments and facilitate intraregional capital flows. This could shorten time to market and may compensate for the additional resources required for the issuance of sustainable bonds.

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CHAPTER 6

The potentials and limitations of blended finance

Samantha Attridge

Overseas Development Institute (ODI)

1 INTRODUCTION

The arrival of the Sustainable Development Goals (SDGs) and the associated Addis Ababa Action Agenda (AAAA) in 2015 was a watershed moment in development thinking and development finance. Not only do these agendas foster a more holistic approach to economic, social and environmental development, they mark a noteworthy change in the international community's strategy to achieve them by recognising the critical and complementary role of the private sector in supporting sustainable development. Indeed, the need to mobilise private finance at scale has been at the heart of international discussions on how to finance the SDGs in low- and middle-income countries.

Given their development mandate, focus on supporting private investment and ability to deploy affordable patient and risk-mitigation capital, development finance institutions (DFIs)¹ and multilateral development banks (MDBs)² have been assigned a critical role in this endeavour. Many people refer to this agenda as 'blended finance' and it quickly became synonymous with the much hyped 'billions to trillions' agenda (World Bank 2015). High expectations were set, but have yet to be realised. This short chapter briefly examines the oft cited potential of blended finance and explores some of its limitations.

2 WHAT IS BLENDED FINANCE?

There is no common official definition of blended finance, consequently blended finance can mean different things to different institutions and stakeholders. However, two main definitions are generally understood in the financing for development discourse.

1 DFIs are specialised government-backed institutions that invest 100% in private sector projects in support of economic growth and job creation in low- and middle-income countries. They deploy a range of instruments including loans, equity, quasi-equity, guarantees, insurance and grants. DFIs can be bilateral such as British International Investment, U.S. Development Finance Corporation and FMO or multilateral such as the IFC.

2 This chapter uses the term MDB to mean the private sector operations or windows of MDBs such as the World Bank, European Investment Bank, European Bank for Reconstruction and Development, and regional development banks such as the African Development Bank and Asian Development Bank. These arms deploy a similar range of instruments in pursuit of the same objectives as DFIs.

The OECD Development Assistance Committee (DAC) defines blended finance quite broadly as the strategic use of development finance to mobilise additional finance in support of the SDGs in developing countries. DFIs and MDBs, however, define it more narrowly, as the use of external concessional finance alongside their own account finance to mobilise additional private finance. Thus, for DFIs and MDBs blended finance is a very small part of their operations, and they would refer to it as ‘blended concessional finance’. The broader OECD definition would include all DFI and MDB investment to mobilise additional private finance³. This chapter adopts the broader OECD definition with a focus on DFI and MDB investment to mobilise private finance in support of the SDGs and a low-carbon climate resilient (LCCR) economic transition.

3 THE POTENTIAL

Currently, only a fraction of the global assets of private investors such as banks, pension funds, insurance companies, foundations, and so on are invested in low- and middle-income countries and in sectors which are critical for the achievement of the SDGs and the LCCR transition. It is frequently posited in the financing for development discourse that if just a very small percentage of this could be shifted to support SDG-aligned investment, this would go a long way in bridging the SDG financing gap and supporting the LCCR transition. For example, the OECD estimates that the Covid-19 pandemic has potentially increased the SDG financing gap from \$2.5 trillion to \$4.2 trillion and that this gap could be filled if just 1.1% of the \$379 trillion in global finance assets held by banks, institutional investors and asset managers could be shifted to support SDG-aligned investment (OECD 2020).

There is indeed great potential here. The appetite for sustainable investment is rapidly growing, driven in part by a growing social conscious, especially among younger generations, who are increasingly concerned by social and environmental issues and who are demanding more socially and environmentally aware business practices and investment. We can therefore expect to see a realignment in global finance towards sustainability and inclusivity (IFC 2019).

A good illustration of this shift is the rapid growth in the global pools of capital which are now seeking measurable positive social and/or environmental impact alongside financial return (e.g. impact investment).⁴ In 2019, the International Finance Corporation estimated the potential pool of impact capital at \$26 trillion, which equates to 10% of global financial assets (IFC 2019). Currently, the IFC estimates that \$2.3 trillion was invested for impact in 2020, approximately 2% of global assets under management (IFC 2021b).

³ For a more detailed discussion on definition, see Attridge and Engen (2019).

⁴ Impact investment is distinct from environmental, social and governance (ESG) investment, which screens investment for ESG risks which may negatively impact return should they materialise (IFC 2019).

On paper, tapping these impact-orientated pools of capital could go a long way in supporting the achievement of several SDGs and supporting the LCCR transition in low- and middle-income countries, but the reality presents some very real challenges which affect whether this capital can be shifted at the scale needed, especially to the poorest and most challenging of geographies. Currently, global pools of private impact capital mainly focus their investment in developed markets (57%) and emerging markets (31%); little private impact capital is currently allocated to the poorest and most challenging of geographies (IFC 2021b). The ability to leverage this growing appetite very much depends not only on the supply of attractive investment opportunities but also on the ability of the impact investment industry (including DFIs and MDBs, who are the original impact investors) to create investment opportunities at scale in low- and middle-income countries and to structure these so that they are attractive to investors, in a standardised way (IFC 2019). This is the challenge that DFIs and MDBs must address and which this chapter focuses on.

4 THE ROLE OF DFIS, MDBS AND BLENDED FINANCE

There are many types of private investor seeking positive social and environmental impact – including fund managers, banks, pensions funds, insurance companies, private foundations, family offices, and so on – who target a range of financial returns (e.g. from sub-commercial to commercial returns), depending on their institutional goals. Most impact investors, however, target commercial returns,⁵ as do commercial private investors. However, many investments in low- and middle-income countries in sectors which lend themselves to private investment and which are critical for the SDGs and the LCCR transition do not offer competitive risk-adjusted rates of return (e.g. the returns are too low for the level of real or perceived risks). In general, risk can arise from political, policy, regulatory, macroeconomic, technological, environmental and bankability issues, to name but a few. Climate change also poses significant acute and chronic physical risks, as well as transition risks for the investor. These risks can be several and combine in such a way that private investors do not have the capacity or expertise to manage.

Take the example of scaling renewable energy investment. Many risks can combine to impede private investment. Political, policy, and regulatory uncertainty can arise from the lack of a legal framework for independent power producers, unfavourable transmission access and/or fossil fuel subsidies that create an uneven playing field. Technological risk is high for frontier renewable energy technologies as they are untested (battery storage, hydrogen, floating solar, etc.). Even proven and cost-effective technologies such as solar can be perceived as risky if there is little experience with them in a new context. Some technologies have high ESG risks, such as geothermal energy or large-scale hydro power. Macroeconomic risk can be high, especially foreign exchange risk when equipment is

5 See <https://thegiin.org/impact-investing/need-to-know/#what-is-impact-investing>

imported and paid for in hard currency during construction and future revenues when operational are denominated in local currency. Add to this the often high credit risk associated with poor credit worthiness of utility off-takers.

Given their mandate, DFIs and MDBs can play a critical role in helping overcome some of these barriers to private investment. They are able and willing to take on greater risk than commercial investors and commercially oriented impact investors. They can use their toolkit (e.g. financing, risk mitigation and advisory capabilities) to address affordability concerns and/or shift the risk-adjusted rate of return to make it commercial. They can also play an important role in sharing local market knowledge and experience, building local capacity and shaping policy and regulatory reform.

5 THE LIMITS OF BLENDED FINANCE

Despite the potential of this agenda and the rhetoric surrounding it in the discourse (e.g. billion to trillions), progress had been disappointingly slow prior to the onset of the Covid-19 pandemic and has been knocked further off course because of it (Attridge and Gouett 2021). Two issues in particular stand out, which illustrate the limits of the current approach of DFIs and MDBs and which are arguably manifestations of the limits of some current DFI and MDB business models. These issues are now discussed in turn.

5.1 Mobilisation levels and ratios are low

Levels of private finance mobilisation by DFIs and MDBs are low overall and have been declining in recent years. In 2016, MDBs reported that they mobilised \$71.1 billion of private investment in low-income and middle-income countries (MDBs 2017). In 2019, the latest year for which data have been published, MDBs and European DFIs collectively mobilised \$63.6 billion of private finance in (MDBs 2021).⁶ To put this into perspective, this is the equivalent of 42% of 2019 Overseas Development Assistance (ODA) and 0.2% of the \$26 trillion that the IFC estimates is managed for impact in 2019. Mobilisation numbers for 2020 have not yet been published, but it is expected that mobilisation will be lower in 2020 than 2019 due to the impact of Covid-19 (MDBs 2021). Unfortunately, the near-term prospects of turning this agenda around do not look great, considering the increased risk of debt distress in many low- and middle-income countries and tighter financing conditions in financial markets as monetary policy tightens in the US and other advanced economies (Attridge 2022).

6 The 2019 figure did not include European DFIs, so the decline is even larger.

Not only are mobilisation levels low overall, so too are mobilisation ratios.⁷ Recent ODI research in 2021 estimates that MDBs and DFIs⁸ are mobilising 69 cents in private finance for every dollar they are investing (Attridge and Gouett 2021) and that this is very low compared to catalytic impact funds, which typically mobilise three to four times their initial catalytic capital (Attridge and Novak 2022). Despite the increasing appetite for impact investment, DFIs and MDBs have not yet been able to tap this interest in a material way. Private finance is not being mobilised at a scale that is needed, nor that which was envisioned by the G20 who, in 2016, set MDBs a target to increase their mobilisation between 25% and 35% within three years.⁹

5.2 DFI and MDB investment and mobilisation remains persistently low in low-income countries

DFI and MDB investment remains persistently low in low-income countries and is even lower in the poorest of these countries. The 2021 ODI study estimated that DFIs and MDBs allocated 5.7% of their portfolio to low-income countries in 2013 and that this slightly increased to 6.4% in 2018. This represented an increase of just \$340 million in collective annual investment. However, annual foreign direct investment (FDI) inflows to these countries decreased by \$11 billion over the same period. This, combined with slow annualised GDP growth of 2.9% (2013–2018), highlights the fact that the development of these countries had fallen behind prior to Covid-19 (Attridge and Gouett 2021). These countries are likely to fall even further behind given the impact of the pandemic and current war in Ukraine. Similarly, levels of mobilisation in LICs are relatively low, although they have increased by 20% from \$5.3 billion in 2017 to \$6.7 billion in 2019 (MDBs 2018, 2021).

It is important to note, however, that the ability of DFIs and MDBs to mobilise private investment in low- and middle-income countries will be positively correlated to the investment climate in the country (Attridge and Engen 2019). It is stating the obvious, but private commercial and commercially oriented impact finance will not flow freely to low- and middle-income countries where the local investment climate is challenging, markets are not functioning, and where the risk-adjusted rate of return is uncompetitive. DFI and MDB investment can only ever tip the balance, it will not work if the fundamentals are not right.

To illustrate the scale of the challenge, it is insightful to look at sovereign credit ratings. Only a small number of low-income country sovereigns have an investment grade credit rating, while 80% have a sub-investment grade rating or none at all (IFC 2021). Given that private investment is conventionally rated a few notches below the sovereign risk rating,

7 Defined as how much private sector investment is mobilised per dollar invested by MDBs and DFIs.

8 This ODI research analysed the investment portfolios and reported mobilisation of 12 MDBs and DFIs who collectively mobilised more than 70% of the private finance mobilised that was reported to the OECD for the period 2017-2018. This level of coverage is deemed to be a suitable level of coverage from which to draw insight as to the mobilisation ratio overall.

9 <http://www.g20.utoronto.ca/2017/2017-g20-hamburg-action-plan.html>

this implies a significant need for subsidisation and for DFIs and MDBs to deploy risk-mitigation capital to enhance the risk-adjusted rate of return. Many DFIs and MDBs use external concessional resources to do this, as it is argued that their business models do not generally allow for such high-risk investment. However, the deployment of high-risk capital remains limited (Attridge and Gouett 2021).

This issue clearly suggests a very clear action agenda which refocuses efforts on strengthening the investment climate in low-income countries, which perhaps was eclipsed by the ‘billions to trillions’ rhetoric but which perhaps has now come to the forefront in light of the mobilisation record to date. Here there is a clear role for national government and a clear role for the public sector windows of the MDBs, regional development banks and donors to collaborate and support this upstream work.

6 CHALLENGES WITH CURRENT DFI AND MDB BUSINESS MODELS

As mentioned previously, these issues are manifestations of current approaches, which have been slow to evolve. Whilst there is a wide range of external factors that affect the availability of bankable investment opportunities for the private investor, this section focuses on two specific ‘supply’ issues associated with the current DFI and MDB approach.

6.1 Products and investment approaches

DFIs can deploy a range of products to mobilise private investment (e.g. debt, equity, guarantees, insurance and grants) with different degrees of concessionality embedded within them. These products are deployed to address affordability issues and/or to mitigate risk for the private investor. They all have different risk and return characteristics, with consequent different propensities to mobilise depending on the market context.

In the capital structure of a project or business, senior debt is low-risk capital as repayment is prioritised above other investment. It therefore sits at the top. It can be concessional if it is offered on non-commercial terms¹⁰ and is often used to address affordability issues. Subordinated debt sits below senior debt as it has a lower priority for repayment (and is usually concessional). Guarantees or other risk-sharing products also mitigate private investor risk (and usually have non-commercial fees charged). Equity sits at the bottom of the capital structure. It is often used to mitigate the risk to senior debt holders by improving interest coverage ratios. It is high-risk capital, as the financial returns are not predefined and are paid out of net profit, so the return on equity is more volatile than the return on debt. Equity is a prized product as it has high development and financial additionality, due to its relative scarcity in many developing countries and its ability to enable a leveraging of company or project balance sheets. Grants can also be deployed with no expectation of repayment, or they can be contingent.

¹⁰ For example, this could be longer maturities and/or grace periods than what the market would provide or reduced collateral requirements compared to what the market would require.

Despite the range of products available to DFIs and MDBs, their toolkit remains fairly limited overall and has been slow to evolve. This limits their ability to tap the growing appetite for impact and sustainable investment. Two specific issues are noteworthy here: (i) limited deployment of higher risk capital, (ii) limited local currency lending, and (iii) reliance on traditional approaches to mobilise private capital.

Limited deployment of higher-risk products

Debt, most often denominated in hard currency, dominates many DFI and MDB portfolios with very limited deployment of risk-mitigation products (e.g. subordinated debt, guarantees, insurance and equity), which means that DFI and MDB products do not often meet the risk mitigation needs of the private investor, especially when it comes to mobilising private investment in low-income countries.

Recent ODI analysis of the portfolios of 12 DFIs and MDBs finds that debt financing dominates the instrument composition of most of the studied committed portfolios and that this importance appears to have increased since 2013 (Attridge and Gouett 2021). In 2018, 76% of the studied bilateral DFIs commitments were in the form of loans, and loans accounted for 51% of total DFI and MDB commitments (Attridge and Gouett 2021). Compared to other products, debt tends to be simpler to manage and allows for a more frequent recycling of capital. Unfortunately, data on the type of debt are not generally available. Where data are available, they suggest that most of the debt investment is senior debt rather than subordinated. For example, external concessional finance can be used by DFIs and MDBs to enable them to make high risk investment which their own balance sheets would not normally permit (DFIs and MDBs refer to this as 'blended concessional finance'). Given that, in 2019 and 2020, 60% and 32% of this concessional capital was deployed, respectively, in the form of senior debt, it is reasonable to presume that much DFI and MDB own account debt investment takes the form of senior debt (DFI Working Group 2019, 2020). Often and especially in low-income countries, many private investors do not want to invest pari-passu with a DFI and MDB. It increases the number of lenders who have a senior claim on project or business assets, and hence increases their risk. They want to have the least risk and have their claim paid first.

As noted, the ODI analysis also finds a very limited deployment of risk mitigation capital. The study finds a very limited use of guarantees. In 2018, 18% of the studied DFI and MDB commitments were in the form of guarantees, but their use is mainly driven by the World Bank Group (e.g. MIGA, IDA and IFC); their use was fairly limited for most of the other studied DFIs and MDBs (Attridge and Gouett 2021). Likewise, the study noted very limited deployment of equity investment. In 2018, 12.6% of MDB and DFI investment commitments was deployed in the form of equity. The deployment of equity as a percentage of annual investment commitments has declined since 2013, when it stood at 16.8% of annual investment commitment (Attridge and Gouett 2021). This is of concern considering the small number of DFIs that focus on and deploy equity and the additionality of this kind of investment (as previously discussed).

There are several factors that potentially constrain the deployment of risk capital. For guarantees, their low use is mainly to do with the lack of incentives. They are often more complicated than debt. Their ticket size is often smaller, they don't expand the balance sheet and they usually yield less than debt but use the same amount of capital as debt (Attridge and Novak 2022). DFIs and MDBs have limited appetite for equity investment as it is human resource and financial resource intensive. It requires specialist expertise, which many MDBs and DFIs do not have, and it ties up DFI and MDB capital for long periods before a return is potentially realised, with limited opportunities for exit.

This limited use of risk capital constrains the mobilisation agenda, especially in low-income countries and other challenging contexts where private investors have a high need for risk mitigation, given the challenging investment climates of these markets. Indeed, risk mitigation capital is generally found to have a much higher leveraging effect than senior debt. For example, based on IFC experience with blended concessional finance in the real sector, subordinated debt mobilises on average \$22 for every \$1 invested by the IFC, compared to senior debt which on average mobilises \$11 for every \$1 invested. Likewise for financial intermediaries, first loss guarantees mobilise \$30 for every IFC \$1 invested, compared to senior debt which mobilises \$6 (IFC 2021c).

Limited local currency lending

In ODI's research, one key constraint that comes up time and time again, related to country risk, is foreign exchange risk, which can make investment unviable and the cost of hedging, if it is available, is often prohibitive (estimated at anywhere between 5% and 10% of project cost for exotic currencies). Most DFI and MDB lending is denominated in hard currency and this risk is borne by the project or investee in the case of debt. For example, 92% of the Association of European DFI consolidated portfolio at the end of 2019 was denominated in US dollars or euros. Some DFIs are making efforts in this area. For example, the IFC can lend in 60 local currencies, but its local currency composition was 18% in 2019. This remains a major gap, and DFIs and MDBs should be doing much more to increase their levels of local currency lending and the local currency composition of their debt portfolios. Some ideas here could include:

- More use of credit enhancement structures to enable DFI and MDB clients to borrow in local currency from other sources – for example, through the creation of local syndicates of banks that could provide local currency financing with a DFI and MDB guarantee covering the loan syndication.
- Increased use of SWAPS by DFIs and MDBs with local swap counterparts, including central banks where commercial swap markets are not available in low-income countries.

- DFIs and MDBs (which are debt funded) could step up issuance of local currency bonds. This will also have the added advantage of supporting the development of local capital markets and result in diversified foreign currency loan portfolios, which can help reduce exposure (indeed, diversification of currency has been key to the success of TCX).
- DFIs and MDBs could scale up their support to market makers in hedging instruments such as TCX (Tyson 2018).

Reliance on traditional approaches to mobilise private capital at scale

In general, the DFI and MDB approach to mobilising capital at scale from institutional investors has been slow to evolve. Many DFIs and MDBs focus on their role as principal investor rather than a mobilising ‘intermediary’ role – they ‘originate to hold to maturity’ rather than ‘originate to distribute’. As a result, many DFIs and MDBs rely on traditional A/B loan syndication structures to mobilise. There is very little use of guarantees and structuring techniques such as securitisations and pooled investment approaches, and very little management of third-party assets and funds. Further, DFI and MDB investment tends to be opportunistic and driven by individual transactions, which, together with the limited use of risk capital to structure, means that the needs of institutional investors – in terms of ticket size, risk diversification, risk-adjusted rates of return and liquidity – are not met.

This slow evolution in approach reflects the fact that the rhetoric, for many institutions, has been slow to translate into clear new institutional objectives, strategies and incentive structures. For many DFIs and MDBs, incentives are still based on the volume of own account lending, which is naturally in tension with mobilisation objectives, resulting in DFIs and MDBs competing with private investors, especially where deal flow is limited. In more developed markets, where there is arguably a larger universe of private investors to mobilise, DFIs and MDBs should shift their focus to ‘originate to distribute’ models and shareholders should set some key performance indicators on mobilisation and project realisation rather than targets that are based on commitment and/or approval volumes.

In these markets, DFIs and MDBs will need to step up the creation of products that can channel the mainstream commercial and impact-orientated pools of capital at greater scale towards the SDGs and the LCCR transition. Two issues will be key in this endeavour: (i) creating products which meet the needs of institutional investors, and (ii) originating a pipeline of suitable assets to transfer into mobilisation vehicles.

To create products that meet the needs of institutional investors, DFIs and MDBs will need to shift away from an approach focused on individual investment to pooled portfolio approaches that aggregate operational infrastructure assets to meet the large ticket size investment requirements of institutional investors. Pooling enables MDBs and DFIs to structure large-item products into tranches with differing risk profiles to meet the risk appetite of a range of institutional investors. Blended concessional finance can be used to finance the higher-risk tranches. MDBs with large balance sheets in diverse geographies

and sectors are well placed to do this. This will have the benefit of recycling MDB capital more frequently for reinvestment. To avoid fragmentation, MDBs should work together to create a few large funds. Smaller DFIs could do the same. To do so, MDBs would need to recruit new structuring and risk management expertise and capacity (Tyson 2018, Humphrey 2018, Attridge and Gouett 2021).

The ‘mobilisation at scale’ agenda presupposes the existence of a large pipeline of bankable projects, especially infrastructure projects. The reality, however, is a lack of investable pipeline, especially in infrastructure. To create a pipeline that can feed these vehicles, a different approach is required. First, investment will need to be more strategic and coordinated at the country level to transform sectors, especially in infrastructure. Here there is a very clear role for government and a clear role for the public sector windows of the MDBs, RDBs and donors to collaborate and support upstream policy and regulatory reform more broadly and in specific sectors (e.g. energy). Second, MDB and DFI investment should then piggyback on and complement this reform agenda by scaling up project preparation facilities and increasing the deployment of early-stage high-risk capital to support the development of infrastructure assets when the risk is high. Finally, MDBs and DFIs need to actively seek out respectable partners in developing countries who can help build the pipeline, bring deals to the market, and tap and develop local capital markets. One concrete idea here is to partner with well-governed national development banks.

7 CONCLUSIONS

The advent of the SDGs in 2015 resulted in increased ‘asks’ of DFIs and MDBs. DFIs and MDBs are now expected to play a much bigger role in sustainable development, moving beyond a narrow focus on job creation to support economic growth to a focus on transformation through market creation and mobilising vast pools of impact and commercial capital in support of the SDGs in low- and middle-income countries. DFI and MDB business models, however, have been slow to adapt, resulting in slower progress than the international community had originally hoped for. These ‘asks’ have no doubt increased. Covid-19 has reversed years of development progress and dramatically increased the SDG financing gap. DFIs and MDBs will be under pressure to mobilise. Private low-carbon and climate-resilient investment must be boosted urgently to avert a climate breakdown and build resilience. If DFIs and MDBs are to rise to the challenge, bold changes will be required to how DFIs and MDBs invest, where they invest, and in what. With the clock ticking until 2030, urgent bold action will be required.

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CHAPTER 7

Assessing climate risks for long-term investments and the role of multilateral development banks

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1 UNDERSTANDING CLIMATE RISK INDICES OF COUNTRIES

As yet, there is no industry standard for climate change risk assessments at the country level. A number of institutions have developed indices, but the approaches used differ widely. Few include indicators for both physical and transition risks.² Some consider a wide range of variables while others focus on only one aspect, such as extreme weather events or energy systems. Coverage ranges from global to a specific group of countries (e.g. those relevant for private investors), and different aggregation methods are used. Some indices are designed as a standalone assessment, while others are part of a wider environmental, social and governance (ESG) assessment. Given the lack of industry standards, the variance among ratings produced by different indices is significant.³ The choice index can substantially affect the results obtained.

In this chapter, we consider two indices with broad coverage: the Notre Dame Global Adaptation Initiative Index (ND GAIN) and the EIB Climate Risk Country Scores. ND GAIN (Chen et al. 2015) is one of the most widely used indices due to its large country coverage (190 countries) and freely available scores. It is built on a large set of variables (45) and its approach is based on equal weights. The index does not cover transition risk. The EIB Climate Risk Country Scores provide an alternative systematic assessment of the climate risks faced by countries (Ferrazzi et al. 2021). The scores cover 184 countries and separately consider physical and transition risks that could materialise over the next 5–10 years.

1 The views expressed are those of the authors and do not necessarily reflect the views of the EIB.

2 Physical risk covers all the future impacts of the changing climate, including the risk of natural disasters ('acute risk'), as well as more gradual changes ('chronic risk'). Transition risks are policy and regulatory risks driven by the introduction of stringent climate policies to help countries achieve carbon neutrality in line with the Paris Agreement goals. These climate policies affect the cost of doing business and the returns on domestic assets, increasing the likelihood of carbon-intensive assets becoming stranded.

3 For example, for (non-sovereign) ESG ratings, Berg et al. (2022) find that the correlations between ratings from six different institutions are on average 0.54, and range from 0.38 to 0.71, compared to a correlation of 0.92 between sovereign credit ratings.

The EIB Climate Risk Country Scores are designed to be comprehensive, but with a clear link between risk drivers and scores. The approach builds on a number of subcomponents which capture the most relevant risks (to avoid the redundancy of variables), with much care given to their aggregation (to avoid arbitrary weights). For physical risk, the damages, costs and losses due to climate change (due to extreme weather, reliance on agriculture, rising sea levels, increasing heat, required infrastructure investments or water scarcity)⁴ are all expressed in terms of GDP. This allows the impact of the various subcomponents to be aggregated, and avoids the need to determine ex ante a specific weight for each subcomponent. The index also accounts for climate adaptation. For transition risk, the various subcomponents (e.g. energy rents, emissions, renewables, energy efficiency and climate action) capture actual performance and future commitments. They are aggregated based on a statistical methodology.

Climate risk assessments are very stable over time. This stability reflects the long-term nature of the risks covered. It arises in indices through their reliance on slow-moving variables and through the modellers' objective of avoiding large swings from year to year. The stability of physical risks can be easily observed from the ND GAIN Country Index, which has the longest time span among similar indices. The correlation of countries' scores in 1995 and 2019 (latest observation) is 0.95, and this number increases to 0.99 when comparing 2015 and 2019 scores. While the EIB Climate Risk Country Scores only exist for two years, they exhibit a similar level of stability.

Climate risks can be seen as a structural feature of an economy and are therefore more helpful for understanding sovereign rating levels than for explaining rating changes. Indices are changing over time, and perhaps counter-intuitively, the ND GAIN Country Index has been *improving*. Between 1995 and 2019, it rose by some 7%, and this increase has been gradual. Moreover, this improvement has occurred across the board, although countries with the lowest scores in 1995 saw the smallest improvement. With a change of about 2.5% per decade, this index is as 'structural' as variables such as GDP per capita or governance indicators, which are typically considered important in explaining rating levels. When assessing the impact of the climate risks on sovereign creditworthiness, it would thus be important to disentangle these structural variables. In practice, this is very challenging given their high correlations: 0.86 between the ND-GAIN Country Index and log GDP per capita, and also 0.86 with the average of the World Bank's World Governance Indicators. As these variables are slow-moving, they are typically of limited use when explaining rating changes.

Distinguishing risks and adaptive capacity is important when analysing an index's relevance to understanding sovereign ratings. The ability to adapt to climate change is driven by economic factors, as well as governance and social ones. These are also important drivers of sovereign creditworthiness. An empirical analysis of rating

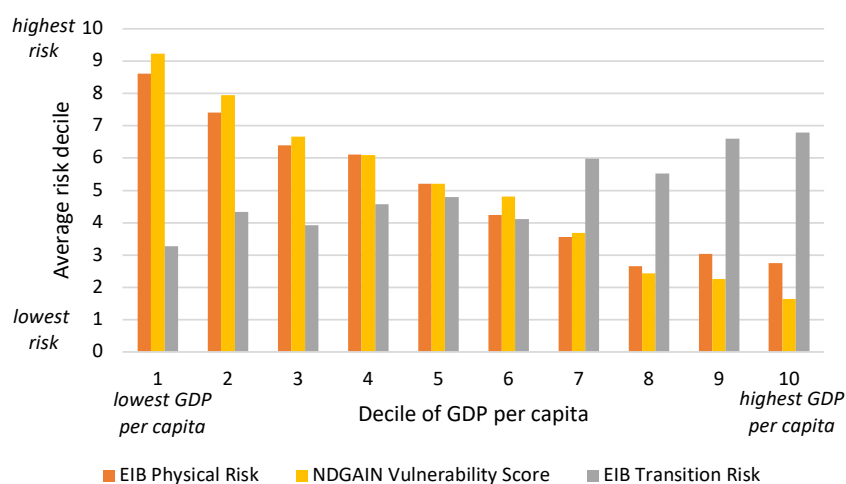
4 The water scarcity component was added in the second vintage of the model, see Ferrazzi et al. (forthcoming) for the details.

drivers should thus focus on components assessing vulnerability to climate change, rather than on countries' capacity to adapt (in other words, the gross rather than the net risks), so that the impact of the various rating determinants is properly gauged.⁵ Hence, this analysis draws on the ND GAIN Vulnerability Score (measuring exposure, sensitivity and capacity to adapt to the negative effects of climate change)⁶ and excludes its Readiness Score (measuring a country's ability to finance and implement adaptation measures). Similarly, throughout this chapter, the adaptation subcomponent is not taken into account in the EIB Physical Risk index.

2 CLIMATE RISK, COUNTRY INCOME LEVELS AND RATINGS

Low-income countries are most vulnerable to physical risk. Figure 1 shows that the decile of countries with the lowest GDP per capita face the highest physical risks, and that subsequent deciles fare only somewhat better. The vulnerability of so many low- and middle-income countries arises partly from their geographical and climate situation. Small island states in the Caribbean and Pacific are particularly vulnerable to hurricanes and cyclones, as well as sea-level rise. Many Asian and African countries are particularly vulnerable to long-term impacts on agriculture, as well as to the impact of excessive temperatures on labour productivity. Many Asian and Southeast Asian countries are very vulnerable to sea-level rise, as are some coastal African countries.

FIGURE 1 RELATION BETWEEN GDP PER CAPITA AND RISK INDICES, 2019



Note: Countries are allocated to a decile according to their GDP per capita (PPP adjusted). For all countries in a certain decile, the average decile for each index is then calculated. Based on 132 countries with a credit rating; EIB Physical Risk capped at 3% of GDP.

Sources: EIB Climate Risk Country Scores; ND GAIN.

⁵ This is also consistent with the standard rating approach of assessing risks and mitigants independently.

⁶ The ND GAIN Vulnerability Score has also improved over time and also exhibits high correlations with (log) GDP per capita and governance indicators (85% and 70%, respectively).

At first sight, transition risk is less pronounced for the Global South. Figure 1 shows that high-income countries, which consume a large share of world resources and generate significant emissions, generally face higher risks from the transition to a low-carbon world economy. Regardless of income levels, fossil fuel exporters are most at risk. However, in the near future, developing countries are expected to face higher transition risks, as they catch up with developed economies without decoupling economic growth from greenhouse gas emissions. In addition, developing countries are often characterised by weak mitigation capacity, with a slow penetration, so far, of renewables as energy sources and a relative lack of commitment to change, with scant financing also influencing this aspect. Moreover, even where transition risks are low, green investment in developing countries is still urgent. These countries need tremendous investment to fill infrastructure gaps, reduce poverty and create decent jobs in a way that does not lead to unsustainable greenhouse gas emissions. That development transition also has to be part of the global climate transition.

The negative relation between physical risk indices and sovereign ratings is dominated by the high collinearity with other covariates. Countries with higher physical risk typically have worse ratings (the correlation ranges between -0.5 and -0.7). However, already when controlling for a country's GDP per capita and governance, the correlation is close to zero. When adding other control variables, a stylised model⁷ shows that both physical risk indices have a small and even positive impact on ratings. Clearly, the collinearity with other structural indicators absorbs all negative effects. Meanwhile, the counter-intuitive finding with regard to the part of the risks that cannot be explained by other covariates (i.e. the residual from regressing the physical risk indicator on the other covariates) could have several explanations. It could be that some risks covered by the indices have not been considered relevant for sovereign ratings (e.g. because they concern a longer time horizon, or are the compound effect of several smaller risks), or were unknown (e.g. because the analysis of climate change effects was less comprehensive in the past). It could also be that this finding is uninformative because the indices are only able to provide a rough indication of overall risks (i.e. small differences in the indices should not be over-interpreted).

In estimations, transition risk tends to become a proxy for economic development. Reflecting its positive relationship with income levels, transition risk has a mildly positive correlation with ratings (20%). Also, according to the stylised model with control variables, high transition risk pushes up the rating, and the impact is statistically significant. Clearly, being highly developed is still positive for a country's rating despite the related transition risks.

⁷ An ordered logit model is run on sovereign risk ratings of the three main credit rating agencies. The various variables included in the analysis are those typically used by CRAs and reflect public finances, economic performance, external performance and institutions. In addition, GDP per capita is included as a proxy of economic development. See Zwart (2022) for the considerations underlying the model choice and the details.

Overall, climate change risk indices do not appear to be reflected in sovereign ratings, aside from any indirect effect through other covariates. Both physical risk and transition risk can be related, econometrically, largely to factors that are commonly included in any assessment of sovereign risk ratings. Especially for physical risk, it is not straightforward to relate the remaining part of the risks to sovereign creditworthiness. Hence, while these indices provide an adequate ranking, in the context of sovereign ratings, small differences between countries should not be over-interpreted. Additional research might conclude that only extreme risks are relevant as a risk driver. However, a further complication is that data are often incomplete for some of the countries with the highest physical risk and rather low ratings (e.g. small island nations), which prevents the most relevant countries from inclusion in any estimation.

3 DO SOVEREIGN RATINGS ACCOUNT FOR LONGER-TERM CLIMATE RISK?

Climate risks have been included in the three major credit risk agencies (CRAs) sovereign risk assessments for a long time, despite none explicitly including climate change in their assessment as a separate factor (Fitch Ratings 2021b, Moody's Investor Service 2019b, and S&P 2017). Importantly, the climate assessments of CRAs, often as part of their ESG assessments, do not mechanically feed into their rating framework. However, CRAs typically account for climate risks when applying discretion. Even before climate risk itself became mainstream, CRAs already included related risk in their assessments. For example, they pointed out that Gulf countries were heavily reliant on oil exports, and that this could not last forever. Similarly, even before rising temperatures became an issue, countries dependent on agriculture were advised to diversify their economies in order to become more resilient. Finally, the occurrence of extreme weather events such as hurricanes and floods have long been mentioned by CRAs as credit negative for countries at risk.⁸

More broadly, several recent studies confirm that ESG risks are a relevant factor for (sovereign) ratings. The Central Banks and Regulators Network for Greening the Financial System (NGFS) notes in its most recent study on the measurement of climate risk by CRAs (NGFS 2022b) that, in 2020, 27% of S&P's sovereign rating actions were related to ESG factors. The equivalent figure for corporates and rated infrastructure was 16%. The figure for the banking and insurance sectors was much lower at 1%, as the impact of climate change on these sectors was indirect via rising credit risks and financial market volatility and tagged as non-ESG.

The relatively short time horizon of credit ratings limits the scope of relevant risks. Sovereign ratings aim to capture risks over the next 3–5 years, while climate risks play out over a longer time span (NGFS 2022a). Physical risks are expected to grow over time

⁸ Although perhaps the growing frequency and impact of these extreme weather events were not fully accounted for as assessments are typically based on historic data.

as the effects of global heating intensify. Transition risk also play out over a long horizon, although there is a certain acceleration recently as several (advanced) countries are setting more ambitious goals. For the Global South, transition risk may also increase with economic growth. However, CRAs tend to focus on short-term risks as their impact on ratings can be assessed with greater certainty (Moody's 2019a). Many of the climate risks relevant for a country could thus be outside the scope of CRAs' assessments.

Climate risk seems to be more relevant for market-based risk metrics such as government bond spreads, particularly for developing economies. A December 2020 study by the IMF (Cevik and Jalles 2020), that replicates and updates the findings by Kling et al. (2018), showed that climate vulnerability matters for long-term government funding costs. For a panel of 67 advanced countries, emerging markets and developing economies (EMDEs) over a period of 1995–2017, this study concluded that an increase of 10 percentage points in climate change vulnerability led to an increase of about 30 basis points in long-term (10-year) government bond spreads relative to the US. On the other hand, a similar improvement in climate change resilience was associated with a decrease of 7.5 basis points in long-term government bond spreads. Importantly, the results depended on income levels: climate change vulnerability had no significant impact on long-term government bond spreads in advanced economies, but for EMDEs an increase of 10 percentage points in climate change vulnerability was associated with an increase of over 150 basis points. For a 10 percentage point reduction in vulnerability, a decrease of 37.5 basis points was found. Other papers, such as Battiston et al. (2019) and Beirne et al. (2021), obtain broadly the same results, with Capelle-Blancard et al. (2019) showing that, for a sample of 20 OECD countries, only social and governance dimensions matter for government bond spreads, while the environmental dimension of ESG does not.

ESG performance also seems to be related to corporate funding costs. According to NGFS, a 2021 study by Hermes for corporates demonstrated a correlation between credit default swap (CDS) spreads and ESG performance. Corporates with better ESG performance had lower CDS spreads (and vice versa), even after controlling for operating and financial risks as measured by credit ratings. This may be a sign that CDS spreads are more sensitive to ESG factors than credit ratings, reflecting real time market sentiment, and may therefore be useful leading indicators of potential risk differentials.

This recent line of research should be developed further in the future in order to disentangle why climate risk is better reflected in market-based metrics. The evidence gathered so far suggests that for longer-term bond yields, the effects of climate change are not fully captured by sovereign ratings. Two factors seem to play an important role: (1) different time horizons – ratings focus on 3–5 year horizon, while bond spreads measure risks beyond that; and (2) anticipated or potential changes in risk appetite and regulation, in combination with investors' reputational concerns, that have a greater effect on long-term bonds. This said, it may be expected that the reflection of climate

risk in ratings will catch up with that for market-based indicators in the future, as the effects of climate change become more pronounced over time. By lowering sovereign creditworthiness, this will further complicate countries' access to external financing.

4 THE NEED TO ACT NOW WITH MDBS LEADING THE WAY

Progress on development is needed to mitigate the worst effects of climate change.

The fact is that many poorer countries and people are so vulnerable to climate change because they are poor. Low-quality infrastructure and housing massively amplifies the human impact of natural disasters like hurricanes or flooding. Over-reliance on agriculture and other outdoor work makes many people and economies extremely vulnerable to extreme heat and drought. Meanwhile, people on low incomes with few savings and little capacity to borrow are exceedingly vulnerable to any kind of crisis. By one estimate, the effects of climate change could push an extra 100 million people into extreme poverty by 2030 (Hallegatte et al. 2016). But the same modelling shows that rapid progress on development – that is inclusive and that builds climate resilience – could prevent most of that negative impact.

However, 'business-as-usual' growth strategies could increase countries' exposure to transition risks.

While growth may contribute to climate resilience, industrialisation strategies that increase dependence on fossil fuels will also increase countries' exposure to policy shifts necessary to bring about decarbonisation, as well as contributing globally to climate change. Only a green growth strategy, that includes shifts towards renewable energy sources and electrification or green fuels in transport and industry, can mitigate both physical and transition risks. This is critical to mitigate the threat that climate change and the materialisation of unaddressed transition risks pose to financial stability.

Greening the global financial sector, including the proper estimation and reporting of climate risks, is an essential part of the climate transition.

The adequate reflection of climate risks in sovereign risk ratings is needed to make the global financial system climate resilient and preserve financial stability. To an extent, it could also encourage timely climate change mitigation and adaptation measures, by rewarding states that show commitment and take early action and improve their readiness. Green project finance, such as green bonds, also has the potential to incentivise action, where investor preferences can be passed through via a premium for interest rate investments.

However, inaction on climate change is the result of a number of market failures that the greening of the financial sector, alone, cannot address. Key market failures include:

- **The negative externality of greenhouse gas emissions.** Pricing in these externalities through some form of carbon pricing remains key to incentivising a shift to greater energy efficiency and use of renewables. Similarly, internalising the benefits of investments in climate change mitigation is a challenge.

- **Temporal displacement of cost and benefits.** Climate risks are mostly likely to materialise beyond the timeframe of most current investments, and of sovereign ratings, effectively 'kicking the can down the road'. Short-term investment horizons represent a failure of coordination in the face of this externalisation of costs to the future. The high discounting of future costs and benefits, moreover, presents a particular hurdle to many green investments (such as renewables) that are characterised by high initial capital expenditure amortised by reduced costs over a long period.
- **Internalisation of country climate risks in the appraisal of green investments.** The negative effect of climate risks on national economies and sovereign ratings could also impinge on the risk profile of individual green projects, even when these are part of the solution, not the problem. In the worst case, countries facing high climate risks could be effectively treated as a 'lost cause', while investment flows preferentially to less at-risk countries.
- **Information asymmetry and gaps with regard to green investments.** A lack of clarity on what counts as green investment, including a lack of common standards, has been an impediment to the mobilisation of green finance, also creating opportunities for 'greenwashing'. Adequate assessment and disclosure of climate risk exposure is part of addressing this problem.
- **Policy uncertainty.** Given the externalities inherent in the climate challenge, policy coordination is critical, including to provide forward guidance on policy for investors. Lack of policy consensus contributes to 'wait and see' short-termism.

Development banks are an important tool for addressing many of these market failures. As a part of the economic policy toolkit, multilateral development banks (MDBs) complement financial systems, improve the functioning of banking and financial markets and help to address longer-term challenges. As public financial institutions with a dedicated promotional mission, addressing market failures that lead to the under-provision of finance to key investments and sectors is central to their rationale.

As public international promotional institutions, MDBs play a key role in addressing the positive externalities of climate change mitigation investments. Backed by public capital and guarantees, MDBs can mobilise finance for investments that bring societal benefits that are not internalised in financial returns. As multilateral institutions, MDBs are particularly important as a tool to internalise the global benefits of climate change mitigation measures. Already one of the largest global providers of climate finance, the European Investment Bank (EIB) is committed to make climate the focus on at least half of its lending by 2050, to mobilising €1 trillion investment by end of the current critical decade.

MDBs are also needed to address the coordination problem inherent in short-term investment horizons. Traditionally, one of the main functions of development banks has been to act counter-cyclically (Levy-Yeyati et al. 2004, Mazzucatto and Penna 2016), addressing the coordination failure inherent in cyclical downturns when the benefits of sustained lending are not internalised for private banks that can act pro-cyclically (Arrow and Lind 1970) in considering a shorter horizon for risks and returns. MDBs also address structural investment needs, however, particularly where there is a need for a long-term perspective. Investments in both climate change mitigation and adaptation are prime examples of this. MDBs like the EIB have the capacity to provide long-term finance that matches the life of infrastructure projects, something often otherwise unavailable in low and middle-income countries. They have a correspondingly long-term view of risk – the EIB, for example, screens all its projects for climate resilience. It also ensures its lending policies are compliant with the goals of the Paris Agreement. Taking a long view, we know we must avoid investing in technologies that will become stranded assets in the course of the climate transition.

Going beyond the role of reacting to market failures, MDBs can also help to identify market failures and help to create and shape new markets. Through loan-screening and lending activities, development banks can inform governments about issues that exist in different markets helping to inform the design of development policies and help with their implementation (Fernando-Arias et al. 2019). Where markets for certain kinds of technology or investment activity are underdeveloped or not yet present, they can act to overcome information barriers and the ‘wait and see’ attitude of would-be investors, to help create those markets (Mazzucatto and Penna 2016). The emergence of the global green bond market, kicked-off by the EIB’s inaugural Climate Awareness Bond in 2007, is a clear example of this. Nurtured by the early issuance activity of the EIB and other MDB, total issuance has now surpassed \$1 trillion. Addressing information barriers and transparency issues has proved critical in this, both to give investors confidence and to guard against greenwashing. The EIB played a pioneering role in developing green bond market governance and standards, advocating the establishment of a single EU taxonomy for sustainable activities, and advising that process as an experience public investor in climate action.

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CHAPTER 8

The key roles of development banks in financing the structural transformation

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At the international level, there has been a renaissance of public banks and development banks after the North Atlantic financial crisis and throughout the Covid pandemic. They are even more important now, in view of the difficulties that exist at the international level due to the invasion of Ukraine and the risks of inflation and recession globally. In this chapter, I will make the case for public development banks and highlight the important contributions they can make in providing long-term finance for sustainable development.

Financial markets have more market failures than government failures. And that is the reason why intervention is necessary – financial markets are flawed, for example in creating a low-carbon economy, as private financial markets are full of imperfections. That is why public intervention is important, not because governments and public institutions are perfect, but because they are less imperfect than private financial markets are. Market failures in creating a low-carbon economy are one of the major challenges facing developing and emerging economies. Indeed, private financing alone is not willing to finance activities with uncertain returns and other externalities. And sufficient finance is key to a structural transformation to a greener and more inclusive economy. Therefore, there is a strong need for development banks due to the severe limitations of private sector finance to act on its own. Long-term private loans are scarce and expensive, alongside the uncertainties due to the pandemic and the need for a climate transition, which makes it especially difficult for smaller and newer companies to access credit.

The shortage of funding to finance the massive investment for the structural transformation towards a green economy is a big challenge. Many financing sources are required to make this transition so that there is more credit for the green economy. The European Investment Bank (EIB), the large development bank of the European Union, is becoming a green bank, and 50% of its loans will be destined for the green economy by 2025. In the United States, Congress and President Biden have just approved the creation of a federal green bank, with an initial public capital of \$27 billion. This is in recognition of the important role of development banks for structural transformation.

Development banks play a crucial role at the multilateral, regional, and national levels. They finance 10% of global investment, representing more than \$20 trillion in assets and around \$2.4 trillion of annual lending. Development banks are important in both emerging economies and low-income countries, as well as in developed economies. Development banks are important in Europe, for example, including important players like the EIB and Germany's Kreditanstalt für Wiederaufbau (KfW).

A balanced approach must combine both public and private institutions. It is important to point out that the support of development banks implies a reflection of a balanced approach that includes the participation of both the public and private sectors. There must be a paradigm shift: instead of deciding whether it is the role of the state or the market in finance which dominates, it is critical to acknowledge the complementarity of the two and consider the strength of each of the sectors, and how best they can work together.

How can development banks support sustainable development and structural transformation?

In situations of fiscal retrenchment and low growth, where there are high levels of debt and high inflation rates, public resources become particularly scarce. An important advantage of development banks is that they are able to leverage public resources and therefore can have a greater impact on the recovery of the economy and on long-term development. The other advantage of development banks is that they tend to provide very long-term loans, in other words, it is patient capital. World Bank surveys show more than half of loans of development banks are over ten years.

The key roles of development banks include enabling counter-cyclical financing and providing resources for structural transformation. Furthermore, they should help create greater inclusion, finance public goods, and meet new challenge of supporting the post-Covid recovery and ensuring it is aligned with green goals. Counter-cyclical measures are crucial in the post-crisis circumstances. Public development banks played an important role during the 2008–2009 crisis. Lending by national development banks worldwide increased by 36% between 2007 and 2009, according to a World Bank survey. Another example is the large expansion of development bank lending during Covid. During the recent crisis, many private financial institutions have reduced lending as a pro-cyclical measure, given increased uncertainty. However, public development banks – multilateral, regional, national and sub-regional – have significantly increased their lending, playing a crucial counter-cyclical role and thus helping recovery and maintaining levels of investment. During the Covid period, the largest expansion of loan commitments amongst multilateral banks was that of the Asia Infrastructure Investment Bank (AIIB), which grew by 120% in a year.

And why are counter-cyclical measures important? Because they are crucial to providing long-term investment to mitigate the effects of the crisis and the effects of the pandemic. They also need to support the solvency of companies and prevent many of them from

going bankrupt, and thus prevent unemployment increasing. For development banks to be able to provide this kind of assistance, it is very important that they have enough capital to be able to respond quickly in difficult periods of crisis. We have seen in recent years that multilateral banks have had insufficient capital to help.

The second point is that these long-term loans can help structural transformation, which is key to a more inclusive and a greener economy. Also crucial is their support for innovation and entrepreneurship in national economies. This is very important because it serves as a bridge between the public and private sectors, and development banks can contribute in significant ways to financing new sectors and cross-sector projects, to aid countries to become more dynamic in their economy.

Additionally, development banks can be crucial to supporting the green economy. Their advantages include their accumulated expertise, administrative efficiency, and the power to make loans that, as mentioned, are crucial for this transformation. They also help governments design green transformation public policies and structures, as in the cases of China and Germany – two examples that are worth highlighting.

Development banks are also important to help mobilise additional funding, mainly in the private sector. They can prove the viability of some sustainable investments. Germany's KfW is the second largest commercial bank and, like the Chinese Development Bank, it has played an important role in the shift of the energy matrix – both nationally and globally – towards renewables.

One of the interesting conclusions of this analysis is that we need both multilateral and national development banks. Some countries, like Germany and China, have very large development banks in proportion to their GDP, and this helps considerably with transformation and recovery. In the current scenario there are low levels of investment in both the public and private sectors, which makes recovery more complicated. Here, development banks can be particularly valuable due to the leverage they provide.

What are the conditions for development banks to be more effective? As well as a functioning financial sector, I think it is important that the country has a clear development strategy that focuses on a green and fair transformation. We also need to have clearer policy targets for development banks. It would be better if these banks did not change their mandates with different governments as much – a good example to follow here is that of KfW, which changes mandate based on the needs of the economy and not in response to the demands of different governments.

I would like to finish with some conclusions and policy recommendations from the first meeting of public development banks that was held in Paris and attended by over 400 banks. The first recommendation was that it is important to ensure that the capital of development banks is at a sufficient scale.

The second point is that public development banks should incorporate the transition to low-carbon and inclusive economies in all their financial decisions and all their project cycles. It is important that they blend resources with the private sector. There are several ways that these public banks can interact with the private sector; I think some methods are better than others. The first is that public development banks can finance themselves on the capital market. They can also co-finance with private banks and private investors. Finally, they can use more complex instruments with high leverage, but here there is a risk of creating problems of future contingent liabilities for the development banks. Furthermore, this may imply that they lose policy steer. This may be less desirable.

The main message is that development banks have to be effective, and they have to maximise their development impact. It is important that they have good financial results, but the main aim, against which they need to be evaluated, is for impact on innovation and structural transformation towards a more dynamic, greener and more inclusive economy. I think a lot has already been achieved by development banks. They are pioneers, but there is a lot yet to be done.

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CHAPTER 9

The role of central banks and supervisors in scaling up sustainable finance and investment in the Global South

Ulrich Volz, Simon Dikau, Elena Almeida and Nick Robins

SOAS, IDOS and LSE; LSE; LSE; LSE

1 INTRODUCTION

A growing number of central banks and financial supervisors (CBFSs) in emerging market and developing economies (EMDEs) have begun to address the financial and macroeconomic stability challenges of climate change and environmental degradation. Many have also started to explore and encourage the scaling up of sustainable finance and investment with the aim of supporting financing of national mitigation and adaptation efforts. In general, there are at least five reasons why CBFSs should be concerned with environmental degradation, climate change and the loss of nature.

First, CBFSs are required to respond to environmental externalities affecting their traditional core responsibility of safeguarding macroeconomic stability (especially low and stable inflation) as well as financial stability. It is now widely recognised that the physical and transition impacts of climate change and nature loss create financial risks that need to be mitigated. Moreover, it is increasingly well-documented that climate impacts can threaten macroeconomic and price stability. It is therefore critical that CBFSs understand, assess and address climate- and nature-related risks and impacts in their prudential and monetary policy frameworks to adequately respond to these new challenges.

Second, central banks need to consider the impact of climate- and nature-related risks on their own balance sheet. Importantly, central banks' collateral frameworks need to account for material climate- and nature-related risks to protect their balance sheet from financial losses arising from counterparty default. Moreover, central banks need to mitigate climate- and nature-related risks in their investment and policy portfolios. By integrating sustainability risks in their collateral frameworks and investment policies, central banks are able to both mitigate their own risk and have a positive impact on the real economy.

Third, CBFSs need to consider the potential impact of their own policy choices on climate- and nature-related outcomes. As highlighted by the concept of double materiality, organisations need to not only consider material climate/nature-related impacts on themselves, but also how their own operations and policies affect the climate, nature or other dimensions of sustainability (Täger 2021). This is particularly relevant for CBFSs in jurisdictions where the government has formally adopted climate targets such as net zero, which CBFSs should not contravene through their actions.

Fourth, given their role at the heart of the financial system, the policies and actions of CBFSs can have a market-shaping impact. Through their convening power but also their monetary, prudential and other policies, they can play a crucial role in aligning financial markets with sustainability goals. While CBFSs cannot substitute for government policies on climate change and nature, they can play an important role in ensuring that the financial system supports the much-needed transition to a low-carbon, more environmentally sustainable and resilient economy. At the same time, supporting the transition to a low-carbon and sustainable economy is the best way of minimising the risks of climate change and nature loss to the stability of the financial system and the macroeconomy. The extent to which CBFSs may contribute to ‘greening’ the financial system and the economy depends on the specific country context as well as their institutional mandate, remits and interpretation thereof (Dikau and Volz 2021a).

Fifth, CBFSs should lead by example. When requesting that supervised entities disclose climate- and nature-related risks and impacts and account for these risks in their lending/investment decisions, CBFSs should apply the same standard to themselves and their own operations.

In principle, these five reasons apply to CBFSs in both advanced economies and EMDEs. A consensus has started to emerge in the global central banking community that taking climate- and nature-related risk into account in the design of monetary policy and financial supervision in the pursuit of the traditional goals of price and financial stability falls squarely within their mandates and remits. This has been affirmed by the 116 CBFSs that are members of the Network of Central Banks and Supervisors for Greening the Financial System (NGFS). The NGFS has also forged a consensus that CBFSs should support the scaling up of sustainable finance.

While the challenge is universal, climate- and nature-related risks and investment needs tend to be larger in EMDEs than in advanced economies, while financial systems are less developed. Although most EMDEs have contributed little to nothing to climate change, they tend to be disproportionately affected by its physical impacts, which means they face enormous investment needs in adaptation and resilience. Moreover, most EMDEs face the need for significant upfront investments in low-carbon energy and transport infrastructure, all of which should be climate-resilient. It is hence of vital importance for CBFSs in EMDEs to explore and consider how they can support ramping up sustainable investment to reduce risks and vulnerabilities.

Against this background, this chapter discusses the role that CBFSSs in the Global South can play in scaling up sustainable finance and investment. Section 2 discusses the rationale for CBFSSs to be actively involved in aligning finance with sustainability and in designing and implementing policies that encourage sustainable finance and investment. Section 3 discusses the specific tools and instruments that CBFSSs can use to this effect, and Section 4 reviews the emerging practice in EMDEs. Section 5 concludes.

2 THE RATIONALE FOR CENTRAL BANKS AND SUPERVISORS IN THE GLOBAL SOUTH TO SUPPORT THE SCALING UP OF SUSTAINABLE FINANCE AND INVESTMENT

To achieve the twin goals of the Paris Agreement and the 2030 Sustainable Development Goals, and to avert the looming climate and environmental catastrophe that would come with significant economic and financial disruptions, investment will have to be directed away from fossil fuel-dependent and resource-intensive activities and towards sustainable economic activities. At the same time, vulnerable countries need to massively ramp up investment in adaptation and resilience.

The need to transition to a low carbon economy was formalised in the Paris Agreement on Climate Change in December 2016. Although the Paris Agreement recognises that peaking of greenhouse gas emissions will take longer for developing country parties, the amounts of finance that EMDEs will have to mobilise to undertake critical investment in renewable energy and low-carbon infrastructure are significant. It is important to highlight that investments in a low-carbon transition are also critical in EMDEs in order to maintain international trade competitiveness. As highlighted by Patel (2022), the threat from decarbonisation policies of advanced economies to EMDEs' mining, manufacturing and agricultural sectors "is both real and imminent". Plans by the European Union to introduce a Carbon Border Adjustment Mechanism (CBAM) highlight this challenge.

EMDEs are not only disproportionately affected by the physical impacts of climate change, but many are also acutely threatened by nature and biodiversity loss. Nature loss is becoming an increasingly pressing issue for EMDEs, forcing policymakers to extend their definitions of 'sustainable' and develop a comprehensive understanding of the impact and dependency of the economy and financial system on key ecosystem services (NGFS and ISNPIRE 2022). A large portion of the most biodiverse regions in the world are located in EMDEs, whose national economies are often highly dependent on key ecosystem services. Over the last decades, losses of intact ecosystems have occurred primarily in the tropics, home to the highest levels of biodiversity on the planet (IPBES 2019). The loss of nature and ecosystems, which is largely driven by land use change,

including deforestation, can have lasting impacts on the economy and financial system.¹ Unlike climate change, where impacts are spread globally regardless of the origins of emissions, impacts of nature loss are more localised. Economic sectors that EMDEs rely on, such as fisheries, agriculture and tourism, are highly dependent on healthy ecosystems. But manufacturing processes which require clean water and other ecosystem services to operate are also vulnerable. In a recent study, Johnson et al. (2021) estimate that low- and lower-middle-income countries could be the most severely impacted by the disruption of ecosystem services provided by nature. Low-income countries are estimated to lose up to 10% of GDP by 2030, while lower-middle-income countries could lose up to 7.3% of GDP. This compares to 2.4% for high-income economies.² Agarwala et al. (2022) show that such nature loss scenarios would result in substantial sovereign credit downgrades in EMDEs.

In this context, CBFSs face the interrelated dual challenge of, first, mitigating the macroeconomic and financial stability risks stemming from the physical and transition risks of climate change and nature loss; and second, supporting the alignment of financial markets with sustainability goals and the scaling up of sustainable finance and investment. The two rationales are interconnected as mitigating climate- and nature-related financial risks will in many cases also have implications for the allocation of credit away from environmentally harmful and polluting activities that are also most exposed to transition risks, towards more sustainable economic activities and sectors, the scaling up of which also helps to reduce long-term physical risks. Indeed, by supporting an alignment of the financial sector with climate, nature and other sustainability goals, CBFSs can contribute to a climate-proofing of the economy and make the economy less vulnerable to future shocks.

When discussing the potential role of CBFSs in aligning financial flows with sustainability goals and the scaling up of sustainable finance and investment, an important question is how addressing environmental degradation relates to the mandated objectives of CBFSs (Dikau and Volz 2021a). Following a long historical process of changing remits and priorities (often abruptly in response to an economic or financial shock), today, central banks typically have two core mandates.

First, virtually all central banks are tasked with maintaining price stability, i.e. low and stable inflation. In this context, it is important to recognise that while there is increasing empirical evidence that shows that the physical impacts of climate change are also affecting inflation in advanced economies (Beirne et al. 2021, Faccia et al. 2021), the effects have been generally more pronounced in the Global South (Parker 2018, Heinen et al. 2019, Mukherjee and Ouatarra 2021). Going forward, more frequent and severe weather events

1 For example, deforestation across the Amazon has contributed to prolonged droughts that have impacted agricultural yields and Brazil's hydropower production (Harris 2021). These impacts reduce the revenues of agricultural firms and power producers and affect the macroeconomy through rising food and electricity prices, contributing to inflation and rising global commodity prices (Harris and Pulice 2021).

2 Note that spillover effects such as trade were not accounted for.

could have a significant impact on agricultural and industrial production, potentially leading to supply shocks that manifest as cost-push inflation (Dikau and Volz 2019). In a similar vein, nature- and ecosystem-loss could lead to disruptions in provisioning services (i.e. pollination, fisheries, and soils) that negatively affect agricultural and other commodity production, thereby also causing prices to rise. Moreover, transition impacts can also affect inflation in different ways (Schnabel 2022). Through their impacts on multiple macroeconomic variables and the monetary transmission process, climate change and nature loss could significantly complicate monetary policy with varying implications under different monetary policy regimes (McKibbin et al. 2020). Central banks therefore need to augment their macroeconomic models to correctly analyse and predict the drivers of inflation and respond adequately (Boneva and Gianluigi 2022, NGFS 2020a, Schoenmaker 2021). Moreover, as will be discussed below, they can use different monetary policy tools to account for environmental impacts.

A second core responsibility of central banks – even if it is not explicitly stated in the legal mandate – is safeguarding financial stability.³ If climate change and environmental degradation affect the stability of banks, insurers and other actors within the financial system, prudential intervention by CBFs would be warranted (NGFS 2021). CBFs are thereby concerned with the financial stability of individual financial institutions as well as with the stability of the system as a whole. Whether climate- or nature-related financial risks caused by physical and transition impacts are systemic or only affect individual institutions depends on various factors.

Physical risks arise through exposures of the economy to the physical impacts of climate change and nature loss. For example, more severe droughts or floods resulting from climate change and nature loss can disrupt business as usual, negatively impact business operations and lead to credit and market risk. In many EMDEs, these risks are of special concern because of the frequency and severity of the physical impacts of environmental changes coupled with an often-high dependence of the economy on sectors such as agriculture, forestry, fishing or tourism that are particularly exposed.

Transition risks, on the other hand, arise as a result of changing policies, consumer preferences and innovations in line with a low-carbon and nature-positive future. For example, a carbon tax or restrictions on habitat modification could increase business costs, operations and profitability, particularly for companies whose activities have a negative impact on climate or nature, ultimately transmitting to financial risk. Again, these risks can threaten individual financial institutions, and potentially aggregate into systemic financial exposures, warranting the attention of CBFs. Closely related to physical and transition risks, litigation risks could also arise, particularly in the context of nature loss, as immediate impacts tend to be local and more easily linked to firms that are harming local environments (e.g. logging companies, factories polluting freshwater).

3 Even if this function is formally separated from the central bank and tasked to a dedicated supervisory authority, the central bank cannot ignore (macro)financial stability considerations.

Concerning the timeframe of these risks, climate change has been described as a ‘tragedy of the horizon’ (Carney 2015). The worst effects of climate change will be felt beyond the traditional horizons of most actors and will impose a cost on future generations that the current generation has no direct incentive to fix (Stern 2007). Likewise, the main risks materialise beyond the business and financial cycle, the political cycle and the traditional horizon of technocratic authorities, including CBFSs. To overcome the tragedy of the horizon, policymakers need to address the lack of incentives by market participants to limit risks that will affect future market participants and society. Because the financial system, which is overseen by CBFSs, plays a key role in allocating capital in the economy, it is critical that financial institutions incorporate sustainability factors into their risk management and governance frameworks to mitigate the adverse, longer-term impacts of climate- and nature-related risks.

Operationally, the primary function of prudential risk-mitigation frameworks is the identification and mitigation of financial risks. Requiring financial institutions to assess, price and disclose climate- and nature-related financial risks would lead to disinvestment and a scaling-down of financial flows to unsustainable, and therefore high-risk sectors, which in turn would reduce the longer-term risks to the economy and the financial system. The risk-based deployment of prudential instruments, such as large exposure restrictions and capital requirements, can therefore, in addition to mitigating risks, contribute to the scaling-down of unsustainable finance in favour of investment in more sustainable activities. It should be mentioned, however, that some CBFSs in EMDEs are also employing prudential instruments outside of a risk-based approach to penalise lending to unsustainable activities or support sustainable investments.

Furthermore, some central banks, especially but not only in EMDEs, have broader mandates to support wider economic policies such as sustainable development, maximum employment or financial inclusion (Dikau and Volz 2019, 2021a). While there are differing views on whether CBFSs should play a role in actively aligning financial flows with sustainability objectives, some CBFSs in the Global South are already playing a much more active, sustainability-oriented ‘developmental’ role. For example, the legal mandate of Bangladesh Bank, the central bank of Bangladesh, includes supporting economic growth and development as a secondary objective, while the central bank of Brazil has a mandate to promote balanced development and to serve the collective interest, implying a sustainability objective (Dikau and Ryan-Collins 2017). Insofar as central banks are mandated to support their governments’ overall economic, social and environmental policies, they may have a more proactive role to play in aligning financial flows with sustainability objectives (Dikau and Volz 2021a). Additionally, as highlighted above, EMDEs are likely to be more affected by the physical impacts of climate change, and thus their central banks could be compelled to take action to promote green growth.

Conceptually, interventions to affect the allocation of credit could be justified by the existence of far-reaching market failures. To achieve global climate and biodiversity targets, it is necessary for the financial sector to fund sustainable economic activities

and curtail funding of economic activities that harm the environment. Meanwhile, in the absence of public intervention through fiscal or environmental policy, the financial sector will likely prioritise maximising short-term returns, which could mean allocating capital to environmentally and socially harmful activities. The argument in favour of intervention into the allocation of capital to scale up sustainable finance relates to the failure of the financial system to account for the negative externalities of activities causing environmental degradation and harmful emissions (Dikau and Volz 2021a). Climate change has been described as a result of the biggest market failure of our times (Stern 2007). Those who pollute the environment (e.g. through carbon emissions, toxins, plastic) do so without having to pay for their actions, while impacts are spread across society – mostly affecting the poorest and most disadvantaged within and across countries. Environmental degradation, biodiversity loss and climate change are the result of an environmentally unsustainable and socially sub-optimal allocation of resources, and of a lack of internalisation of negative externalities. This discrepancy between environmental or social returns and private returns represents a market failure or imperfection that justifies efficiency-enhancing public intervention. While strong market correcting government policies such as carbon pricing would be the first-best option to address such externalities, these types of policies are often politically difficult and infeasible, and thus may compel CBFSSs to step in, as a second-best option to address market failures and support the allocation of credit towards sustainable activities (Volz 2017, Dikau and Volz 2021a).

The externalities that cause an environmentally suboptimal allocation of capital by financial institutions provide a sufficient rationale for a more active, market-correcting role of CBFSSs. Their oversight over money, credit and the financial system enables them to nudge (or in some cases push) financial institutions to redirect credit and investment toward green sectors of the economy. Especially when coupled with a mandate to support the government's economic policy, EMDE central banks are in a unique position to support the scaling up of green finance. Importantly, EMDE central banks tend to have a strong institutional standing, enabling them to influence policy outcomes where other public institutions, such as environmental ministries, may not be able to.

However, it is important to mention that such interventions into the allocation of credit stand in strong contrast to the notion of the 'market neutrality' of monetary policy (Colesanti Senni and Monnin 2020). Moreover, and perhaps more importantly, policymakers need to be aware that interventions, even if made with the best of intentions, can cause negative and distortive side-effects. Historically, credit allocation policies and various other instruments of 'financial repression' were widely used and led in many cases to substantial distortions of financial systems with often unwanted repercussions for savings and prices (Dikau and Volz 2019). Any intervention hence needs to be well designed and its efficacy needs to be carefully monitored, measured and verified.

3 HOW CAN CBFSS HELP THE SCALING UP OF SUSTAINABLE FINANCE AND INVESTMENT?

The instruments and policy frameworks of CBFSSs can be calibrated in ways that, on the one hand, account for climate- and nature-related financial risks and, on the other hand, contribute to achieving climate and nature goals. Table 1 provides an overview of different types of policy instruments, grouped in three broad policy areas: monetary policy, prudential policy, and other policies. The full ‘toolbox’ of instruments is set out in Annex 1.

TABLE 1 A TOOLBOX OF SUSTAINABLE CRISIS RESPONSE MEASURES FOR CENTRAL BANKS AND SUPERVISORS

Monetary policy
(1) Collateral frameworks
(2) Indirect monetary policy instruments
(3) Non-standard instruments
(4) Direct monetary policy instruments
Prudential policy
(5) Microprudential instruments
(6) Macroprudential instruments
Other policies
(7) Further financing schemes and other initiatives
(8) Management of central bank portfolios
(9) Supporting sustainable finance

Source: Dikau et al. (2020).

As a general starting point, CBFSSs can play an important role in building the critical financial architecture for sustainable finance (including standards, taxonomies and metrics, frameworks for disclosure and compliance) to help the identification, assessment and mitigation of relevant climate and environmental risks and impacts, and to enable the mobilisation of sustainable finance and investment. In addition to establishing an effective data and information infrastructure, CBFSSs may also have a role to play in aiding the development of missing markets, for example, primary and secondary securities markets as well as money and exchange markets (Gray and Talbot 2007). This is particularly relevant in EMDEs where there are missing or incomplete financial

markets preventing the trading of different forms of credit, assets or risks. Furthermore, CBFSs can play a role in supporting the development of new green market segments, for example by ensuring that the regulatory environment is supportive of green, social and sustainability bond issuance and trading (Dikau and Volz 2019).

Operationally, CBFSs have various tools to influence investment decisions and the allocation of resources and credit. First, central banks' monetary policy tools can be utilised to encourage, incentivise or force the financial sector to scale up sustainable finance. Starting with the collateral framework, which defines the set of eligible collateral that financial institutions can use in operations with the central bank to obtain central bank credit, central banks can apply haircuts to account for climate and nature risks or entirely exclude asset classes that are not aligned with sustainability objectives (Oustry et al. 2020). Adjusting the collateral framework, which has been shown to be subject to a carbon bias in the EU context (Dafermos et al. 2021), has a powerful impact, as financial institutions have an incentive to hold assets that are eligible as collateral and receive only a small haircut. Furthermore, differential or preferential refinancing lines offer refinancing for commercial banks at preferential terms for specified asset classes, thereby compensating or overcompensating financial institutions for lending at lower-than-market interest rates to low-carbon or otherwise sustainable projects. Some central banks in EMDEs also rely on so-called 'window guidance' to induce financial institutions to extend credit and allocate lending in line with official (government) targets. While window guidance originated in Japan, the instrument has been used in China to promote green lending while discouraging investment in environmentally harmful activities (Dikau and Volz 2021b). Furthermore, central banks can use mandatory minimum/maximum credit quotas/floors – fixed lending requirements that are set by the central bank to require commercial banks to allocate a certain share of their loan portfolio to specified asset classes, sectors, industries, or geographical areas – to require banks to fund sustainable investments. In contrast to most policy instruments in use by central banks, the operating channel of credit quotas is not the creation of incentives for financial institutions to allocate their resources to preferred causes, but a mandatory and binding quota, which may potentially create severe market distortions. The administrative setting of commercial banks' lending rates with the aim of promoting green investment and curbing unsustainable lending is another heavy interventionist tool that is not aimed at creating incentives, but instead targets the setting of lower rates for preferred sectors (to increase funding) or higher rates for less preferred ones (to reduce funding).

Second, as mentioned above, while prudential frameworks should be primarily used to mitigate financial risks, prudential instruments can in principle also be used outside of a risk-based approach to penalise unsustainable or support sustainable investments. Microprudential policy instruments can be employed to address the identified relevant risks for individual financial institutions by, for example, requiring banks and other financial institutions to adopt environmental risk management standards, to assess and disclose climate- or nature-related risks, or to hold additional capital. Macroprudential

frameworks that are concerned with systemic risk implications can be used to, for example, require banks, especially systemically important financial institutions, to build up additional buffers against systemic risks (e.g. countercyclical and higher capital buffers), making it less attractive for them to finance high-risk activities.

Finally, under ‘other policies’, CBFSs are at times relying on corporate financing facilities or loan guarantees subject to a reduction of carbon emissions or sustainability enhancing activities. Furthermore, the management of central bank portfolios can play an important signalling role through the disclosure of climate-related financial risks in own portfolios or the adoption of sustainable and responsible investment principles for portfolio management. In addition, CBFSs can support the broader sustainability agenda through sustainable finance roadmaps, by providing advice to their government, and by engaging in capacity building programmes in sustainable finance for the financial sector.

4 EMERGING PRACTICE OF EMDE CENTRAL BANKS AND SUPERVISORS

CBFSs in EMDEs are already employing a wide range of tools to assess and mitigate environmental risks and to align financial flows with sustainability objectives. In fact, given the pressing environmental and climate-related challenges facing their countries, CBFSs in EMDEs were among the first seeking to address climate change and environmental degradation – long before CBFSs in advanced economies started to consider such factors (Dikau and Volz 2019). Table 2 provides selected examples of sustainability-related policies implemented by CBFSs in the Global South. Policy measures range from indirect and direct monetary policy instruments over micro- and macroprudential tools to other policies such as the development of sustainable finance classifications, standards and taxonomies.

While many EMDE CBFSs have been creative in introducing green/sustainable policy frameworks and instruments that many advanced economy CBFSs would consider unorthodox, they are in part just repurposing existing ‘developmental’ frameworks through an added sustainability component.

Although a plethora sustainable finance measures has been rolled out by CBFSs in EMDEs, there is so far little robust empirical evidence regarding the efficacy of these measures. This may not be surprising given that most measures were introduced only recently, although in some jurisdictions (including Bangladesh, Brazil, China and Lebanon) measures have been in place for many years. Going forward, CBFSs will have to more systematically assess the effectiveness, efficiency, and equity of adopted measures to ensure that clearly defined policy goals are met while unwanted distortions are avoided (Augoyard et al. 2022).

TABLE 2 EXAMPLES OF SUSTAINABILITY POLICIES IMPLEMENTED BY CBFSS IN THE GLOBAL SOUTH

	Monetary policy
(1) Collateral frameworks	In 2018, the People’s Bank of China (PBoC) included green bonds in the pool of assets eligible as collateral for its Medium-Term Lending Facility and gave green bonds a ‘first-among-equals’ status.
(2) Indirect monetary policy instruments	<p>In 2001, Banque du Liban introduced differentiated reserve requirements, favouring loans tied to energy saving plans.</p> <p>In 2009, Bangladesh Bank introduced a Refinancing Scheme for Renewable Energy and Green Financing which refinances green loans at a preferential rate, thereby incentivising commercial banks to extend loans for sustainable investment projects.</p> <p>In 2010, the Banque du Liban issued a circular to facilitate financing and investments in green sectors by exempting commercial banks from part of the required reserves, enabling the finance of these projects at lower costs.</p> <p>In 2011, the Brazilian Monetary Council issued rules on financing climate mitigation and adaptation projects and established credit (refinancing) lines for climate-friendly lending, backed by resources from the National Plan for Climate Change.</p> <p>In 2014, Banque du Liban established a Subsidised Loan Scheme (refinancing lines) to incentivise investments into green sectors of the economy.</p> <p>In 2016, the PBoC offered green refinancing, allowing commercial banks to use green loans or bonds as collateral for borrowing at discounted rates.</p> <p>In 2017, Banque du Liban issued a circular to decrease the total liabilities subjected legal to reserve requirements from foreign currency loans balance to finance investments and incentivise eco-friendly investment.</p> <p>In 2021, the PBoC launched a Carbon Emission Reduction Facility to offer low interest loans to financial institutions that help firms cut carbon emissions.</p> <p>In 2021, Bank Negara Malaysia committed to assessing how climate change would feed into monetary policy as part of its periodic review of the monetary policy framework.</p> <p>In 2021, Hungary’s central bank published a green monetary policy toolkit outlining a strategy for introducing climate objectives into its monetary policy.</p> <p>In 2022, Bank Negara Malaysia introduced the RM1.0 billion Low Carbon Transition Facility to encourage and support SMEs in adopting sustainable practices for business resilience in line with the Government’s target for Malaysia to be a net-zero emission economy by 2050.</p>
(3) Non-standard instruments	No current initiatives

(4) Direct monetary policy instruments

Since 2006/2007, the China Banking Regulatory Commission and the PBoC included 'green' targets in their window guidance policy to discourage lending to carbon-intensive and polluting industries and/or to increase support to sustainable activities.

In 2012, the Reserve Bank of Fiji introduced an Agriculture and Renewable Energy Loans Ratio, requiring commercial banks to allocate 4% of their deposits, and similar liabilities in loans, to the agriculture (including forestry and fisheries) sector, and 2% to the renewable energy sector.

In 2015, the Reserve Bank of India (RBI) extended its Priority Sector Lending guidelines, under which it requires banks to allocate 40% of their lending according to government priorities, to include lending for social infrastructure and renewable energy projects (Reserve Bank of India, 2015). In August 2019, the RBI added a provision that allows banks to increase their exposure to non-banking financial companies by permitting on-lending for the priority sectors.

In 2016, Bangladesh Bank mandated banks and financial institutions to set at least 5% annual targets (increased to 15% in 2021) for eco-friendly financing and sustainable financing respectively.

In 2021, the Royal Monetary Authority of Bhutan introduced priority sector lending (PSL) guidelines towards the promotion of sustainable micro, small and medium enterprises (MSMEs).

Prudential policy: Regulation and supervision**(5) Microprudential instruments**

In 1998, Bank Indonesia required banks to conduct environmental impact assessments for large or high-risk loans.

In 2011, the Banco Central do Brazil (BCB) published a circular on the Internal Capital Adequacy Assessment Process in Pillar 2 of Basel III, requiring banks to demonstrate how they evaluate the risk arising from exposure to social and environmental damage caused by their activities when assessing how much capital is needed to cover a range of operational and financial risks. In 2014, the BCB issued Guidelines on Social and Environmental Responsibility for Financial Institutions.

In 2012, Bank Bangladesh issued Environmental Risk Management Guidelines for Banks and Financial Institutions. In 2017, Bangladesh Bank issued updated Environmental and Social Risk Management Guidelines for Banks and Financial Institutions.

In 2014, the Brazilian Securities Commission required listed companies to include environmental information in their annual reports.

In 2015, the State Securities Commission of Vietnam issued Guidelines for Information Disclosure on Securities Market, requiring listed companies to report on their impacts on the environment and society.

In 2015, the State Bank of Vietnam issued a Directive on Promoting Green Credit Growth and Environmental and Social Risks Management in Credit Granting Activities, as well as Guidelines for Information Disclosure on Securities Market to require listed companies to report on their impacts on the environment and society.

In 2015, Peru's Superintendency of Banking Insurance and Private Pension Fund Administrators issued Regulation on Socio-environmental Risk Management of Financial Firms in Peru.

In 2017, the State Bank of Pakistan issued Green Banking Guidelines providing guidance regarding Environmental and Social Risk in lending, financing green projects and reducing the banks' carbon footprint.

In 2017, the Indonesian Financial Services Authority (OJK) issued Regulation on the Application of Sustainable Finance, requiring financial services agencies, issuers, and public companies to prepare sustainable finance action plans and ensure that they have sufficient environmental and social management policies and processes in place.

In 2018, Nepal Rastra Bank issued Guideline on Environmental & Social Risk Management (ESRM) for Banks and Financial Institutions. In 2020, Nepal Rastra Bank issued a directive requiring all banks and financial institutions to integrate ESRM into their overall credit risk management process and formulate ESRM policies in compliance of 2018 Guideline.

In 2018, Paraguay's Central Bank issued a Guide for the Management of Environmental Social Risks for Entities Regulated and Supervised by the Central Bank of Paraguay, to be integrated within the credit risk analysis of financial institutions.

In 2018, the Central Bank of Iraq issued a Corporate Governance Guide, promoting best practices in governance and sustainability within the banking sector.

In 2019, the Bank of Ghana launched the Ghana Sustainable Banking Principles to provide guiding principles for effective environmental and social risk management for banks.

In 2019, the National Bank of Rwanda issued a Regulation on Publication of Financial Statements and Other Disclosures, requiring banks to prepare an annual integrated report that demonstrates the links between financial performance and the wider social, environmental and economic context.

In 2019, the Philippines Securities and Exchange Commission released Sustainability Reporting Guidelines for Publicly Listed Companies.

In 2019, the Magyar Nemzeti Bank (Hungary) introduced preferential capital requirement programme for credit institutions to support the growth of green financial products and to improve the energy efficiency of the Hungarian building stock.

In 2020, the National Bank of Georgia issued ESG Reporting and Disclosure Principles.

In 2020, the Bangko Sentral ng Pilipinas issued a Sustainable Financial Framework, expecting all banks to embed sustainability principles, including those covering environmental and social risk areas, in their corporate governance framework, risk management systems, and strategic objectives consistent with their size, risk profile and complexity of operations. The framework outlines specific duties and responsibilities of the board of directors and of senior management.

In 2020, the National Banking and Insurance Commission of Honduras issued a Standard for the Management of Environmental and Social Risk applicable to the Institutions of the Financial System.

In 2021, the Bank of Thailand included ESG risks as part of the revised Guideline on Application of the Supervisory Review Process under Pillar 2 of the Basel capital framework, coming into effect in 2022.

In 2021, the Securities and Exchange Board of India issued a circular implementing new sustainability-related reporting requirements for the top 1,000 listed companies by market capitalisation, replacing the existing Business Responsibility Report.

In 2021, the Brazilian Securities Commission introduced ESG information disclosure criteria, requiring listed companies to disclose ESG information or provide an explanation why they did not disclose them.

In 2021, Bank Al-Maghrib published a directive for credit institutions to improve their management of climate-related and environmental risks.

In 2021, Banco Central do Brasil launched a public consultation on the improvement of rules on risk management and social, environmental and climate responsibility applicable to financial sector.

In 2021, the Central Bank of Kenya published Guidance on Climate-related Risk Management under the Banking Act.

**(6)
Macroprudential
instruments**

In 2015, the PBoC introduced a green component of its Macro Prudential Assessment (MPA) system, which includes indicators for capital and leverage, asset and debt, liquidity, pricing, asset quality, risk of cross-border financing and the implementation of credit policy. It also ranks banks on their performance and attributes higher MPA scores to banks that have a higher proportion of green loans and that have issued green bonds.

In 2021, Banco de la República (Colombia) conducted a macroeconomic and sectoral climate risk stress test.

In 2021, the Superintendencia Financiera de Colombia conducted a sectoral climate risk stress test.

In 2021, Banco de México conducted a counterparty, macroeconomic and sectoral climate risk stress test.

In 2021, the South African Reserve Bank conducted a sectoral climate risk stress test (future exercises planned for 2022-2023).

In 2022, Bank Al-Maghrib (Morocco) started working on a macroeconomic and sectoral climate risk stress test.

In 2022, Banco Central de Chile is conducting a macroeconomic and sectoral climate risk stress test.

In 2022, Bangko Sentral ng Pilipinas (Philippines) is conducting a climate risk stress test.

In 2022, the People's Bank of China is expected to complete a counterparty and sectoral climate risk stress test.

Other policies

**(7) Further
financing schemes
and other
initiatives**

In 2009, the Brazilian Monetary Council issued a resolution requiring all Brazilian pension funds to state in their investment policy whether they consider environmental and social (E&S) issues in their investment decisions.

In 2016, Bangladesh Bank introduced the Green Transformation Fund (GTF) to provide finance for environment-friendly infrastructures in export-oriented industries. The GTF expanded its scope in 2019 from just three sectors (textiles, leather, jute) to include all manufacturing and export-oriented entities, irrespective of sector.

	<p>In 2018, the Brazilian Monetary Council issued a resolution with Investment Rules of Occupational Pension Funds, requiring pension funds' asset managers to consider environmental, social, and governance (ESG) risks as part of their investment decision making process.</p> <p>In 2018, Argentina's Superintendencia de Seguros de La Nación implemented a Green Insurance Project, which allocates 1% of the premiums of automotive policies to support afforestation efforts.</p>
(8) Management of central bank portfolios	<p>In 2021, Bank Negara Malaysia committed to further strengthening internal frameworks for integrating sustainability factors in its investment operations and reserves management.</p>
(9) Supporting sustainable finance	<p>In 2012, the Central Bank of Nigeria together with the Nigerian Banking Association approved the adoption of the Nigerian Sustainable Banking Principles.</p> <p>In 2012, the China Banking Regulatory Commission (CBRC) issued Green Credit Guidelines, introducing a first definition of green loans that included 12 sectors and activities. In 2013, the CBRC introduced the Green Credit Statistics System for banking institutions when categorising their green credit portfolio. In 2014, the CBRC issued a Notice on Green Credit Key Performance Indicators, requiring all banking institutions to conduct a self-assessment of their implementation of the Green Credit Guidelines.</p> <p>In 2014, the Mongolian Central Bank together with the Mongolian Banker's Association issue Mongolia's Sustainable Finance Principles and related Sector Guidelines as a voluntary framework to help local banks integrate environmental and social considerations into their lending decisions and product design.</p> <p>In 2015, the People's Bank of China established a green bond standard through the Green Bond Endorsed Project Catalogue in 2015.</p> <p>In 2016, the PBoC, Ministry of Finance, National Development and Reform Commission, Ministry of Environmental Protection, China Banking Regulatory Commission (CBRC), China Securities Regulatory Commission, and China Insurance Regulatory Commission issued Guidelines for Establishing the Green Financial System, which aim to mobilise and incentivise more capital to invest in green sectors, while restricting investment in polluting sectors.</p> <p>In 2017, the Indonesian Financial Services Authority (OJK) issued a Regulation on the Issuance and the Terms of Green Bond to set standards for green bonds.</p> <p>In 2017, the China Securities Regulatory Commission issued Green Bond Assessment Guidelines, setting out official requirements for what projects qualify as green, the management of proceeds, and reporting.</p>

In 2018, Egypt's Financial Regulatory Authority approved the legal framework for issuing green bonds, with the aim of providing financial tools to fund eco-friendly projects in the fields of new and renewable energy, construction, and transport. In 2021, it approved a draft amendment in the Capital Market Law in regard to regulating bonds, securitisation bonds and sukuk.

In 2018, the Moroccan Capital Market Authority issued Green, Social and Sustainability Bond Guidelines.

In 2018, the China Insurance Regulatory Commission, together with the Chinese Ministry of Environmental Protection, passed the Compulsory Environmental Pollution Liability Insurance Regulation.

In 2019, the National Bank of Georgia launched the Roadmap for Sustainable Finance, aiming to provide a credible, predictable and stable regulatory framework and prepare the market for transitioning to sustainable finance.

In 2020, the Superintendencia Financiera de Colombia published a Good Practice Guide for Issuing Green Bonds on how to comply with the highest standards of transparency.

In 2020, the Central Bank of Mongolia announced its national Green Loan Statistics, calculating the amount and ratio of green loans in the portfolio based on the Mongolia Green Taxonomy.

In 2020, the Central Bank of Sri Lanka published a Roadmap for Sustainable Finance in Sri Lanka.

In 2021, Bank Negara Malaysia published a Climate Change and Principle-based Taxonomy guidance document with specific focus on how business operations affect pollution, biodiversity and resource efficiency.

In 2021, the Superintendencia Financiera de Colombia published the first phase of the construction of the Colombia Green Taxonomy, which seeks to facilitate the identification of projects with environmental objectives, develop green capital markets, and promote the effective mobilisation of private and public resources towards sustainable investments.

In 2022, Qatar Central Bank announced plans to implement strategic actions on green finance as part of the Second Strategic Plan for Financial Sector Regulation 2017-2022.

In 2022, the Capital Markets Board of Turkey released Guidelines on Green Debt Instruments and Green Lease Certificates.

5 CONCLUSION

A growing number of CBFSs in the Global South have become active not only in acknowledging and addressing climate- and nature-related financial risk, but also in scaling up sustainable finance, utilising a plethora of policy instruments. Against the background of a strong rationale to mitigate long-term risks, correct market failures and reduce vulnerabilities, EMDE CBFSs are resorting to conventional as well as unconventional policy instruments to green their economies and financial flows. While various instruments employed by EMDE CBFSs would be considered by many CBFSs in advanced economies to be outside of their scope and remit, there is an increasing openness to learn lessons from some of the unconventional approaches tested in EMDEs.

The more active engagement by many EMDE CBFSs in scaling up sustainable finance to enhance mitigation and adaptation efforts is reflective of a growing awareness in the Global South of the need for urgent policy adjustments in the face of significant vulnerabilities and the necessity to mitigate the worst impacts. CBFSs in EMDEs have typically played a significantly broader, at time ‘developmental’ or even ‘quasi-fiscal’, role in supporting their governments’ economic policies and development priorities. This is in many ways now reflected in quite pragmatic, hands-on approaches regarding sustainable finance and investment. Many EMDE CBFSs are in a strong position to implement far-reaching policies to scale up sustainable financial flows in their economies, illustrating how existing mandates and policy instruments often provide ample room to address and mitigate environmental implications and scale up sustainable investment.

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ANNEX 1: POLICY TOOLS AVAILABLE TO CENTRAL BANKS AND FINANCIAL SUPERVISORS

	Conventional (sustainability-blind) calibration	Sustainability-enhanced calibration
Monetary policy		
(1) Collateral frameworks	Collateral credit quality is assessed based on conventional methods, perpetuating exposure to and market mispricing of climate risks and carbon bias and maintaining financing conditions for industries not aligned with the Paris Agreement.	Collateral frameworks become carbon-neutral, take climate- and other sustainability-related financial risks into account and apply haircuts to account for these risks. Collateral frameworks exclude asset classes that are not aligned with sustainability goals such as the Paris Agreement.
(2) Indirect monetary policy instruments	Standard instruments such as open market operations, standing facilities, reserve requirements and refinancing operations are calibrated without sustainability considerations, leading to a potential carbon bias.	Align refinancing operations with sustainability goals such as the Paris Agreement. Differentiated reserve requirements, risk weights, accounting for carbon footprint, climate-related financial risk (particularly transition risks), or other sustainability factors. Interest rates based on sustainability criteria.
(3) Non-standard instruments	Asset purchase programmes (APPs) ignore climate- and other sustainability-related financial risks, perpetuating financial markets' exposure to climate risks and carbon bias. Direct (short-term) credit to the government to support standard fiscal spending. Helicopter money without conditionality.	APPs exclude carbon-intensive assets. Direct (short-term) credit to the government to support sustainable/ Paris-aligned fiscal policies. Purchase of green sovereign bonds Helicopter money conditioned on sustainable/Paris-aligned spending.

(4) Direct monetary policy instruments	<p>Direct controls on interest rates (e.g. minimum and maximum interest rates, preferential rates for certain loan categories).</p> <p>Credit ceilings (at aggregate level or on individual banks).</p> <p>Directed lending policies (e.g. preferential central bank refinance facilities to direct credit to priority sectors).</p> <p>Window guidance/moral suasion to promote priority sectors.</p>	<p>Credit interest rate ceilings for sustainable priority sectors, asset classes, and firms.</p> <p>Minimum/maximum allocation of credit through credit ceilings or quotas to restrict/promote lending to carbon-intensive/sustainable sectors.</p> <p>Targeted refinancing lines to promote credit for sustainable sectors.</p> <p>Window guidance/moral suasion to promote lending to sustainable sectors.</p>
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Prudential policy: Regulation and supervision

(5) Microprudential instruments	<p>Conventional stress testing / excessive delay of climate-stress testing.</p> <p>No disclosure requirements for climate-related financial risks.</p> <p>Standard supervisory review process (SRP).</p> <p>Conventional calibration of other Basel III instruments.</p>	<p>Stress testing frameworks that acknowledge climate and other sustainability risks and help firms take into account longer-term risks.</p> <p>Mandatory disclosure requirements for climate-related financial risks or other sustainability risks.</p> <p>Supervisory review process (SRP) that highlights management of climate-related financial risks or other sustainability risks.</p> <p>Climate risk-sensitive calibration of other Basel III instruments, distinguishing between low-carbon and carbon-intensive/high-exposure assets to create buffers against climate-related losses (e.g. differential risk-based capital requirements, lower required stable funding factor for green loans).</p>
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(6) Macroprudential instruments

Conventional system-wide stress testing.
Calibration of instruments along the cyclical dimension without explicit acknowledgement of climate-related financial risks.
Calibration of instruments along the cross-sectional dimension without explicit acknowledgement of climate-related financial risks.

System-wide stress testing that acknowledges and assesses systemic climate-related financial risks.
Cyclical instruments calibrated to account for and mitigate systemic risk implications of climate change and restrain the build-up of risk-taking during the recovery/expansion phase (e.g. countercyclical and higher capital buffer in order to protect the financial sector from periods of excessive carbon-intensive credit growth, LVRs and loan-to-income ratios to limit the extension of credit by banks to carbon-intensive industries and investment in non-sustainable asset classes).
Cross-sectional instruments calibrated to account for and mitigate systemic risk implications of climate change and to mitigate individual institutions' contribution to systemic risk (e.g. large exposure restrictions to limit financial institutions' exposure to highly carbon-intensive assets, capital surcharges for systemically important financial institutions and institutions with high exposure to carbon-intensive assets).

Other policies

(7) Further financing schemes and other initiatives

Corporate financing facilities or loan guarantees without climate or sustainability conditionality.
Financial sector bailouts without climate or sustainability conditionality.

Corporate financing facilities or loan guarantees subject to reduction of CO2 emissions or sustainability enhancing activities.
Incorporation of sustainability considerations into bailout packages in case of partial or full nationalisation of financial institutions.
Funding sustainable lending/investment schemes by public banks and development finance institutions (e.g. for renewable energy or retrofitting of buildings) through refinancing credit lines or purchase of bonds under APPs in secondary market or direct refinancing operations.
Tailoring of supervisory frameworks for development banks to enhance their public policy capacity to bear risk, promote economic transformation.

(8) Management of central bank portfolios	Management of central bank portfolios without consideration of climate change and other sustainability risks.	Disclosure of climate-related financial risks in own portfolios (e.g. following the TCFD recommendations). Adopting sustainable and responsible investment principles for portfolio management.
(9) Supporting sustainable finance	No new sustainable finance initiatives launched, ongoing efforts are postponed or halted.	Sustainable finance roadmaps/ guidance for financial institutions. Advice and dialogue with other parts of the government. Research and publication of handbooks and resources (e.g. reference scenarios, risk assessment methodologies). Capacity building programmes in sustainable finance for the financial sector, convening role of central banks.

Source: Dikau et al. (2020).

CHAPTER 10

Adaptation and resilience finance: The role of ‘alignment’ in scaling up adaptation and resilience finance in the Global South

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1 INTRODUCTION

The Intergovernmental Panel on Climate Change (IPCC)’s Sixth Assessment Report provides the most compelling, stark evidence yet of the growing challenges posed by climate change (IPCC 2022). As the climate warms, extreme events will become more frequent and more severe. Rising seas, shifting climate zones and the transformation of ecosystems will have profound social, environmental and economic consequences. Risks to water availability will continue to increase and global food production will be increasingly put in pressure. The impacts on people and livelihoods will be most acute in the Global South. The costs are already becoming evident. Already in 2021/22, Eastern Africa – Ethiopia, Kenya and Somalia – face into a drought of a length not experienced in the last 40 years with devastating impacts on people and livelihoods in the region.

Consequently, adapting to climate change is increasingly urgent. Adaptation – *the process of adjustment to actual or expected climate and its effects to moderate or avoid harm and exploit beneficial opportunities²* – is a vital part of efforts to achieve the Sustainable Development Goals (SDGs) in a changing climate (Fuldauer et al. 2022). Climate adaptation will be critical to ensure water and food security; to protect lives and livelihoods; and to safeguard assets, property and infrastructure. Investing in building climate resilience today brings immediate benefits, but there is also an urgent need to integrate climate risks into longer-term decision making across sectors to avoid locking in future risks, for example in infrastructure and buildings, food and water systems and land management (Ranger and Garbett-Shiels 2012).

1 Dr Ranger acknowledges the support of the Climate Compatible Growth Program (CCG) of the UK’s Foreign Development and Commonwealth Office (FCDO). The views expressed in this chapter do not necessarily reflect the UK government’s official policies or the OECD.

2 IPCC definition.

Finance must be an important part of the solution. The Paris Agreement in 2015 enshrined the commitment by developed countries to jointly mobilise US\$100 billion per year by 2020 in support of climate action in developing countries, balanced between adaptation and mitigation. As of 2021, adaptation finance has remained only 20–25% of all committed concessional finance across all sources and overall climate finance has fallen short of commitments and well short of needs.³ The UN Environment Programme (UNEP) estimated financing needs for adaptation in developing countries at \$140–300 billion per year by 2030 and \$280–500 billion per year by 2050 (UNEP 2021). The United Nations Framework Convention on Climate Change (UNFCCC) identified \$34.1 billion of adaptation public finance in 2017/18 (UNFCCC 2021). The Climate Policy Initiative (CPI) identified global investment of \$46 billion in adaptation in 2019/20 (CPI 2021).

FIGURE 1 CONCEPTUAL FRAMEWORK ON SCALING UP AND TRANSFORMING CLIMATE FINANCE, AS PROPOSED BY THE INDEPENDENT EXPERT GROUP ON CLIMATE FINANCE (IEGCF)



Source: Reproduced from IEGCF (2021).

The importance of mobilising private finance, alongside public finance, has long been recognised both for meeting current commitments and also for scaling up the ‘billions to trillions’ to meet the growing needs over time. In 2021, the Independent Expert Group on Climate Finance laid out a framework (Figure 1) to illustrate the modalities of public and private needed to deliver ‘billions to trillions’ across mitigation and adaptation. Scaling up private finance for adaptation is generally seen as more challenging than for mitigation, for several reasons: (1) complexity – the diverse and highly localised nature of adaptation interventions; (2) the enabling environment, including issues around data,

3 <https://unfccc.int/process-and-meetings/the-paris-agreement/the-glasgow-climate-pact/cop26-outcomes-finance-for-climate-adaptation> (accessed 24 July 2022).

regulation and lack of clarity on needs; and (3) perceived low returns on investment versus upfront costs (Tall et al. 2021). We focus on the fifth pillar of Figure 1, which to date has been much less discussed in the literature but has potential to be significant in terms of scale of financial flows – the opportunity to mobilise large untapped private finance through shifting the whole financial system to ‘align’ with climate risk and adaptation opportunities.

Aligning finance is not new. The UNEP Inquiry into the Design of a Sustainable Financial System was established in 2014 to explore how to align the financial system with sustainable development. The 2020 OECD–UNDP Framework defines several objectives of SDG-aligned finance: (1) resources mobilised to accelerate progress across the SDGs; (2) net positive impact on the SDGs over the lifetime of an investment; and (3) investment does no harm across the SDGs. The G20, in 2021, established the G20 Sustainable Finance Roadmap to inform action with the goal of scaling up sustainable finance that supports the objectives of the 2030 Agenda and goals of the Paris Agreement.

Article 2.1c of the Paris Agreement⁴ calls for “*making finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development*”. This commitment shapes the concept of alignment that we explore in this chapter. Importantly, the focus to date has been on mitigation alignment, where alignment is typically defined in terms of reducing absolute (or financed) emissions at a rate commensurate with the Paris climate goal (Caldecott 2020), including increased investment in low-carbon activities, stewardship and transition finance, and in some cases, divestment from high-carbon activities. Momentum has been significant. For example, in 2021 the Glasgow Financial Alliance for Net Zero (GFANZ) brought together over 250 financial institutions responsible for over \$80 trillion of assets to align finance with the transition to net zero emissions by 2050.⁵ Despite the dual focus of Article 2.1c, the topic of climate-resilience aligned finance has received far less attention to date (Whitley et al. 2018, Rydge 2020). One half of Article 2.1c is undefined. This despite the immediacy of climate impacts, the potential for lock-in of future risks and the dependence of achievement the SDGs on adaptation.

A potential challenge is that the concept of climate resilient development itself is less well defined than mitigation (or adaptation) and is generally defined as a process rather than as an outcome. The IPCC (2022) itself defines climate-resilient development as a process where “*reducing exposure and vulnerability to climate hazards [reducing GHG emissions] and conserving biodiversity are given the highest priorities in everyday decision-making and policies on all aspects of society including energy, industry, health, water, food, urban development, housing and transport*”. Climate resilience is defined as a quality of a system, the “*capacity of social, economic and ecosystems to cope with a hazardous event or trend or disturbance*”.

4 See https://unfccc.int/sites/default/files/english_paris_agreement.pdf

5 See <https://www.gfanzero.com/>

Here, we define climate resilience alignment as the process of ensuring that financial flows are consistent with those needed to achieve adaptation and climate-resilient development at a societal level; this whole-of-society view reflects the IPCC definition, and the specific inclusion of adaptation mirrors Article 2.

As with mitigation alignment, having information and transparency over which finance flows are aligned and are not aligned is a necessary step to avoid locking-in future risks and to steer private finance and investment into adaptation and climate-resilient development. This is a central argument of this chapter. The chapter also aims to contribute to the discussions about how to define and operationalise climate resilience-aligned finance, building upon the frameworks in Mullan and Ranger (2022), with a focus on the opportunities for scaling up finance for adaptation in the Global South.

2 THE ROLE OF ALIGNMENT IN SCALING ADAPTATION FINANCE

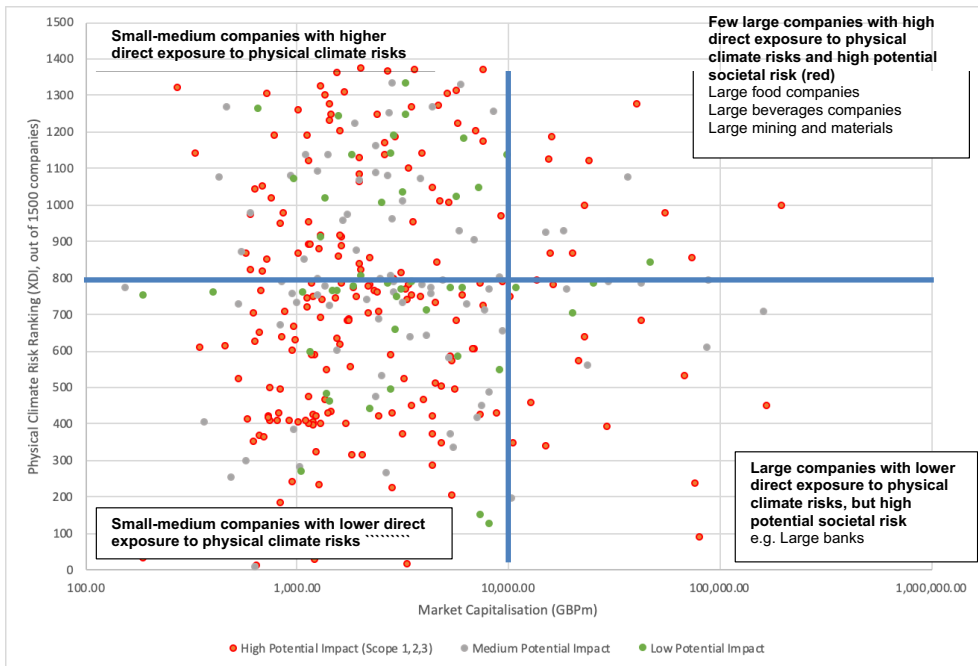
Finance flows – both public and private, domestic and international – have significant impacts on climate resilience in the Global South and beyond. The scale of these flows is many orders of magnitude larger than earmarked climate finance. These impacts can be positive, neutral or negative. For example, total infrastructure investment globally stands at around \$2.7 trillion each year (Mirabile et al. 2017), almost 60 times larger than all earmarked climate finance for adaptation. These investments will shape the structure and resilience of our economies for decades; yet, in many parts of the world, buildings and infrastructure are still not built to minimum standards (Cançado and Mullan 2020), potentially undermining local climate resilience. Financial flows related to global agriculture – which can have major impacts on resilience locally and globally through its relationships with land-use change, ecosystems, pollutants, water resources, rural income levels, commodity prices and trade – are even larger at over \$5 trillion.⁶ We have little way of knowing right now to what extent these financial flows support or are in opposition to adaptation needs globally and locally. This is potentially creating a major challenge to meeting the Paris goals. For all these flows, there is currently no framework to identify or track how finance and investment flows are positively or negatively impacting resilience outcomes, so we have limited information from which to assess the issue and act. Tracking only earmarked finance could give a misleading picture of progress. Conversely, investments in health and education play an unrecognised positive role in resilience.

Taking the FTSE350 index companies as an example, almost 45% of those companies, or £1.5 trillion in market capitalisation, are in sectors that have potential to have a direct impact on wider societal resilience, such as agriculture, food and beverages (the latter through its water footprint), construction, real estate, chemicals and insurance (Figure 2). Most of these companies have a global footprint, so the potential impact is large. A

6 <https://blogs.worldbank.org/voices/do-costs-global-food-system-outweigh-its-monetary-value>

challenge is that there currently is no one metric or framework to measure and compare the resilience impact of such firms, which makes measuring the alignment of finance more difficult. We propose a simple framework equivalent to 'scope 1' and 'scope 2' equivalent to emissions, that is, *activities that generate societal impacts that are directly (1) or indirectly (2) within the control of the company and its use of resources, such as energy and water* (Figure 3). As such, looking at the societal resilience implications across the whole value chain is defined as 'scope 3' and would now include *'financed resilience impacts'* from banks and investors. Including 'scope 3' would mean that over 60% of FTSE 350 companies (£1.6 trillion) are in activities with potentially a non-negligible influence on global resilience. Scaling up from the 350 firms to more than 40,000 (\$80 trillion) listed companies globally, the potential for impact and the potential opportunities through climate resilience aligned finance are massive.

FIGURE 2 PHYSICAL CLIMATE RISK RATING (SOURCE: XDI), MARKET CAPITALISATION (SOURCE: LSEG) AND SECTOR-BASED SOCIETAL IMPACT (LOW, MEDIUM, HIGH) FOR FTSE350 COMPANIES



Source: Authors calculations.

FIGURE 3 A PROPOSED FRAMEWORK FOR ANALYSING FIRMS CONTRIBUTION TO SOCIETAL ADAPTATION AND RESILIENCE GOALS



Source: Authors.

Several FTSE 350 companies fall within the quadrant in Figure 2 with large size (market capitalisation), high direct physical climate risk and high potential societal impact. All are large food, beverages or natural resources companies. Such firms could be defined as having a high potential 'systemic importance for societal resilience' (SISR). Such a metric, if quantified and comparable across companies, would be useful as a tool to inform investors and governments as part of a climate disclosure framework. International companies can have a large impact on societal resilience outcomes in the Global South both directly and indirectly: directly, through their supply chains (e.g. agriculture, natural resources) and indirectly (employment, trade, macroeconomic conditions). Analogous to the concept of systemically important financial institutions (SIFIs) in the financial stability space, these firms could have systemic impacts on local and global resilience if risks are not managed appropriately. If, however, such firms committed to align activities with climate resilience goals, this could have a meaningful positive impact on societal resilience and adaptation.

Measuring alignment to climate resilience goals, acting upon this and disclosing that information where appropriate, could yield significant benefits for society as well as financial institutions:

- Enabling investors and lenders to assess the position of companies and portfolios in relation to adaptation and resilience goals at global, national and local levels.
- Increasing financial institutions' ability to effectively allocate capital in ways that support resilience and adaptation goals (scope 3 resilience), as well as manage their own risks and opportunities (scope 1 and 2).
- Deriving value (reputational, commercial positioning, cost of capital) through increasing alignment.
- Proving incentives for physical risk management across the private sector, including risk-based pricing.

Along with the efforts to resolve wider barriers to adaptation, the measurement and disclosure of climate resilience alignment could, as such, drive more financing into climate resilience-aligned activities and away from activities that undermine resilience and lead to maladaptation. Such financing (pillar 5 in Figure 1) would complement earmarked climate finance for adaptation and be potentially much larger. Measuring alignment could also guide government and development financial institutions (DFIs) to areas most in need of public interventions.

3 ALIGNMENT IN PRACTICE

Achieving alignment that successfully scales adaptation finance for the Global South requires action by private financial institutions, DFIs and the public sector, as well as improved disclosures by firms. Three main components of alignment are defined (Figure 4).

FIGURE 4 COMPONENTS OF CLIMATE-RESILIENCE ALIGNED FINANCE



Note: DNSH = do no significant harm.

Source: authors.

The majority of financial frameworks to date, including the Taskforce for Climate-Related Financial Disclosure (TCFD) framework, focus only on the first two components – management of physical climate financial risks and opportunities. Financial institutions must manage material financial risks as a core part of their fiduciary duties. For some investments, products and assets, physical climate shocks – like hurricanes, wildfires, floods and droughts, and slow-onset climate change – could create a material risk to the financial institution. Financial risk management can have positive spillovers on the wider social and economic resilience of societies. A financier investing in resilient infrastructure will help reduce disruptions to communities. Better pricing of physical climate risk, for example in insurance premiums and interest rates on lending, will encourage investments in adaptation. The cumulative impact of measures to manage private risks may contribute to resilient economies.

Despite progress on TCFD, evidence suggests that current and future physical climate risks are not fully priced within financial flows (TCFD 2020). For example, Blackrock (2019), evaluating coastal real estate, the \$3.8 trillion US municipal bond market and 269 listed utilities, concluded that climate-related risks are currently under-priced across all

three of these asset classes. This has significant implications. Insofar as finance accessed by a company, small business, government or household does not fully reflect climate risk, there is less incentive to act; hence risks continue to accumulate. Integrating physical risks more explicitly into financial decision making is therefore essential to enhance resilience within the financial sector, but also to correct the current market failure and thereby enhance wider societal resilience.

More also needs to be done to capture opportunities. Analysis by the Global Commission on Adaptation identified \$1.8 trillion of investment opportunities that would yield benefits of \$7.1 trillion, yet there are challenges bringing such finance to the Global South at scale (Climate Finance Advisors 2019). There has been progress – the first dedicated climate resilience bond was launched by the European Bank for Reconstruction and Development (EBRD) in 2019, raising \$700 million (CBI and GCA 2021).

Climate risk management is not the same as achieving alignment (Caldecott 2020). Alignment, rather than just considering the impact of climate on the business or financial institution and the opportunities, looks at whether its activities are helping societies become more adapted and resilient. This is the third component of Figure 4 and concerns *ensuring that actions support, and do no significant harm, to societal resilience, in line with national adaptation plans and goals*. Alignment takes a short-term and longer-term societal perspective, while physical climate risk management alone tends to focus on the organisational perspective.⁷ There can be trade-offs. A chemical plant could address drought risk either by increasing water efficiency, or by increasing groundwater extraction from an overstressed aquifer – both may have similar outcomes for financial risks, but vastly different outcomes for societal resilience.⁸

For financial institutions therefore, operationalising component 3 (Figure 4) and aligning finance with climate resilience, would mean, for example: (1) assessing and mitigating the impacts of activities/investments on societal resilience and national adaptation goals; (2) avoiding/divestment from activities that create or increase physical risks to communities and society; (3) proactively supporting or incentivising adaptation activities; and (4) engagement/stewardship with investees such that they invest positively in resilience.

The concepts of assessing *double materiality* and *do no significant harm* are not new, they are core to many voluntary frameworks for sustainable finance; responsible banking and investment; environmental, social, governance (ESG) investing; and corporate social responsibility (CSR) (European Commission 2019, Manca et al. 2017). We argue that aligning finance with climate resilience is consistent with these existing approaches. Through mandatory and voluntary disclosure frameworks, some firms already report on

7 Distinction is analogous to double materiality (Adams et al. 2021).

8 Financial risk management without alignment risks drawing finance away from those communities most at risk from climate change if investors manage theirs through withdrawing from highly vulnerable areas. An alignment approach would place greater emphasis on providing *adaptation financing* to help communities and firms adapt.

metrics and plans related to resilience – for example, the Carbon Disclosure Project's Water Security initiative, and the UK's Adaptation Reporting Power, which targets critical national infrastructure providers in particular.

While the concept of aligning private financial flows with adaptation and resilience goals is still nascent, it is becoming more mainstream in DFIs. In 2017, together with the International Development Finance Club (IDFC), the multilateral development banks (MDBs) announced their vision to align financial flows with the objectives of the Paris Agreement, with one building block and principles dedicated to adaptation and climate-resilient operations.^{9,10} Existing frameworks include the World Bank's Resilience Rating System (Figure 5), the EBRD Paris Alignment Methodology¹¹ and MDBs' Paris Alignment Methodology.¹²

FIGURE 5 WORLD BANK RESILIENCE RATING SYSTEM



Source: World Bank (2021).

9 <https://thedocs.worldbank.org/en/doc/784141543806348331-0020022018/original/JointDeclarationMDBsAlignmentApproachtoParisAgreementCOP24Final.pdf>

10 <https://www.mainstreamingclimate.org/5-principles/>

11 <https://www.ebrd.com/documents/comms-and-bis/ebrd-paris-alignment-methodology.pdf?blobnocache=true>

12 <https://www.mainstreamingclimate.org/>

4 TOWARDS OPERATIONALISING ALIGNMENT

The taxonomy of the EU's 2021 Sustainable Finance Strategy¹³ is one of the first disclosure frameworks for private financial institutions that explicitly embeds adaptation. It sets out detailed principles and criteria that financial or non-financial institutions can use to ensure alignment with adaptation (Figure 6). Concepts of double materiality and do no significant harm are both implicit and explicit in the EU taxonomy.¹⁴

FIGURE 6 THE EU TAXONOMY PROPOSED DEFINITION OF ACTIVITIES THAT SUBSTANTIALLY CONTRIBUTE TO ADAPTATION

EU taxonomy	
An economic activity is considered to contribute substantially to adaptation where:	
that economic activity includes adaptation solutions that either substantially reduce the risk of adverse impact or substantially reduces the adverse impact of the current and expected future climate on that economic activity itself without increasing the risk of an adverse impact on other people, nature and assets	that economic activity provides adaptation solutions that contribute substantially to preventing or reducing the risk of adverse impact or substantially reduces the adverse impact of the current and expected future climate on other people, nature or assets, without increasing the risk of an adverse impact on other people, nature and assets

Source: EU Technical Expert Group on Sustainable Finance (2020).

The OECD and the UK Centre for Greening Finance & Investment reviewed the EU taxonomy and other existing regulations, voluntary standards and disclosure frameworks to draw out a generic set of principles and targets for climate resilience aligned finance (Mullan and Ranger 2022). A common feature of each of the existing frameworks is that they do not attempt to measure alignment against a specified goal or quantify alignment in any way. They aim to identify investments that are aligned with adaptation and resilience goals in a broad sense, and rely upon project-level assessments. All of the approaches use *positive framing*, which means they aim to identify investments that are aligned to climate resilience, rather than those that are not. They also all rely upon a *process-based* approach to identify whether investments are aligned, rather than external characteristics of the investment (e.g. industry sector). Most include double materiality, the impact of an activity on societal resilience (Table 1).

¹³ https://ec.europa.eu/info/business-economy-euro/banking-and-finance/sustainable-finance/eu-taxonomy-sustainable-activities_en

¹⁴ These concepts, which are core to our proposed building blocks of alignment (Figure 3), are also core to many voluntary frameworks for sustainable finance, responsible banking and investment, ESG investing and CSR (European Commission 2019, Manca et al. 2017).

TABLE 1 CHARACTERISTICS OF APPROACHES RELEVANT TO ALIGNMENT

	Impact on societal resilience considered?	Systemic impacts	Monitoring
EU Taxonomy	Y	Do no significant harm (DNSH) principle; compliance with relevant strategies	Requirement to have monitoring plan
World Bank Resilience Rating System	Y	Normal safeguarding processes	Optional for resilience through projects
Joint MDB Paris Alignment Approach		DNSH and consistency with relevant adaptation strategies	
CBI Climate Resilience Principles	Y	DNSH	Y
EBRD Paris Alignment Methodology	Y	Objectives do not undermine climate resilience where the project operates	

Source: Mullan and Ranger (2022).

Table 2 summarises the generic principles from the frameworks that could be used as a starting point by both private financial institutions and the public sector to build toward metrics for adaptation alignment. Recognising the different perspectives on climate resilience, this is intended as a minimal set that captures the key aspects of climate resilience, while recognising that the operationalisation will differ by context. Given the challenges in measuring adaptation outcomes (e.g. Mullan and Ranger 2022, Leiter et al. 2019), such a framework could be operationalised at a portfolio level initially through measuring broadly the proportion of assets aligned or not aligned, with an initial focus on firms with high potential SISR.¹⁵

¹⁵ G20 Sustainable Finance Roadmap (https://g20sfwg.org/wp-content/uploads/2022/01/RoadMap_Final14_12.pdf). Any approach should follow principles set out in the G20 Sustainable Finance Roadmap 2021 to ensure greater comparability, interoperability, and consistency, of alignment approaches to enable the further development of sustainable financial markets.

TABLE 2 POTENTIAL CORE PRINCIPLES FOR ASSESSING CLIMATE RESILIENCE ALIGNMENT OF FINANCE

	Principle	Examples of how this could be assessed at the asset level
Process of risk assessment	Relevant climate-related risks have been identified and managed, in a way that is proportionate to the type of investment and vulnerability to climate risks. This process should aim to achieve robustness against uncertainty	<ul style="list-style-type: none"> * Existence of process for risk-assessment, including scenario analysis * Pricing of physical climate risk exposure
Consistency with adaptation/resilience strategies	The investment should be compatible with relevant strategies for adaptation or resilience (if these strategies exist)	*Cross-referencing with relevant strategies (e.g. national adaptation plans)
Consistency with Net Zero	The investment should be compatible with achieving progress towards Net Zero	<ul style="list-style-type: none"> * Investment also complies with standard for aligning with Net Zero * Compatibility with national strategies for decarbonisation * Consistency with NDCs
Do no significant harm	The investment does not undermine the resilience of people or ecosystems, for example by shifting risks to downstream users, or undermining biodiversity and ecosystems	<ul style="list-style-type: none"> * Compliance with safeguarding standards *Implementation of countervailing measures to manage identified risks
Monitoring strategy	Strategies in place to monitor performance over time	Plan to repeat risk assessment at set intervals and report within risk reporting framework
Positive contribution to resilience beyond the project/investment	The project or investment actively facilitates societal resilience line with relevant goals and plans (e.g. national adaptation plan)	* Robust analysis of potential benefits beyond the project boundaries

Source: Mullan and Ranger (2022).

5 MAKING ALIGNMENT IMPACTFUL FOR THE GLOBAL SOUTH

Can the frameworks outlined here be made to work for mobilising finance for adaptation in the Global South, particularly given the wider barriers to private finance, the earlier stage of development of financial markets in some countries, and as such, the unsuitability of complex disclosure frameworks?

Firstly, the opportunities to ensure that international companies, and financial institutions – particularly those with potential high SISR – align their activities with adaptation and resilience goals through international and domestic frameworks will benefit all countries, particularly in the Global South. Organisations like the IIGCC are already putting pressure on companies to show how they are adapting to climate change (IIGCC 2021), though are not yet focused on societal resilience outcomes. For this reason, engaging in international disclosure and regulatory frameworks will be important, even for countries with less developed financial markets, to ensure that the implications of international companies and financial institutions for communities and economies in the Global South are recognised and accounted for within international frameworks.

Secondly, many countries are seeing their asset bases expand rapidly and, in some cases, more investment in long-term finance. For the largest financial institutions and corporates, implementing light-touch alignment approaches, alongside investments in strengthening the enabling environment, could support both adaptation of the firms themselves and increased domestic investment in adaptation-aligned activities. While there can be costs to implementing disclosures, it is important to avoid the accumulation of climate risks through ensuring that financial decisions take account of physical climate risks now.

Thirdly, climate-resilience alignment frameworks can help increase demand for a pipeline of investments in adaptation in the Global South. This, alongside measures to strengthen the enabling environment and (where necessary) provision of development finance to catalyse private investment, can help to mobilise international and domestic private investment into activities aligned with adaptation goals.

Governments can play an important role in each of these through: (1) defining clear adaptation and investment plans with measurable targets against which corporates and financial institutions can measure progress; (2) providing national, sectoral and/or local climate change risk assessments and scenarios that financial institutions and corporates can use in their analyses of alignment; (3) investing in public good data and tools to facilitate alignment; (4) providing clear taxonomies and guidance to identify those sectors and investments that are most relevant to adaptation and resilience; and (5) mandating disclosures of climate-related risks and impacts for financial institutions and corporates in sectors relevant for climate resilience.

Finally, all the frameworks here also need to be implemented for public finance and investment, including fiscal expenditure and government procurement, national investment banks, export credit guarantees etc.

Climate-resilience alignment is a necessary part an overall framework for mobilising finance, but is not a silver bullet. To seize the opportunities for adaptation investment, in many countries, governments and MDBs also need to take measures to strengthen the wider enabling environment for adaptation and remove barriers (e.g. Tall et al. 2021, GCA 2021)¹⁶, including blended finance facilities to mobilise finance. Alignment can increase demand from the investment community, but action is needed to enable the supply.

6 CONCLUSIONS

This chapter has identified some of the key elements for a framework for defining and assessing alignment with climate resilience and discussed how this can (and cannot) work for mobilising finance in the Global South. Further work is needed by FIs, policymakers and academics to further develop and operationalise these concepts. It is important to note that climate resilience aligned finance is synergistic with nature-aligned finance, in that financial flows that are aligned with the preservation and restoration of nature and biodiversity will also help to build climate resilience, and indeed natural capital is a key determinant of resilience and adaptive capacity. It should also be seen as an integral part of SDG-aligned finance.

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¹⁶ Subsidies, regulations and other incentives provided by the public sector can play an important role both in determining which activities represent a material financial risk to a financial institution and where commercial returns can be sought from investing in adaptation or providing adaptation and resilience products and services.

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CHAPTER 11

Inclusive green finance

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1 INTRODUCTION

Against the backdrop of the impending climate and biodiversity crises, a growing number of central banks and financial supervisors have recognised the need to address environmental risks through their prudential policies, and to scale up green finance to support the transition to a sustainable and resilient economy. Environmental risks, and climate risks in particular, have been recognised by central banks and financial supervisors as a material risk to the stability of individual financial institutions and the financial system at large (NGFS 2019, Bolton et al. 2020).² Green finance comprises two key areas: (1) the financing of adaptation investment and insurance solutions that enhance resilience to environmental change; and (2) investment in mitigation action, including investment in renewable energy, low-carbon infrastructure and energy efficiency.

For a much longer time, central banks and supervisors have worked on promoting inclusive finance. Inclusive finance policies aim to promote access to affordable financial products and services to households and businesses that otherwise would be excluded. These are usually poorer households at the base of the economic pyramid and micro, small and medium-sized enterprises (MSMEs), as well as underprivileged groups such as women and youth.

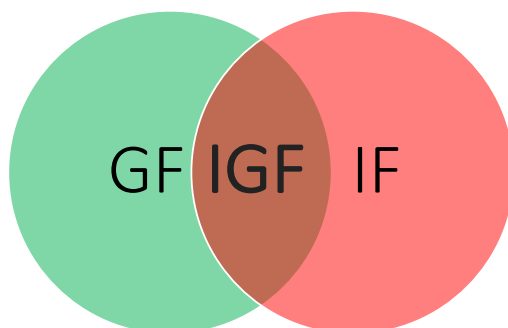
To date, green finance and inclusive finance have been treated in the academic and policy literatures mostly as two distinct, largely unrelated concepts. Likewise, in practice, central banks and financial supervisors have mostly handled green finance and inclusive finance as two separate agendas, often with different teams working on these issues. However, as will be shown in this chapter, there are meaningful overlaps between the two, as the key target groups for inclusive finance tend to be disproportionately exposed to the risks and impacts of local and global environmental change, while also playing

1 This chapter originated from a joint project with the Alliance for Financial Inclusion (AFI) that led to a policy report on Inclusive Green Finance (Volz et al. 2020). The authors would like to acknowledge financial support from AFI, and would like to thank Johanna Nyman, Laura Ramos and Jeanette Moling for excellent cooperation and very helpful comments. Any errors or shortcomings of this chapter are those of the authors alone.

2 The NGFS (2020: 9) defines climate-related risks as “financial risks posed by the exposure of financial institutions to physical or transition risks caused by or related to climate change, for example, damage caused by extreme weather events or a decline in asset value in carbon-intensive sectors.” Environmental risks are defined by the NGFS (2020: 9) as “financial risks posed by the exposure of financial institutions and/or the financial sector to activities that may potentially cause or be affected by environmental degradation (such as air pollution, water pollution and scarcity of fresh water, land contamination and desertification, biodiversity loss, and deforestation) and the loss of ecosystem services.”

an important role in mitigating environmental change.³ This chapter hence calls for a holistic approach that links green and inclusive finance policies into an integrated inclusive green finance (IGF) approach (Figure 1).

FIGURE 1 OVERLAPS BETWEEN GREEN FINANCE (GF) AND INCLUSIVE FINANCE (IF)



This chapter discusses challenges and opportunities related to developing IGF approaches. It highlights the importance of social risk and equity concerns in devising green policies and outlines how IGF can be instrumental for a just transition to a sustainable economy. Moreover, the paper draws on Volz et al. (2020) and Volz and Knaack (2022) to present a framework for policy approaches on how to leverage IGF for climate change adaptation and mitigation. It also reflects on how IGF-related policies could contribute to a sustainable recovery after the global pandemic and help countries meet commitments made under the Paris Agreement and the Sustainable Development Agenda.

The remainder of the chapter is structured as follows. Section 2 surveys the literature to examine the theoretical and empirical linkages between environmental sustainability, poverty alleviation and social inclusion, and the role of finance in addressing these goals. Section 3 presents a policy framework for IGF and corresponding policy efforts by regulatory authorities in emerging markets and developing economies (EMDEs). The chapter concludes with a discussion of policy options for incorporating IGF in a sustainable post-Covid recovery.

3 Global environmental change comprises climate change, stratospheric ozone depletion, changes in ecosystems due to loss of biodiversity, changes in hydrological systems and the supplies of freshwater, and land degradation, among others.

2 CONCEPTUALISING INCLUSIVE GREEN FINANCE

There are multiple ways in which environmental sustainability and the reduction of environment-related financial systemic risk – the main goals of green finance – and poverty alleviation and social inclusion – the main goals of inclusive finance – are connected. In the following, we distinguish three main linkages:

1. Environmental degradation and climate change place a higher burden on poorer, more vulnerable groups – the role of inclusive finance in enabling **adaptation**.
2. Reducing environmental degradation and mitigating climate change requires the involvement of all parts of the economy – the role of inclusive finance in enabling **mitigation**.
3. Social risks threaten a successful transformation to a low-carbon, environmentally sustainable economy – the role of IGF in facilitating a **‘just transition’**.

While climate change affects humanity as a whole, it is expected to have significantly negative impacts on people at the base of the economic pyramid. A significant proportion of low-income households live in less-favoured agricultural areas and low-elevation coastal zones at greater risk from climate change and its effects (Barbier and Hochard 2018). At the same time, households at the base of the pyramid have fewer resources available to protect themselves against adverse shocks (Hallegatte et al. 2016). Unequal exposure to environmental risks threatens to fuel a vicious cycle, whereby vulnerable parts of the population suffer disproportionately from the adverse effects of climate change, thus further exacerbating social inequalities (Islam and Winkel 2017). Climate change has deleterious consequences not only for households but also for firms, especially for MSMEs and for firms in EMDEs (Kling et al. 2021).

Financial services can play a key role in empowering vulnerable parts of the population to adapt to climate change, but only if they are accessible, useful and well-designed. Traditional financial services have often failed to meet those standards (Collins et al. 2009). The track record of traditional inclusive finance efforts is mixed, but the digital financial revolution of the 2010s promises to upend the old economics of financial inclusion. In particular, mobile network operators and BigTech firms have extended digital financial services through extensive agent networks and affordable mobile phones, exploiting platform economics, artificial intelligence and big data analytics in ways that traditional providers cannot (Osafo-Kwaako et al. 2018, Frost et al. 2019).

Digital person-to-person payments have shown previously unexpected benefits in increasing climate resilience, especially for low-income households and MSMEs. Field research in Kenya and elsewhere has revealed that mobile money lowers transaction costs for domestic remittances and thus allows households to weave a wider net of informal insurance and risk sharing (Jack and Suri 2013, 2014, 2016, Bharadwaj et al. 2021). When faced with droughts, flooding or other extreme weather events, for example,

households in need of financial support can reach out to friends and family near and far for emergency transfers, rather than having to decrease consumption or sell assets (Jones and Gong 2019, Wakadha et al. 2013).

This interpersonal safety net of diffuse reciprocity is complemented by that provided by governments. Here too, digital financial technology can increase efficiency and facilitate access to hard-to-reach parts of the population. In India, replacing indirect or in-kind social transfers with direct payments to bank accounts and associated debit cards was key in reducing leakage from imprecise beneficiary targeting and corruption, saving the government an estimated \$7 billion over 2.5 years alone (Pazarbasioglu et al. 2020). In Fiji, the government has leveraged digital financial services in the aftermath of Tropical Cyclone Winston, sending transfers directly to the mobile phones of recipients in the disaster zone (AFI 2020).

Financial policymakers have recently turned to digital finance to enhance resilience of the population to a non-environmental shock, namely, Covid-19 and the economic fallout it caused. As early as April 2020, regulators in Kenya and 13 other EMDEs ordered firms to waive transaction fees for low-value mobile money transactions and increased transaction caps and storage limits on e-wallets (GSMA 2020, Njogore 2020). The Bangladeshi government harnessed digital finance for its Covid-19 relief efforts by channelling unconditional cash transfers in April 2020 through mobile financial services, reaching millions of workers in the informal sector that would be hard to reach with traditional policy tools (Islam and Divadkar 2020).

Beyond payments, digital financial services providers can promote climate resilience by offering better savings products, insurance and credit. Traditionally, low-income households would invest a part of their savings in livestock or crops, which are vulnerable to environmental disasters. Financially included households can access savings more safely and conveniently to enhance their resilience vis-à-vis economic shocks caused by climate change or other forces. Digitally powered microinsurance can incorporate meteorological information and geospatial data to facilitate premium payments and disbursements at low cost, allowing vulnerable populations to better manage climate risk (Microinsurance Network 2017). Low-income households and MSMEs can leverage microcredit to reduce their sensitivity to natural disasters, better cope in their aftermath (Pantoja 2002, Dowla 2018), and invest in adaptation options such as climate proofing crops, arable land and buildings (Fenton et al. 2017). Nevertheless, responsible financial access remains a concern (Izaguirre and Mazer 2018, Kaffenberger et al. 2018, Bharadwaj et al. 2019, Gwer et al. 2019).

While digital financial services promise to alleviate financial exclusion and reduce vulnerability to climate risks, policymakers must remain aware of inequities in access. Even though the widest observed gender gaps are beginning to close, climate finance needs to be gender-inclusive in order to deliver on its promise to enhance resilience and facilitate adaptation for those who need it most.

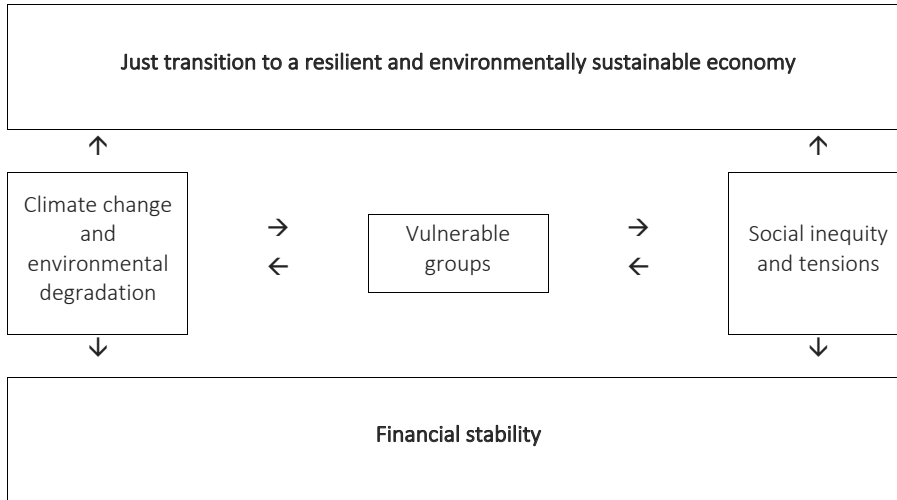
While adaptation is a key priority to increase the resilience of vulnerable populations vis-à-vis climate change, it needs to go hand in hand with mitigation measures that reduce global warming and environmental degradation. Even though the bulk of greenhouse gas emissions are not coming from MSMEs, they tend to operate in sectors that are energy-intensive and in need of technological change for climate change mitigation (UNDESA 2020).

Even when technological change is cost-saving for MSMEs in the medium or long run, many businesses do not have the financial tools at their disposal to stomach the significant upfront investment in low-carbon technology. Here, financial inclusion can make a clear difference. For example, in Kenya, the pay-as-you-go product M-Kopa harnesses mobile money transaction data to allow qualifying business owners to lease and eventually own solar panels to power their shops (Costa and Ehrbeck 2015, Omwansa and Sullivan 2013). Similar pay-as-you-go financing schemes have helped MSMEs transition to more climate-friendly technologies of energy and water provision across sub-Saharan Africa and beyond (IRENA 2020, Sharma 2019).

Inequality and social tensions may be exacerbated both by the economic and social effects of climate change and the transition to a low-carbon, environmentally sustainable economy (Semieniuk et al. 2021). For example, the forced decline of carbon-intensive parts of the economy can cause transitional unemployment and ‘stranded workers’ who may not be easily re-employed (Heim 1984). The 2018 *‘gilets jaunes’* (yellow vests) protests in France in response to climate policies that were felt as placing an unfair burden on lower income groups have highlighted the importance of placing greater emphasis in climate policies on equitable and inclusive policies. Here, inclusive finance can help to empower the base of the economic pyramid to be a driver of transition, thus making it ‘just’. This specifically relates to MSMEs and the business opportunities arising from a transition.

The links between climate change and environmental degradation, vulnerable groups, social inequity and tensions, and financial stability are further elaborated in Volz et al. (2020) and Volz and Knaack (2022) and summarised in Figure 2. As discussed, climate change and environmental degradation can have immediate impact on vulnerable groups and vice versa. By threatening the livelihoods and assets of vulnerable groups, climate change and environmental degradation can have adverse impacts on social equity and contribute to intra-society conflicts and tensions. Social inequity and exclusion from economic opportunities limit the capacity of vulnerable groups to protect themselves from the effects of environmental change. Although not a panacea, IGF can play an important role in supporting vulnerable groups in adapting to global environmental change and strengthening their resilience. Likewise, IGF can facilitate mitigation action of vulnerable groups while supporting their economic opportunities. Moreover, the physical impacts of (unmitigated) climate change, as well as disruptions caused by a disorderly transition, pose material risks to financial stability. Central banks and supervisors therefore need to address both environmental and social risks to the stability and functioning of the financial system through prudential policy and by supporting IGF.

FIGURE 2 THE LINKS BETWEEN CLIMATE CHANGE AND ENVIRONMENTAL DEGRADATION, VULNERABLE GROUPS, SOCIAL INEQUITY AND TENSIONS, AND FINANCIAL STABILITY



Source: Volz et al (2020).

3 A POLICY FRAMEWORK FOR INCLUSIVE GREEN FINANCE

Financial regulators, supervisors and government finance executives have various tools at their disposal to turn the concept of IGF into actionable policies. In harnessing the synergies between green finance and financial inclusion, they can help improve the livelihood of low-income households and the business prospects of MSMEs, while simultaneously contributing to climate change adaptation and mitigation. This section lays out the key elements of a policy framework for IGF. A more encompassing development of this framework along with a wealth of policy examples can be found in Volz et al. (2020).

Scaling up IGF has two main policy purposes as discussed in Section 2: adaptation and mitigation. When approaching the spectrum of financial inclusion policies that serve green purposes, it is useful to distinguish between direct and indirect measures. The latter are designed to shape the market in ways that let private actors develop and offer services that increase financial inclusion. Rather than intervening directly, the state lays out market rules and incentive structures that guide business operations in a desirable direction. In contrast, direct interventions encompass all policies where the state is the protagonist, dedicating its own capacities and budgetary resources towards fostering financial inclusion, or requiring financial institutions to support specific activities. Implementing effective IGF policies along these lines reveals a 2x2 matrix (Figure 3) that can help policymakers to structure and sharpen their thinking about this important new policy area.

FIGURE 3 A POLICY FRAMEWORK FOR INCLUSIVE GREEN FINANCE

		Inclusive finance	
		Market-shaping policies	Direct interventions
Green finance	Adaptation to environmental change & enhancing resilience	Implement regulatory enablers for mobile money, microinsurance and other resilience-supporting (digital) financial services. Enact ESRM guidelines that incorporate environmental and social risks. Awareness-raising and capacity building measures for financial institutions. Green finance taxonomies for MSMEs and smallholder farming. Consumer protection, awareness-raising and capacity-building measures for vulnerable end-users.	(Digital) cash transfers to disaster affected. Subsidies or guarantees for credit to invest in adaptation / resilience-enhancing activities. Directed credit / sectoral credit targets.
	Mitigation of environmental change	Regulatory enablers for Pay-as-you-go solar and water. Prudential rules that incentivise credit to green MSMEs or sustainable agriculture. Enact ESRM guidelines that incorporate environmental and social risks. Awareness-raising and capacity-building measures for financial institutions. Guidance and incentives for inclusive green FinTech innovation.	Subsidies or guarantees for credit to invest in new resource-efficient / low-carbon practices / technologies. Directed credit / sectoral credit targets.

Note: ESRM = environmental and social risk management.

Source: Volz et al. (2020).

Market-shaping policies for IGF are designed not just to prepare the private sector to offer financial services for green projects that also support vulnerable groups, but to also create the right incentive structures as businesses compete in delivering those services. Financial inclusion can enhance resilience and adaptation in the ways outlined in Section 2, but only if and when policymakers implement regulatory enablers to a thriving market in digital payments, mobile money, and the second- and third-generation services that build on this infrastructure. Financial inclusion experts have distilled years of policy research to identify four regulatory enablers that are key for digital financial services to thrive: non-bank e-money issuance, use of agents, risk-based customer due diligence, and consumer protection (Staschen and Meagher 2018). The latter is particularly important

for vulnerable populations: unfettered growth of a poorly regulated digital financial services market can leave economic agents exposed to monopoly pricing and predatory lending on top of environmental degradation, rather than increasing their resilience and adaptive capacity.

Similarly, policymakers can harness market forces to overcome the financing bottlenecks that prevent many economic agents from investing in climate change mitigation. For example, they can provide an enabling environment for the market entry of pay-as-you-go providers of climate-friendly technologies, which low-income households or MSMEs would not otherwise be able to afford. Moreover, regulators can adjust prudential risk weights in ways that incentivise lenders to provide credit for green products and services. Along the same lines, regulators in Nepal, Paraguay and elsewhere have enacted environmental and social risk management (ESRM) guidelines to proactively assess and address the environmental and social risks of financing decisions, steering them away from environmental degradation and towards greener, socially beneficial economic activities. Since 2014, Bangladesh Bank, for example, requires commercial banks to dedicate at least 5% of their loan portfolio to green projects.

There is a thin but conceptually relevant line between this kind of regulatory treatment and *direct intervention* in the market. In many jurisdictions, the executive branch of government provides the authority (and budget) for such direct interventions, whereas central banks and regulatory authorities tend to focus on market-shaping policies under their prudential supervisory mandate.

The primary government policy to enhance the resilience of populations vulnerable to the impacts of environmental change is to weave a social safety net that can encompass a variety of transfer schemes. Governments can also foster IGF by providing subsidies or guarantees for credit to activities that help vulnerable populations adapt and enhance their resilience to environmental change. Credit guarantees in Nigeria and Ghana, for example, are designed to secure credit to smallholder farmers subject to climate risks. The State Bank of Pakistan, among others, offers concessional loans for solar and wind energy projects through its refinancing facility. Regulators in Sri Lanka, Vanuatu, Fiji and the Philippines have established special credit facilities for post-disaster recovery (Volz et al. 2020). Policymakers have the opportunity to explore a self-reinforcing cycle here: state support and preferential rates for green financing make financial access attractive for hitherto excluded populations, and growing financial inclusion can help the government cast a wider net to steer the economy towards environmentally sustainable activities.

4 THE ROLE OF INCLUSIVE GREEN FINANCE IN SUPPORTING SUSTAINABLE RECOVERIES

The Covid-19 crisis has highlighted how vulnerable the global economy is to natural disasters. At the same time, it has shown that people can harness financial services, especially in digital form, to better deal with adversity and economic hardship. Mobile money payments surged across sub-Saharan Africa as friends and families supported each other during the lockdowns caused by the pandemic (Carboni and Bester 2020, Njogore 2020). Governments around the world took advantage of previous financial inclusion efforts as they channelled emergency support transfer to vulnerable populations using branchless agent banking networks and digital channels. These financial networks between individuals and between people and the government can be expected to be as useful in enhancing resilience and supporting recovery after future natural disasters as they have been during the pandemic.

While the global pandemic has helped to spur financial inclusion, it has also provided an urgent reminder that much more work remains to be done. Financial networks can only be leveraged meaningfully for recoveries if all vulnerable populations have access. There is a risk that policymakers, in the wake of a climate-related crisis, become reticent to reach the financially excluded, because directing emergency funds through digital financial networks can be so much more cost-effective than alternative channels. Such behaviour would exacerbate existing inequalities along the lines of income, education, gender and location because financially excluded parts of the population are also likely to be those most in need of state support in the wake of a natural disaster.

By exploring the synergies between green finance and financial inclusion, policymakers have the opportunity to direct financial flows in ways that (1) address equity concerns and (2) facilitate a transition to a low-carbon economy, all while (3) safeguarding financial stability. Only when financial policy reflects and incorporates all three of the above goals can economic recovery become a catalyst in a larger process of a just transition to an environmentally sustainable economy.

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CHAPTER 12

Harnessing the potential of digital finance for financing sustainable development

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1 INTRODUCTION

Many emerging and ‘frontier’ markets are leading the way in the new world of digital finance. Companies at the forefront of innovation in these markets are experiencing higher acceptance of their new approaches, as well as tolerant regulators who see them as a potential remedy to enhance financial inclusion in the face of a low penetration of traditional banking and insurance solutions. Limited capital market and financial services infrastructure makes these markets fertile ground for digital finance innovation. Digital technologies – including artificial intelligence (AI), distributed ledger technologies (DLT) and the internet of things (IoT) – are particularly well suited to address the barriers specific to emerging markets to scaling up finance for sustainable infrastructure and other critical areas of development. The core capabilities of digital finance can enable emerging markets to reinvent how capital market infrastructure and instruments are built to be responsive to the specific financing needs of companies in emerging markets, as well as the needs of the local investor base.

Most companies in emerging markets are family-owned SMEs, including small farming businesses, which are often only able to present patchy or incomplete financial data, but also need a historical track record to raise finance. At the same time, many citizens capable of micro-investing or emerging institutional investors are searching for different asset classes to allocate capital. Embedding technology into the fabric of capital markets allows for the design of both infrastructure and capital market instruments that respond well to the structures of many emerging and frontier economies. In economies in need of capital market infrastructure, there is a strong case for allowing listing requirements to be open to smaller issuers at low costs and enabling efficient aggregation of millions of micro-investors in a simple and accessible online user experience. Furthermore, data service providers that are active in capital markets can play a role in aiding institutional investors to mitigate the perceived high investment risks in these markets by leveraging

cutting-edge technologies, such as earth observation data, to enhance information and add a track record to relevant assets, and for retail customers to inform risk profiles and investment strategies.

However, various challenges may arise when embarking on using digital technology to reinvent financial market design processes in emerging markets that tend to have weaker governance and lower institutional capacity to regulate the digital finance solutions, which can lead to consumer protection risks, concentration of power in a few large platforms, data privacy and cyber security risks and more.

This chapter highlights the opportunities as well as the risks of digital finance in mobilising capital to support sustainable development in emerging markets. Section 2 will discuss opportunities for digital approaches to leverage sustainable finance by enlarging the investor base through digital capital market infrastructure and digital bonds, by increasing the supply of green and transition assets through digital data and asset aggregation, and by building a historical track record of retail customers and assets to unlock green finance. Section 3 will discuss risks and challenges. The final section will conclude.

2 OPPORTUNITIES FOR DIGITAL APPROACHES TO SCALE UP SUSTAINABLE FINANCE

Building financial market infrastructure in an environment where digital technologies are maturing, with some ready to move from prototypes to scaled solutions, offers emerging markets an opportunity to not just emulate and copy the financial market design of advanced markets, which in most cases also relies on an established legacy financial system, but to leapfrog into a system design that is digitally enabled and responding to the financing needs of their economies. This section focuses on three of the numerous possible avenues to leverage digital technologies to redesign financial market infrastructure and instruments to scale up sustainable finance in emerging markets.

2.1 Enlarging the investor base through digital capital market infrastructure and digital bonds

Given the urgent need to scale up investments in sustainable infrastructure to foster a low-carbon transition, many countries with underdeveloped capital markets face significant challenges mobilising domestic resources for infrastructure investment. Without innovative fundraising approaches, emerging markets stand to face significant challenges achieving their own sustainable transition efforts. Italy's inaugural green bond issuance in 2021 was larger than all emerging market sovereign green bond issuances in 2020. At the same time, the UK has installed more capacity of solar photovoltaics than the entire continent of Africa. Local capital will have to play a bigger role in closing the

financing gap for sustainable infrastructure to meet the Sustainable Development Goals (SDGs) and stay on a path to net zero by 2050 that is estimated to amount to roughly \$2.6 trillion annually through 2030 (Donovan 2021).

In many emerging markets, a ‘mobile first’ approach can be observed, under which access for consumers as well as SMEs to capital markets can naturally happen through a mobile interface, with assets stored in a digital wallet. In contrast, many people in advanced economies and markets still have to build confidence in using these practices that are often widely used in emerging markets. A digital wallet (a financial transaction application that runs on mobile devices, securely storing payment information and passwords) is a tool that plays a key role in unlocking greater access to capital, borrowing, investment and insurance. Furthermore, the low levels of credit card penetration in emerging markets have paved the way for the adoption of digital wallets as the primary avenue for people to financially connect. About 1.4 billion adults are unbanked (World Bank 2021), but approximately 84% of the world’s population has a smartphone and 92% of people own mobile phones today.¹ This far-reaching dissemination of mobile phones highlights the opportunity for the 1.4 billion unbanked people with mobile phone ownership to place even small amounts of savings into the most secure asset class in the world, namely, government securities, if supply is available.

Building on this digital financial infrastructure, first service providers, often supported or even initiated by central banks, have started to develop approaches using mobile phones to provide investment opportunities in capital markets for people who previously had neither the means nor the expertise and access to invest in securities. Most famously, the Government of Kenya (under the National Treasury, administered through the Central Bank of Kenya) launched the M-Akiba project to raise funding for infrastructure projects by issuing retail bonds that could be bought by small-scale individual investors on their mobile phone.² In 2017, the first M-Akiba (which means ‘M-Savings’ in English) bond raised KSh247 million (US\$2.47 million). In 2022, the Central Bank of Kenya launched a new and more user-friendly M-Akiba platform (Okoth 2022). In a similar project called Treasury Mobile Direct,³ the central bank allowed users in 2020 to buy treasury bills and bonds on their phone.

More recently, having explored the technological feasibility of green bond tokenisation, a use case has been developed by the Bank for International Settlements (BIS) Innovation Hub in Hong Kong in collaboration with the Hong Kong Monetary Authority (HKMA). This was done with the aim to concept test a government-issued digital asset for the retail market in Hong Kong to improve investor participation by streamlining the bond issuance and lifecycle process while allowing a smaller minimum allocation size. The developed prototype enabled the issuance of assets directly to the retail market. It also

1 Source: <https://www.bankmycell.com/blog/how-many-phones-are-in-the-world>

2 <https://www.treasury.go.ke/916-2/>

3 <https://www.centralbank.go.ke/tmd/>

tested the processes for direct secondary market exchanges among retail investors, utilising the underlying ledger infrastructure to introduce greater liquidity for retail green bond investors (BIS Innovation Hub 2021a).

Chen and Volz (2022) have proposed blockchain-based project bonds as an asset to raise finance through a digital crowdfunding platform, which is also able to transparently record and certify the use of proceeds, sustainability impact and the revenue streams of projects. This approach would introduce a project management tool, provide investors with the opportunity to purchase local-currency assets, and enable issuers to raise funds for sustainable infrastructure investment. Monetary and financial authorities, as well as national and multilateral development banks, can play a key role in supporting or even instigating these initiatives and in then further developing and scaling these approaches to complement conventional capital markets and mobilise financial resources for sustainable infrastructure investments.

Emerging markets can build on the lessons learned from these prototype projects in order to create the regulatory framework to encourage and supervise the tokenisation of bonds and shares to unlock the local investor potential of the broader population. Today, 85% of the world's population would have to save for more than two years to be able to afford a share in each of the top five market capitalisation companies (Tummala et al. 2020). Government securities are equally inaccessible to the 1.4 billion unbanked, as well as to lower-income groups in jurisdictions with minimum investment requirements (World Bank 2021). In many jurisdictions, the investment process can also be daunting and too complex for many to engage, contributing to the barriers that prevent citizens in emerging markets from investing in green assets.

Against this background, the tokenisation of bonds and shares can enable citizens in emerging markets to become investors with smaller amounts of savings and via digital aggregation of these micro-investments to raise additional sustainable investment capital. This would not only have the added benefit of unlocking more local currency capital, but it would also diversify the investor base from mainly foreign to also local. In addition, this helps to shift accountability and interest payments from exclusively being a relationship between the government (for government securities) and foreign creditors to also becoming a relationship between the government and the national population.

Furthermore, central bank digital currencies (CBDCs) are emerging as key elements of the digital financial infrastructure needed to enable the design of the capital market infrastructure and instruments that can enable the launch of tokenised bonds and fractionalised shares. CBDCs can enable the end-to-end digitisation of a green (or other sustainable) bond, including for payments and settlement on-chain. In addition, CBDCs can play a role in facilitating remittance flows to unlock additional sustainable investment capital (Dikau et al. 2022).

2.2 Increasing the supply of green and transition assets through digital data and asset aggregation

A global comparison of the availability of capital with the quantity of investable projects available living up to capital market requirements highlights a mismatch between an abundance of capital and a lack of sufficiently large and mature green projects, especially in emerging market economies. This supply-and-demand imbalance can act as an important barrier to scaling up green financing and investment in emerging market economies. Digital technology can be leveraged to innovate additional pathways to loan pipeline development, focusing on leveraging digital data to unlock access to green and transition finance for SMEs and smaller assets, which tend to make up the bulk of assets in emerging economies. In Africa, SMEs provide an estimated 80% of jobs across the continent (Runde et al. 2021), while in the Asia-Pacific region, MSMEs comprise 97% of all enterprises and employ 69% of the total workforce (ADB 2020).

According to a recent SME Climate Hub survey, SMEs are already making efforts to cut their greenhouse gas emissions (Jouven and Schmidt 2022). However, only 60% of SMEs have a long-term emissions reduction plan in place. The most common barrier to climate action by SMEs is a lack of resources, with 68% of surveyed businesses citing it as a concern. The lacking resources can be personnel, knowledge, or time to dedicate to the issue. The second-most common reason cited is lack of funding (Jouven and Schmidt 2022).

Digital technologies hold the potential to innovate in the mitigation of this financing gap by reducing transaction costs of SME carbon accounting, thereby enabling the structuring of green or green-transition SME credit. To enable this shift, it is key for banks and financial technology companies to start digitising carbon- and environment-related SME data points as part of the credit assessments process. In jurisdictions with open banking infrastructures and carbon inventory data, SME emissions accounting is already conducted using automated approaches for SMEs. A combination of transaction data available through open banking application program interfaces (APIs) and carbon inventory data has given rise to new digital solutions based on algorithms that can directly assess SME expenditure data from banks. With these data, it is possible to automatically classify every purchase of goods from a sector based on supplier codes and to finally automatically ascribe a carbon footprint based on the size of the purchases and the sector's emission averages.

These technology-enabled solutions can allow SMEs to access the carbon footprint of their operations and, at the same time, offer banks the data needed to design SME loans that link interest rate rebates to carbon reductions or to significant contributions to climate change mitigation or adaptation. Furthermore, these data sets can enable banks to identify patterns, provide businesses with actionable insights on how to transition to carbon-lighter expenditures, and identify the exposure to carbon-intensive business practices and the associated financial risks. Currently, the transaction data made

available by open banking are based on merchant codes, and not available for specific items purchased on online platforms or in shops. If open banking was to offer businesses an opportunity to share more granular (product-level) transaction data, then automated business carbon (and eventually also nature) footprints would become more accurate, based on real behaviours rather than on modelled sector averages. This would also enable banks to offer more precise and granular advice on transition pathways.

If this kind of product-level digital carbon inventory data are made available, it could also be leveraged by banks to aggregate SMEs with similar green transition needs for the issuance of digital SME climate transition bonds. A digital bond could be linked to changes in, for instance, transitioning the energy mix of SMEs, with the use of proceeds tied to, for example, solar installations or the electrification of transport fleets. The application of DLT to transition bonds could also enable issuance in various sizes. For DLT-issued bonds, there would be no difference in costs between a \$10 investment and a \$10 million investment (SDFA and HSBC 2019), enabling capital market instruments to better respond to the needs of emerging and frontier markets, where most green projects and assets are too small for traditional bond issuances.

2.3 Building a historical track record of retail customers and assets to unlock green finance

Credit to small-scale farmers and retail customers in emerging markets was for decades perceived as high risk and associated with high transaction costs by the incumbent financial services industry. Digital automation has already significantly reduced the transaction cost of financial services by allowing firms to harness economies of scale that make financial inclusion a profitable endeavour, rather than a regulatory requirement to be met (Knaack and Volz 2022). Non-banks, including mobile network operators and BigTech, appear to have done much more to foster financial inclusion over the past decade than traditional financial services providers by extending financial services through extensive agent networks and affordable mobile phones, exploiting platform economics, artificial intelligence and big data analytics in ways that traditional providers cannot (Osafo-Kwaako 2018).⁴

A next step for scaling up investments in green and transition finance in emerging markets could lie in leveraging digital technologies to create a track record covering the historical operations of firms and adding this background information on firms' underlying operations to the related assets. For example, earth observation and sensor data can be used for this process. The lack of a historical track record of most firms and the related assets, including yields and productivity of small-scale farmers, means that commercial lending or investment options are seldom available due to high perceived and real risks increasing the cost of capital. Concerning small-scale farmers, for example, the financial

4 See also the discussion on inclusive digital finance by Knaack and Volz (2022) in this book.

sector meets less than 3% of total smallholder demand for financing, which is estimated to amount to \$450 billion (Hong and Hanson 2016). Earth observation and sensor technologies hold great potential to deliver data inputs and inform the credit assessments of farmers, taking into account historical exposure to climate risks stemming from droughts and floods, the risk forecasting and the assessment of business plans relating to farm patterns of yield and productivity. The use of earth observation technologies has already been adopted by ‘insuretech’ (insurance technology) companies, enabling them to offer insurance products such as weather index insurance. Index insurance services require historical datasets to create and operationally run indices. However, limited weather station coverage across emerging and developing countries means that rural weather data are often unavailable, causing problems for risk models that require at least ten years’ of data from the monitoring source. The increasing affordability and accessibility of satellite data have resulted in better coverage, more extensive historical data and access to near real-time weather data (GSMA 2020). This has also empowered farmers with data on their climate-related risk exposure and insurance options to increase resilience in the face of this risk. Emerging markets can further strengthen capabilities in the financial and fintech sector to leverage a mix of satellite imagery, AI, the IoT and big data analytics to leapfrog the building up of historical data sets by enabling the use of technology to engineer a missing historical track record of firms’ activities. Some of these datasets are made publicly available through the EU Copernicus open source satellite data by the European Space Agency (ESA) as well as the NASA Landsat datasets of the US, but also datasets from Google Earth Engine.

3 RISKS AND CHALLENGE

Digital finance can be associated with its own problems and challenges, ranging from weak and vulnerable digital infrastructure, the limited robustness of systems, data protection issues, and the use for fraudulent activities, to the adverse environmental impacts of technology and digitisation (e.g. energy use of cloud computing and environmental impact of critical minerals, including rare earth mining and processing). Furthermore, in emerging market and developing economies where digital banks have fertile ground to rapidly scale up their operations, risks for financial stability become relevant, with potential systemic implications. These so-called ‘neobanks’ that operate exclusively online without traditional physical branch networks are exposed to risks stemming from their traditionally uncollateralised consumer lending business, which tends to be vulnerable to losses due to limited buffers.

Furthermore, cryptocurrencies are increasingly recognised as speculative assets that, in many cases, are used to facilitate money laundering, ransomware attacks and other financial crimes. Bitcoin in particular has been subject to public and regulatory scrutiny, resulting in criticism for the lack of public interest attributes, as well as criticism of its wasteful energy footprint (BIS 2021). CBDCs are emerging in response to these shortcomings as they provide a safe and public digital financial infrastructure that also

has the potential to enhance sustainable digital finance. While the potential of CBDCs to increase and support financial inclusion and facilitate international payments has already been explored (BIS Innovation Hub 2021b, BIS, 2022), the potentially important role of CBDCs in contributing to scaling up green finance remains under-researched.

Furthermore, addressing limited financial and digital inclusion is a major obstacle not only to reducing vulnerabilities and creating opportunities through microfinance and insurance, but also to scaling up sustainable finance. There is still a significant usage gap of 3.2 billion people in 2021, or 41% of the global population, relating to a lack of affordability, relevance, knowledge and skills, in addition to safety and security concerns. Digitisation can be a key lever in addressing financial inclusion, with operators' investments in network infrastructure over the last decade having helped to shrink the coverage gap for mobile broadband networks from a third of the global population to just 6% (GSMA 2022).

These challenges will have to be addressed to leverage digital capabilities to scale up sustainable finance. Emerging market central banks, supervisors and policymakers can play a critical role in supporting the development of digital sustainable finance infrastructures. While for some, the challenges lie in having to mitigate possible unintended consequences and risks of digitisation to consumer protection and financial stability, others play a foundational enabling role and are dealing with basic infrastructure and financial or digital inclusion-related challenges reflected in an underdeveloped digital infrastructure.

4 CONCLUDING REMARKS

Emerging markets have the opportunity to leverage digital technology to make banking and capital markets fit to deliver on the sustainable financing needs of their economies. Market readiness to pursue the three described avenues towards capital market innovation varies across jurisdictions, depending on coverage of mobile connectivity, regulatory and supervisory capabilities and frameworks, and capacity of the financial services sector to manage tech-driven capital market development processes. However, emerging market regulators and policymakers can play a role in assessing and building the tech-enabled financial market architecture best suited to support the sustainable financing needs of the economy, thereby also outlining the required combination of technologies and data. The pathway to implementing digital sustainable finance solutions can be formalised as part of a roadmap, which could either follow an 'all-in' approach under which all digital components are built at once or a 'step-by-step' approach that envisions one or more modules being implemented over time.

Many emerging market jurisdictions already implement one or more of the approaches described above, or at least different components of them. For instance, open banking, as an enabler of access for SMEs to green finance through automated SME carbon accounting, is either being proposed or rolled out across emerging markets. Even though it

is not necessarily happening with a green finance objective, sustainability could be added later into the established open banking roadmap. In Africa, open banking is part of the recent Kenyan payment directive, and the Nigeria central bank has issued open banking guidelines. In these two jurisdictions, less emphasis is given to access to accounts; instead, a greater focus lies on open APIs that allow the integration of mobile money networks and financial institutions. However, both approaches offer the opportunity to link transaction and carbon emission data. Getting the infrastructure ready for capital markets to link these data sets will be key to unlocking the discussed potential, which is something regulators and policymakers can strategically work towards. Bringing this explicit sustainability perspective into capital market digitisation strategies will have to be a next step for emerging markets in order to leapfrog advanced economies by aligning financial market architecture with the sustainable financing needs of local economies.

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PART II: REGIONAL AND COUNTRY CASE STUDIES

CHAPTER 13

Scaling up sustainable finance and investment in the Global South: The case of Latin America and the Caribbean

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1 INTRODUCTION: CLIMATE CHANGE TRANSITION IN LATIN AMERICA AND THE CARIBBEAN

Climate change poses a substantial threat to sustainable development, globally and in Latin America and the Caribbean (LAC), through a variety of physical and economic impacts, many of which are associated with a great deal of uncertainty. LAC is the second most disaster-prone region in the world. Some 152 million people were affected by 1,205 disasters between 2000 and 2019 (OCHA 2020). The majority of the events are related – in frequency and intensity – to climate change, including tropical storms and hurricanes, droughts and floods.¹ Tropical storms and hurricanes have affected mostly Mexico and the Caribbean states, with 110 storms since 2000 causing US\$39 billion in damages and 5,000 deaths. The majority of these occurred in Haiti – the country with the highest vulnerability due to lack of adaptive capacity. Droughts have mostly affected the Andean zones of Ecuador, Peru and Bolivia as well as northeastern Brazil and the Central American Dry Corridor,² and have caused more than \$13 billion in damages and affected 53 million people. Floods are the most common disaster in LAC, with 548 occurring since 2000 with a very high geographical dispersion. Despite the relatively low death toll directly associated with floods, they have affected almost 41 million people and caused almost \$26 billion in total damages (OCHA 2020).

LAC contributes less than 10% of total greenhouse gases (GHGs), although per capita GHG emissions in the region are in line with global averages (WRI 2022, ECLAC 2014). Regional GHG emissions are concentrated in the energy system (including power generation, transportation, and industrial uses of energy), the food system (including agriculture and land use change), waste management, and industrial processes. Historically, emissions from deforestation and agriculture have been relatively

1 The other major type of disaster affecting the region but not related to climate change are earthquakes.

2 Guatemala, Nicaragua, El Salvador and Honduras.

more important in the region than in the rest of the world, but this could change as LAC is experiencing faster-than-average growth of sales of private cars and is investing heavily in natural gas.

As the region needs to invest alongside the rest of the world towards its decarbonisation, the human and financial toll imposed by climate change can be mitigated with significant investments in resilience and adaptive capacity. Investing in resilience would yield four times higher returns than its cost in terms of avoided costs from natural disasters and incentives to attract private investments, while the Inter-American Development Bank (IDB) estimates that a 1% increase in a country's score in the Index of Governance and Public Policy in Disaster Risk Management (iGOPP) corresponds to an average reduction in fatalities of 3% and a reduction in economic losses due to natural disasters of 6% (Delgado et al. 2021).

Financial flows in the region are currently insufficient to meet the climate goals. Public and private financial flows need to be increased and redirected in a way that is consistent with a resilient, net zero emissions economy, while meeting the region's increasing infrastructure services needs considering the necessity of reducing emissions and adapting to a changing climate. Governments of the region need to find between 7% and 19% of GDP via green fiscal reforms and removal of fossil fuel subsidies to redirect funds towards the provision of sustainable infrastructure services (2–8% of GDP) (Serebrisky 2014, Rozenberg and Fay 2019, Cavallo and Powell 2021) and the funding of social spending in light, as well, of climate vulnerabilities (5–11% of GDP) (Galindo Paliza et al. 2022).

There are more than \$1.2 trillion in climate-smart investment opportunities with the potential to create between 22 and 27 million new jobs in green sectors (more than 15 million net jobs considering losses in sectors not aligned to the net zero transition) (IFC 2021, Saget et al. 2020). These investments span the spectrum of sustainable development to meet the region's need for clean water and sanitation services (\$582 billion in investments), for clean energy and energy efficient construction (\$278 billion), for sustainable transport (\$33 billion) and for sustainable food production (\$170 billion).

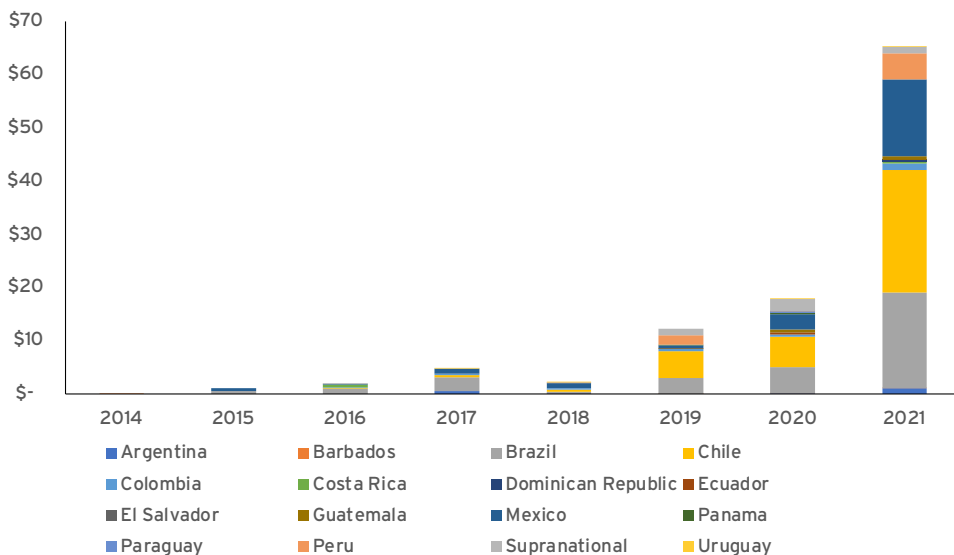
Against this backdrop, this chapter reviews the challenges and progress so far in the greening of the finance market of the region, starting with the evolution of sustainable capital markets and financial institutions in LAC (Section 2), and then reviewing the regulatory and supervisory response from governments, central banks and regulators (Section 3). Section 4 concludes.

2 SUSTAINABLE FINANCE MARKETS IN LAC

LAC still represents a small portion of the \$2 trillion global labelled green bonds (as per mid-2022), with about \$40 billion issued in the LAC green bond market since 2014 and bought by international and local investors (CBI and IDB 2021). Despite sustainable bond issuances in the region doubling in size between 2019 and 2021, the market overall remains very uneven and highly concentrated, with about 80% of all issuances originated in just four countries – Brazil, Chile, Colombia, and Mexico – and only 14 countries having seen thematic bond³ issuance (Figure 1) (IDB Green Bond Transparency Platform 2022)

Green and sustainable bonds have proven effective in attracting international capital to the region’s sustainable investment opportunities, while also emerging lately as an instrument for domestic investor mobilisation. About 70% of the issuance (in volume) has been in hard currency (mostly US dollars) and went predominantly to international investors; the remainder of the issuance volume was in local currency and has increasingly been bought by local investors. In terms of the number of issuances, local currency issuances are much more prominent – for every one hard currency issuance, there are two local currency issuances. Given this trend, domestic investors gain in importance (CBI and IDB 2021).

FIGURE 1 LAC THEMATIC BOND MARKET (US\$ BILLIONS)



Source: IDB Green Bond Transparency Platform (www.greenbondtransparency.com).

3 Thematic bonds here include green, social and sustainable bonds as well as sustainability-linked bonds.

On the issuer side, the private sector and corporates have been driving the market, with the notable exception of just two sovereign issuers – Chile and Colombia – that have been able to develop issuance programmes of significant size (Ministry of Finance of Chile 2022b, Ministry of Finance of Colombia 2022). Contextually, the role of development financial institutions has been decreasing over time – now at 14% of the region’s market share, down from 18% in 2019 – while local government issuance remains limited to a handful of entities in Mexico and Argentina, given the strict fiscal discipline at the sub-national level in most countries in the region (CBI and IDB 2021).

The surge of sovereign issuance across the spectrum of thematic bonds – green, social and sustainable – has been a notable development in LAC sustainable finance markets in the past few years, since the inaugural Republic of Chile sovereign green bond issuance in 2019. Public sector issuers together account for about 30% of the total green bond issuance, with five countries in the region – Chile, Mexico, Guatemala, Ecuador and Colombia – having piloted the issuance of sovereign sustainable bonds, approaching capital markets to finance public expenditures towards low-carbon and climate-resilient goals (Chile and Colombia), social and affordable housing (Ecuador), social spending to mitigate the impacts of Covid-19 (Chile, Guatemala), and spending to reduce social inequality and development in the most vulnerable areas (Chile and Mexico) (CBI and IDB 2021). The successful issuance of sovereign thematic bonds in the region has been driven by a few important benefits this instrument brings to treasurers in the Global South: diversification of the investors’ base, direct mobilisation of investment capitals towards green and sustainable activities, and support for the creation of sustainable capital markets (Frisari 2019).

Since its inaugural issuance in 2019, the Republic of Chile quickly has quickly become the largest issuer of sustainable bonds in the region, with a cumulative volume of around \$36 billion in green, social, sustainable and sustainability-linked bonds. More importantly, **Chile’s sustainable bonds now represent a quarter of the total outstanding bonds for the country**, highlighting how thematic bonds are a core financing instrument for this issuer (Ministry of Finance of Chile 2022b). Furthermore, with the issuance of the first (global) sovereign sustainability-linked bond (SLB) in March 2022, Chile showed that in addition to monetising sustainable public expenditures and infrastructure spending, sustainable bonds can also be instrumental in monetising sustainable policies and national commitments (such as the Nationally Determined Contribution, or NDC, set by the country under the Paris Agreement).

Another key example is Colombia, with the inaugural sovereign issuance in September 2021, repeated in October 2021 and again in the second trimester of 2022. **Differently from many emerging countries, Colombia issued its sovereign green bonds in local currency for the domestic market (called Green TES) through a twin issuance with**

conventional bonds (TES).⁴ The twin issuance model – piloted by the German Federal Government in 2021 with the aim to overcome investors’ concerns over green bonds’ liquidity due to their smaller issuance size⁵ – was chosen both to promote the growth of the nascent sustainable investment national industry as well as to increase the presence of foreign investors in Colombia’s domestic market. Indeed, the first green issuance saw a share of foreign investors participating that was approximately twice the share for conventional bonds, with a total of \$200 million capital raised (Ministry of Finance of Colombia 2022).

Beyond capital markets, financial institutions in the region have been making some progress in the transition towards sustainable finance, and more specifically in integrating low-carbon and climate-resilient practices in their operations. However, compared to international investors that are active in the region, domestic ones show significant lower resources (human and financial) allocated to sustainable investing as measured by ESG policies in place, staff dedicated to sustainable investments, and reporting mechanisms (Frisari et al. 2020). On climate-related disclosure, the region has shown interesting progress, with the percentage of companies⁶ reporting on sustainable issues increasing from 11% in 2018 to 26% in 2020 (Table 1), surpassing the reporting percentages of North America. This is thanks to the efforts of the region’s regulators and supervisors in integrating promptly in their reporting requirements the frameworks for sustainability reporting currently being developed at global level, such as the Recommendations from the Task Force for Climate Related Disclosures (TCFD) published in 2017, which are now received as reference by regulators in Brazil, Chile, Colombia (and many more globally), and integrated by the International Financial Reporting Standards (IFRS) into the recently announced International Sustainability Standards Board (ISSB) (TCFD 2021).

TABLE 1 TCFD REPORTING LEVELS BY REGION

Region	Average % by disclosure year			Pt Change '18-'20
	2018	2019	2020	
Europe	28	35	50	22
Asia Pacific	19	25	34	15
Latin America	11	18	26	15
Middle East and Africa	10	16	22	12
North America	15	16	20	5

Source: TCFD (2021).

4 When a bond is issued as a twin to a larger conventional bond (that is with the same financial characteristics of maturity and coupon), these green bonds could be traded and/or switched for their twin conventional bond in case of liquidity needs in the secondary market.

5 <https://www.deutsche-finanzagentur.de/en/federal-securities/types-of-federal-securities/green-federal-securities/>

6 The sample population includes all companies in eight industries selected by the Task Force on Climate-Related Financial Disclosures based on the availability of financial reports (in English) and a minimum \$1 billion in reported revenues.

3 REGULATORY AND SUPERVISORY SIGNALS

A combination of regulatory, supervisory and voluntary practices has helped to advance the transition of financial markets in Latin America towards sustainable finance, albeit with significant differences across countries. Up until 2019, only a handful of countries in the region had made efforts towards the transition to greener financial markets. Brazil, Peru and Paraguay were the only ones with financial regulation ‘explicitly’ addressing sustainability concerns (mostly social and environmental risks), with the majority of the countries in the region focused on awareness raising and supervisory activities to integrate climate change concerns as either risk and/or opportunity, and/or with financial institutions’ self-regulation initiatives such as the Green Protocols in Brazil and Colombia, the Public-Private Sustainable Finance Roundtable in Argentina, Chile and Panama, and the Sustainable Committees for banks and capital markets in Mexico, among others (Frisari et al. 2019).

Regulatory and supervisory action has increased noticeably in the past couple of years, along with the engagement of more public and private sector institutions in the sustainable financial dialogue at the global and regional levels, as well as the development of sustainable finance taxonomies, climate risk management practices and significant revisions to reporting and disclosures frameworks (Figure 2). On engagement, several institutions in the region have actively joined the global dialogue and international initiatives for the development of green finance standards and practices, such as the Central Banks and Supervisors Network for the Greening of the Financial Sector (NGFS), which today counts more than 15 members from the region,⁷ and the Sustainable Banking Network, which counts as members several banking associations and regulators from LAC.⁸ To foster a regional dialogue as well participation in a global one, the IDB Group has created a regional Network of Regulators for Sustainable Development (*Red de Reguladores para el Desarrollo Sostenible*, or REDES),⁹ launched in 2020 in collaboration with the Association of Banking Supervisors of the Americas (ASBA), a regional platform for information and knowledge sharing known (the Green Finance LAC),¹⁰ and finally a platform to promote transparency and reporting (the Green Bond Transparency Platform).¹¹

7 As of August 2022, the NGFS members from LAC are: Central Bank of Argentina, Central Bank of Brazil, Central Bank of Chile, Central Bank of Colombia, Central Bank of Costa Rica, Central Bank of the Dominican Republic, Central Bank of Mexico, Central Bank of Peru, Central Bank of Paraguay, Central Bank of Trinidad and Tobago, Central Bank of Uruguay, Banking Commission of Mexico, Financial Market Commission of Chile, Financial Superintendency of Colombia.

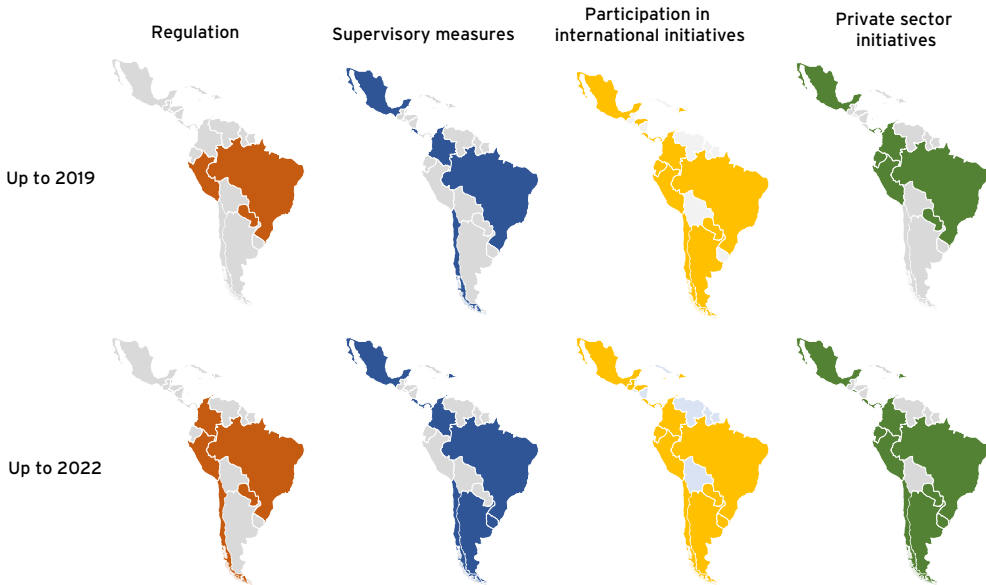
8 <https://www.sbfnetwork.org/membership/>

9 <https://www.iadb.org/en/financial-markets/redes>

10 <https://greenfinancelac.org/>

11 <https://www.greenbondtransparency.com/>

FIGURE 2 GREEN FINANCE INITIATIVES IN LAC



Source: Author's elaboration.

Private sector initiatives have continued to make progress through green agreements within financial institutions, and often with public sector engagement as well. Green protocols among banks have been the starting step for sustainable finance dialogues in Brazil, Colombia, Dominican Republic and Mexico. In Chile and Uruguay, instead, the public sector (governments, regulators) has convened Green Finance Roundtables, inviting key private and public institutions to discuss sustainability issues and, as in the case of the Green Agreement in Chile, to make mutual commitments towards the integration of environmental and climate concerns in financial policies, products and processes. Though different in nature and far from being regulatory conditions, protocols, agreements, and roundtables all represent efforts¹² to share awareness and capacities across financial institutions, as well as to get commitments from the different actors towards the implementation of new measures and the adoption of common principles and definitions related to sustainable finance.

Continuing in the footsteps of the European Union, which launched a sustainable finance taxonomy in 2020, several countries in the region (seven to date) have been working on the development of taxonomies, with Colombia and Dominican Republic being the first to publish their national taxonomies. Colombia's efforts culminated after two years of work and resulted in a taxonomy led by the Ministry of Finance and the Financial Superintendence (the financial regulator) that covers ten key sectors in the economy but, in contrast to the EU taxonomy, with a differentiated approach. For seven

¹² <https://greenfinancelac.org/es/recursos/novedades/el-ministerio-de-hacienda-lidera-la-presentacion-de-las-actividades-de-la-mesa-publico-privada-de-finanzas-verdes/> (in Spanish).

sectors of the economy (energy, water, transport, construction, telecommunication, manufacturing, and waste management), the taxonomy focuses on the contribution of economic activities to climate change mitigation, ensuring they do not cause any damage to other environmental objectives. For three sectors of the Colombian economy that rely specifically on the country's natural capital (agriculture, cattle ranching, and forestry), eligible activities will have to contribute positively to five environmental objectives: (1) adaptation to climate change, (2) conservation of water resources, (3) biodiversity, (4) contamination and pollution, and (5) the circular economy. Colombia's green taxonomy is already in its implementation phase, and will be crucial for the development of sustainable finance instruments (contributing to further expand the national green bond market). At the same time, the taxonomy will serve as a reference for the implementation of regulatory measures to avoid the risk of greenwashing and to increase transparency in monitoring and reporting of the environmental impacts of financial activities.

Brazil's financial institutions – and its central bank in particular – have long led the region in the integration of sustainability issues in the financial system, beginning with the introduction of the Forest Code in 2008 and then the responsibility principles for environmental risks for financial institutions (Res 4327 of 2014). The latter introduced the need for financial institutions active in the country to integrate environmental risks into their risk management processes and develop assessment and monitoring instruments proportional to the complexity of their operations (Frisari et al. 2019). On 1 July 2022, the Central Bank of Brazil launched its Sustainability Dimension,¹³ an extremely comprehensive agenda for the alignment of financial regulation to international best practices (NGFS and TCFD) covering climate risk assessment and management, financial incentives for green finance through collateral and liquidity management, and disclosures and reporting. A few elements of this package are worth highlighting. The new regulation makes explicit mention of climate-related risks, detaching them from the environmental risk category and hence expanding ESG concerns to include climate ones, thus adopting the TCFD distinction between physical and transition risks. The principles of differentiated and proportional responsibility are maintained and a few governance and institutional requirements for financial institutions are put in place, including the appointment of director in charge of ESG and climate policy, the creation of a ESG/climate committee, and making the board ultimately responsible for any ESG/climate risk mismanagement (Resultante ESG 2022). The agenda also integrates climate concerns in the mandatory disclosure and reporting requirements, making Brazil the first country in the region to announce (in 2020) a mandatory sustainability disclosure framework inspired by the TCFD recommendations (TCFD 2021).

Among the countries with the fastest advancement in sustainable finance, Chile is a very interesting case study, with significant leadership taken on the side of the public sector and regulators, and a progression from voluntary agreements

13 <https://www.bcb.gov.br/en/financialstability/sustainability>

to an established regulation on financial instruments, climate risk management and reporting. In 2019, facing lacklustre interest in sustainable finance from the Chilean financial market, the Ministry of Finance convened the various regulators and representatives of the financial industry for a public-private dialogue, *La Mesa de Finanzas Verdes*,¹⁴ with the aim of (1) creating shared awareness of the opportunities and risks for the financial system related to climate change, (2) making a first assessment of sustainable finance capacities in the market through a **survey** (Ministry of Finance Chile and IDB 2019), and (3) and striking a voluntary **Green Agreement** (Ministry of Finance of Chile 2019) within the sector towards coordinated action on sustainable finance. The activity of the *Mesa* was quickly followed by the publication of a climate change strategy (Comision para el Mercado Financiero 2020) by the Financial Market Commission (the regulator for banking, insurance and capital markets), which introduced in the context of Chilean regulation the need to assess and manage climate risks, the need to integrate existing ESG disclosures with climate-related information aligned with TCFD (now in the already revised Disclosure Resolutions 385 and 386), and the need to develop transparent definitions and taxonomies to limit the risk of greenwashing. Conversely, the Pension Funds Regulatory (*Superintendencia de Pensiones*) – another signatory to the Green Agreement – has introduced Regulation 276/2020, which asks pension fund managers to integrate ESG and climate considerations in their policies and investment processes, as well as in risk assessment systems (Asociacion de Auditores Externos de Chile 2021). Lastly, in 2022 the Ministry of Finance, the Ministry of Environment, the Commission for the Financial Market, the Superintendency of Pensions and the central bank convened again to form a Committee for the Preparation of the Foundational Elements of a Sustainable Finance Taxonomy, which will make its recommendations on the structure and core elements of the Chilean taxonomy by the end of 2022 (Ministry of Finance of Chile 2022a).

Finally, **Mexico presents an interesting case of parallel progress between the public and private sector.** Except for the disclosure requirements from the Securities Exchange Commission, which ask all companies listed on the Mexican Stock Exchange (*Bolsa Mexicana de Valores*, or *BMV*) include a detailed description of their environmental performance, the country has not yet formally developed financial regulation explicitly targeting climate risks or opportunities (Frisari et al. 2019). The central bank has long been involved in international initiatives addressing sustainable finance issues, first with the G20 Sustainable Finance Group, and then founding the NGFS with other seven central banks and supervisors. More recently, in 2020, the central bank led a very detailed assessment of the preparedness of Mexican financial institutions in managing climate-related risks and opportunities¹⁵ and spearheaded the creation of the Sustainable Finance Committee (*Comité de Finanzas Sostenibles*, or *CFS*), within the Financial Stability Council, as the new convening initiative to promote a dialogue on

14 <https://mfv.hacienda.cl/>

15 <https://www.banxico.org.mx/sistema-financiero/d/%7B3A8C7F15-9FE1-9A2A-DCF7-6C6D11A0E1DB%7D.pdf>

sustainable finance and climate resiliency between Mexican regulators and supervisors, as well as the representatives of the different segments of the national financial industry (Banco de Mexico 2021). Conversely, the domestic market has been very active on the sustainable finance front. Launched in 2016 for the development of a green capital market and supported by the BMV, the Green Finance Advisory Board (*Consejo Consultivo de Finanzas Verdes*, or CCFV) has over the years expanded its scope to also include commercial and development banks, as well as infrastructure investments. On the banking side, in 2016, the Mexican Association of Banks (*Asociación de Bancos de México*, or ABM) presented a Sustainability Protocol that was signed by 22 of the 52 banks operating in the country. The protocol consists of five strategic areas of action: (1) strengthening of corporate governance through internal policies of sustainability; (2) environmental and social risk management in investment and loan operations; (3) sustainable investment; (4) efficient use of resources in internal processes; and (5) monitoring and communications of sustainability policies and practices in the sector (Frisari et al. 2019).

On the other hand, a significant part of the region remains at an incipient stage in the development of sustainable finance markets both in terms of the creation of opportunities (with isolated and limited issuance of green bonds, for example) as well as the management of climate-related risks and the introduction of definitions, transparency frameworks and institutional processes. This is especially true for the Caribbean Basin, where, despite significant climate vulnerability, there has been limited development of sustainable finance initiatives by either the public or private sector. One notable, and very recent, exception is the launch in 2022 of the national Green Taxonomy of Dominican Republic for the development of sustainable investments. The taxonomy, supported by the International Finance Corporation (IFC), was led by a joint effort of the Ministry of Environment and the Superintendent of the Securities Market, representing the first example of such efforts in Central America and the Caribbean (Superintendencia del Mercado de Valores 2022).¹⁶

4 CONCLUSIONS

Progress in sustainable finance in LAC continues to advance, albeit at very different speeds and with differing levels of ambition across the countries. The most active and sophisticated sustainable finance markets (Brazil, Chile, Colombia and Mexico) closely follow the leadership of the European Union in terms of the creation of investment opportunities and the development of a regulatory and supervisory framework that improves transparency of risks and impacts, as well as limit greenwashing issues and

16 <https://simv.gob.do/ministerio-de-medio-ambiente-superintendencia-del-mercado-de-valores-y-corporacion-financiera-internacional-anuncian-proyecto-taxonomia-verde-en-republica-dominicana/>

market abuse. Conversely, a significant part of the region (Central America and the Caribbean, smaller states) struggles to follow this lead despite being the most vulnerable to climate chronic changes and extreme events.

In most countries, regulatory action is limited to voluntary participation in sustainable finance dialogues and/or not-binding agreements (e.g. green protocols) that have the merit of introducing the issue in domestic dialogues across financial institutions with very different capacities in the area, but that can also present the issue of setting ambition at a level that might be too low when confronted with the urgency of action in the financial markets of the Global South.

International cooperation, development banks and cross-border investors all have a role to play in making capital available to harness sustainable investment opportunities, but financial institutions, regulators and supervisors in the region must do more (in terms of both scale and speed) to identify, assess and manage the risks that climate change is presenting to the economic development of LAC and the health of its financial system.

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ANNEX 1: LIST OF SUSTAINABLE FINANCE INITIATIVES IN LATIN AMERICA AND THE CARIBBEAN

Country	Regulation	Supervisor measures	Participation in international bodies	Private sector
Argentina		Sustainable Finance Roundtable	Central Bank in NGFS, Banking Association in SBN	Banking Green Protocol
Bahamas				
Barbados				
Belize				
Bolivia				
Brazil	Central Bank's Res 4327 and Sustainability Agenda 2022	Climate Risks Assessments from Central Bank	Central Bank in NGFS and SBN	Green Protocol
Chile	Disclosure Requirements (CMF N461)	Green Agreement	Central Bank in NGFS and SBN	Green Finance Roundtable
Colombia	Reporting Regulation, Asset Manager ESG Policy	Taxonomy, Climate Risk Assessments of Financial Market	Central Bank in NGFS, Superintendent in NGFS and SBN, Banking Association in SBN	Green Protocol
Costa Rica		Climate Risks Assessments from Central Bank	Central Bank in NGFS, Superintendent in SBN	Green Protocol
Cuba				
Dominican Republic		Green Taxonomy	Central Bank in NGFS, Banking Association in SBN	Green Protocol
Ecuador			Central Bank and Banking Association in SBN	Green Protocol
El Salvador				Green Protocol
Grenada				
Guatemala			Banking Association in SBN	
Haiti				
Guyana				
Honduras			Regulator and Banking Association in SBN	

Country	Regulation	Supervisor measures	Participation in international bodies	Private sector
Jamaica			Central Bank in SBN	
Mexico			Central Bank in NGFS, Banking Association in SBN	Green Finance Advisory Board, Green Protocol, Stock Exchange Reporting
Nicaragua				
Panama		Survey by Banks Superintendent	Banking Association in SBN	Sustainable Finance Protocol
Paraguay	Central Bank Res 8		Central Bank in NGFS and SBN	Green Protocol
Peru	Superintendent Res 192/-2015		Central Bank in NGFS, Superintendent in SBN	Green Protocol
Saint Lucia				
Suriname				
Trinidad and Tobago			Central Bank in NGFS	
Uruguay		Green Finance Agreement	Central Bank in NGFS	Green Protocol
Venezuela				

CHAPTER 14

The sustainable finance landscape in Brazil

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Annelise Vendramini

Fundação Getulio Vargas

1 INTRODUCTION

Financial systems are intrinsically linked to economic and social development. The services they provide to society – savings mobilisation, economic assessment of projects, capital allocation, risk management and transaction facilitation – are highly correlated to economic growth (Levine 2005). Financial development depends on a multidimensional process. The IMF developed the Financial Development Index (FDI) to summarise and compare the ways different countries perform in terms of the depth, access, and efficiency of their financial institutions and financial systems.¹

According to the IMF, Brazil has been steadily improving its performance in the FDI in the last 40 years. At the beginning of the 1980s, Brazil's score was 0.20; in 2020, the country scored 0.66. This improvement was mainly led by increased liquidity in financial markets and by financial institutions access, which is represented by bank branches and ATMs per 100,000 adults. According to the IMF's assessment, the least developed aspect of the Brazilian financial system is financial markets access, an indicator that proxies access to the stock market for newer and smaller issuers, as well as their access to the bond market. In terms of market capitalisation, Brazilian capital markets volumes are equal to nearly 50% of GDP, whereas in places such as the United States, the United Kingdom and South Africa, capital markets volumes correspond to over 100% of GDP. Thus, when compared to international markets, Brazilian capital markets have room to grow (FGVces 2020). In addition, the Brazilian economy is considered 'mostly unfree', with a Heritage Foundation Index of Economic Freedom score of 133 (out of 177). In terms of financial freedom, Brazil's score in 2022 is 50 (out of 100). This dimension captures the openness of a country's financial system in terms of access to financing opportunities, the level of competition in the banking environment and in financial intermediation, and the ease of raising capital and diversifying risks. Another dimension, investment freedom, assesses the level of constraints on the flow of capital, including across borders. In this, Brazil scored 60 (out of 100) in 2022 (Miller et al. 2022). These assessments seem

¹ Source: <https://data.imf.org/?sk=F8032E80-B36C-43B1-AC26-493C5B1CD33B&slid=1485894037365> (accessed 9 September 2022).

consistent with the IMF's FDI assessment for Brazil. They also indicate that, despite the concerns of the international financial investment community regarding the importance of restraining deforestation in Brazil, these concerns may not immediately resonate within the domestic financial market given the relatively small size of Brazilian capital markets and their stronger dependency on the public and private banking sector for access to financial resources.

In the last decades, due to the growing understanding of the implications of sustainable development for economic activities, social and environmental dimensions have been gradually included in the discussions of the already multidimensional process of financial development. As a consequence, the concepts associated with sustainable finance became part of central bank discussions in at least 100 jurisdictions.² In Brazil, discussions on sustainable finance have also been increasing. The Central Bank of Brazil has been an active promoter of the inclusion of environmental, social and climate aspects in the banking sector, with several regulations requiring that these aspects be considered. One example is the obligation of financial institutions to have a social, environmental and climate policy and to include those aspects in their risk management process.³ In 2021, the Brazilian Securities and Exchange Commission amended the disclosure requirements for listed companies to include additional information regarding climate change in accordance with recommendations of the Task Force on Climate-related Financial Disclosure (TCFD), among other addition environmental, social and governance (ESG) information.⁴ Banks and investors are also actively discussing the ESG agenda through their associations, such as the Brazilian Federation of Banks (*Federação Brasileira de Bancos*, or FEBRABAN) and the Brazilian Financial and Capital Markets Association (*Associação Brasileira das Entidades dos Mercados Financeiro e de Capitais*, or ANBIMA). ESG has become a popular topic within the Brazilian financial system.

Although 'sustainable finance' is a term that has gained momentum, it still lacks a common, clear and operational conceptual definition. Sustainable finance can mean different things to different stakeholders. Cunha et al. (2021) performed a review on the subject and based on their research proposed the following definition: "Sustainable Finance and Investment (SFI) is the management of financial resources and investments with the aim of promoting long-lasting, positive, and measurable social and environmental impacts". In this chapter, I will adopt their definition.

Within the sustainable finance field, another concept that is receiving increasing attention in Brazil is ESG – the incorporation of environmental, social and governance aspects into investment decisions. The CFA Institute defines ESG as "an approach to managing assets where investors explicitly acknowledge the relevance of environmental, social and governance (ESG) factors in their investment decisions, as well as their own

2 www.ngfs.net/en/about-us/membership

3 Resolutions CMN No. 4.327/2014 and CMN No.4.557/2017.

4 Resolution CVM No.59/2021.

role as owners and creditors, with the long-term return of an investment portfolio in mind” (CFA Institute 2021). Sustainable finance is an umbrella concept of which ESG is a smaller and more operational part, usually related to investment activities rather than banking operations. ESG can be implemented through various strategies, such as impact and community investing, sustainability theme investing, negative screening, positive and best-in-class screening, norms-based screening, corporate engagement and ESG integration (GSIA 2020).

Although they are different concepts, in this chapter I will use ESG as a proxy for sustainable finance and will focus exclusively on banking and investment activities within the financial sector. I will also focus on the ‘E’ and the ‘S’, rather than the ‘G’, because of their novelty for financial markets (Christensen et al. 2022).

This chapter is organised as follows. In the next section, I describe the Brazilian financial system and provide an overview of some of the ways in which environmental and social aspects are incorporated into credit and capital market regulation, self-regulation and some voluntary initiatives. In Section 3, I review the current state of sustainable finance in Brazil, although there is a lack of relevant assessments for the Brazilian financial system. I mention the Brazilian Federation of Banks’ assessment of the volume of bank loans funnelled to green economy sectors; these loans represented 21% of total bank loans in 2019 (last report available). For capital markets, I present some results from the latest Brazilian Capital Markets Association survey of 209 asset managers on how they perceive ESG: although most of them regard ESG as important, only 20% have implemented ESG practices and 70% are still in the process. Lastly, I discuss how barriers to scaling up sustainable finance include the unstable macroeconomic environment, legal and judicial system deficiencies, an unstable political environment, and a lack of investment culture. Overcoming these barriers will improve credit and capital markets and increase the volume of financial flows towards sustainable finance in Brazil.

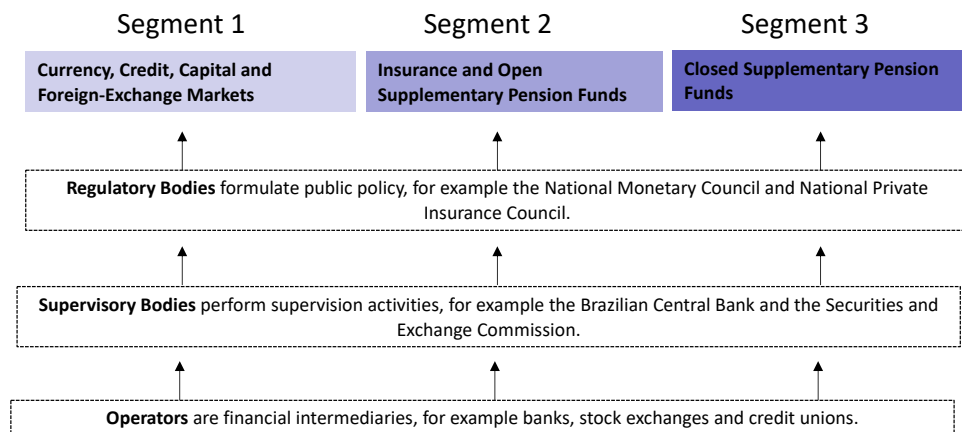
2 ENVIRONMENTAL AND SOCIAL ASPECTS OF THE BRAZILIAN FINANCIAL SYSTEM

In Brazil, the financial system is composed of three large segments: (i) currency, credit, capital and foreign exchange; (ii) private insurance, open supplementary pension funds and capitalisation contracts; and (iii) closed supplementary pension funds. Several organisations participate in the financial system: regulatory bodies (such as the National Monetary Council,⁵ the National Council of Private Insurance and the National Supplementary Pension Plan), supervisory bodies (such as the Central Bank of Brazil, the Securities and Exchange Commission, the Insurance Regulatory Authority and the

5 The Monetary Council oversees the financial system and is responsible for the credit and monetary policies. Its ultimate objective is currency stability and the social and economic development of the country. It is composed of the Minister of Economy (chair), the President of the Central Bank of Brazil and the Secretary of the National Treasury, who is appointed by and answers to the Minister of the Economy.

National Pension Funds Regulatory Authority), and many operators (such as banks, stock exchanges, brokers, credit unions, etc.). Figure 1 summarises the composition of Brazil's Financial system.

FIGURE 1 COMPOSITION OF THE BRAZILIAN FINANCIAL SYSTEM



Source: Author, based on the Central Bank of Brazil (www.bcb.gov.br/pre/composicao/composicao.asp?frame=1)

In Brazil, as in other developing countries, firms rely largely on the banking sector for debt financing, with capital markets, especially the bond market, underdeveloped (Yamahaki et al. 2020). The Brazilian banking market is dominated by large, vertically integrated financial conglomerates, with different types of control structures: foreign-controlled, government-controlled and private. The top five largest banks in terms of assets (Itaú, Banco do Brasil, Caixa Econômica Federal, Bradesco and Santander) account for nearly 70% of the total assets of financial conglomerates and independent institutions, indicating that the credit market in Brazil is concentrated.⁶

Any discussion of scaling up sustainable finance in Brazil must consider the entire composition of the financial system and the interplay among a diverse set of institutional aspects, such as the laws and regulations governing the financial system and voluntary commitments. Brazil has sound environmental legislation concerning environmental information, water and waste management, and biodiversity (OECD 2021). Environmental protection laws existed in Brazil before the 1988 Constitution, but this extended the legal range of environmental defence and preservation, establishing an administrative, civil and criminal protectorship of the federal government over the environment. After the 1988 Constitution, several laws were enacted with the purpose of protecting the environment, including the Environmental Crimes Law (9,605/1998), which holds that anyone involved in environmental damage is legally responsible, including directors,

⁶ Source: www3.bcb.gov.br/efd/efd (accessed 9 September 2022).

administrators, council and technical body members, auditors, managers, agents, or representatives of a legal entity who, aware of the criminal behaviour of other people towards the environment, refrain from preventing their practice. The Forest Code (Law 12,651/2012) establishes the conditions under which exploitation of vegetation is allowed and when conservation is mandatory. On the social side, examples of legal protection include laws that govern employment relationships and protection of children and the elderly, among others. However, key challenges include enforcement of legal provisions, improving integration of environmental databases, systematising and reporting on indicators and improving the efficiency and adoption of economic instruments for environmental protection, among others (OECD 2021).

Legislation and regulations related to social and environmental domains within the Brazilian financial system became more common after 2008. Since then, the Monetary Council and the Central Bank of Brazil (*Banco Central do Brasil*, or BCB) have published a number of regulations requiring that financial institutions incorporate social and environmental aspects into their activities, guided by two main objectives: (i) risk mitigation, given that social and environmental aspects may pose significant risks to loan operations, financing, investments and insurance; and (ii) greater integration of the financial system with other non-financial public policies (FGVces 2014). These regulations apply to a broad range of banking activities, from requirements that banks make sure that their clients have environmental compliance, to refraining banks from offering rural credit in the Amazon region to non-compliant clients,⁷ to rules on guidelines that banks and other financial institutions under the supervision of the BCB need to follow to establish a social, environmental and climate policy and action plan.⁸ The BCB has been an active member of the Network for Greening the Financial System (NGFS) since 2020 and supports the TCFD, having established a regulation based on the Taskforce (GIZ 2022).

Since 2009, the Brazilian Securities and Exchange Commission (*Comissão de Valores Mobiliários*, or CVM) requires that registrants disclose certain environmental data regarding company operations. More recently, in 2021, the CVM increased information requirements for companies regarding their environmental, social and governance practices, in particular relating to climate issues and the diversity of their board and labour force (CVM 2022). In 2022, the regulatory body for insurance and open supplementary pension funds (*Superintendência de Seguros Privados*, or SUSEP) issued a regulation applying to all organisations under their supervision requiring, among other aspects, the establishment of a sustainability policy, disclosure requirements and the inclusion of social, environmental and climate risks in the risk management process.

⁷ Resolution No. 3,545/2008.

⁸ Resolution No. 4,945/2021.

Voluntary commitments regarding ESG factors in the Brazilian financial system are also booming. One example is the Brazilian Federation of Banks (FEBRABAN), which established a self-regulation standard in 2014 with guidelines and procedures for social and environmental policies for signatory banks. Since 2014, FEBRABAN has been promoting voluntary ESG practices by signatory banks. Additionally, in 2015 FEBRABAN developed a taxonomy based on the United Nations Environment Programme (UNEP)'s definition of 'green economy'⁹ to assess the volume of financial resources directed towards financing companies and economic activities in sectors associated with a green economy, such as renewable energy, energy efficiency, sustainable agriculture and forestry, among others. The main driver of this effort is a need to better understand the dynamics of supply and demand for financial resources through bank loans in different sectors associated with the transition to a green economy (more about this subject in the next section).

Another example is the Brazilian Investor's Association (*Associação de Investidores no Mercado de Capitais*, or AMEC), which included "Take ESG factors into account in their investment processes and stewardship activities"¹⁰ in its Stewardship Code. There are only 116 signatories in Brazil to the Principles for Responsible Investments (PRI), out of a total of 4,900 worldwide¹¹ (roughly 2%), due to the relative smaller size of the Brazilian capital markets and a possible sign of the still slight importance ESG has for domestic investors. On the other hand, in 2021 the Brazilian Financial and Capital Markets Association (ANBIMA), a self-regulatory association that aims to strengthen local capital markets, issued a self-regulation that states the criteria, requirements and procedures to be observed by an investment fund in order to be considered and marketed as a sustainability-related fund (ANBIMA 2022a).

The landscape for the inclusion of social and environmental aspects in financial regulations in Brazil is not homogeneous. The degree of importance of social and environmental factors varies across different regulatory and supervisory bodies, with the BCB historically leading the process. The CVM and SUSEP are also engaged in social and environmental discussions, although with a lesser degree of incorporation of such factors in their regulations when compared to the BCB. The same is true for voluntary commitments, with the largest banks operating in Brazil in general following international best practices, whilst domestic investors are less mature in incorporating these factors.

9 "A Green Economy results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities" (www.unep.org/explore-topics/green-economy/why-does-green-economy-matter/what-inclusive-green-economy).

10 Source: <https://amecbrasil.org.br/stewardship/amec-stewardship-code/?lang=en>

11 Source: www.unpri.org/ (accessed 9 September 2022).

3 CURRENT STATE OF SUSTAINABLE FINANCE IN BRAZIL

Globally, there are a few estimates of different aspects of sustainable finance and investment. For example, the Global Sustainable Investment Alliance (GSIA)'s *Global Sustainable Investment Review* shows that assets under management that consider ESG aspects total US\$35.3 trillion (GSIA 2020). It is still challenging to estimate the size of the ESG market in Brazil, as there is no similar assessment.

On the banking side, according to the latest FEBRABAN estimates published in December 2018, nearly \$80 billion in bank loans were directed to green economy sectors according to the FEBRABAN taxonomy. This represented 21% of the total credit provided by the 15 banks participating in the assessment, including the Brazilian National Development Bank (*Banco Nacional de Desenvolvimento Econômico e Social*, or BNDES). Previous editions of this assessment reported financing percentages to sectors associated with a green economy varying from 12% (2013) to 28% (2017) (FEBRABAN 2019). However, due to changes in the methodology and the number of participating banks through the years, a comparison among these different results is not possible.

In terms of capital markets, and in particular debt issuance, an estimate made by the local consulting company NINT, a leader in second opinions of labelled bonds for the Brazilian market, indicates that there were 111 green, social, sustainability or sustainability-linked bond issuances in 2021 amounting to \$15 billion, up from 43 issuances in 2020 totalling \$5.8 billion (Bertão 2022). In 2022, BNDES signed a cooperation agreement with the Climate Bonds Initiative to promote sustainable finance in Brazil. BNDES has also developed a tool to calculate greenhouse gases (GHGs) for the portfolio associated with their climate fund. Finally, also in 2022, BNDES announced it will buy nearly \$20 million in carbon credits on the voluntary market from projects originated in Brazil.¹²

According to a study published by ANBIMA, with data from 265 financial market players (including 209 asset managers), although many regard ESG as very important concept, only 20% of respondents consider they have fully implemented ESG practices, 30% say there are no plans for implementation, and nearly 40% say ESG practices are in the process of being implemented (ANBIMA 2022b). In addition, the study shows that there are many different understandings of ESG, its scope, and ways to implement it. According to the GSIA (2020), institutional investors are the main force driving ESG investing, accounting for 75% of sustainable investing assets, with retail investors holding 25% of these assets. Although there is no similar assessment in Brazil, an investigation conducted by ANBIMA in 2021 into the profile of Brazilian retail investors shows that the majority prefer to keep their money in savings accounts and are unfamiliar with financial

¹² Source: www.bndes.gov.br/wps/portal/site/home/financiamento/produto/fundo-clima/ferramenta-calculo-reducao (accessed 9 September 2022).

products.¹³ Therefore, the demand for sustainable finance in Brazilian capital markets is mainly driven by foreign institutional investors, followed by domestic institutional investors, in line with the *Global Sustainable Investment Review*.

4 FINAL REMARKS

Sustainable finance has been advancing in Brazil over the last two decades, with the banking sector leading the process through regulation, self-regulation and voluntary commitments. In capital markets, sustainable finance is receiving increasing attention, with advances in regulation mainly in the last five years and increased demand for ESG financial products mostly driven by foreign, and to some degree domestic, institutional investors.

Sustainable finance will help transform economies into a less unsustainable state. Scaling up sustainable finance is a global challenge, but developing countries such as Brazil face additional difficulties due to their specific institutional contexts and limitations to the development of their financial markets. Perhaps the most important challenge is to enforce existing environmental legislation, such as the Forest Code. Additional challenges involve overcoming structural barriers that hinder the development of credit and capital markets in general, including unstable macroeconomic environments, deficiencies in legal and judicial systems, unstable political environments and a lack of investment culture (Yamahaki et al. 2020). Overcoming these barriers will improve credit and capital markets and increase the volume of financial flows towards sustainable finance in Brazil.

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13 Source: www.anbima.com.br/pt_br/especial/raio-x-do-investidor-2022.htm (accessed 10 August 2022).

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CHAPTER 15

Scaling up sustainable finance and investment in the Global South: A case study of sub-Saharan Africa

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1 INTRODUCTION

There is a growing appetite in Africa to ‘green’ the financial sector and take into consideration sustainability in investment decisions. This is both for ecological reasons and the financial returns that sustainable finance presents. Sustainability in finance is very closely linked to long-termism, i.e. business thinking that goes beyond the horizon of quarterly financial targets and financial statements. Currently, 53 African countries have submitted their Nationally Determined Contributions (NDCs), of which 51 countries, accounting for 93% of Africa’s GDP, have indicated the costs of implementing them. This NDC implementation amounts to US\$2.8 trillion between 2020 and 2030, presenting a huge sustainable investing opportunity (CPI 2022).

Africa is fast growing in population and rapidly urbanising. How this urbanisation shapes up will be consequential for the investment needed in renewable energy and sustainable finance, as energy needs heighten due to urban development. Africa’s population currently stands at 17% of the world’s population and this is expected to increase to 40% by 2100, when the world population is expected to reach almost 11 billion (FSD Africa, 2022).

Africa’s contribution to greenhouse gas (GHG) emissions is estimated at 3–7% of the world’s total and the lowest per capita, yet it is disproportionately affected by the impacts of climate change (UNFCCC 2022). A recent study by McKinsey put that emissions contribution at just under 10% when all emissions, including land-use and non-energy emissions, are considered. The emissions are fragmented across the regions with key hotspots being in Sahelian West Africa, North Africa, and East Africa. With the exclusion of South Africa, which is relatively highly industrialised, the remaining share of emissions is quite minimal (McKinsey & Company 2021). The McKinsey study puts total emissions at 5.4 Gt CO₂e (carbon dioxide equivalent), consisting of:

- land use, land use change and forestry (LULUCF): 2.2 Gt CO₂e (~40%)
- agriculture: 1.1 Gt CO₂e (~20%)

- industry: 0.8 Gt CO₂e (~15%)
- power: 0.5 Gt CO₂e (~10%)
- transportation, waste, and buildings: 0.8 Gt CO₂e (~15%).

The emissions mix shows a different picture from most developed nations, where emissions are typical from the industry, power, and transport sectors (for example, three-quarter of the EU's emissions are from these three sectors). Despite the small share of emissions, the socioeconomic and financial costs from climate change are immense and significant across sub-Saharan Africa (SSA), as we shall discuss shortly. For example, the Kenyan government estimated that addressing the impacts of climate change emanating from drought and changes in precipitation cost it between 3% and 5% of GDP, yet the nation accounts for less than 0.1% of global emissions (Government of Kenya 2020).

As nations around the world embark on decarbonisation, Africa's pathway will be important in achieving a low-carbon future. Africa is hugely commodity-dependent and so as the world moves away from heavy-carbon sectors, this presents a risk to the region's economic prospects, commodity prices and demand patterns. Nonetheless, SSA is also endowed with renewable energy sources (wind, solar and wave), presenting an opportunity to unlock a green energy transition that will contribute significantly to green growth and abatement of GHG emissions. Therefore, it is necessary to carefully navigate a climate-resilient development pathway.

In SSA, there has been an increase in environmental, social and governance (ESG) considerations in financing and investing decisions, and a matching of these criteria with internationally recognised standards such as the Green Loan Principles (Sustainable Fitch 2021). Financial institutions are increasingly aware of the risks that the triple planetary crises (climate change, nature loss and pollution) pose to their business and society at large. Beyond the risk, there is also an increasing awareness of the opportunities that sustainable finance presents in terms of bankable projects (e.g. climate-resilient infrastructure and climate-smart agriculture) but also financial products (e.g. green loans and weather index-based insurance products).

Traditionally, a lot of investment aligned to the Sustainable Development Goals (SDGs) in SSA has been driven by bilateral and multilateral institutions, but increasingly there is a focus on private capital as a catalyst for sustainable development. This historical reliance on development-aligned finance has influenced how ESG has played out in the region. Other salient players have included regional and national banks, insurers, and central banks.

Moreover, there has been increasing alignment to international partnerships such as the Sustainable Banking and Finance Network (SBFN) and the Network of Central Banks and Supervisors for Greening the Financial System (NGFS). Regionally, there have been initiatives such as the African Financial Alliance on Climate Change (AFAC) and the African Carbon Asset Development Facility (ACAD). However, there is still a huge need

for financial institutions in the region to build capacity to attract sustainable finance and take advantage of investable opportunities. This challenge is not only on the supply side; there is also a lack of sufficient awareness of sustainable financing ventures on the demand side (among banking and insurance clients, project developers, governments, and the general population). There is therefore a case for propping up demand for sustainable finance in SSA through building awareness and capacity to absorb and deploy such capital.

Against this backdrop, this chapter reviews the emerging sustainable finance landscape in SSA. The chapter is structured as follows. Section 2 briefly reviews the impact of climate change on the region and discusses the current state of adaptation funding in the region. Section 3 provides a comprehensive landscape of sustainable finance in SSA, including sub-sections on green, social and sustainability bonds (GSS) bonds, blue bonds, gender bonds, sovereign issuances, Islamic finance, impact investing, sustainable stock exchanges, nature and finance, sustainable insurance, sustainable banking, the state of climate risk regulation, and the regional initiatives and organizations. Section 4 discusses the barriers to sustainable finance in SSA. Section 5 offers recommendations and Section 6 concludes.

2 CLIMATE CHANGE IMPACTS AND ADAPTATION FUNDING IN SUB-SAHARAN AFRICA

Africa is the most vulnerable region to climate change, with 27 of the world's 40 most climate-vulnerable countries (GCA 2021). In 2019 alone, three Southern Africa nations experienced two tropical cyclones – Idai and Kenneth – that caused nearly 1,000 deaths and impacted around 3 million people. In 2020 and 2021, an unprecedented locust swarm destroyed hectares of cropland in the Horn of Africa across Ethiopia, Somalia, and Kenya, putting pressure on food production amidst Covid-19 (GCA 2021). Owing to Covid, Africa experienced its first recession in half a decade and employment fell by around 8.5% (IMF 2021).

There is also the challenge of water stress and coastal erosion. Changes in precipitation are a huge challenge given most households in Africa are smallholder farmers and about 95% of agriculture in Africa is rainfed. A 2021 report by Fitch found that six of the ten countries with the least irrigated agricultural land are in SSA (Ghana, Benin, Kenya, Uganda, Lesotho, and Mozambique). This means that increasing frequency and severity of changes in precipitation across the region poses a huge risk to production of key crops such as tea, coffee, cocoa, cotton, cut flowers and nuts (Sustainable Fitch 2021).

A third of the world's population considered most at risk of climate change live in Africa. Furthermore, up to 118 million of the extremely poor in Africa will be exposed to catastrophic climate hazards by 2030 (WMO 2021). A study by McKinsey estimated that a 2°C increase in average temperature by 2050 would expose more than 900 million

people in Africa to one or more physical climate hazards. This would be perpetuated by the intensity of hazards, geographical reach, and the rapid population growth (McKinsey & Company 2021).

This climate change impact is exacerbated by the lack of social safety nets. More than 32 million people were pushed into extreme poverty due to Covid-19 effects and this is expected to worsen especially for populations that are reliant on food and fuel imports (World Bank 2022a). Some 600 million Africans have no energy access. This limits the capacity for resiliency and adaptation to climate-induced hazards.

These physical risks make the case for increased sustainable finance to invest in adaptation strategies and climate-resilient development. Additionally, being a heavily commodity-dependent region, this will put more scrutiny on the use of commodities such as coal, oil, metals, and minerals. This further justifies the need for green and sustainable issuances that divert proceeds away from heavy-carbon sectors.

Globally, public adaptation funding needs by 2030 are around 0.25% of global GDP annually, and SSA needs \$30–50 billion per year in incremental finance for climate adaptation (IMF 2020, 2022). According to a recent study by the Global Center on Adaptation (GCA) that tracked adaptation finance flows in Africa, there was just over \$6 billion for the period 2017–2018. Of this amount, 90% was in the form of grants and concessional debt, with the majority coming from development finance institutions (DFIs) (67%), followed by bilateral flows (19%). East Africa was the biggest recipient by sub-region and agriculture the biggest recipient by sector (GCA 2021). Table 1 shows the GCA tracking of adaptation finance flows by sub-region.

TABLE 1 TOTAL ADAPTATION FINANCE FLOWS TO AFRICA

Sub-region	Tracked adaptation finance (USD billions)
North Africa	0.72
East Africa	1.76
West Africa	1.10
Central Africa	0.31
Southern Africa	0.76
Unspecified regional flows	1.36
Total	6.01

Source: GCA (2021)

If this trend were to continue, total financing from 2020–2030 would only amount to \$66 billion. This would fall short of the \$331 billion (or approximately \$33 billion annually) as per the NDC cost estimates for African countries. This is consistent with estimates by

the UN Economic Commission for Africa (UNECA) that Africa needs \$3 trillion by 2030 to fund its NDCs, \$425 billion for Covid-19 response and \$130–170 for infrastructural financing needs (UNECA 2022). One further challenge of these finance flows is that there is limited to no correlation between vulnerability and adaptation finance overall or per capita. Thus, the most vulnerable countries are not necessarily the highest recipients of adaptation finance.

The current funding figures look dismal in the context of the severe effects of climate change. However, this is also an indication of the opportunity that exists not just for adaptation financing, but for sustainable finance in all its forms. Unlocking this funding will require action from across the financial sector, including governments and regulators. This is because public funds are inadequate, development finance is narrowing, and yet there is a huge funding gap and investment opportunity.

The Paris Commitment for funding of \$100 billion to developing nations by developed nations is yet to be met. According to the OECD forward-looking scenarios, this target will not be met given the trends. Funding by developed countries reached \$78.3 billion and \$79.6 billion in 2018 and 2019, respectively (UN 2022). Even in a scenario where the \$100 billion target is met, it is far below Intergovernmental Panel on Climate Change (IPCC) estimates for climate financing needs in Africa.

At the start of the century, the African Development Bank (AfDB) estimated a funding need of \$20–30 billion per year for climate change adaptation in Africa over 10–20 years (AfDB 2011). Now it is estimated that climate change presents a \$2.8–3 trillion investment opportunity in Africa, with 75% expected to come from private sector sources. Of the total climate finance need, governments have since committed \$264 billion, which is only about 10% of the investment need (CPI 2022, FSD Africa 2022).

3 THE SUSTAINABLE FINANCE LANDSCAPE IN SUB-SAHARAN AFRICA

3.1 The sustainable bond market

The Environmental Finance Bond Database estimated that sustainable bond issuance globally has surpassed the \$3 trillion mark.¹ This includes green, social, and sustainability (GSS) bonds, as well as sustainability-linked bonds. More than 60% were in the form of green bonds. Green bonds were the first GSS issuance globally, when the European Investment Bank (EIB) issued €600 million in climate awareness bonds in 2007 (EIB 2021). They were followed by social and sustainability bonds (totalling more than 30%). Sustainability-linked bonds contributed only 5% but are expected to increase with the publishing of the Sustainability-Linked Bond Principles in 2020. Issuance is dominated by sovereign, municipal and agency issuers.

1 <https://efdata.org>

Green bonds

Over the period 2014–2020, 20 green bonds were issued in Africa in seven countries totalling over \$2 billion (EIB 2021). This represented 0.2% of global green bond issuances, which reached \$1 trillion over the same period. Most issuances are in US dollars, but there have also been green bonds issued in local currencies in South Africa (rand), Morocco (dirham), Kenya (shilling), Namibia (dollar), and Nigeria (naira).

Green bond issuance in Africa, representing 0.2% of global issuance as at 2020, was far below the 2.8% of world GDP contribution by Africa in 2020. This shows the region remains highly underrepresented in the GSS bond market globally. This is partly explained by a historical over-reliance on multilateral concessional credit, as opposed to tapping capital from the capital markets. Also worth noting is that, while Africa accounts for 23% of official climate finance, its green bonds accounts for less than 1% of global issuances and it is paying more than twice as much to access the markets relative to peers with similar ratings (World Bank 2022b).

AfDB has been a big player in the green bond market through its AfDB Green Bond programme. Under the programme, funds equal to the net proceeds of a green bond are allocated to a sub-portfolio of the Treasury's liquidity portfolio. When eligible projects become due for disbursement, the funds initially allocated to the liquidity portfolio are allocated to the loan pools of the disbursing green projects. Table 2 shows a listing of transactions within the AfDB Green Bond programme.

The first African green bond issuance was in 2012 by South Africa's Nedbank (which colloquially refers to itself as the 'green bank') and raised ZAR 5 billion (\$577 million) to fund the growth of green and energy-efficient industries (e.g. in manufacturing, infrastructure, and construction). In 2019, the bank became the first in South Africa to list a renewable energy bond on the Johannesburg Stock Exchange (JSE) green segment (Nedbank 2019). Later, in 2020, the bank announced the launch of a Sustainable Development Goal (SDG)-linked tier 2 capital instrument which would be listed on the JSE green bond segment (Nedbank 2020). In 2021, Nedbank issued another green bond of ZAR 1.09 billion to fund green residential developments. This issuance brought the total green bond segment of the JSE to ZAR 6.8 billion as of the end of 2021 (JSE 2021).

By 2020, green bonds in Africa targeted various industries including energy, water, waste, transport, manufacturing, and construction. FSD Africa in partnership with the Climate Bonds Initiative (CBI) developed a *Green Bonds Toolkit* to provide capital market participants in Africa, including financiers and regulators, with industry guidance on how to initiate and issue green bonds in line with international standards and best practices (FSD Africa 2020).

TABLE 2 GREEN BOND TRANSACTIONS BY THE AFRICAN DEVELOPMENT BANK

Year	Green Bond Transaction
2022	SEK 2 billion 5-year Green Bond due February 2027
2021	SEK 1 billion 5-year Green Bond due April 2026
2019	SEK 2 billion 5-year Green Bond due April 2024
2018	\$500 million 3-year Green Bond due December 2021
2018	\$350 million 2-year SOFR-linked Green Bond due November 2020
2016	AUD 140 million 15-year Kangaroo Green Bond due December 2031
2016	SEK 1.25 billion 4-year Green Bond due June 2022
2015	\$500 million 3-year Green Bond due December 2018
2014	SEK 1 billion 5-year Green Bond due March 2019
2014	SEK 1 billion 5-year Stibor-linked Green Bond due February 2019
2013	\$500 million 3-year Green Bond due October 2016

Source: African Development Bank (AfDB) Green Bond Program.

Social bonds

Following the Covid outbreak, AfDB issued a three-year \$3 billion 'Fight Covid-19' social bond in 2020 to help alleviate the impact of the pandemic. It was oversubscribed, attracting a demand of \$4.6 billion. The bond saw interest globally from across Africa, Europe, Americas, Asia, and the Middle East and across different investor categories – central banks and official institutions, bank treasuries and asset managers (including ESG investors). It became the largest social bond issuance within capital markets and was AfDB's first listing on the London Stock Exchange (AfDB 2020a).

Earlier in 2019, AfDB had issued a Norwegian kroner NOK 1 billion social bond. It was the Bank's first Norwegian kroner issuance and the first social bond in the Norwegian market. Between 2017, when the AfDB established a Social Bond framework, and the end of 2019, the bank had raised about \$5.5 billion in five transactions across 28 African countries. The proceeds supported 89 social projects (AfDB 2020b). It has since issued social bonds in the following currencies: US dollars, euros, Norwegian kroner, Swedish kroner, and Australian dollars.

June 2022 saw the first-ever frontier currency-denominated ESG issuance by a multilateral development bank (MDB) when AfDB raised in Uganda UGX 19 billion (\$5.07 million) through a fixed coupon, 10.5%, 2-year theme bond in line with the 'Feed

Africa' aim as part of the bank 'High 5s' priorities.² The bank's latest social bond issuance in the Australian market ('kangaroo bond') was in April 2022 and raised AUD 155 million for a 10.5-year period (AfDB 2022a).

Sustainability bonds

In 2021, Banque Ouest Africaine de Développement (BOAD), also known as the West African Development Bank, issued the first sustainability bond in Africa. The issuance raised €750 million with a 12-year maturity. It was oversubscribed by six times (amounting to €4.4 billion) and it attracted more than 260 investors across the world, with the bulk of orders (80%) coming from Europe. The issuance, supported by Natixis Corporate and Investment Banking, saw the bank attract the best coupon (2.75%) and re-offer spread (MS +300 basis points) in the international market.

Proceeds from the BOAD sustainability bond were targeted at financing projects in sectors with high social and environmental impacts. According to the bond information, the priority sectors include agriculture and food security, renewable energy, basic infrastructure, health, education, and social housing (Natixis 2021a). In the same year, the bond won the Environmental Finance Bond Award in the category of "*Sustainability Bond of the year - supranational, sub-sovereign and agency (SSA)*".

Also in 2021, Netcare (a South African private healthcare provider) issued the first sustainability-linked bond in South Africa and Lesotho. The 3-year bond issuance was supported by Standard Bank and raised ZAR 1 billion (\$67.8 million), with the unsecured note priced at 5.4% (3-month Jilbar +175 basis points). The bond was listed on the JSE's interest rate market and its coupon rate linked to pre-agreed sustainability targets – for instance, an achievement of its water efficiency and mitigation targets would see a drop in coupon rates (ESI Africa 2021).

Blue bonds

The blue bond by the Government of Seychelles in 2018 was the world's first sovereign blue bond. The 10-year bond raised \$15 million aimed at financing marine and ocean-based projects to help Seychelles safeguard its oceans and develop its blue economy through sustainable fishing and protection of marine resources. The issuance received credit enhancement from the World Bank (a \$5 million partial guarantee) and the Global Environment Facility (a \$5 million concessional loan to subsidise coupon payment). The credit enhancement support substantially de-risked the investment and enabled Seychelles to access funding at a discount – the effective interest rate was reduced from 6.5% to 2.8% through the coupon subsidy. The bond was privately placed with three US-based impact investors – Calvert Impact Capital, Nuveen, and Prudential Financial – each at \$5 million (World Bank 2018, GCA 2020).

2 The High 5 priorities are 'Light up and Power Africa'; 'Feed Africa'; 'Industrialise Africa'; 'Integrate Africa'; and 'Improve the Quality of Life for the People of Africa' (AfDB 2022b).

Africa's blue economy stands to gain and generate a lot of interest through blue bond issuances due to the region's maritime endowment. The continent has 38 coastal and island states with over 47,000 km of coastline. Its maritime industry is valued at \$1 trillion per year (The Exchange 2021) and the wealth that can be produced from the ocean ecosystem is conservatively estimated at \$24 trillion (UNECA 2018). Beyond economic activity, oceans and seas play a critical role as carbon sinks as they store large amounts of CO₂, and this helps with the goal of climate change mitigation.

On the sidelines of the UN Ocean Conference in Lisbon in June 2022, five international organisations – the International Finance Corporation (IFC), International Capital Markets Association (ICMA), United Nations Global Compact (UNGC), United Nations Environment Program Finance Initiative (UNEP FI), and Asian Development Bank (ADB) – announced that they would partner to develop a global practitioner's guide for bonds targeted at financing the blue economy. The global blue economy finance guide is to be developed from a synthesis of existing principles, guidance, and guidelines by these institutions, to support the achievement of SDG14 on life underwater (IFC 2022b).

Gender bonds

Gender bonds mostly target the financial inclusion of women, female entrepreneurship, women in senior leadership, and gender-positive policies – to support the advancement, empowerment, and equality of women. No gender bond had been issued in SSA until 2022, when Tanzania's NMB Bank listed the Jasiri bond on the Dar es Salaam Stock Exchange ('jasiri' is Swahili for 'brave'). The bond raised \$32 million (297% over-subscribed), with the IFC investing in 31% of the bond. The proceeds are to be used to finance over 2,000 women-owned small and medium-sized enterprises (SMEs) in Tanzania for their business growth and job creation. The bond was issued in line with ICMA's Social Bond Principles and had a Second Party Opinion given by Sustainalytics. FSD Africa provided NMB Bank with technical input and assistance on this transaction (IFC 2022a).

Sovereign issuances

Sovereign sustainable bonds are still quite limited globally and much more so in Africa. Only five sovereign GSS bonds have been issued so far in Africa: in Nigeria (2017, 2019), Seychelles (2018), Egypt (2020), and Benin (2021). This contrasts with vanilla sovereign Eurobonds, which have been issued by over 20 African countries since 1995 (Mustapha 2021, Marbuah, 2020). Besides sovereign issuances, there have been issuances of sovereign guidelines, with South Africa becoming the first African country to develop a green finance taxonomy. Table 3 provides an overview of the five sovereign issuances in Africa.

TABLE 3 SOVEREIGN SUSTAINABLE BOND ISSUANCES IN AFRICA

Nigeria (2017, 2019)	Africa's first green bond in 2017, raising NGN 10.69 billion (\$30 million) for five years with a coupon rate of 13.48%. The second issuance in 2019 had a 7-year tenor and 14.5% coupon rate and raised NGN 15 billion (\$41 million). Both are aimed at financing NDC-aligned projects and are listed on the Nigerian Stock Exchange (NGX). The country has an NGN 150 billion Sovereign Green Bond programme aimed at raising finances to meet its NDC targets (CABRI 2021).
Seychelles (2018)	Africa's first sovereign blue bond of \$15 million in 2018. The details are discussed in the earlier section on blue bonds. Seychelles has a Blue Economy Strategic Framework and Roadmap (Blue Economy Roadmap) approved in 2018.
Egypt (2020)	Africa's first US dollar-denominated sovereign green bond in 2020, raising \$750 million. It was a 5-year tenor issuance with a 5.25% coupon rate. The initial offering was for \$500 million at 5.75% (which was tightened by 50 basis given the five times oversubscribed demand of \$3.7 billion). This bond achieved the lowest 5-year coupon for a bond in Egypt and the lowest US dollar coupon for Egypt since 2016 (CABRI 2021, Sustainable Energy Egypt 2020)
Benin (2021)	Africa's first SDG bond for €500 million (\$520 million) issued with the aim of supporting projects that contribute highly to the achievement of the SDGs. It had a 12.5-year tenor and 5.25% final coupon. The orderbook peaked above €1.2 billion, indicating high investor demand (UNECA 2022, Natixis 2021b).

Source: EIB (2021); compiled by author.

3.2 Islamic finance

It has been argued that Islamic finance can play a role in diverting capital flows to promote sustainable development objectives. According to the latest *Islamic Finance Development Report* (Refinitiv 2021), Islamic finance global assets reached \$3.374 trillion in 2020 and are expected to reach \$4.944 trillion in 2025. In SSA, the assets reached \$8 billion. The region's Islamic banking assets reached \$4 billion, *sukuk* (sharia-compliant bonds) reached \$2 billion, and Islamic funds reached \$2 billion. Meanwhile, South Africa is among the ten countries with the highest value of Islamic fund assets under management (AUM) at \$2 billion, which includes Islamic exchange-traded funds (ETFs).

Some notable Islamic finance developments in Africa in recent years have included (Refinitiv 2021):

- **Sudan** switched from a wholly Islamic banking system to a dual banking system. This will help the nation attract international capital flows in the wake of post-civil war recovery.

- **Libya** reported that two new Islamic banks would be listed on the reopening of the stock exchange that was long-dormant. Also reported were a real estate investment fund and sukuk.
- **Egypt** saw Islamic banking cross the 5% overall market share threshold (June 2021). The Islamic banking market is quite concentrated, with 90% of the market comprising four banks.
- **Ethiopia** saw Zamzam Bank become the country's first fully Islamic bank in 2020 following approval by the National Bank of Ethiopia (NBE).
- **Algeria** approved draft *takaful* (Islamic insurance) regulations in 2021, which will complement existing sharia-compliant products. There is high potential for *takaful* in North Africa, including in countries like Morocco, which has already developed a *takaful* framework.

3.3 Impact investing

Impact investing refers to investment that is considered to have positive social and environmental outcomes alongside strong financial returns. A 2019 IFC report put global investors' appetite for impact investing at \$26 trillion, representing around 10% of the total value of financial assets available for investments by household and institutions (estimated at \$269 trillion). Africa presents a huge opportunity for impact investing to meet the SDGs, enabled by factors such as a fast-growing population, rapid urbanisation, and the resource endowments of the continent (IFC 2020).

The 2020 Global Impact Investor Network (GIIN) report put impact investing to Africa at nearly half (43%) of all impact investing funds – being the highest of all emerging markets. Further, 52% of the surveyed investors said they were planning to increase their investment in Africa within five years. The growth of impact investing in Africa is primarily being fueled by three sectors: healthcare, African fintechs, and renewable energy. Healthcare has been a major target of private equity in Africa while fintechs have exponentially expanded financial inclusion and ease of doing business. For renewables, they are one of the fastest growing segments in Africa with most of the investment being in solar solutions (GIIN 2020, EY 2022).

3.4 Sustainable stock exchanges

Almost 20 stock exchanges in Africa gave formed part of the United Nations Sustainable Stock Exchanges (SSE) Initiative since its inception. The SSE *“works with stock exchanges through technical assistance, consensus building, and research to contribute to the achievement of the United Nations Sustainable Development Goals (SDGs) and to stimulate investment for a sustainable future”*.³ South Africa's JSE and the Egyptian

3 Source: <https://sseinitiative.org/members/>

Exchange were founding members of the initiative, which has a network of 118 stock exchanges globally. The Cape Town Stock Exchange (CTSE) was the latest African entrant as of September 2022.

Nationally, stock exchanges are recognising ESG and issuing annual sustainability reports (e.g. in Kenya, Nigeria, Botswana, Egypt, and South Africa). Furthermore, some are also requiring ESG reporting as a prerequisite for listing (e.g. Ghana, Mauritius, Nigeria, South Africa, and Zimbabwe) (EIB 2021, ACCA 2014). Stock exchanges are well-placed to enhance achievement of ESG targets by listed entities and to encourage sustainable investment.

The JSE was the first stock exchange globally to introduce a sustainability index in 2014 and it continues to provide sustainable investing products, such as Sustainability Index Futures. Recently, the JSE launched two sustainability guidelines – *Sustainability Disclosure Guidance* and *Climate Change Disclosure Guidance* – which are both targeted to JSE-listed entities. The *Sustainability Disclosure Guidance* is aligned to global standards and frameworks such as the GRI Standards, the Taskforce on Climate-related Financial Disclosures (TCFD) and the International Reporting (IR) Framework, which is now part of the International Financial Reporting Standards (IFRS) Foundation. The *Climate Change Disclosure Guidance* provides JSE-listed issuers with a step-by-step guide on climate-related disclosures (SSE 2021).

3.5 Sustainable insurance

Within the realm of sustainable finance, the insurance sector plays a key role of enabling risk transfer, providing resilience and financial security, and promoting sustainable investment through insurance assets. Green insurance and climate risk insurance (climate insurance) also help with facilitating a ‘just transition’ and offering resilience to the physical effects of climate change and associated economic shocks. This is a form of disaster risk financing and management.

One of the key climate risk insurers in SSA is the Africa Risk Capacity (ARC) Group, which is established under the African Union and provides insurance for disaster-related risk across Africa through innovative mechanisms such as parametric insurance. In 2021 alone, ARC made record payouts of almost \$60 million in claims relating to extreme weather events. Since 2014, ARC has had 62 policies with a cumulative cover of \$720 million offering protection for 72 million people (ARC 2022). When Intense Tropical Cyclone Batsirai hit Madagascar, ARC made an insurance payout of \$10.7 million to the Government of Madagascar.

The AfDB has an Africa Disaster Risk Financing Program (ADRFi) that seeks to support its regional member countries to pay for insurance premiums related to climate disasters. During COP26 in Glasgow, the US pledged support of \$2.5 million to the programme; other support partners include the UK's Foreign, Commonwealth & Development Office (FCDO) and the Swiss Agency for Development and Cooperation (AfDB 2021a).

Insurance underwriters in Africa (both insurers and reinsurers) are increasingly seeking to embed ESG in their business operations and product offerings. At the 48th African Insurance Organisation Conference, which brought together key stakeholders in insurance from across the continent in Nairobi in 2022, the theme was on "Insurance and climate change". Among the topics discussed were how (re)insurers can best integrate sustainability in their business, the market opportunity for sustainable insurance in Africa, and having a regulatory landscape supportive of sustainable business practice.

Several insurers in SSA are signatories to the UN Principles for Sustainable Insurance (PSI), the global sustainability framework for the insurance industry led by UNEP Finance Initiative (UNEP FI). These include ARC (South Africa), Continental Reinsurance (Nigeria), Custodian Investment Limited (Nigeria), East Africa Reinsurance, ICEA LION Insurance (Kenya), NambiRe (Namibia), Santam (South Africa), and ZEP-RE (Kenya). Aside from the PSI, ICEA LION Insurance in Kenya has joined the Net-Zero Insurance Alliance (NZIA), a global alliance of insurers that have committed to transition their insurance and reinsurance underwriting portfolios to net zero GHG emissions by 2050.⁴

April 2021 saw the launch of the Nairobi Declaration on Sustainable Insurance during the UN PSI's 4th Africa summit. The Nairobi Declaration is a commitment by African insurers to support achievement of the SDGs, and is anchored around five pillars: risk management; insurance; investment; policy, regulatory and industry engagement; and sustainable insurance thinking and practice. So far, over 50 insurance organisations across Africa have since signed the declaration as a commitment to help solve major sustainability challenges – ranging from climate change and ecosystem degradation to poverty and social inequality (UNEP FI 2021).

On the insurance regulatory side, various African regulators are members of the Sustainable Insurance Forum (SIF), the convening platform for the integrating of sustainability by insurance supervisors and regulators. These include the Financial Regulatory Authority in Egypt, the National Insurance Commission in Ghana, the Autorité de Contrôle des Assurances et de la Prévoyance Sociale in Morocco, and the Prudential Authority in South Africa. More regulators are expected to demand sustainability considerations including ESG discourses by their supervisee firms.⁵

4 Source: www.unepfi.org/net-zero-insurance/

5 Source: www.sustainableinsuranceforum.org

In 2021, the International Association of Insurance Supervisors (IAIS), in conjunction with SIF, issued an application paper to guide insurance supervisors on the integration of climate risk consideration in their supervision of the insurance industry (IAIS 2021).

3.6 Sustainable banking

Africa's financial system is highly bank-led and therefore banks will play a key role in mobilising and allocating sustainable finance. Banks are increasingly becoming aware of the need to streamline and align their financing to sustainable finance principles – to adequately mitigate risks but also to take advantage of market opportunities. Results from a survey by the EIB showed that more than half (54%) of banks in Africa applied green finance practices in various forms within their operations (EIB 2021). One very common approach is ESG screening of loans as part of the 'know your customer' (KYC) process.

Several countries in SSA now have their own banking industry initiatives geared at embedding sustainability. Meanwhile, banks are signing up to sustainability initiatives driven by different reasons, including regulatory requirements, demand by their investors and financiers, national industry initiatives, joining regional or international alliances, or a strategic objective to mainstream sustainability. National initiatives in the region include the Sustainable Finance Initiative (SFI) by the Kenya Bankers Association (KBA), Guiding Principles on Sustainable Finance by the Central Bank of Egypt, Sustainable Banking Principles by the Central Bank of Nigeria, the Regional Center for Sustainable Finance (RCSF) by Egypt's Financial Regulatory Authority (FRA), the Climate Change Center (CCC) by the Bank of Mauritius, and the Sustainable Finance Working Group in South Africa.

We have several banks in SSA that are signatories to the UN Principles for Responsible Banking (PRB), the global sustainability framework for the banking industry that is led by UNEP FI. These include Absa Group (South Africa), Access Bank (Nigeria), Bank of Industry (Nigeria), Ecobank (Togo), FirstRand group (South Africa), Investec (South Africa), Jaiz Bank (Nigeria), KCB Group (Kenya), Land Bank (South Africa), Polaris Bank (Polaris), Standard Bank (South Africa), Mauritius Commercial Bank (Mauritius), Wema Bank (Nigeria), and Zenith Bank (Nigeria). Two of these banks (Investec and KCB Group) have since joined the Net-Zero Banking Alliance (NZBA) and committed to aligning their lending and investment portfolios with net zero emissions by 2050.⁶

Several African banking associations have become members of the Sustainable Banking and Finance Network (Table 4), an international network of financial sector regulators, central banks, ministries of finance, ministries of environment, and industry associations from emerging markets committed to advancing sustainable finance for national development priorities, financial market deepening, and stability established in 2012.

6 Source: www.unepfi.org/net-zero-insurance/

TABLE 4 AFRICAN MEMBERS OF THE SUSTAINABLE BANKING AND FINANCE NETWORK (SBFN)

Organisation type	Organisation name	Member since
Capital market regulator	Securities and Exchange Commission of Central Africa (COSUMAF)	2022
Banking regulator	Bank of Ghana	2016
Banking association	Ghana Association of Bankers	2016
Banking association	Kenya Bankers Association	2015
Banking regulator	Central Bank of Nigeria	2012
Banking association	Banking Association South Africa (BASA)	2016
Financial sector regulator	South African National Treasury	2021
Financial sector regulator	South Africa Prudential Authority	2021

Source: Sustainable Banking and Finance Network (SBFN) website.

3.7 The state of climate risk regulation

In 2021, AfDB, GCA and UNEP FI jointly launched a baseline study with the aim of providing an understanding of the state of regulation of climate-related risks across Africa’s financial sector. The study was launched at COP26 in Glasgow, Scotland. The study interviewed 11 central banks and regulators and covered about 20 countries representing diverse geographies and levels economic development. The study included a deep dive into the state of regulation in 12 countries: DR Congo, Egypt, Ghana, Kenya, Mali, Mauritius, Morocco, Nigeria, Rwanda, South Africa, Tunisia, and Zimbabwe (AfDB 2021b).

This study identified three archetypes of central bank/regulators in Africa with regard to climate risk:

1. **Established:** Countries whose regulators have already published or drafted specific prudential regulation to identify, measure and manage climate related risks. Examples include the Bank of Mauritius (BOM) and the Central Bank of Kenya (CBK).
2. **Emerging:** Countries whose regulators have implemented other regulations/guidance or engaged with industry (e.g. principle-based regulations, disclosure standards, best practice guidance). Examples include Bank Al-Maghrib (BKAM) Morocco, the Central Bank of Egypt (CBE), the Bank of Ghana (BoG), the Central Bank of Nigeria (CBN), the South African Reserve Bank, and the Reserve Bank of Zimbabwe.

- 3. Initiating:** Countries whose regulators have not yet started integration of climate risks into their regulatory/supervisory actions (they may have initiated work through international or national collaboration). Examples include the Central Bank of Congo, Banque Nationale de Rwanda, the National Bank of Tunisia, and Central Bank of West African States (BCEAO).

Over 80% of the interviewed regulatory authorities (9 out of 11) consider climate risk a high or very high priority on their agenda, but also highlighted challenges to implementation of climate risk management and regulation. Some of these challenges included data availability and/or data quality issues, lack of internal capabilities to implement the climate risk agenda, and differing methodologies (e.g. for climate stress tests).

A growing number of African monetary and financial authorities have joined global initiatives seeking to advance sustainable finance. The Securities and Exchange Commission of Central Africa, the Bank of Ghana, the Central Bank of Nigeria and the South Africa Prudential Authority are members of the SBFN (Table 4). Additionally, 12 African central banks and regulators have joined the NGFS as of July 2022: the Central Bank of Kenya, Bank of Mauritius, Bank of Ghana, Banque Centrale de Tunisie, Bank Al-Maghrib, Central Bank of Seychelles, Central Bank of Egypt, Central Bank of Mauritania, Central Bank of Nigeria, Financial Regulatory Authority of Egypt, South African Reserve Bank, and the Central Bank of West African States.

3.8 Regional initiatives and organisations

There are a various regional initiatives and organizations working on sustainable finance in SSA. A number of these initiatives and organisations (both international and regional) have already been discussed or mentioned earlier in this chapter (ADRFi, AfDB, BOAD, GCA, ICMA, IFC, NGFS, SBFN, UNECA, UNEP FI, UNGC, PRB, PSI, SSE, among others). Other regional initiatives and organisations working on sustainable finance include the following:

Africa Adaptation Acceleration Program (AAAP)

A programme launched jointly by AfDB and GCA to mobilise \$25 billion for climate adaptation and resilience activities in Africa between 2022 and 2025. AAAP is anchored on four pillars: climate-smart digital technologies for agriculture and food security; an African infrastructure resilience accelerator; youth empowerment for entrepreneurship and job creation in climate adaptation and resilience; and innovative financial initiatives for Africa.

Africa Green Finance Coalition (AGFC)

An initiative launched at the COP26 World Leaders Summit that aims to bring together African countries to pool resources to close the continent's green finance gap. AGFC seeks to achieve this through financial sector reforms, technical assistance, and peer learning that will create an increased flows of green investment capital in Africa.

African Carbon Asset Development Facility (ACAD)

A UNEP-led public–private partnership that seeks the development of the carbon market in Africa by enhancing awareness, expertise, and investment willingness. It aims to create a pipeline of low-carbon projects in Africa, provide seed funding, and increase investment flows to low-carbon projects. ACAD also seeks to provide training and carbon finance to banks and entrepreneurs.

African Financial Alliance on Climate Change (AFAC)

A regional alliance that aims to bring together Africa’s key financial institutions to mobilise private capital flows towards Africa-wide low-carbon and climate resilient development. The target financial institutions include central banks, ministries of finance, stock exchanges, insurance companies, national and regional development banks, commercial banks, sovereign wealth and pension funds, institutional investors, among others.

African Venture Philanthropy Alliance (AVPA)

A pan-African network of social investors that seek to increase capital flows to social investments in Africa and to have all forms of capital in Africa deployed effectively to maximise social impact. In 2020, AVPA published a landscape study mapping social investments in 18 countries across Africa (East, West and Southern Africa). This was done in partnership with the advisory services firm Intellectap.

Agenda 2063

A continentally agreed blueprint for achieving inclusive and sustainable development in Africa. It was agreed in 2013 during the marking of the Golden Jubilee celebrations of the Organisation of African Unity/ African Union (OAU/AU). One of its flagship projects was the establishment of the African Continental Free Trade Area (AfCFTA), whose agreement came into force in 2019. Agenda 2063 has since served as the continental framework for sustainable development.

Agriculture and Climate Risk Enterprise (ACRE)

An insurer provider that offers input-linked, mobile-enabled index insurance programmes in Africa to protect smallholder farmers against vulnerabilities of climate change. ACRE has footprints in Ghana, Kenya, Malawi, Mozambique, Rwanda, Senegal, Tanzania, and Uganda.

Carbon market and climate finance alliances

Coalitions of member countries that aim to enhance the capacities of countries in carbon markets and climate finance in their respective regions, through a collaborative regional approach. They include the Eastern Africa Alliance on Carbon Markets and Climate Finance and the West African Alliance on Carbon Markets and Climate Finance. Government representatives to the alliance are appointed by the participating countries.

FSD Africa

A specialist development agency whose work focuses on strengthening financial markets in SSA. It is supported by UK Aid, funded by the Foreign, Commonwealth & Development Office (FCDO) of the UK. Through its work, it supports sustainable capital markets development in Africa. Table 5 lists some of the green/sustainable finance projects that FSD Africa has supported in Africa (FSD Africa 2022).

TABLE 5 FSD AFRICA SUPPORTED TRANSACTIONS

Country	Issuances/programmes	Amount raised (GBP million)	Number of issuances
Nigeria	Green Bond Programme	122	6
Kenya	Green Bond Programme	65	3
Rwanda	Energicotel Bond Issue	2.5	1
Morocco	BCP Morocco Gender Bond Development	15.9	1
Tanzania	NMB Jasiri (Gender) Bond	25.2	1
Morocco	Office National des Chemin de Fer (ONCF) Green Bond	79.8	3
Mauritius	Cim Financial Services Limited (CFSL) Green bond	8.9	1

Source: FSD Africa (2022).

Green Climate Fund (GCF)

The world's largest climate finance fund. According to the *GCF Africa Spotlight Report* of 20 July 2022, GCF funding in Africa was \$3.8 billion (35% of the fund's portfolio). This amount includes the total GCF funding amounts of multi-country projects that include African countries. The number of total approved GCF projects in the region was 81, including 13 multiregional projects. There were 65 projects under implementation at the time. The co-financing to these GCF projects was \$9.3 billion. In terms of GCF readiness support in Africa, there were 194 readiness grants approved (valued at \$138.1 million) with 164 readiness grants disbursed (valued at \$75.4 million) (GCF 2022). Table 6 lists the GCF's direct access entities (DAEs) in Africa. A DAE is an entity (non-governmental, public, or private organisation) accredited to submit funding proposals for GCF-backed projects and programmes.

TABLE 6 THE GREEN CLIMATE FUND'S DIRECT ACCESS ENTITIES IN AFRICA

Initials	Full name
ADA_Morocco	Agency for Agricultural Development of Morocco
AWB	Attijariwafa Bank
BOAD	Banque Ouest Africaine de Développement
CDG_Capital	CDG Capital S.A.
CRDB	CRDB Bank Plc
CSE	Centre de Suivi Ecologique
DBSA	Development Bank of South Africa
DBZ	Development Bank of Zambia
Ecobank	Ecobank Ghana
EIF	Environmental Investment Fund
IDBZ	Infrastructure Development Bank of Zimbabwe
FNEC	Fonds National pour L'Environnement
KCB	KCB Bank Kenya Limited
LBA	La Banque Agricole
MASEN	Moroccan Agency for Sustainable Energy S.A.
MOE_RWA	Ministry of Environment Rwanda
MoFEC	Ministry of Finance and Economic Cooperation Ethiopia
MWE_UGA	Ministry of Water and Environment Uganda
NEMA	National Environment Management Authority of Kenya

Source: GCF.

Marrakech Pledge

A continental pledge of African capital markets regulators and exchanges. It is a commitment to foster green capital markets in Africa to facilitate a shift to a low-carbon economy while achieving sustainable and inclusive growth in the region. This initiative was launched during the 2016 United Nations Climate Change Conference (COP22) held in Marrakech, Morocco.

Sustainable Use of Natural Resources and Energy Finance (SUNREF) Programme

The green finance label of Agence Francaise de Development (AFD), the French development agency. SUNREF provides financing through credit lines to banking partners (e.g. Mauritius Commercial Bank and State Bank of Mauritius), which the banks then issue in the form of green loans to finance green projects. This finances projects such as renewable energy installation, energy-efficient equipment, thermal insulation, and so on.

4 BARRIERS

There are three major types of barriers to scaling up sustainable finance in the region: policy and regulatory barriers, market barriers, and implementation barriers.

4.1 Policy and regulatory barriers

One key barrier has been a lack of sufficient incentives through policy and regulation by SSA governments and regulators. Even where green/sustainability national policies and roadmaps exist, there is a challenge in translating policy into investment needs and incentives, especially for the private sector. As it stands, public finance is inadequate and development finance is narrowing, hence private capital incentives will be important. For example, businesses will need support with listing on green segments of stock exchanges at affordable costs, and banks may need credit guarantee schemes to on-lend funding to green projects by their MSME clients. Besides incentives, there is an important need for regulators to set clear frameworks for sustainable finance, including disclosure requirements, taxonomies, and prudential frameworks.

4.2 Market barriers

Market barriers present the biggest challenge to advancing sustainable finance in SSA. These include:

- **Perception of risk–return profile on projects:** Many investors consider green or sustainability-linked projects as having inadequate returns on a risk-adjusted basis. Being novel projects for a large part, investors may consider the market returns as not adequately compensatory for the inherent risk. One factor that makes the (perceived) risk higher than traditional projects is the complexity of due diligence to make sure the sustainability or green metrics thresholds are met.
- **Perception of commercial viability of sustainable projects:** Many of the innovations happening in the sustainability space are nascent projects without historical records, and investors consider it risky to venture when uncertain of the commercial viability. Where the identified projects are relatively small, it might be difficult to aggregate them or securitise them for a secondary market. This presents investors and project promoters with liquidity risk.
- **Limited pipeline of bankable projects:** There are limited projects considered bankable by investors, coupled with the challenge of risk perception in Africa. Further, a lot of the national plans, such as National Adaptation Plans (NAPs), do not clearly articulate investment-ready opportunities that can attract climate adaptation finance. For local currency projects, this problem is exacerbated by currency risks. A 2020 McKinsey report found that most infrastructure projects in Africa don't succeed – with 80% failing at the feasibility and business-plan stage and fewer than 10% reaching financial close (McKinsey & Company 2020).

- **Limited fiscal space and debt capacity:** For public-led sustainable investments, many governments in Africa are faced with limited fiscal space and debt capacity. This has been worsened by Covid-19 as public resources became more strained from managing the pandemic and economic recovery. There is an estimated sustainable recovery funding gap in Africa of \$345 billion over three years and finance ministers have called for external assistance (GCA 2021). As governments increase their borrowing from capital markets, this has had the effect of crowding out private credit for green/sustainable projects. In the case where government borrowing is not used to finance green projects, this further reduces the funding allocation to sustainable projects within an economy.

4.3 Implementation barriers

- **Limited data and data quality issues:** In most countries, there is a lack of reliable data that are relevant for green projects. Lack of quality data is a limitation to the kind of sustainable finance instruments that can be used, as some require well-defined metrics. For example, banks need climate-relevant data to evaluate the credit risk of clients borrowing for climate-aligned projects. Similarly, an insurer needs reliable data when issuing parametric insurance for disaster risks. The data issue is aggravated by the general fact that poorer countries (that are most in need) have the most data gaps.
- **Limited technical capabilities:** Overall, there are still limited data and technical capabilities on implementing sustainable finance projects. This hinders project origination, product development and rollout of finance instruments that require deep technical expertise. This challenge is highly prevalent for sustainable infrastructure projects, which are usually complex in nature and difficult to implement, and yet many only have modest commercial returns with very long payback periods.

5 RECOMMENDATIONS

While some progress has been made in advancing sustainable finance practices across SSA and scaling up sustainable investment, a lot of work remains to be done. Policymakers and market leaders need to undertake concerted efforts in the following areas.

1) Intensify targeted green/sustainability funds

There is a need to set up more, or expand existing, green/environmental funds that focus on or serve Africa. While the likes of GCF have been useful, the funding gap in Africa is still huge, and the Paris commitment of \$100 billion remains unmet and is insufficient. New or expanded international funds would help intensify private investment in sustainable projects and public investments such as sovereign green bonds.

2) Create policy incentives and enabling environment

The policy environment across countries should be enhanced. This can be done in various ways, including de-risking incentives (e.g. for bondholders that buy corporate green bonds), government support for green lending (e.g. through credit enhancement schemes for banks), enabling co-investing by the private sector for infrastructure projects (e.g. climate-resilient bridges and roads), and enabling local financial institutions to access international funds.

3) Build market stimulus for sustainable investments

Markets need to be conducive to the uptake of sustainable finance. One practical step is having market designs that provide long-term price visibility to reduce the perception of inadequate risk-adjusted returns or lack of commercial viability. Also, there is a need for regulation that enables rapid deployment of investment in high-opportunity sectors like energy renewables. On the policy side, instruments such as carbon taxes and renewable subsidies can be considered, to the extent they are welfare-enhancing and not market distorting.

4) Build technical assistance and data capacity

Building technical capacities would enable financial actors better assess risk (e.g. climate risks in bank portfolios) and appraise investment projects much better. This could also help with debt origination for GSS bonds and listing on stock exchanges. Financial actors like banks and insurers would also benefit greatly from technical knowledge that helps them to structure sustainability-linked products (e.g. green microloans for SMEs or weather index-based insurance solutions). On the data side, concessional and public finance can have a huge impact if a significant portion is channelled towards sourcing and availing data that can support sustainable finance transactions and projects. Organisations such as Partnership for Carbon Accounting Financials (PCAF) are helping financial institutions access data and methodologies that enables them to assess, measure and disclose GHG emissions associated with their lending and investment portfolios.

5) Support SMEs that offer green products and services

SMEs account for 90% of the private sector in Africa and provide 90% of the jobs (World Bank 2017, AUDA-NEPAD 2022). Thus, targeting SMEs would have a material impact on green growth and building sustainable economies. Incentives may include green funds dedicated to SMEs, credit guarantee scheme for financiers offering green loans to SMEs, and simply raising overall awareness of SMEs on green finance and green projects. A 2021 PAGE study on “Greening SMEs in Mauritius” found that 55% of the respondents cited lack of awareness of green finance as the greatest barrier to executing green projects (PAGE 2021). If properly leveraged, SMEs have huge potential for eco-innovation.

6) Pay more attention to nature risks and impacts in finance

One of the main trends in sustainable finance is the intersection of nature and finance. This ranges across finance for biodiversity, land regeneration, food systems and nature-based solutions, among other nature-related topics. The *2021 State of Finance for Nature* report estimated a \$4.1 trillion financing gap globally in nature between 2020 and 2050. Currently, investments in nature-based solutions amount to \$133 billion and are mostly funded by public sources (UNEP 2021). A 2022 study by FSD Africa and Vivid Economics used a quantitative risk assessment and stress-test approach to assess opportunities and risks relating to nature for financial institutions in Africa (FSD Africa and Vivid Economics 2022). It evaluated the extent to which companies impact and depend on nature, and in turn how nature affects business activities. It found out that policy actions to curb nature degradation were likely to have substantial impact on the portfolios of financial institutions, with the most vulnerable sectors being agriculture and extractives. The assessment found that nature-related risks (expected gains and losses) in these two sectors were of the same (large) magnitude as climate-related risks in manufacturing, chemicals, and extractives. Such a nature-related risk assessment was first done by Banque de France and De Nederlandsche Bank (DNB), which found that threats to financial stability arising from nature loss are significant. Therefore, there is a need to go beyond climate risks and pay more attention to nature risks and impacts in the finance sector in Africa.

6 CONCLUSION

In closing, although Africa's contribution to global emissions is minimal, there is a need to green SSA's financial system. On the policy front, countries in nascent stages could start by developing national frameworks and sustainable finance roadmaps that define national sustainability goals and priority sectors. On the private sector side, we have seen progress by financial institutions that have joined initiatives such as SBFN, PRB, PSI, NZIA and NZBA. However, such commitments and public declarations are not enough and must be followed up by tangible action to avoid greenwashing and misrepresentation. African central banks and other financial regulators can play an important role by issuing ESG-related and/or climate risk regulation/guidance and requiring public disclosures by their supervisees (especially banks, since Africa has a highly bank-led financial system). This will help mainstream sustainable finance, avoid the financial stability threat emanating from climate risk and nature loss, and contribute to inclusive and sustainable growth that ensures an orderly transition to a low-carbon economy in sub-Saharan Africa.

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CHAPTER 16

Political economy imperatives and financing needs: South Africa's just transition to a lower-carbon economy and a climate-resilient society

Dipak Patel

Presidential Climate Commission

1 THE EXISTENTIAL THREAT OF CLIMATE CHANGE AND THE CRITICALITY OF ADOPTING A NEW AND DECARBONISING DEVELOPMENT PATH FOR GROWTH AND PROSPERITY FOR SOUTH AFRICA

The Sixth Assessment Reports (AR6) of the Intergovernmental Panel on Climate Change (IPCC), drawing on many thousands of primary research studies, and collectively harnessing the scientific, analytical and collaborative endeavours of 721 authors and review editors, academic experts and scientists, from 90 countries (Thomas 2018), has confirmed beyond doubt that climate change resulting from human-induced emissions will have catastrophic consequences – unless rapid, concerted and unified climate responses across the world are undertaken (IPCC 2021, 2022a, 2022b).

UN Secretary-General Antonio Guterres, upon the release of the third report in April 2022, said: “The jury has reached a verdict. And it is damning. This report of the Intergovernmental Panel on Climate Change is a litany of broken climate promises. It is a file of shame, cataloguing the empty pledges that put us firmly on track towards an unliveable world” (UN 2022).

The United Nations Sustainable Development Goals (SDGs) provide a vital link between the necessity to reduce emissions, thereby reducing temperature rise (SDG13: Climate Action), and the need for these new lower carbon and greenhouse gas development pathways to “promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all” (SDG8) (UN 2015).

It is in this context that, over the past two decades, South Africa has adopted a range of national and sectoral policies, plans and strategies. These have included the National Climate Change Response Strategy (2004), the National Energy Act (2008), an Environmental Levy on CO₂ Emissions on motor vehicles (2010), Climate Change Sector Plans (2015), National Greenhouse Gas Emissions Regulations (2017), a Carbon Tax Bill and Levy (2019), the Updated Nationally Determined Contributions (NDC 2021),

submitted to the United Nations Framework Convention on Climate Change, and the National Climate Change Bill (2022), currently being passed through the legislative process.

South Africa's National Development Plan 2030, adopted in 2012, specifically referenced climate change response as an integral feature: "South Africa is not only a contributor to greenhouse gas emissions – it is also particularly vulnerable to the effects of climate change..." It goes on further to say: "industries and households have to reduce their negative impact on the environment. This will require far-reaching changes to the way people live and work" (South African Government 2012).

This chapter provides an overview of South Africa's efforts to advance a just transition to a lower-carbon economy and a climate-resilient society, and the investments needed to make this happen. Section 2 discusses the critical role of climate finance in South Africa's climate response transition. Section 3 provides an overview of South Africa's climate policies, which are aiming to forge a just transition and strengthen adaptation and climate resilience. Section 4 highlights the risks to South Africa's economy and trade competitiveness from climate policies adopted by major trading partners, which reinforce the need to advance the transition at home. Section 5 discusses the international Just Energy Transition Partnership that was announced at COP26 in Glasgow to financially support South Africa in the transition. Section 6 lays out current efforts by the South African government to develop a coherent and implementable national just transition investment plan. Section 7 concludes.

2. THE CRITICAL ROLE OF CLIMATE FINANCE IN SOUTH AFRICA'S CLIMATE RESPONSE TRANSITION

The consensus that South Africa must undertake a fundamental system transformation, contributing to global emissions reduction whilst achieving its national economic and social development objectives, is reflected in the various initiatives being undertaken in the policy arena and in the domestic capital markets. In the context of fiscal constraints, there is an acknowledgement of the role that financial and capital markets will play in mobilising and scaling up climate finance.

The policymakers and the official negotiators representing South Africa in the United Nations Framework Convention on Climate Change (UNFCCC) will continue to advocate for and demand that the developed countries must live up to their financial commitments to assist developing countries to undertake climate change responses. Such contributions, if they do indeed materialise, play an important role in financial and project risk mitigation, whilst providing concessional support to allow blended finance instruments – thus providing the platform for scaling up investment capital from domestic and global capital markets.

South Africa possesses a well-developed financial sector, including prudential regulations administered by the South African Reserve Bank (SARB), as well as a deep and liquid capital market regulated and serviced by the Johannesburg Stock Exchange (JSE). Although the gross savings saving rate, at 15.6%,¹ is low compared to developed countries, it nonetheless makes a valuable contribution if investments can be profiled to create asset classes that the pension funds and asset managers find compelling on a risk-adjusted basis.

To achieve the confidence required by domestic (and indeed international) capital markets to undertake a fundamental shift towards green and sustainable finance in their portfolios, the regulatory and policy environment must be made conducive to investing in the transition to a lower-carbon economy and a climate-resilient society.

The last few years have seen a considerable effort on the part of government as well as the financial sector to create an enabling environment for mobilising and scaling up climate finance. Among the finance related policies are:

1. The introduction of a carbon taxation system (South African Government 2019). In the 2022 budget speech, the Minister of Finance announced an increase in the carbon tax rate for 2022, progressively increasing in phases. This signalled an intention to internalise the cost of emissions by companies.
2. The amendment of the Pension Funds Act, by introducing Regulation 28 in July 2022 (Burger 2022), which will encourage the pensions industry to diversify their portfolios and encourage long-term investments including sustainability considerations, particularly in infrastructure assets. The aim of the amendment is to explicitly enable and reference longer-term infrastructure investment by retirement funds, by increasing maximum limits that funds may invest in.
3. The National Treasury has been undertaking various initiatives to create an enabling environment for sustainable and climate-responsive financial flows and investments. Among these is the Technical Paper on Sustainable Finance, published in October 2021 (National Treasury 2021). This paper, driven by the imperative for climate finance to be scaled up in the domestic environment, is premised on the need to create new investment pathways that achieve climate objectives and social resiliency to climate change.
4. Based on the Technical Paper on Sustainable Finance, the National Treasury launched the country's First National Green Finance Taxonomy in March 2022 (National Treasury 2022), establishing a voluntary mechanism with clear definitions for the classification of assets, projects and sectors for them to be recognised as green or environmentally friendly.

1 Source: <https://www.ceicdata.com/en/indicator/south-africa/gross-savings-rate>

5. The JSE's Sustainability and Climate Disclosure Guidance (JSE 2022), released in June 2022, supports the stock exchange's listed companies and institutional investors to access domestic and international markets by providing a globally accepted disclosure framework for climate-related metrics.

The investment requirements of South Africa's transition to meeting its climate and development objectives are explored later in this chapter; suffice to say that it will run into hundreds of billions of dollars. Through a combination of public and grant funding (both sources being scarce and/or constrained) and private sector funding and investment (both domestic and international), the environment is being created to mobilise and scale up climate finance. The necessity of blended climate finance and the creation of financial instruments and asset classes that are attractive to investors, while catalysing and driving the climate change response, is understood by all national stakeholders.

3 SOUTH AFRICA'S CLIMATE POLICIES: FORGING A JUST TRANSITION AND BUILDING CLIMATE RESILIENCE

3.1 The Presidential Climate Commission: Forging a social compact and framing the 'just transition'

The South African Presidential Climate Commission (PCC) is a multi-stakeholder body established by the President of the Republic of South Africa in September 2020. The President is also the Chairperson of the PCC. It is mandated to provide advice on the country's climate change response and means of achieving a just transition towards a low-carbon, climate-resilient economy and society. In providing this advice, robust technical and scientific analyses underpin its recommendations and advice. It is also engaged in facilitating dialogue between all social partners in South Africa.

The PCC is guided by the central theme of justice in the climate transition – ensuring decent work for all, social inclusion, and the eradication of poverty. The PCC comprises government cabinet ministers and representatives from all major stakeholder groups in South Africa – business, labour, civil society, research and academic institutions, youth, and traditional leadership.

The Framework for a Just Transition in South Africa (JTF) was adopted by the National Cabinet on 1 September 2022 as a national policy (SA News 2022). All sectors of South African society, including government, are being called upon “to rally behind and embrace this framework”. The Just Transition Framework sets out the principles and strategic elements that should be embedded in all climate response endeavours, to ensure distributive, procedural, and restorative justice as the deep transformational process to achieve a lower-carbon economy is undertaken. “The just transition framework brings coordination and coherence to just transition planning in South Africa” (PCC 2022).

The PCC indicated the importance of blended capital to achieve the just transition, and further elaborated several critical success factors for effective mobilisation and scaling up of climate finance. For adaptation and climate resiliency, and for other projects that do not readily attract commercial investment, the PCC has indicated that it will be necessary to design a just transition financing mechanism. Such a mechanism will aggregate various types of concessional finance contributions – donor grants, development finance, fiscal contributions, and corporate social investment (CSI) grants, to name a few² – from the domestic and international ecosystem and scale up with commercial finance to achieve affordable finance for marginal or non-returning projects. It is envisaged that many of these projects will be in local settings and providing sustainable development opportunities for workers, communities and micro, small and medium-sized enterprises in the localised value chains of affected industries.

Similar blending of finance will be required for investments in technology development and early-stage project preparation and construction, until the risk curve has been traversed and revenues begin to be generated – at which point, projects can be refinanced and packaged for investment by the commercial and long-term savings industry.

The PCC also recognises the importance of policy and regulations providing an environment conducive to investment by the private sector, and in this regard intends to make recommendations for the review of the policy environment to remove barriers and bottlenecks to ease the way for private investment. With regards to public finance and government expenditures, the Cabinet has approved the JTF for implementation and for it to be “integrated into the national planning and budgeting systems” of the country.

3.2 South Africa's updated Nationally Determined Contribution to the UNFCCC

Based on sectoral analysis and climate modelling work already undertaken by various private sector, civil society, government and academic institutions, the PCC was catalytic and instrumental in the process of the South African government submitting an ambitious 2nd NDC to the UNFCCC in 2021, ahead of COP26 (PCC 2021).

Based on rigorous analysis of the options for a net zero trajectory to mid-century, it makes a more ambitious commitment than the NDC submitted in 2016. The mitigation targets contained in the 2016 NDC consisted of a greenhouse gas (GHG) emissions target range in 2025 of 398 to 614 Mt CO₂-eq, and in 2030 a GHG emissions target range of 398 to 614 Mt CO₂-eq, for all national GHG emissions, including those from land use. The draft update proposes revised target ranges of 398 to 510 Mt CO₂-eq for 2025, and 398 to 440 Mt CO₂-eq for 2030 (South African Government 2021a).

2 CSI refers to company investment in social development. Since November 2017, CSI is mandatory for all businesses listed on the JSE to be compliant with the King Code of corporate governance.

The upper end of the ranges is aligned to a fair share contribution (common but differentiated – considering South Africa’s national circumstances) towards a target of no greater than 2°C rise in global temperature, while the lower end is aligned to a temperature rise no greater than 1.5°C. The lower, more ambitious emissions target presupposes “that support will be provided to South Africa as a developing country as set out in the Paris Agreement’s Articles” (DFFE 2021).

Grounded in analysis and based on the realities of South Africa’s economic structure – an almost total reliance on fossil fuel-generated electricity, which powers almost all the mining, agricultural and industrial sectors, and petroleum products for mobility of goods and people – the updated NDC 2021 makes a clear statement of priority sectors that require deep decarbonisation transitions to mitigate emissions. These are:

1. decarbonising the electricity sector during the 2020s and 2030s, with a focus on decommissioning and repurposing coal-fired power stations, and an accompanying rapid roll-out of private sector renewable power generation projects;
2. strengthening and extending the electricity grid to accommodate a changing electricity system; and
3. transitioning to low-emission vehicles, for both passenger and goods transportation.

While not explicitly referred to in the updated NDC 2021, subsequent mitigation pathways analysis has concluded that the development of green hydrogen production capability is a real possibility, for both domestic energy demand and for competitive positioning of South Africa in the global market as an exporter of green hydrogen.

Mobilising the funding and investments that are required to achieve these ambitious decarbonisation targets, and to achieve net zero emissions by 2050, will require creative and innovative approaches to financial structuring. Many of the commercially viable projects for the achievement of these mitigation and transformation pathways could raise the capital that is required through blended finance mechanisms, incorporating concessional finance to close the gaps that arise from a variety of risks. These include composing affordable and fit for purpose financial instruments that utilise grant and deeply concessional tranches, to mitigate financial and project risks while leveraging (to achieve scale) with private and commercial funding.

3.3 Adaptation and building climate resiliency

Achieving the NDC target requires simultaneous attention to addressing the poverty, joblessness, and development needs of the population, ensuring that no one is left behind. In addition, job creation, which will require different skills sets for the future green economy, requires urgent and effective investments in education and training for the youth, and up-skilling for the existing workforce to support workers to transition to the new jobs.

South Africa developed a National Climate Change Adaptation Strategy, which was gazetted in May 2019 after a deep and consultative process across all three spheres of government departments, research and academic institutions, NGOs, community-based organisations, business, and civil society (DFFE 2019). The risks associated with climate change, particularly for vulnerable groups in society and to South Africa's socioeconomic development agenda, were analysed and a vision and strategic outline to build climate resiliency were developed. Specifically, it concluded that in some cases climate mitigation actions and climate adaptation actions could be either mutually supportive or mutually contradictory.

In cases where the mitigation programmes result in further negative impacts on social groups (e.g. the supply chains, workers, and livelihoods of communities currently dependent on the coal value chain), special efforts and investments are required to ameliorate these. The PCC's Framework for a Just Transition calls for the transition that "supports South Africa's broader efforts to redesign the economy to the benefit of most citizens to enable *deep*, *just*, and *transformational* shifts in the context of delivering an effective response to climate change (i.e., improving resilience, making substantial cuts to green-house gas emissions, and protecting and promoting the health of communities)" (PCC 2022).

4 THE RISKS TO SOUTH AFRICA'S ECONOMY AND TRADE COMPETITIVENESS IN GLOBAL MARKETS

On 22 June 2022, the European Parliament adopted various policy components of the European Green Deal 2020, in particular the proposed Carbon Border Tax Adjustment Mechanism (CBAM), which aims to impose taxes on imports that have higher embedded carbon and emissions to address "the risk of carbon leakage in the absence of a fair level playing field" (European Commission 2019, European Parliament 2022).

The European Union is one of South Africa's main export partners, accounting for 23% of its total exports in 2021, while the United States accounts for about 10%.³ With the United States in the process of considering its own carbon border tax mechanism, one third of South Africa's exports face the risk of becoming too expensive to compete in the global market. An initial proposal to exempt developing countries from the EU CBAM mechanism was rejected by the European Parliament in the resolution of 2022. In addition to the CBAM, the European Union also passed a resolution banning the sale of new combustion engine vehicles from 2035. As the developed world moves towards aggressive decarbonisation of its economies, the threat to South Africa's (as also for other developing countries') mining, manufacturing and agricultural sectors is both real and imminent.

3 Source: <https://www.sars.gov.za/customs-and-excite/trade-statistics/reports/>

The immediate focus areas in South Africa's NDC 2021, reconfirmed by various research projects and reflected in the draft South African Renewable Energy Masterplan (due to be adopted in 2022), reflect the government's and industry's view that the energy sector needs rapid decarbonisation and reform (GreenCape 2022). All other sectors' green transition plans will come to nought unless the embedded carbon and other emissions resulting from the electricity and energy inputs in their operations are urgently and significantly reduced.

Government, civil society, labour, private corporations, and all other social partners are aligned in their understanding of these risks and have already developed a tight and unified consensus in this regard.

5 THE INTERNATIONAL PARTNERSHIP TO SUPPORT SOUTH AFRICA'S TRANSITION

At COP26 in Glasgow, an international partnership – the Just Energy Transition Partnership (JETP) – was announced between South Africa and the International Partners Group (IPG) comprising France, Germany, the United Kingdom, and the United States, as well as the European Union, with President Ramaphosa announcing that “partner countries will mobilise an initial \$8.5 billion over the next three to five years through a range of instruments including grants and concessional finance, to support the implementation of our revised NDC through a just transition to a low carbon and climate resilient economy” (SA News 2021, South African Government 2021b).

This development and the announcement of the JETP must be seen against the backdrop of two significant factors:

1. The developed world had thus far failed to live up to its committed pledge of supporting the developing world, made in the Paris Agreement (of \$100 billion per annum) (Harvey 2021)
2. South Africa provides a unique confluence of conditions:
 - a. high per capita carbon and greenhouse emissions with clearly identifiable ‘point sources’ due to heavy reliance on coal for electricity generation and synthetic fuel production;
 - b. a sustained history of positive climate change orientation, legislative reform, and policy development – providing a relatively well-developed political, legislative and policy environment;
 - c. a commitment, and proven capability, to forge effective social compacts and, more particularly, the role that the PCC had already begun to play in forging a science-based and coherent consensus about a climate transition that harmonised industrial sector transformation with social and economic development – a ‘just transition’; and

- d. the submission of an analytically and scientifically coherent updated NDC 2021 – ambitious and underpinned by clearly articulated transitional directions.

Soon after this announcement, a special committee – the Inter-Ministerial Committee, chaired by the President – was formed to “coordinate further work on the country’s Just Transition plan and on the financial offers made to South Africa in the context of the partnership” (SA News 2021)

The Presidential Climate Finance Task Team, led by Mr Daniel Mminele (former Deputy Governor of the South African Reserve Bank), was created and tasked with evaluating and analysing the offer made by the IPG, negotiating with the counterparty officials, and advising the South African Cabinet through the Inter-Ministerial Committee.

At the time of writing this chapter, these processes were ongoing. The objective is to prepare a coherent ‘investment plan’ that would inform the desired allocation of the \$8.5 billion package. It is envisaged that appropriate facilities and instruments will be designed to invest in projects and fund programmes that would help to accelerate South Africa’s just energy transition.

In the context of South Africa’s national economic structure and the imperative to establish a baseline by 2030 from which to successfully pursue the objectives of a decarbonisation trajectory towards the country’s stated intent of achieving net zero emissions by 2050, there are three catalytic focus areas:

1. Decarbonisation of the electricity sector, by accelerated decommissioning of coal-fired power stations and their repurposing for renewable energy and lower-emitting primary fuel sources. To enable this fundamental transformation of the electricity sector, it has been agreed that the following are also critical to success:
 - a. Strengthening and extending the national transmission grid to enable a rapid connection of new renewable power generation capacity, both independent power producers (IPPs) and by the national power utility (Eskom) itself.
 - b. ‘Embedded’ generation, referring to a relaxation of the licencing conditions associated with private sector corporations investing (or enabling investment through power purchase agreements) in renewable power projects up to 100MW.
 - c. The creation of an independent and market-neutral transmission and systems operator – bringing transparency and confidence to the electricity supply industry.
2. The development of an electric vehicle sector – to continue to support the manufacturing of vehicles in South Africa, for both the domestic market and continued export to world markets.
3. The development of a green hydrogen sector for domestic demand as well as the global market’s anticipated demand over the coming decades.

South Africa's just transition, and the just *energy* transition, will require significantly more investment than this \$8.5 billion offer of concessional finance from the IPG. The total investments required for the multi-decadal transition, incorporating both mitigation and adaptation (including climate resiliency), are being quantified by various stakeholders. Depending on the modelling methodologies and the assumed pace-pathway-decarbonisation trajectories, estimates for the total transition to net zero emissions by 2025 have a wide range. For the energy transition alone, including the financing of direct just transition elements that are largely to ameliorate the direct negative impact on workers in the industrial and mining sectors involved in the transition and the communities associated with these value chains, the estimate is between US\$250 billion and \$370 billion. What is clear is that South Africa's just transition will require very significant resources, with climate finance being one necessary element for the achievement of a deep system change towards a lower-carbon, climate-resilient economy.

It is vital that this initial offer of finance for the just energy transition be *catalytic*, *concessional* and *coherent*. The ultimate fitness for purpose and utility of the JETP will have to meet some non-negotiable criteria:

1. The finance mobilised must follow the principle that *developed countries provide finance, technical assistance, and technology transfer to developing countries to advance their climate response*, taking account of national circumstances and priorities (as advanced by the UNFCCC agreements).
2. The finance must be *new* and *additional* to existing and prior climate and development assistance commitments.
3. The grant component and the concessionality of the package must reflect the obligations of developed countries under the UNFCCC, to finance the mitigation and adaptation programmes of developing countries.
4. The overall concessionality of the finance offered must produce a cost of financing that is significantly lower than that which South Africa can raise in global and domestic markets, and in addition, must not negatively impact the country's fiscal position.
5. The flow of funds must be predictable and certain, to enable the country to catalyse and sustain momentum in its just energy transition and the overall just transition investment plan.

6 BRINGING IT ALL TOGETHER WITH COHERENCE: SOUTH AFRICA'S JUST TRANSITION 'INVESTMENT PLAN'

Much work is being done to develop a comprehensive view of, and a roadmap for, South Africa's just transition. This will consist of harmonising the methodologies and outputs of various modelling capabilities, collating and corroborating the conclusions of academic and analytical studies and adopting a long-term national green transition strategy and an investment plan. Such an investment plan is currently being developed.

At a macroeconomic level, the Energy Systems Research Group at the University of Cape Town has built a macroeconomic model that will quantify the decarbonisation effects of various choices that the country will make to pursue alternative options on its pathways to meet the NDC 2021 objectives.

At sectoral level, the National Business Institute has undertaken industrial sector analysis, both to inform the transition of those sectors to a lower-carbon future as well as to quantify the impact of those green transitions on decarbonisation outcomes. Their preliminary estimate for the financial requirements of the industrial transition to meet the NDC targets to 2050 is \$370 billion.

Meridian Economics, a private consultancy group, proposed that South Africa could trade a commitment to reduce CO₂ emissions for a deeply concessional financial package to relieve the debt burden on the country's power utility, Eskom, and provide the financial and balance sheet space for a rapid decarbonisation and a reform of the electricity system.

The Blended Finance Taskforce and the Centre for Sustainability Transitions have jointly analysed the prospects of accelerating a just energy transition in South Africa, and what this entails at a granular level of investment needs for each component of this programme. Their estimate of financial requirements to meet the decarbonisation targets to 2050 is \$250 billion.

The Presidential Climate Finance Task Team has begun the process of developing a comprehensive just energy transition investment plan and intends to allocate the initial \$8.5 billion (to be provided by the IPG) in alignment with this plan, as a catalytic spur for the multi-decadal transition towards net zero emissions by 2050. At the time of writing this chapter, their work on both the investment plan and an estimate of the financial requirements was ongoing.

The World Bank Group is currently in the process of undertaking research towards a Country Climate and Development Report on South Africa, to be published later this year. Their preliminary estimate of the total requirement for the just transition in South Africa (including mitigation, adaptation, and social climate resiliency) is approximately \$420 billion to 2050.

The PCC has started a process of evaluating these various studies and analytical processes, with a view to formulating a comprehensive roadmap of mitigation and adaptation pathways that will set South Africa on a deep, sustainable, and socioeconomic transformation – the just transition.

Further work is being done to quantify the investment and funding needs for the various pathway options that present themselves as possibilities, providing a strategic- and programme-level decision making framework for climate finance mobilisation, scaling, and allocation.

Taken together – the just transition mitigation and adaptation pathways, overlaid with a quantification of the investment and costs involved – the foundations for a coherent and implementable *national just transition investment plan* will be formulated for the period 2025, 2030, and beyond. Such an investment plan will guide the country’s social partners, institutions, and the financial and capital markets in their collective and individual commitments to achieve South Africa’s ambitious NDC 2021 trajectory towards net-zero emissions by 2050.

7 CONCLUSION: THE ROAD AHEAD IS STILL LONG

“I have walked that long road to freedom. I have tried not to falter; I have made missteps along the way. But I have discovered the secret that after climbing a great hill, one only finds that there are many more hills to climb. But I can only rest for a moment, for with freedom come responsibilities, and I dare not linger, for my long walk is not ended.” – Nelson Mandela

This brief case study on South Africa’s journey towards enunciating and implementing an ambitious and deeply transformative socioeconomic path, the ‘just transition’, is intended to provide an insight into the complexities involved in this endeavour. Each country has its own specific set of unique circumstances. In South Africa, the lesson that we have learnt over many decades of social and economic transformation – from apartheid to democracy, from economic exclusion to economic inclusion – is that progress is not linear. We will falter, we will stumble, we will err, we will experience failures. We have also learnt that we are part of a global community of nations, and that we must collectively commit to playing our respective parts to ensure a safe and prosperous future for all of us. A social compact is a necessary foundational condition as we set off on our journey to curtail global warming and climate change.

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CHAPTER 17

Scaling up sustainable finance and investment in the Middle East and North Africa

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1 INTRODUCTION: CHALLENGES AND THREATS

The Middle East and North Africa (MENA) region is expected to double in population by the year 2070 (Borghesi and Ticci 2019). This growth imposes challenges of economic demands and financial burdens to ensure the prosperity of society and the availability of resources for nations, while leaving no one behind. This growth heightens the urgency to ensure sustainable growth, opportunities, and access to basic resources for people (Wilmoth et al. 2022). At the same time, the wealth disparity between regional countries in MENA is exceptionally high, creating opportunities for cross-border investment and knowledge sharing across sectors, particularly in the finance industry (UNEP FI 2022). It is paramount to address those challenges and opportunities considering that growing populations coupled with climate change risks renders the MENA region highly vulnerable.

The MENA region is one of the most susceptible regions to the adverse impacts of climate change, including rising sea level, land degradation and desertification, and water scarcity, noting that the region has 12 out of 17 of the world's most water-stressed countries (UNEP FI 2021b, Olawuyi 2022). This is especially threatening to MENA as the region depends on agriculture and climatic conditions for its stability and economy, affecting human security (Borghesi and Ticci 2019). Additionally, the region has relatively low adaptive capacity to climate change risks and includes small and shallow islands which, as arid and small island developing states, are susceptible to the adverse impacts. The GDP of the region is expected to be affected by the growing pressure of water scarcity, with a loss estimated at 6–14% by the year 2050 (Olawuyi 2022).

Sustainable finance is a key element for the achievement of the Sustainable Development Goals and the Paris Agreement on climate change to ensure prosperity and sustainability of the environment, societies, and economic growth. It is critical that finance is channelled to enhancing the resilience of the region by developing climate-smart infrastructures

¹ This chapter is written in the author's own capacity and is not a representation of UNEP FI's views.

and systems that also contribute to the reduction of greenhouse gas (GHG) emissions (Olawuyi 2022). Actions against climate change by financial institutions (FIs) can help to minimise their risk of non-performing facilities as a result of what are perceived as pre-financial risks – in other words, climate change risks. In its 2022 *Financial Stability Report*, the Central Bank of Oman warned that “climate change risks present severe concerns to the financial system posing micro and macroprudential risks” (Central Bank of Oman 2022). The central bank also acknowledges that a large part of the country’s GDP is dependent upon the production and export of hydrocarbons, which is an immense source of GHG emissions that needs to be addressed attentively. This move by the Omani financial sector may result in changes to the structure of the economy, and will not be risk-free. However, the risk of inaction is considered greater (Central Bank of Oman 2022). This is applicable across all the MENA countries where financing models need to evolve and adopt progressive business models that have climate action and responsible finance at the heart of their operations (Atef 2017, UNEP FI 2021b).

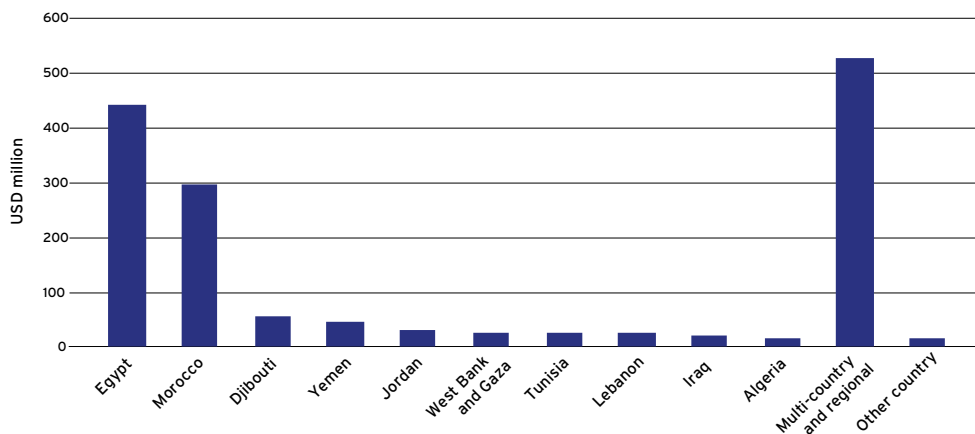
Against this backdrop, this chapter will examine the landscape of sustainable finance in the MENA region, addressing policy, regulatory, and market developments. The chapter is structured into seven sections including the introduction. Section 2 focuses on the financing gap for the SDGs in the MENA region by looking at available funding from external sources and from within the region itself. Section 3 discusses the decarbonisation landscape in MENA with view to national and institutional efforts and regional needs. Section 4 provides a comprehensive overview on the policy landscape for sustainable finance and climate action in the MENA finance industry, indicating good case practices, and sheds light on the regulatory momentum. Section 5 addresses market developments in the region, drawing on initiatives presented to advance the sustainable finance agenda and support enacting of this notion. Section 6 explores the support received by the region from institutions such as the United Nations, development agencies, and regionally focused nexus projects. Section 7 concludes by providing a summary and recommendations.

2 THE FINANCING GAP

The finance sector plays an instrumental role not only in mobilising finance towards the achievement of the SDGs, but also as an intermediary across all economic industries. On a global scale, it is estimated that there is a financing gap of US\$5–7 trillion annually until the year 2030; the developing world faces a gap of \$2.5 trillion (UNEP FI 2021b). The MENA region’s inflows of financial support are considered limited, and the majority of these funds go towards on mitigation efforts focused on few large-scale projects rather than adaptation, despite the imminent adaptation needs for the region (Saab and Sadik 2018, Watson and Schalatek 2021). Between the years 2003 and 2050, \$1.5 billion was approved for a total of 139 projects in the region (Watson and Schalatek 2021).

The top recipients of these funds were Morocco and Egypt (Saab and Sadik 2018) with percentages of 19% and 29%, respectively, of the total approved financing for the region (Watson and Schalatek 2021).

FIGURE 1 AMOUNTS APPROVED FOR MENA RECIPIENT COUNTRIES, 2003 - 2020



Source: Watson and Schalatek (2021).

In developing countries, and MENA, the main sources of financing the sustainable development agenda are international institutions, multilateral funds and foreign direct investment, with little contribution from domestic and public financial resources. Stronger emphasis should be put on non-official sectors, blended finance solutions and private investment, among others (Saab and Sadik 2018).

There has been a significant increase in awareness of the importance of sustainable development and climate action in MENA, nonetheless the notion of sustainability continues to be operated in silos and not seen as an integral part of 'business as usual' or considered central to policymakers' core mandate (UNEP FI 2021b). This translates negatively into the amount of funds mobilised towards sustainability in the region. Only 15% of the needs of MENA are currently met and efforts to bridge the financing gap will require more than the traditional approaches, including increased support from the private sector and non-state actors (UNEP FI 2022).

3 DECARBONISATION AND NET ZERO IN MENA

Almost all of the countries in MENA, with the exceptions of Libya and Yemen, submitted their first Nationally Determined Contribution (NDC) as part of their commitment to the Paris Agreement to reduce their GHG emissions. Very few countries in the region announced net zero targets to be achieved on national levels. This is one of the challenges faced by financial institutions to follow a net zero approach and join net zero commitments. In October 2021, the United Arab Emirates (UAE) was the first country

in MENA to announce its 'Net-Zero 2050' strategic initiative, with coordination efforts being led by the Ministry of Climate Change and Environment (MOCCA) to ensure collaboration on a national level for the achievement of this objective (UAE Government 2022). Following suit, the Kingdom of Saudi Arabia announced in the same month its net zero commitment (to be achieved by 2060 rather than 2050, however) and has pledged to invest more than \$180 billion to support this commitment as part of its national Green Middle East Initiative for the kingdom's energy transition (Saudi Green Initiative 2021). The Kingdom of Bahrain was the third country to announce its 'net zero by 2060' pledge ahead of the UNFCCC's 26th Conference of Parties on Climate Change (COP26) in Glasgow, despite the country contributing only 0.07% of global GHG emissions (Bahrain News Agency 2021).

Additionally, there are countries in MENA which may have not put in place net zero targets but have pledged to reduce GHG emissions, such as Qatar and Egypt. Qatar, in its National Environment and Climate Change Strategy, pledged to reduce its GHG emissions by 25% against its business as usual scenario by the year 2030, in line with the Qatar National Vision 2030 to contribute to its efforts in achieving the commitments listed in the Paris Agreement (Government Communications Office n.d., General Secretariat for Development Planning 2008). Egypt did not set a national net zero target or an economy-wide GHG emissions reduction, but it did announce in the first update to its NDC quantified sectoral reductions for electricity generation, transport and oil and gas industries, along with adaptation and mitigation efforts (UNFCCC 2022). Efforts towards decarbonisation are still at preliminary levels in a region heavily reliant on GHG-contributing sectors, particularly the Gulf Cooperation Council (GCC) as an oil-based industry.

Although limited, there is evident momentum with regards to action against climate change and decarbonisation in the MENA region. These efforts, while positive on the regulatory and policy front, can also be limiting on an institutional level. Financial institutions may be restricted in their climate action and targets, particularly if their ambitions are higher than the national context in which they operate. Another potential challenge is that net zero ambitions specifically tackle mitigation efforts. The MENA region is not considered one of the highest GHG-emitting regions, but it is one of the most vulnerable one to climate change impacts and in need of greater adaptation actions.

4 POLICY INITIATIVES TO ENHANCE SUSTAINABLE FINANCE

The recent regulatory efforts and increasing support in the MENA banking industry in particular are derived from central banks' attentiveness to the notion of sustainable finance and enhanced understanding that climate risks are not separate from financial risks. This can be seen in the growing number of central banks in the region that have joined global initiatives such as the Network of Central Banks and Supervisors for Greening the Financial System (NGFS) or the International Finance Corporation

(IFC)'s Sustainable Banking and Finance Network (SBFN). Among the NGFS' global membership, ten are from the MENA region, with representation from Egypt, UAE, Morocco, Bahrain, Lebanon, and Jordan.² Similarly, the SBFN is a voluntary community that brings together financial regulatory actors and industry associations committed to advancing the notion of sustainable finance from emerging markets aligning with international good case practices. The membership of the SBFN includes representation from Egypt, Jordan, Iraq, Morocco, and Tunisia.³ This representation from the MENA region provides encouragement to the regional finance industry to follow suit and act on the needed climate action and institutional frameworks that are aligned with the regional and global direction for sustainable finance. Central banks and supervisors should use this opportunity to put forth regulations and support mechanisms that resonate with the momentum seen through the regional finance institutions efforts. This section will elaborate on some policy developments in various MENA countries as well as accelerating initiatives.

4.1. Policy developments

Since 2010, several MENA countries have initiated green finance policies and initiatives. The Banque du Liban, the central bank of Lebanon, was among the first central banks globally to undertake steps to promote green finance (Volz 2017). In 2010, it issued a circular to facilitate financing in green sectors by exempting commercial banks from part of the required reserves when financing eco-friendly projects, enabling the financing of such projects at lower costs.

In 2015, the Cabinet of the UAE issued a decision to implement the UAE Green Agenda 2015-2030, which comprised a Green Finance and Investment Support Scheme aiming “to stimulate the country’s financial sector towards investment in green projects and innovating green finance products and services” (Ministry of Environment and Water 2015: 4). The scheme comprised the development of domestic green finance models and products such as energy performance contracts and a market for green *sukuks* (Islamic bonds), as well as capacity building and match-making between entrepreneurs and potential funders/lenders. Additionally, the UAE Securities and Commodities Authority requires companies listed on the Abu Dhabi Securities Exchange (ADX) or the Dubai Financial Market to present their environment, social and governance (ESG) disclosures, and in 2019 ADX issued guidelines for listed companies with a set of 31 key performance indicator (KPIs) on ESG disclosure requirements in companies’ sustainability reports (Clifford Chance 2021).⁴

2 These include: Abu Dhabi Financial Services Regulatory Authority (ADGM), Bank Al-Maghrib, Bank of Lebanon, Banque Centrale de Tunisie, Central Bank of Bahrain, Central Bank of Egypt, Central Bank of Jordan, Central Bank of the UAE, Dubai Financial Services Authority, and the Financial Regulatory Authority of Egypt (<https://www.ngfs.net/en/about-us/membership>).

3 <https://www.sbfnetwork.org/membership/>

4 <https://sseinitiative.org/stock-exchange/dubai-financial-market/>; see also Clifford Chance (2021).

In 2016, Bank Al-Maghrib, Morocco's central bank, developed a "Roadmap of the Moroccan financial sector for the emergence of sustainable finance in Africa" together with other stakeholders.⁵ This paved the way for the development of its National 2030 Climate Plan to ensure that the finance industry plays a pivotal role in supporting the transition of the real economy in Morocco to adhere to the global sustainability ambitions and increase the kingdom's adaptive capacity to imposed climate change risks (Bank Al-Maghrib 2016, UNEP FI 2021b). The roadmap also comes hand-in-hand with the first guidelines for setting the regulatory framework for the issuance of green bonds in Morocco, in a partnership between the IFC and the Moroccan Capital Market Authority (AMMC) in 2016 (AMMC and CSE 2017, UNEP FI 2021b). On the non-banking front, Morocco's Casablanca Stock Exchange (CSE) introduced ESG-10, an environmental, social and governance (ESG) benchmarking index for publicly traded firms based on 38 criteria and over 300 ESG indicators. This index contributes to the development of socially responsible investments (SRIs) and to increased awareness and knowledge on the importance of ESG adoption and sustainability-related business models (UNEP FI 2021b). These regulatory efforts have encouraged the finance industry to mainstream sustainable finance through various methods of institutional governance of environmental and social risks, introducing climate-related financial products, enhancing financial inclusion for women and marginalised communities, as well as enhancing the capacity of the banking and finance industry at large (Bank Al-Maghrib 2020).

In line with these regulatory efforts, over the past two decades Morocco has focused its sustainable finance attention on the development of projects that encourage capitalisation, mainly on infrastructure for energy production and transport. International finance institutions, such as the European Bank for Reconstruction and Development (EBRD) and the French Development Agency (AFD), have partnered with a number of national financial institutions to mobilise funds to large and medium enterprises focused on green energy production, energy and resource efficiency (UNEP/MAP MedWaves 2022). This is all in line with the national strategy to achieve targets of energy savings of 20% and energy production of 52% by the year 2030. The energy mix is diversified across solar, wind, and hydropower resources, creating an abundance of investment opportunities in Morocco with a substantial need for investment of \$30 billion.

In 2021, Egypt witnessed major policy developments in the finance industry for both banking and non-banking financial institutions. The Central Bank of Egypt, with support from the IFC, launched the first Guiding Principles on Sustainable Finance for the Egyptian Banking industry. The guidance includes a set of six principles tackling capacity building, enhancing sustainable finance, involving stakeholders, managing climate change risks, applying the principles and mainstreaming them across operations,

⁵ These included the Moroccan Capital Market Authority, the Supervisory Authority of Insurance and Social Welfare, the Ministry of Economy and Finances, the Casablanca Finance City Authority, the Casablanca Stock Exchange, the Moroccan Banking Association, and the Moroccan Federation of Insurance and Reinsurance Companies.

and, reporting. These principles act as a first step towards developing the general framework for sustainable finance business models and towards building the necessary capacities for its implementation on a national level, addressing the most crucial points such as climate change risks, and also addressing both climate mitigation and adaptation efforts (Central Bank of Egypt 2021).

The Financial Regulatory Authority (FRA) of Egypt mandated companies listed on the Egyptian Stock Exchange (EGX), as well as companies operating in non-banking financial activities, to provide ESG and climate disclosures on a quarterly basis in their compliance reports starting in the 2022 (Zawya 2022). This giant leap in the Egyptian finance market is expected to increase foreign investments and promote alignment with the global sustainability agenda by developing strategies and recalibrating the industry's operations to have climate-related actions at their heart, as well as ensuring accelerated steps towards sustainable finance. The new regulations segment the companies into two categories: (1) all companies listed in the EGX and companies operating in non-banking financial activities whose issued capital or net ownership rights are not less than 100 million Egyptian pounds; and (2) companies whose issues capital or net ownership rights are not less than 500 million Egyptian pounds and listed on EGX. Companies in the first category are expected to have ESG disclosures, while disclosures by companies in the second category are expected to be in accordance with the Taskforce on Climate-related Financial Disclosures (TCFD) (SSE 2021), which has become the de facto global climate risks reporting framework. It is worth noting that the EGX has over 230 listed companies with a total market capitalisation of over 731 billion Egyptian pounds (*Daily News Egypt* 2021).

Bahrain has taken numerous steps in support of the transition of its financial markets, particularly the banking sector, through its policies that focus on establishing green finance frameworks and financing of sustainable infrastructure projects. This channels efforts to mainstream sustainability in banks' internal operations and strategies and encourage the development of innovative green finance products and tools, as well as transparency in the progress of banks' sustainability journeys (UNEP FI 2021b). The Bahrain Stock Exchange, Bahrain Bourse (BHB), as a member of the United Nations Sustainability Stock Exchange since 2019⁶ and a member of the World Federation of Exchanges (WFE), has been exerting efforts to mainstream sustainability across the finance industry by promoting environmental and social governance practices among its listed companies,⁷ in order to support its economic market transition and promote ESG practices among listed firms. Similarly to Morocco, Egypt and the UAE, Bahrain has also introduced ESG metrics and reporting guidelines for listed companies on its stock market. These guidelines include a set of 32 KPIs based on the recommendations

6 <https://sseinitiative.org/stock-exchange/bhb/>

7 <https://sseinitiative.org/stock-exchange/bhb/>; see also UNEP (2021).

of the SSE to integrate ESG aspects into companies' business decisions, operations, governance, and strategies (UNEP FI 2021b). This is a major step on Bahrain's path to supporting its real economy transition through the finance industry.

4.2 Accelerating initiatives

Various national policy initiatives have been witnessed in the region, including 'Tamkeen' in Bahrain, which was established in 2006 as a national programme mandated to promote sustainable finance practices, entrepreneurship and innovation, and sustainable development at large. Tamkeen invested one billion Bahraini dinar in direct support and 700 million Bahraini dinar in indirect support through the banking sector to expand on opportunities available for the private sector to strengthen their sustainability approaches.⁸ Tamkeen partnered with a number of leading banks in the country to promote the extension of green finance and expand on financing of sustainability-related projects through an Islamic Shariah-compliant solar financing scheme. This scheme encourages enterprises to invest in renewable energy sources for their operations, such as solar water heaters, solar panels, and other technologies, to reduce their carbon footprint and also reduce their energy costs (UNEP FI 2021b).

In the UAE, Masdar was established in 2006 to maintain the country's leadership in the global energy sector and enhance its growth and diversification by developing commercially viable renewable energy projects regionally and internationally.⁹ Masdar represents an essential leap in the development of bankable sustainability projects that are tailored to the country's needs and available resources (i.e. renewable energy). In 2013, Masdar and the UK's Green Investment Bank (GIB) signed an agreement to jointly invest in green infrastructure projects in the UK, refinancing £58.6 million of Masdar's 20% stake in the London Array offshore wind farm. This farm is responsible for supplying clean electricity to around half a million homes in the UK (Beyer and Bayoumi 2022).

Egypt recognises the need for immediate action against climate change and the role of the finance industry in supporting this. In 2021, the FRA in Egypt launched the Regional Center for Sustainable Finance (RCSF) with the aim to accelerate and support non-banking financial FIs to mainstream sustainable finance practices. The RCSF is focused on Egypt and the MENA region more broadly, seeking to address barriers and challenges that hinder the integration of sustainable finance into strategies and operations of non-banking FIs through capacity building and awareness raising.¹⁰ Beyer and Bayoumi (2022). Among the services offered by the centre are technical advisory support and assistance through partnerships on sustainability topics including ESG integration, the TCFD, and climate risks more specifically (Beyer and Bayoumi 2022). The centre also aims to encourage redirection of private capital flows to finance the SDGs and contribute

8 <https://www.tamkeen.bh/about-us/>

9 <https://masdar.ae/en/About-Us/Management/About-Masdar>

10 <https://www.greenfinanceplatform.org/policies-and-regulations/regional-center-sustainable-finance>; see also Beyer and Bayoumi (2022).

to reducing the financing gap in the region (SSE 2021b). The centre plays an instrumental role in promoting sustainable finance literacy not only in Egypt but in the wider MENA region, particularly in countries with high potential for growth and expansion.¹¹

The involvement of diverse actors in sustainable finance from the public and private sector is essential to accelerate the transition. The UAE has developed sustainable finance platforms and coordination mechanisms among central governmental departments, regulators and commercial institutions to address sustainability from a multi-stakeholder approach, resulting in a surge in sustainability action in the country. Stakeholders jointly discuss efforts to scale green finance, managing climate change risks and adverse impacts, policy developments, and capacity building in the finance industry (Beyer and Bayoumi 2022). A number of finance declarations committing to the development of sustainable finance strategies and initiatives were seen in the 2016 Dubai Declaration as well as sustainability working groups by ADGM in 2019 and the Dubai Financial Markets (ADGM 2019, DIFC 2019, Beyer and Bayoumi 2022). The Dubai Declaration was jointly presented to financial institutions by United Nations Environment Programme Finance Initiative (UNEP FI) and the UAE government to support the implementation of the UAE Vision 2021 and the ambitions listed in the UAE Green Agenda 2015-2030. It includes a pledge that commits institutions to manage direct and indirect environmental risks, develop sustainable finance instruments to support the real economy transition, and incorporate ESG at the heart of their institutional operations and policies (UNEP FI 2016). The working groups, on the other hand, were developed to advocate for long-term growth of the UAE in line with global sustainable finance best practices and support the government's sustainability agenda. These working groups comprised UAE government agencies, financial regulatory authorities, and private sector institutions collectively working towards the same ambition (ADGM 2019). The group was the main anchor for developing the guiding principles on sustainable finance in the UAE.

Bahrain has also recognised the importance of capacity building and knowledge sharing to advance the sustainable finance agenda, and the Bahrain Association of Banks (BAB) established a sustainable development committee to this end. The committee engages and advises banking institutions' boards on aligning with sustainable finance practices and provides recommendations for doing so. In 2018 the committee, alongside the BAB, drafted a policy paper that outlines the needed steps for the development of a sustainable finance framework that supports channelling investment to sustainability initiatives and projects that align with the country's visions and needs through four recommendations, including developing a sustainable finance sector by building the needed capacities and support mechanisms, mainstreaming sustainable finance practices in institutional operations, and establishing a Bahrain Green Fund highlighting the need for short and long-term actions (BAB 2018, Beyer and Bayoumi 2022).

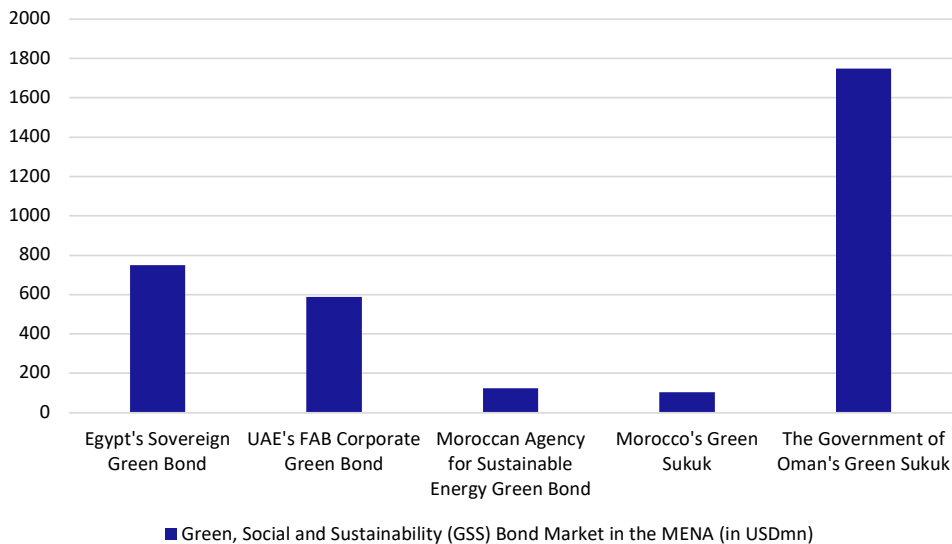
11 <https://www.greenfinanceplatform.org/policies-and-regulations/regional-center-sustainable-finance>; see also SSE (2021b).

5 SUSTAINABLE FINANCE: MARKET DEVELOPMENTS

The global bond market grew from \$37 billion in 2014 to over \$230 billion in 2019. In the MENA region, the value of sustainability-linked debt sales rose by 38% year-on-year in the first half of 2021, exceeding the total issues in the year 2020 (Bloomberg 2021). The outlook for expanding on and mainstreaming sustainability-linked investments and instruments continues to indicate market growth, particularly if coupled with enhancing and focusing on development of the awareness and involvement of human capital in sustainable development (EBRD 2022). There is evident growth in the bond market demonstrated in MENA's leadership – including Kuwait, the Kingdom of Saudi Arabia, Qatar, UAE, and Egypt – in the establishment of the One Planet Sovereign Wealth Funds (OPSWF) framework. The OPSWF was founded by six members¹² that developed a unified framework to support the alignment of long-term asset pools with the Paris Agreement and share best practices (OPSWF 2021).

The MENA region has not yet reached maturity when it comes to bond issuance and capital markets' sustainable finance journey. In the Gulf Cooperation Council (GCC) region, where the economy is reliant on the oil and gas industry, we witness growing attention to contributing to and advancing the sustainable development agenda in governments' approaches, by setting policies and regulations and also by making available tools and products to support this transition (Clifford Chance 2021)

FIGURE 2 EXAMPLES OF GREEN, SOCIAL AND SUSTAINABILITY (GSS) BOND MARKETS IN MENA



¹² The six founding members are Abu Dhabi Investment Authority (ADIA), Kuwait Investment Authority, New Zealand Superannuation Fund, Norges Bank (the central bank of Norway), Saudi Arabia's Public Investment Fund, and Qatar's Investment Authority. This membership is majorly represented by the MENA finance sector (<https://oneplanetwfs.org/>).

The first corporate green bond in the MENA region was issued by the National Bank of Abu Dhabi in the UAE in 2017 (UNEP FI 2021b), which was the beginning of the growing bond market in the region. In 2020, Egypt issued the first sovereign green bond in the MENA region amounting to \$750 million directed mainly to funding and sustaining its sustainability needs, particularly green projects in the energy sector, pollution reduction, as well as water and waste management (UNEP FI 2021b, 2022). The bond was originally announced for \$500 million with an interest rate of 5.75%, but as it was oversubscribed the government of Egypt decided to increase its size to \$750 million and lower the interest rate to 5.25% (World Bank 2022). The UAE government also issued a sovereign green bond to contribute to the National Energy Strategy for the production of 50% clean energy by the year 2050 and a reduction in the national carbon footprint by 70% – a paramount investment opportunity in green finance where a pipeline of renewable energy projects will be required (Mosuro 2021). The global and regional markets are expected to continually grow over the coming years particularly with regional policy development where legal frameworks for green bond issuance are being issued – for example, by the Egyptian Financial Regulatory Authority in 2018 with the support of the IFC. In 2016, the Moroccan Agency for Sustainable Energy issued the country's first ever green bonds aimed at raising finance for the concentrated solar powerplant project NOOR, valued at \$123 million; and in 2018, the first sovereign Islamic green bonds (sukuks), valued at \$104.2 million, were issued for energy efficiency and renewable energy projects in the country (UNEP FI 2021b).

The government of Jordan, through the Ministry of Environment, established in 2009 the Jordan Environment Fund (JEF) with a mandate to help Jordan's financing by extending financial support directed to environment protection and sustainability-related projects.¹³ According to the Ministry of Environment, the JEF has a mandate that includes five main pillars: supporting environmental protection and conservation; supporting resource efficiency and sustainable development projects; enhancing understanding of and use of cleaner production technology; prioritising the national sector to fulfill environmental requirements; and promoting cooperation and knowledge transfer on a national, regional and international front. This fund aligns with Jordan's sustainability efforts, which have been evident since the 1960s with the establishment of the Royal Society for the Conservation of Nature (Francis et al. 2008), and the country's efforts have been demonstrated in various policies in the finance realm in particular. A few examples of the outcomes of the fund can be found in its support for awareness-raising projects on the notion of waste management and recycling in cooperation with various Jordanian non-governmental organizations (NGOs); sustainable forest rehabilitation schemes, in cooperation with stakeholders representing the public and private sectors and NGOs; and finally, making available in Arabic the first climate change course to maximise outreach and awareness raising.¹⁴ As the country advances

13 http://www.moenv.gov.jo/EN/Pages/Protect_the_Environment; see also UNEP (2021b).

14 http://www.moenv.gov.jo/EN/Pages/Protect_the_Environment

with its sustainability agenda, the government is exploring altering the JEF funding support mechanism to provide soft loans and revolving finance rather than subsidies and grants (UNEP 2021b).

To accelerate action on emissions reduction, the Glasgow Financial Alliance for Net Zero (GFANZ) was launched comprising seven membership-based, sector-specific initiatives to achieve net zero (GFANZ 2022). Only two financial institutions from the banking industry in the MENA region joined one of these initiatives – the Net-Zero Banking Alliance. Those institutions are the Commercial International Bank (CIB) in Egypt and the UAE's First Abu Dhabi Bank (FAB),¹⁵ two leading banks in their countries in terms of banking and sustainability.

6 SUPPORTING INITIATIVES IN THE REGION

There are diverse initiatives and projects in the region to support the finance industry's transition to more responsible approaches. Some of these initiatives are global, while others are specific to MENA. UNEP FI had identified the global need for an overarching sustainability framework for banks that can be adopted by any banking institution at any stage of its sustainability adoption, and in any regional or economic context in which it may be operating. This framework would ensure that banks align their strategies with the vision of the Paris Agreement and the SDGs. Upon this, in 2019, the UNEP FI Principles for Responsible Banking (PRB) were launched at the United Nations General Assembly in New York, now with over 270 signatories representing over 45% of banking assets worldwide.¹⁶ In the MENA region, UNEP FI currently has 11 members, including both publicly owned and private, which provides diverse perspectives and learning opportunities throughout engagements on UNEP FI PRB activities and working groups.¹⁷ On the second anniversary of the launch of the PRB, a collective progress report was published which revealed that over 90% of the signatory banks identified sustainability as a strategic priority and are setting the necessary targets based on systemic approaches. In doing so, over the course of the initial two years, around \$2.3 trillion of sustainable finance were mobilised, showing signs of impact on the real economy with a focus on climate and financial inclusion (UNEP FI 2021a). UNEP FI continues to grow not only its membership base in the region, but also the impact it creates with its members on the real economy towards achieving the SDGs and the commitments set forth in the Paris Agreement in due time.

¹⁵ <https://www.unepfi.org/net-zero-banking/members/>

¹⁶ <https://www.unepfi.org/banking/bankingprinciples/prbsignatories/>.

¹⁷ These are: Bank of Africa - BMCE Group in Morocco, Ahli United Bank in Bahrain, First Abu Dhabi Bank in the UAE, and Commercial International Bank, Arab African International Bank, Banque Misr, Banque Du Caire, National Bank of Egypt, Qatar National Bank - Al Ahli, Alex Bank - Intesa San Paolo all in Egypt (<https://www.unepfi.org/banking/bankingprinciples/prbsignatories/>).

Alongside frameworks, there are also multi-year projects. A key strategic project in the region which commenced in 2019 and is expected to conclude in 2023 is the SDG-Climate Facility Project: Climate Action for Human Security.¹⁸ The SDG-Climate Facility Project is a multi-partner initiative that focuses on the impacts of climate change on human security and addresses this nexus in the Arab region, particularly in the context of countries in crisis. The project brings together a diverse group of entities comprising UN agencies, including the UN Development Programme (UNDP), the UN Disaster Risk Reduction (UNDRR), the UN Human Settlement Programme (UN-Habitat), the UN Environment Programme Finance Initiative (UNEP FI), and the World Food Programme (WFP), alongside the League of Arab States and the Arab Water Council (AWC). The seven partners come together, with support from the Swedish International Development Agency (Sida), with the aim to deliver climate solutions that bring co-benefits across the SDGs and to scale up access to climate finance and partnerships with the private sector.

UNEP FI, by virtue of its mandate, is responsible for scaling up climate finance in the region through a number of activities over the lifetime of the project. Among those activities was the launch of the “Knowledge Platform: Financing Climate Transition in the MENA”. The knowledge platform is designed as a one-stop platform to facilitate access to information, data from research, and direct links to sustainable finance tools. This is to support the finance industry, and society at large, with better understanding and knowledge on the transition to more climate-aware business models. The platform also provides a channel for knowledge sharing and good practice cases submitted by contributing banks in the region.¹⁹ One of the challenges the MENA region faces is the scarcity of data; the knowledge platform combines all available data on climate finance for the region ranging from webinar recordings, publications, tools and conference proceedings to peer-exchange opportunities, all to accelerate knowledge dissemination among financial institutions, policymakers, practitioners, and wider civil society.

Another activity carried out over the course of 2021 was a project to explore how a holistic approach to climate action and the SDGs more broadly can unlock private sector solutions. This was intended to narrow the financing gap in the MENA region in two countries in particular: Egypt and Morocco. Business-as-usual practices are no longer sufficient to address climate change and meet regional needs. The project landed findings that an impact-based approach is now needed more than ever for a regional development mode on the African continent in particular (UNEP FI 2022). The findings are summarised into immediate and long-term roadmaps. The immediate roadmap presents three main action points: expansion of the scope of what qualifies as climate finance; setting priorities for the finance industry to contribute to private sector engagement with and financing of the SDGs; and agreeing on general guidelines for optimising blended

18 <https://www.undp.org/arab-states/sdg-climate-facility-climate-action-human-security>

19 <https://www.unepfi.org/knowledge-platform/risks-and-opportunities/>

finance solutions. The long-term roadmap also presents three main action steps that require government buy-in and can be implemented beyond the lifetime of the project. These steps are the development of African impact-based solutions as part of business development; making available impact-based tenders for project implementations to ensure impact-based solutions in the region; and the development of an implementation and monitoring tool that encompasses the holistic impact approach (UNEP FI 2021). The main takeaway from the impact-based mode of operations proposed from the findings is the importance of acknowledging how sustainability and climate are topics that cut across industries and themes. It has been evident over the years, with inability so far to achieve parts of the SDG ambitions, that the notion of risks and opportunity is no longer effective in addressing sustainable finance and climate action. An impact-based approach will ensure that environmental and social factors will be at the heart of planning and policymaking.

In 2021, the League of Arab States (LAS) and UNEP FI, in partnership with the Union of Arab Banks (UAB), held the first roundtable meeting that brought together central bank governors and the executive management of banking institutions to discuss strategic approaches and define a common vision to boost the banking sector's contribution to and engagement in sustainable finance. The meeting tackled several aspects of the role of banking institutions, including pioneering banks in sustainable finance, required regulatory support to ensure equitable transition, opportunities and risks, as well as unlocking financing and capacity building in the Arab region and MENA more broadly. The meeting landed a set of recommendations and action points, including the need for capacity building and awareness through guiding frameworks and approaches to accelerate banks' sustainability transition, and for holistic collaboration between relevant stakeholders from the public and private sector (LAS et al. 2021).

7 CONCLUSION AND RECOMMENDATIONS

The MENA region shows strong momentum and active development in the realm of sustainable finance, and will continue to see growth in the years to come. However, this growth must form part of a structured and strategic approach to scale up existing efforts and address areas where efforts are limited or absent (Beyer and Bayoumi 2022).

Building understanding and raising awareness on the benefits and financing of sustainable development is crucial to advance systemic and structured progress towards achieving the SDGs and the Paris Agreement (Atef 2021, Beyer and Bayoumi 2022). Governments are now taking long strides towards achieving sustainable finance in the MENA region, particularly with COP27 and COP28 taking place in Egypt and UAE, respectively. The awareness raising is taking place partly through the industry transforming values in financial business practices (Atef 2017) and the understanding that climate risks are pre-financial risks that will adversely impact profitability and growth if no actions are taken to address them. Additionally, the adoption of an impact-based approach combats

industry perceptions that climate financing is unattractive due to its low returns and long tenor. There is a need to build capacities to mainstream evidence-based, proactive policies and decisions that embrace a holistically integrated, impact-based approach to cross-cutting themes within the SDGs (Saab and Sadik 2018, UNEP FI 2021b).²⁰ BHB held a workshop on “Sustainability and Investor Relation Digital Solutions” in 2019 as part of its efforts to build capacity related to sustainable finance and to promote best practices for investor relations. This workshop was the in a planned series of workshops in line with the national and regional efforts towards a sustainable finance market.²¹ This is an example of awareness raising that can support the translation of knowledge acquired into case practices and implementable exercises. Additionally, creating knowledge-sharing working groups ensures that policies that are being drafted take into account the perspective of the implementing institutions, promoting a collaborative effort rather than regulated ones. The UAE was able to achieve this through its development of the multi-stakeholder Dubai Sustainable Finance Working Group in 2019 to create a sustainable finance hub in the region that brings together the public and private sectors across industries. The efforts of the working group allow industries to identify and assess the impacts of their operations on other sectors as well as opportunities to align and join efforts for positive sustainable impact.²²

Translating national and regional sustainability visions into bankable pipelines and elaborating the profit returns is paramount for the financial market (UNEP 2021, Bayer and Bayoumi 2022). The finance sector is a profit-making industry, and in its exerted efforts towards sustainable finance, maintaining profitability is needed to ensure sustainability of its operations. It has been proved by banks that have a sustainability business model that the adoption of sustainability measures in banking operations safeguards those institutions against almost 10% of the annual losses resulting from social and environmental risks posed by financed projects and loaned facilities (Atef 2017). Additionally, measuring and identifying impacts and risks supports financial institutions and the real economy in managing and minimising stranded assets and economic losses. This can be achieved by expanding financial instruments, risk-mitigation structures, ESG indices, and significantly enhanced disclosure and information, coupled with improved risk management and expanded education (Toronto Centre 2019). Environmental and social projects should also be presented with regards to specific, costed opportunities that can be financed through sustainability financing tools such as green loans, sovereign bonds and green corporate bonds. Sovereign wealth funds can be leveraged for transition finance, particularly in a region that is represented as members of the founding group of the One Planet Sovereign Wealth Funds Initiative, by establishing necessary frameworks and channelling resources to scale up investments. This can be done by directing efforts

20 <https://www.unepfi.org/knowledge-platform/risks-and-opportunities/>

21 <https://sseinitiative.org/stock-exchange/bhb/>

22 <https://sseinitiative.org/stock-exchange/dubai-financial-market/>

towards strategic low-carbon industries while managing investments in fossil-based industries that are at risk amidst the global low-carbon transition. (Beyer and Bayoumi 2022).

International support and reliable and affordable finance for the MENA region is essential to achieve the SDGs and reverse the adverse effects of the Covid-19 pandemic and the conflict in Ukraine on the region (United Nations 2022). However, it is urgent that the private sector engages further in financing for the SDGs and the fight against climate change, particularly climate adaptation (UNEP FI 2021b). The Organization for Economic Co-operation and Development (OECD) has made available a range of policy tools to support government bodies in mobilising private finance to achieve their national goals. These tools highlight the need for governments to alleviate burdens on private sector and non-state actors by putting in place sound policies that explicitly promote private investments in the SDGs, ensure policy coherence across real economy sectors, and finally ensure that high-quality investments are in place to maximise the volume of private sector participation (Saab and Sadik 2018, UNEP FI 2021b). International support from entities such as the United Nations may also be required to strengthen sustainable finance governance and regulatory frameworks to support the mainstreaming of sustainable business practices, as seen in the development of green bond frameworks in various regional countries. Additionally, the support enables the economic market to accelerate the transition and facilitates the journey. It is essential to support the development of regional sustainability taxonomy to identify clear definitions of, for example, ‘sustainable’, ‘adaptation’ and ‘mitigation finance’ to ensure a common understanding and to develop a baseline for sustainable finance efforts in the region (UNEP FI 2021b, 2022, Beyer and Bayoumi 2022). Adopting a regional sustainability taxonomy will open doors of opportunities for investments by offering them security, prevent greenwashing, and promoting synergistic approaches and integration of sustainability across sectors. Here, regional collaboration contributes to accelerating the process and preventing taxonomies from being revisited or the need to adapt at national scale. These efforts can be supported by international organisations such as the UN and regional finance centres (Beyer and Bayoumi 2022).

The MENA region has a specific context in terms of its sustainability journey and its economic dependency when it comes to mitigation actions. It is indeed a challenge for financial institutions to pledge carbon emissions reduction targets that are more ambitious than those of their governments. This points to the need to support the developing regions, particularly those with lower global emissions contributions, to be able to take sufficient and adequate action in reducing GHG emissions. Innovative, tailored solutions will be needed for MENA’s decarbonisation journey (French 2022). Every region has its own journey to sustainable finance, with its own aspects of adaptation, mitigation, bridging financing gaps, innovating, and so on. To collectively reach the SDGs by 2030, it is essential that developed countries and international organisations alleviate the

burden on the less-developed regions and nations, and for nations in developing regions to do their part. Sustainable finance and climate action are no longer a luxury, they are a necessity for the sustainability of mankind – for our generation and future ones to come.

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research, social and environmental risk management, contributing to the development of guidelines and tools, capacity building and awareness raising, all to advocate for sustainable finance business practices that ensure a just transition. Atef graduated from the American University in Cairo (AUC) with a Bachelor Degree in Architectural Engineering, and holds a Master Degree in Sustainable Development also from AUC.

CHAPTER 18

Scaling up sustainable finance in India

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1 INTRODUCTION: THE EXISTING CHALLENGES FOR INDIA

The concept of sustainable finance is amorphous, and in recent years several attempts have been made to define it. Sustainable finance is understood as finance to support economic growth while reducing pressures on the environment and taking into account social and governance aspects. It is also understood to encompass transparency in regard to the environmental, social and governance (ESG) risks that may have an impact on the financial system, and the mitigation of such risks through the appropriate governance of financial and corporate actors.¹ In short, sustainable finance is resource mobilisation for inclusive growth. India's long experience with financing development priorities, including an inclusive growth, will be instrumental in meeting the new challenges of the low-carbon transition. Be it the allocation of expenditures to social priorities or the flow of credit to priority sectors mandated by regulation, India is familiar with the challenges.

Having said that, the estimated costs of transition are sizeable. While their proportion to the projected size of the economy remains unassessed, it is articulated that public finance cannot fill this financial gap. This is especially so since fossil fuel-based revenues, a significant source of revenue in many Indian states, are expected to decline with the transition, and therefore private finance must respond. The Paris Agreement and the pressures to decarbonise have compelled private capital to reassess its approach to investing. The demand for ESG-based investments has been particularly pronounced among global asset owners, including pension funds, seeking to access the Indian capital markets. As a result, there is growing awareness not just among investors but also regulators. For example, India has mandated the reporting of ESG by the top 1,000 listed companies starting in the financial year 2022-23. Yet, this remains a small part of the overall investment portfolio. For a developing country like India, concessional finance will also be necessary to fund projects that carry low returns. Therefore, development finance institutions (DFIs) and multilateral development banks (MDBs) must simultaneously step up their support.

¹ https://finance.ec.europa.eu/sustainable-finance/overview-sustainable-finance_en

As India grapples with its legacy economic challenges, while trying to meet its net zero target by 2070, the source and scale of finance will be key. In order to scale up the sources of finance, there is a need to define the universe of India's economic priorities and to identify the profile of economic activities that are compatible with the target. As a step towards this, the Department of Economic Affairs of the Ministry of Finance set up a Task Force on Sustainable Finance in 2021, mandated to chart a sustainable finance road map for India. The Task Force is unprecedented in its approach as it has brought together all regulators along with specialists to deliberate the taxonomy, regulations and disclosures to support the transition in India. The work is now complete and awaiting the implementation of a comprehensive sustainable finance strategy. As India ushers in an era of economic transformation, there is a need for concerted thinking on how the different sources of private and public finance will be scaled up. This chapter deliberates this very issue.

The next section will discuss the crucial role of public finance in fostering India's net zero transition. Section 3 will examine the role of corporate action and private finance. Section 4 will discuss sustainable finance in India's banking sector. Section 5 concludes.

2 THE IRREPLACEABLE ROLE OF PUBLIC FINANCE

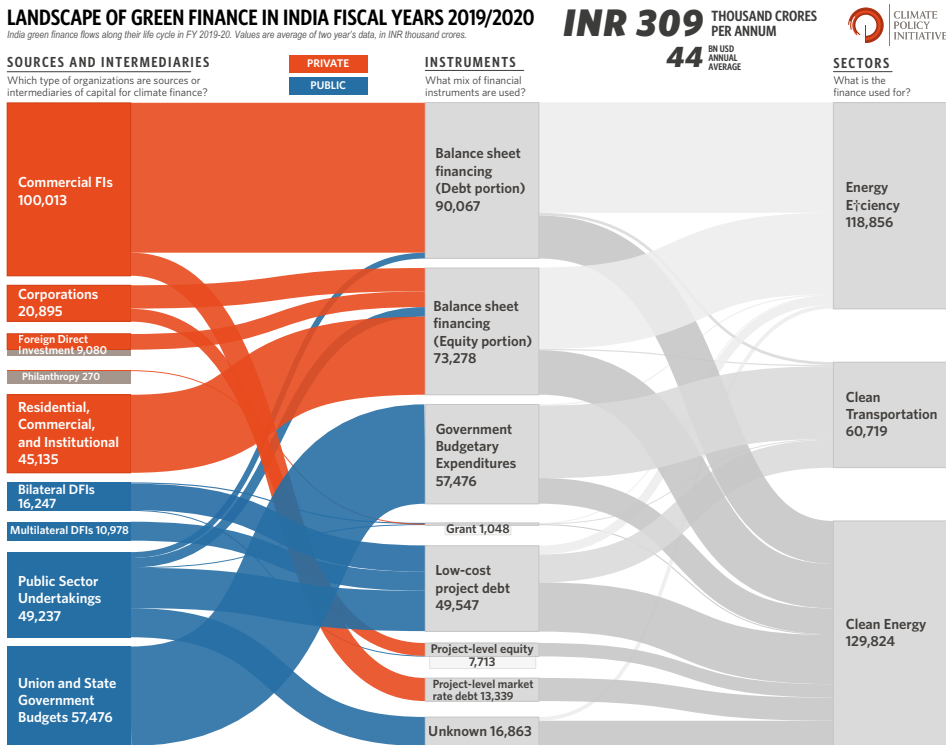
Achieving the Sustainable Development Goals (SDG) as well as a low-carbon transition implies economy-wide shifts. Social protection is an important element of the transformation and historically has not been left to private and international capital. The very existence of climate change, caused by carbon emissions from human activities, shows that markets have been unable to adequately price economic externalities. Moreover, there are related social costs which are now being recognised in the movement for a just transition, yet these are far from being adequately addressed. In India, the loss of jobs and resources, and the health impacts, are not uniform among the fossil fuel-dependent cities or districts (Miller 2014). Therefore, national as well as sub-national governments will have to play an important role in fostering a just transition.

As per the Union Budget 2020-21, India budgeted to spend INR 12.589 trillion (42% of the total union budget) on the SDGs (iCED 2020). The current spend is not sufficient according to Soto et al. (2021), who estimate that, in order to achieve the 2030 targets, India would have to spend another 6.2% of GDP. At the same time, there are estimates available for the costs of the energy transition in India. The desired investment will also not be uniform. Even though India reports low per capita emissions of 1.77 metric tonnes per person, it accounts for 7% of global emissions.² Therefore, the transition will require significant investments by a developing country that is also more exposed to transition risks. Standard Chartered estimates that India will require \$12.5 trillion of investment to transition to net zero by 2060 (Livemint 2022). Alternatively, the Council on Energy,

2 <https://www.statista.com/topics/8881/emissions-in-india/#dossierKeyfigures>

Environment and Water estimates a cost of \$10.1 trillion for net zero by 2070 (CEEW 2022). The Standing Committee on Energy estimates that meeting the near-term target for renewable energy by 2030 would require an annual investment of INR 1.5–2 trillion annually, whereas actual investment in the past years has been only INR 750 billion (Ministry of New and Renewable Energy 2022). These estimates suggest a funding gap, but do not indicate the extent to which they cover the social costs or duplicate the existing need for investments for the SDGs. Assuming that these investments are additive, a significant shortfall in investment exist for the SDGs as well as the scaling up of renewable energy. It may be inferred that the current size of the state is not optimal and an expansion of its role is necessary through budgetary action. In comparison to these estimates, the current flow of green finance remains limited. The Climate Policy Initiative maps the flow of green finance in India. As per the 2022 estimates shown in Figure 1, 40% of the funds (INR 3.09 trillion, or \$38.79 billion) are provided by the government through its budgetary support, public sector undertakings and development finance institutions. The bulk of these investments were made in energy efficiency, clean transport and clean energy. While no similar mapping exists for the SDGs, it is imagined that for less commercially viable projects, smaller investments such as impact bonds and government budgetary support will be critical.

FIGURE 1 GREEN FINANCE IN INDIA IN 2019-20



Source: Climate Policy Initiative (2022).

Governments, especially sub-national governments, cannot expand their fiscal liabilities without constraint. Fiscal rules tend to cap the deficit and borrowing power of the states. In India, the Fiscal Responsibility and Budget Management Act caps the centre's fiscal deficit at 3% and borrowing at 40% of GDP. Similarly, states are required to maintain a fiscal deficit below 3% of their gross state domestic product, while their borrowings must remain limited to 20%. Both the centre and states have, in the past, reneged on these commitments. But any sustainable expansion in expenditure programmes would require simultaneous increases in revenues. This problem is expected to be exacerbated by the decline in revenues for states that are dependent on fossil fuels. States will be required to bear the costs while experiencing revenue losses from the tapering of fossil fuel consumption. Added to this, there are already estimated financial strains within the fiscal system. The Reserve Bank of India (RBI) observed that a slowdown in own tax revenue, a high share of committed expenditure and rising subsidy burdens have stretched state government finances such that there is fiscal strain among many states (RBI 2022a). Therefore, a long-term strategy will be necessary to scale up public finances. In order to put it into perspective, the nature and extent of the impact on current revenue collections are summarised in Figure 2.

Currently, India collects multiple taxes at the state and centre from coal,³ oil and natural gas.⁴ Furthermore, non-tax revenues, including royalties, are collected from companies. These account for 17% of total government revenue (IISD and CEEW 2022). The phase down is estimated to result in a revenue gap of \$178 billion (Koshy 2022). Not only are these losses significant, but they will also be spatially uneven. As is seen in Figure 2, fossil fuel revenue collected in India is concentrated among a few states such as Chhattisgarh, Gujarat, Maharashtra and Odisha, which are likely to be fiscally impacted by transition.

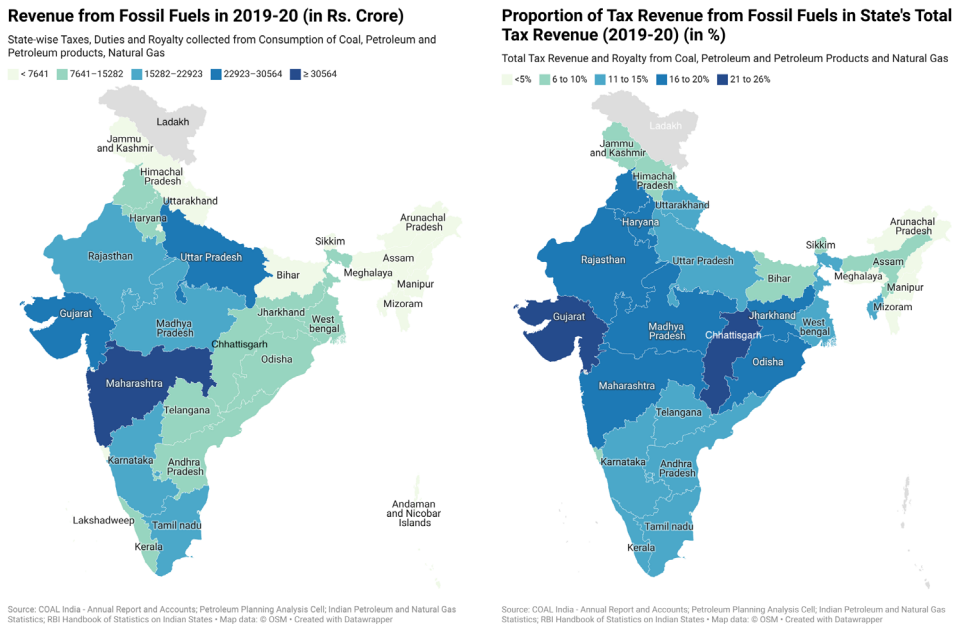
The dual risks of transition – higher investment demand and loss of tax revenue – may manifest to varying extents depending on the pathway for phasing down. There is as yet no pathway to be able to measure precisely the annual mismatch between revenues and expenditures of the potential for a new tax base. One possible means to ensure that future revenue streams are not adversely impacted is to plan for sector diversification at the state level. This is being explored by coal-dependent states, and among the recommended activities are non-coal mining, trade promotion, as well as investment and strategy from coal companies (CSIS and CIF 2021). While states encourage such new activities, they must also acknowledge the regenerative potential of these activities. Further, in order to achieve the diversification targets, the skills and livelihoods of the communities would have to be mapped accurately. In the absence of such mapping, the diversification plans will remain unfulfilled as labour is dislocated. Therefore, the means to secure sustainable finance depend significantly on public policy. Fiscal innovation may be necessary to cope with the increasing demand for finance. First, current taxes in India are applied to fossil

3 Goods and Services Tax (GST) and GST compensation cess, custom duty, corporate tax and other taxes.

4 Cess, customs, excise duty, National Calamity Contingent Duty, VAT, corporate tax, GST on petroleum products under GST.

fuels but are not based on emissions per se. According to the OECD, these taxes cover 13% of emissions at a carbon tax rate of €60 (OECD 2018). Based on these estimates, there is scope to expand the coverage of the carbon tax. IMF research suggested that a carbon tax rate of \$35/tonne of CO₂ emissions would be more than enough to meet the Paris mitigation pledge by 2030 for countries like India (Parry 2019). Although carbon taxes are seen as instruments of change with the potential to raise revenues, the effects of this tax on inequality and the use of funds raised are equally important issues. The recent energy price rise underscores the equity concerns that may also arise in the case of a high rate of carbon tax, which could potentially feed into food prices and transport. Taking such effects into consideration, IMF researchers recently recommended an international carbon price floor of \$25-75/tonne of CO₂, depending on the level of development of the country (Chateau et al. 2022).

FIGURE 2 SHARE OF STATES IN FOSSIL FUEL-BASED REVENUE AND SHARE OF FOSSIL FUELS IN STATE REVENUE



Source: Constructed from RBI state finance data, 2020.

India is currently considering strategies to price carbon through the introduction of carbon markets. If it does implement a carbon tax, a formulated policy on the level of government that will levy the tax, sequestering funds for transition and social security to low-income deciles will go a long way in scaling up sustainable finance. Experience with

earmarking of the clean energy cess⁵ can be replicated with the carbon tax. However, it would require supporting legislation to allow states to access such finance as well as for sequestering, both of which may be challenging given India's fiscal history where the centre and states have both resisted ceding fiscal space.

Second, concessional finance provided by multilateral development banks can be instrumental. At COP26, MDBs committed to increasing climate finance (Group of MDBs 2021), even though the current promise of \$100 billion annually is not being fulfilled (Group of MDBs 2017). A large part of the MDB finance in low- and middle-income countries has been in the form of investment loans. The annual flow of climate finance to India has increased over time and in 2020 was \$3.549 billion (Group of MDBs 2017). Domestic DFIs such as the National Bank for Agriculture and Rural Development (NABARD) and the Small Industries Development Bank of India (SIDBI) are also taking initiatives that can support the scaling up of sustainable finance. For example, SIDBI's 4E Financing Scheme has provided \$15.4 million in low-cost financing to 105 micro, small and medium-sized enterprises across India, enabling them to invest in energy efficiency and clean production measures (UK PACT 2022). NABARD's accreditation with the Green Climate Fund has enabled it to access \$120.7 million in concessional finance that it is on-lending for solar rooftop installation, groundwater recharge and solar micro-irrigation (UK PACT 2022).

There have also been examples of partnerships with international DFIs to fund green activities. For example, the British International Investment has funded projects such as the development of the renewable energy platform Ayana, facilitating the Rainbow Children's Hospital in Bangalore to reduce its electricity consumption by 27% and water by 32%, and sustainable organic farming (British International Investment 2021). All of these are relatively small investments and there is a need to imagine potential for scaling up.

3 CORPORATE ACTION AND PRIVATE FINANCE

For India to meet its ambition of transitioning to a net zero economy, public finances including concessional finance may be limited and used to meet social priorities. In order to fill the investment gap, as has been discussed earlier, private finance would have to recalibrate its risk-return assessment. That is, the exposure to climate and transition risks on investments must be properly assessed so that, irrespective of a carbon price, companies would be encouraged to take up more sustainable practices.

5 Now subsumed under the GST compensation cess.

3.1 Equity investments based on ESG

One of the key developments in the Indian capital markets has been the evolution of a framework for responsible business reporting. In 2009, India released the national voluntary guidelines. However, the push to report non-financial information came with the amendment to the Companies Act 2013 and the Business Responsibility Report (BRR) introduced by the Securities and Exchange Board of India (SEBI) in 2012. While this initially covered only 100 listed companies, reporting was extended in 2017 to the top 500 listed companies on a voluntary basis, and further extended in 2019 to 1,000 companies. Beginning with the financial year 2022-23, the newly introduced Business Responsibility and Sustainability Reporting (BRSR), which is a more objective form of reporting, has been mandated for the top 1,000 listed companies by market capitalisation.

As the standards for disclosures evolve, there has also been a simultaneous expansion in the demand for such investments. The creation of dedicated ESG-based indices such as NIFTY 100 ESG, S&P BSE 100 ESG as well as the Global Securities Market Green Platform at the India International Exchange (India INX) established in India's offshore financial centre signal growth in demand for ESG-based investments. Further, between November 2019 and 2021, the assets under management for ten ESG-based mutual funds in India increased 4.7 times (*The Economic Times* 2021a). It is estimated that as of March 2022, the total of ESG funds in India amounts to INR 124.47 billion (Madia 2022). However, when compared to the overall size of the market, ESG-based funds constitute a small fraction both in terms of the total assets under management for mutual funds (0.3%) in India as well as the share of global funds (\$35.4 trillion as of end-2022). Even though the reporting standards have been updated, ESG investing practices remain in their infancy (*The Economic Times* 2022a) and have a long way to go. It is often argued that ESG funds perform better financially based on the growth in the index. Evidence has been presented to support such claims in India (Sarangi 2021). This argument needs to be treated with some degree of scepticism. It is observed that the funds invest in limited stocks that are performing well and may include fossil fuel companies (*The Economic Times* 2022a), and some experts warn about ESG's oversell (Damodar 2021).

It is perhaps too early to say whether ESG-based investments will assume a significant role in the sustainable finance landscape in India. While ESG-based investing can provide private capital for 'social' outcomes, it is important that the shareholders can use ESG reporting to hold companies accountable, and it must translate into additional greenfield investment for it to provide the required scale of finance. This has assumed significance as corporate investments have slowed in India post-pandemic, despite the rising profit margins. Simply reporting non-financial information does not mean that investments will follow. There is a need to translate the language of ESG into information that is useful for investors. A general critique of ESG reporting has been that it does not provide objective and comparative information. It has been observed in many countries that rating agencies ended up with inconsistent ratings, making them hard for an investor to decipher (Poh 2019). It is hoped that the new regulatory framework, through which ESG

ratings providers are accredited by SEBI, India's capital market regulator, and, more importantly, the new mandatory BRSR framework will make reporting more objective and addresses concerns of greenwashing. This in turn can help scale private investment linked to sustainability.

3.2 Corporate investments in sustainability

At the level of corporations, there has been a visible shift in focus towards sustainable activities, and some companies in India are beginning to price in the externalities. Large companies such as Godrej Consumer Products, Tech Mahindra, Reliance, Indian Railways, Infosys, TCS, Tata Motors, Mahindra & Mahindra have committed to carbon neutrality (CNBC 2021). Then there are special initiatives by companies such as Maruti Suzuki, which has floated a separate company called Maruti Suzuki Toyotsu India Pvt Ltd (MSTI) with the Toyota Tsusho Group to set up a vehicle dismantling and recycling facility in India (Toyota Tsusho Corporation 2019). The cement sector, which is among the large emitters and contributes to 30% of industrial emissions in India (Dasgupta 2021), is already changing the way it operates. Ultratech (Dasgupta 2021: 31), Dalmia⁶ and Shree Cement⁷ have committed to using alternative fuel in production, water and waste management. Finally, there are companies that have responded by setting an internal carbon price that is used to sequester funds that are then invested in low-carbon technologies and activities. For example, ACC Ltd., a cement manufacturing company, uses a maximum price of \$63.98/tonne of CO₂ and an average price of US\$ 47.33. Infosys was the first company to declare its goal to become carbon neutral and in 2019 reported an internal carbon price of \$14.25/tonne of CO₂. The proceeds from the internal carbon price are used towards meeting the multiple objectives of meeting stakeholder expectations, driving energy efficiency and low-carbon investment (TERI and CDP 2019).

3.3 Green bonds

Companies not only rely on equity investment but also access debt through the green bond market. India is among the first to have introduced a green bond framework in 2016, when SEBI issued the "Guidelines for the Issuance and Listing of Green Bonds", followed in 2017 by "Disclosure Requirements for Issuance and Listing of Green Bonds".⁸ The total issuance of green, social and sustainability-linked bonds in India reached \$19.5 billion in December 2021 (Bhattacharya et al. 2022). These were predominantly issued as green bonds and nearly 87% were issued in foreign currency. It is estimated that grid-

⁶ <https://www.dalmiacement.com/sustainability/>

⁷ <https://www.shreecement.com/sustainability>

⁸ The principles include financing of activities: 1. Renewable and sustainable energy including wind, solar, bioenergy, other sources of energy which use clean technology; 2. Clean transportation including mass/public transportation; 3. Sustainable water management including clean and/or drinking water, water recycling; 4. Climate change adaptation; 5. Energy efficiency including efficient and green buildings; 6. Sustainable waste management including recycling, waste to energy, efficient disposal of wastage; 7. Sustainable land use including sustainable forestry and agriculture, afforestation; 8. Biodiversity conservation

connected utility-scale energy is the largest type of project financed. However, green bonds for solar rooftop assets, waste management operations, agriculture, real estate, and electric vehicle (EV) investments are in the pipeline (Bhattacharya et al. 2022). Though green tends to dominate the debt market, it is observed that non-financial companies such as Adani Electricity, UltraTech Cement and JSW Steel have also ventured into the sustainability-linked borrowing (SLB) market. It is possible, through transparency of use of proceeds and clear regulatory guidance, for green bonds and SLB to assume an important position in India's private capital market. The green bond market has fared better in terms of demand than conventional corporate bonds. Yet, these bonds do not carry a cost advantage, or 'greenium', in India; the rate of return promised on these bonds is similar to the interest rate on government bonds (Ghosh et al. 2021). The green bonds compete with sovereign debt and are sensitive to interest rate changes (Bhattacharya et al. 2022). For the wider use of green bonds, the credibility of the instruments needs to be established and there need to be ways to raise the returns associated with green bonds. A policy shift that recognises the risks associated with activities/projects that are fossil fuel-based is one way to achieve this. India's taxonomy can be instrumental in this regard. In 2022, the Indian government announced its intent to issue sovereign green bonds to the tune of INR 240 billion, or \$3.3 billion (*The Economic Times* 2022b). It is expected that the market will evolve and will achieve the depth and liquidity necessary to scale up sustainable finance. There is, however, a need for caution that green corporate debt is not crowded out by such issuance.

3.4 Impact investment

Besides commercial investments, there are also purely social enterprises or outcomes that need to be financed. ESG is still in its early stages and returns continue to form the basis for investment. Therefore, in addition to public finance, there have been innovations to leverage private finance. In this space there are two important developments: a social stock exchange and impact bonds. The framework for a social stock exchange proposed by SEBI will allow non-profit enterprises and for-profit social enterprises with an explicit social intent and impact to list on the exchange. There are 15 broad activities that qualify as social work, including eradicating hunger, poverty malnutrition and inequality, promoting gender equality, ensuring environmental sustainability, and promoting education. Enterprises will be permitted to raise capital through equity, zero coupon zero principal bonds, mutual funds, social impact funds and development impact bonds. The stock exchange would therefore help in providing the liquidity to enterprises that remain straddled for finance.

Development impact bonds (DIBs) and social impact bonds (SIBs) are also innovative instruments linked to particular social or environmental outcomes that are pre-agreed and verified (Agarwal and Singh 2018). These bonds are particularly effective in servicing non-bankable sectors (Aravamuthan et al. 2015) through public-private cooperation. Impact bonds have been used to achieve a variety of outcomes relating to social welfare,

employment, education, health and environment. In the past, for example, an impact bond was used to finance the education of girls in Rajasthan's Bhilwara district. Recently, the India Skills Impact Bond was launched by the National Skill Development Corporation (NSDC) in collaboration with HRH Prince Charles's British Asian Trust, the Michael & Susan Dell Foundation, the Children's Investment Fund Foundation, HSBC India, JSW Foundation and Dubai Cares, with the UK's Foreign, Commonwealth and Development Office (FCDO) and USAID as technical partners. The funds will be deployed to train 50,000 individuals and employment remains the focus. The bonds raised a corpus of \$14.4 million.⁹ SDG impact bonds have also been "ground-breaking" in India (Tandon et al. 2021), although these are small issues. One of the main constraints has been identification of pools of capital that are willing to co-invest. Public finance, philanthropies and corporate social responsibility (CSR) can be leveraged to scale up impact bonds.

3.5 Corporate social responsibility

India is among the few countries that have mandated spending on corporate social responsibility. As per the Companies Act 2013, qualifying companies¹⁰ must allocate 2% of their net profits in the preceding year for activities related to eradicating hunger, promoting gender equality and environment sustainability, to name a few. In the financial year 2019–20 17,006 companies spent INR 248.6 billion, or \$3.13 billion, on CSR.¹¹ The proceeds were spent largely on the social sector, including health and sanitation and rural development. The CSR spend is an important means to encourage unlisted companies not yet covered by ESG disclosure requirements to allocate profits to sustainability-linked activities. Interestingly, many oil-producing and energy companies such as Reliance, ONGC, Indian oil corporation and NTPC contribute significantly to CSR.¹² However, the spend remains concentrated in the industrial hubs, where many of the large entities are located. States such as Maharashtra, Gujarat, Karnataka and Tamil Nadu account for 28% of all spend. There remains potential to deploy CSR funds for SDGs including in regional development. It is also possible to explore the use of unspent CSR funds to support impact bonds as a means to achieve the scale of finance.

4 SUSTAINABLE FINANCE IN INDIA'S BANKING SECTOR

While capital markets are an important source of finance, the banking system remains the key source of finance in India. It is hence critical that the banking sector expands lending to economic activities that will advance a just transition while phasing out lending to carbon-intensive activities that run contrary to this goal. Moreover, banks need to account for both physical and transition risk related to climate change.

9 <https://www.nsdcindia.org/sib>

10 Net worth of INR 5 billion or more, turnover of more than INR 10 billion or net profit of more than INR 50 million

11 <https://www.csr.gov.in/content/csr/global/master/home/home.html>

12 <https://www.csr.gov.in/content/csr/global/master/home/home.html>

Historically, the RBI has used priority sector lending targets to ensure that credit-deprived sectors, also an economic priority, receive a certain percentage of bank credit. In 2015, the RBI included lending to renewable energy¹³ in the priority sector lending (PSL) tool. However, despite the inclusion of the sector in the tool, total lending to non-conventional energy remains small at 0.5% of total bank credit (Gosh et al. 2022). Other than through PSL, the RBI has been slow to address climate-related challenges. Treading cautiously, the RBI joined the Network of Central Banks and Supervisors for Greening the Financial System (NGFS) only in 2021 (RBI 2021a). In 2022, the RBI estimated that the direct risk to the banking sector from three major fossil fuel-based sectors – power, automobiles and chemicals – is around 10% and is not considered alarming (Gosh et al. 2022). It estimates that metals, steel, and crude oil and natural gas contribute 23% to total bank credit. The effects of a low-carbon transition on sectors like iron and steel, cement and oil and gas are still to be ascertained. The second-order effects through inter-bank connectedness also need to be seen. In 2020, the interconnectedness of banking had increased in India to 39.7%, that is, the banks had bilateral exposures that could lead to transmission of crisis even though loan portfolios vary across banks. Then there are non-banking financial companies that are large borrowers and could see a decline in access to finance with the transmission of risk (RBI 2021b).

There is a need to acknowledge all of these risks, but the RBI has been slow to respond. In 2020, it published an analysis on the macroeconomic impact of climate change and policy options for mitigating risks in its monthly bulletin (Dilip and Kundu 2020). More recently, the RBI published a discussion paper that signals the central bank is taking stock of the preparedness of the banking system to deal with disclosures and risk assessment (RBI 2022b). The latter indicates that the RBI may adopt the Task Force on Climate-Related Financial Disclosures (TCFD)'s recommended disclosures. Some central banks explicitly include, through the direct or indirect support to government's policy, sustainability in their mandates. In addition, central banks can mandate disclosures, stress testing, capital adequacy norms, and policy research.¹⁴ It is argued that tragedy of the horizon often limits what central banks can do to mitigate risks (Carney 2015).

One cost of climate change that already permeates the economy is inflation – a key mandate for central banks. This was observed during the sharp decline in the production of wheat, a staple cereal, due to the 2022 heatwave in India (Kajal 2022). The RBI finds “weather conditions, especially rainfall, to have a strong influence on the food inflation trajectory and the impact was found to last for a couple of months” (Dilip and Kundu 2020: 121). Therefore, even though the topic of whether central banks should include climate within their mandates is highly contested, inflation and financial instability places climate within the portfolio of their mandate.

13 Bank loans up to a limit of INR 300 million to borrowers for purposes like solar based power generators, biomass-based power generators, wind mills, micro-hydel plants and for non-conventional energy based public utilities, viz., street lighting systems and remote village electrification etc., will be eligible for priority sector classification. For individual households, the loan limit will be INR 1 million per borrower.

14 For more details see Dikau and Volz (2021).

While research at the RBI has gradually acknowledged the significance of climate risks and the impact on inflation and credit exposure, regulations have not kept pace. It is expected that the RBI will follow up on its discussion paper with regulatory action, which in turn can help shift the priorities of those seeking finance. It is also important that the exposure risks are estimated and brought on books. An important consideration is that the RBI also holds government securities. It is expected that sovereign credit ratings may materially decline for India given the climate risks (Klusak et al. 2021). This in turn can create additional liabilities for the government that can alter the fiscal and monetary policy space available to India. However, there have been no efforts yet to formalise such modelling for India's macroeconomy. While recommending such change, it is important to recognise the constraints. The banking system in India is already under strain due to the relatively sizable non-performing assets (NPAs). The energy transition may exacerbate existing financial fragility. While initiatives such as the setting up of a national 'bad bank', the National Asset Reconstruction Company Ltd, can help resolve NPAs, it is expected that the pace and nature of the energy transition will determine the build-up of stressed assets in the system and their cost to the government. Therefore, the RBI must set out a roadmap for the scaling up of finance in sectors that are green or sustainability-compatible while also stating the scaling down of fossil fuel-based investments. In the absence of such a detailed pathway, chaos is likely to ensue. It is important to mention that such a pathway is not the remit of the central bank and would require close coordination with the Ministry of Finance, which may lay down the timelines and short-term goals for the net zero transition.

5 CONCLUSION

The focus of sustainable finance goes beyond climate, yet this chapter dwells on many aspects related to climate change. This is to emphasise that the commitment to achieve net zero status by 2070 will transform India's economy. This in turn is an opportunity to ensure decent jobs and livelihoods, which has occupied the minds of policymakers for decades. However, not all of it can be done at once, and there will be learning from doing. It is therefore imagined that lessons from climate finance will be replicated across the financial sector to broadly fund sustainable development. There has been a focus on funding the SDGs, but for the time being it remains largely the responsibility of the state and restricted to philanthropies. Public finance will remain a critical source of sustainable finance, although the estimated shortfall in investment indicates that it will not be enough.

Large corporations are recognising the risks they run from not adapting to the demands of a net zero economy. While the debate continues on where ESG-based investing can bring change, there are costs associated with the formalisation of carbon markets in India. India has already mandated stricter disclosure requirements for companies and there are early signs of risk recognition in the banking sector. As insolvencies and investor action become more likely under a business-as-usual scenario, companies may be compelled to

act. There is evidence in India that companies are starting to price carbon emissions and are allocating funds to CSR as well as raising debt for green projects. Nevertheless, all these efforts are comparatively small.

In order to achieve the scale of finance required, there is need for policy guidance on the definition of sustainability and a regulatory framework that will support the flow of finance. The Task Force on Sustainable Finance has carried out work to define India's taxonomy along with the best practices for disclosures and regulation. It is expected that the work of the report will set forth a coordinated approach to scaling up sustainable finance in India.

It is clear that India's ambition to achieve a socially viable low-carbon transition will require innovative approaches such as sequestering of funds and leveraging of CSR, philanthropies and domestic DFIs. At the same time, a reasonable assessment of needs should to be carried out with regard to the diffusion of technologies, since that would lower the R&D costs.

There are two aspects that need attention when discussing the scaling up of sustainable finance in India. The first is the extent to which private capital will be forthcoming and the policies that support such finance. The second is the fiscal structure that would be necessary to ensure that the centre and states can raise the necessary capital for financing the SDGs.

International capital markets and investors have remained important for India's external account. Yet FDI and FII flows remain a small proportion (2.4%) of the GDP. There have been efforts to attract capital through fiscal, tax and regulatory incentives, whether via preferential treatment of infrastructure debt, venture capital or investments made through the International Financial Services Centre, an offshore financial centre in Gift City, Gandhinagar.¹⁵ Despite such fiscal and regulatory incentives, the flow through these channels remains limited. Policymakers must therefore examine the importance of such flows in funding sustainable activities and the potential means to attract capital. Furthermore, the central government and states will have to expand public investment to advance a just transition. Sub-national governments lack the fiscal autonomy to borrow or raise revenues to support the transition.. As one drills down further to the local level, the fiscal autonomy of municipalities dwindles, primarily due to the lack of revenue base. Even though there are examples of municipality bonds, such as Nagar Nigam Ghaziabad's \$20 million green debt issuance (*The Economic Times* 2021b), it may be time to evaluate the fiscal space available to other local bodies so as to understand its replicability. An often-cited example of local resources to fund transition are district mineral funds, which are linked to local mining. These funds, worth INR 538.3 billion collected between

15 <https://www.giftgujarat.in/documents/GIFT-City-Doing-Business-Booklet-JUN2021.pdf>

2015 and 2021, have remained partially utilised (*Hindustan Times* 2022), particularly on account of capacity. These revenues are expected to dissipate with the transition, and the issue of inadequate capacity within the government also needs to be addressed.

As India sets out to transition to a low-carbon economy, capital markets are adapting to the demands of such as transition. There has been an uptick in ESG-based investments and green as well as impact bonds have gained traction. However, the growth in sustainable finance is not commensurate with the anticipated need. In 2019–20, green finance totalled INR 3090 billion (\$38.75 billion), or close to 1% of GDP. While the basis for investing is gradually shifting from profits to ESG, private investments are not sufficient and it is expected that public finance will remain important. In order to achieve the desired scale, there is a need for a cohesive policy that sets the pathway for the banking and financial system so that they may assess the risks and allocate capital in line with the required phasing down of activities. There is also a need to clearly define which activities are compatible with sustainability.

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CHAPTER 19

Sustainable finance in Southeast Asia

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1 INTRODUCTION

Over the past few years, significant progress has been made in the development of financial infrastructure and promotion of sustainable finance activities in Southeast Asia, both at the level of individual member countries of the Association of Southeast Asian Nations (ASEAN) and collectively at the regional level.² Public and private efforts to develop sustainable finance reflect a growing awareness across the region of the vulnerability of Southeast Asian economies to climate and environmental change. Indeed, ASEAN countries are amongst the countries most vulnerable to the physical impacts of climate change, which cause significant risks also for macroeconomic and financial stability (Volz et al. 2020, Beirne et al. 2021). Moreover, ASEAN countries are also exposed to significant transitions risks (ibid.). All ASEAN countries have signed the Paris Agreement, and most have already committed to being carbon neutral by 2050.³

Although the entire region is vulnerable to climate-related risks, the development of sustainable finance activities has been uneven across ASEAN countries due to different levels of economic and financial development as well as differences in institutional capacities. The Covid-19 pandemic has also had significant impact on economic priorities, with many households across the region seeing a substantial drop in income and financial difficulties (Morgan et al. 2021). This has resulted in resources being reallocated to more immediate economic and social policies, impacting longer-term sustainable finance activities.

This chapter provides an overview of the overall state of sustainable finance activities and practices in the region, contextualises the challenges in scaling up sustainable finance and investment, and discusses the opportunities and actions that could be undertaken both individually and collectively. The chapter is structured as follows. Section 2 gives an overview of sustainable finance policies and frameworks that have been established

1 The views expressed in this chapter are those of the authors and should not be attributed to the Puey Ungphakorn Institute for Economic Research or the Bank of Thailand. The authors thank Sean Kidney and Phi Minh Nguyet for sharing the data for Figures 1-4.

2 The ASEAN members are Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand and Vietnam.

3 The governments of Cambodia, Laos, Malaysia, Singapore, Thailand and Vietnam have committed to achieving net zero emissions by 2050, while Myanmar and Indonesia are discussing such a commitment for 2050 and 2060, respectively.

in Southeast Asian countries and at the regional level. Section 3 reviews developments in sustainable financial markets across the region. Section 4 discusses policy challenges and provides recommendations for ASEAN countries to further align finance with sustainability objectives.

2 OVERVIEW OF SUSTAINABLE FINANCE POLICIES AND FRAMEWORKS IN SOUTHEAST ASIAN COUNTRIES

The ten member countries of ASEAN have both individually and collectively taken important steps in the last few years to develop an environment conducive to fostering sustainable finance activities as well as to encourage market practices and the expansion of related products and services.

2.1 Country-level initiatives

Due to the diversity of economic and financial development, related disparities in institutional capacities, but also differing economic priorities, there have been notable differences in the pace and scale at which sustainable finance activities have been undertaken in each ASEAN country. A review of countries (see Annex 1) reveals that seven of the ten ASEAN countries – namely Cambodia, Indonesia, Malaysia, the Philippines, Singapore, Thailand, and Vietnam – have progressed substantially more in the area of sustainable finance than Brunei, Laos and Myanmar. The majority of countries adopted an industry-led approach whereby financial authorities worked with financial industry associations to incorporate principles of sustainable finance into business activities, as reflected in Singapore’s Guidelines on Responsible Financing in 2015, Cambodia’s Sustainable Finance Principles Statement of Intent in 2016, and Thailand’s Sustainable Banking Guidelines on Responsible Lending in 2019.

Capital markets have been a main focal area for the development of sustainable finance. The release of bond standards has been key in facilitating issuances of green, social and sustainability (GSS) bonds in the region. For example, Malaysia’s Sustainable Responsible Investment Framework led to the first sustainable *sukuk* (a sharia-compliant bond-like instrument) and first green *sukuk* issuances. Incentives to issue GSS bonds have been rolled out, with the Monetary Authority of Singapore’s launch of the world’s first grant schemes to support green and sustainability-linked loans or the Securities and Exchange Commission of Thailand’s waiver of approval and filing fees for GSS bonds. To further signal the commitment to enhancing sustainable debt markets, Indonesia, Malaysia, Singapore, and Thailand have issued sovereign green and sustainability bonds, with the Kingdom of Thailand’s sovereign sustainability bond being the first Thai bond to be listed on the Luxembourg Stock Exchange. Stock exchanges in Singapore and Thailand have also issued guidance on sustainability reporting, improving the transparency of operations, and enhancing the ability for market players to price climate and environment related risks. Across ASEAN, seven stock exchanges have joined the Sustainable Stock

Exchange initiative, a UN Partnership Programme supporting exchanges in enhancing performance on environmental, social and corporate governance (ESG) issues and encouraging sustainable investment.⁴

Regulatory authorities have taken a broader approach, targeting not only capital markets but also the banking and insurance sector. Financial authorities have issued initiatives intended to promote market practices through clear communication to market players with the inclusion of sustainability in strategic directions and industry guidelines, as well as through the issuance of key elements conducive to a sustainable financial system such as standards, taxonomies and disclosure. Financial authorities in Cambodia, Indonesia, Malaysia, Philippines, Singapore, Thailand, and Vietnam have all issued either roadmaps, initiatives, guidelines or action plans relating to the creation of a sustainable finance ecosystem. This includes close coordination between public and private players, the formation of mechanisms to enhance market practice such as a taxonomy or data environment, having effective incentives, as well as the enhancement of human capital. Indonesia and Malaysia have already developed taxonomies while Singapore has issued a consultation paper and Thailand and the Philippines are in the process of developing their own taxonomy frameworks.

Several ASEAN countries have started to develop reporting standards in line with the Financial Stability's Board Task Force on Climate-Related Financial Disclosures (TCFD). In 2020, the Bangko Sentral ng Philipinas (BSP) issued circulars requiring banks to disclose environmental and social risks in their annual reports, while in Malaysia the Joint Committee on Climate Change (JC3) released a TCFD application guide in 2022 outlining key recommendations as a practical resource to facilitate adoption of TCFD recommendations by the Malaysian financial industry.⁵ Thailand, meanwhile, plans to issue disclosure guidelines in line with the TCFD by the end of 2022 and states that it will require domestic systematically important banks to disclose information by 2024 (BOT 2022).

Several supervisors have also begun to assess the risks for financial systems from climate risks and to work on climate stress tests. In 2020, the BSP published a study on the impact of extreme weather episodes on the Philippine banking sector, using evidence from branch-level supervisory data (Bayangos et al. 2020). The study confirmed that extreme weather conditions adversely impact the banks, reflected by negative effects on the growth of deposits and loans, loan quality and profitability. The BSP has also started to work with the World Bank on a pilot climate stress-testing exercise on the banking system.⁶ In 2020, the Monetary Authority of Singapore (MAS) issued guidelines for banks on environmental risk management, including stress testing (MAS 2020).

4 Indonesia Stock Exchange, Bursa Malaysia, Philippine Stock Exchange, Singapore Exchange, Stock Exchange of Thailand, Hanoi Stock Exchange, and Ho Chi Minh Stock Exchange.

5 The JC3 is co-chaired by Bank Negara Malaysia and the Securities Commission Malaysia and comprises Bursa Malaysia and 19 other industry participants.

6 The World Bank and the IMF have conducted climate stress tests for the Philippines' Financial Sector Assessment Program (Regelink, 2019, Hallegatte et al. 2022).

The MAS announced it would incorporate a range of thematic climate scenarios as part of its 2022 industry-wide stress test exercise (MAS 2022a). The Bank of Thailand also plans to run a climate stress test exercise with large financial institutions by the end of 2023 before expanding it to an industry-wide exercise in 2024 (BOT 2022). Bank Negara Malaysia (BNM) has developed an industry-wide climate risk stress testing exercise that it plans to run in 2024 (BNM 2022). In Indonesia, the central bank and financial supervisory authority have also started to work on climate stress tests.

More recently, to increase the impetus for sustainable finance, regulatory elements of sustainable finance are gradually being incorporated into policy frameworks, with a number of countries issuing directives to require financial institutions to integrate environmental and social risk management into their risk management frameworks (Philippines), promoting green property mortgages (Indonesia) or revising Basel Pillar 2 capital rules to include ESG factors in the risk assessment process (Thailand). Vietnam also requested credit institutions to report how they plan to achieve national green growth targets. BNM launched a Low Carbon Transition Facility to encourage and support SMEs to adopt sustainable practices for business resilience.

Although progress in local development of sustainable finance activities has been somewhat affected by the pandemic, there has been a move towards greater collaboration across ASEAN countries and beyond the region as countries emerge from the Covid-19 crisis, with a number of countries signing MOUs with the UK Government and central banks bilaterally engaging with proponents of sustainability practices such as the Banque de France, as seen in the case of the National Bank of Cambodia. The Banque de France also inaugurated its Asia-Pacific Representative Office in Singapore, where collaborative efforts include the area of green finance.

2.2 ASEAN-level initiatives

At the regional level, there has been steady progress in aligning priorities regarding climate change and a formal recognition by finance ministers and central bank governors that the long-term outlook for the region is contingent on how the region manages climate-related risks (AFMGM+3 2022). Although environmental issues have long been a part of ASEAN's agenda, this has been driven by the ASEAN Socio-Cultural Community (ASCC) Blueprint and, due to the specific nature of the issue, discussions have historically been the realm of environment-related agencies. The momentum of climate-related policy discussions by the economic and financial regulators under the economic pillar of ASEAN has built only relatively recently. This, in part, has been fuelled by the membership of seven regulatory bodies from six member countries to the Network of Central Banks and Supervisors for Greening the Financial System (NGFS).⁷

⁷ As of August 2022, seven financial regulators from six ASEAN member countries have joined the NGFS: Bank Indonesia, Bank Negara Malaysia, Bank of Thailand, Bangko Sentral ng Pilipinas, Monetary Authority of Singapore, National Bank of Cambodia, Otoritas Jasa Keuangan (Financial Services Authority Indonesia).

Under the economic pillar, working groups have traditionally been designed to reflect specific areas, namely, capital markets, banking, and insurance. Discussions and initiatives regarding sustainable finance have therefore progressed at different paces in these areas. The ASEAN Capital Markets Forum (ACMF), which comprises the capital markets regulators of all ASEAN countries, has been most active. In 2017, the ACMF released the ASEAN Green Bonds Standards as an effort to nurture this market and facilitate investment into green investments (ACMF 2018a).⁸ It subsequently released the ASEAN Social Bonds Standards (ACMF 2018b) and the ASEAN Sustainability Bonds Standards (ACMF 2018c) in 2018. In 2020, it published the ACMF Roadmap for ASEAN Sustainable Capital Markets and in 2021 the ASEAN SDG Bond Toolkit, which provides guidance on the key principles and processes for the issuance of bonds. These regulatory guidelines have been an important foundation for promoting the issuance of GSS-related bonds in the region and for guiding the direction of capital market development.

Banking and insurance regulators have had a slower start in comparison to their capital market peers. However, work on the development of key elements of a sustainable financial system and the launch of the ASEAN Sustainable Banking Initiative has gained traction, as reflected in the fourth Joint Statement of the ASEAN Finance Ministers' and Central Bank Governor's Meeting (AFMGM) in 2018,⁹ when the topic of sustainable finance was first mentioned (and given its own subsection) (AFMGM 2018). Since then, the subsection reporting on work regarding sustainable finance has expanded significantly and demonstrates that priority has been given to the development of an environment conducive to scaling up sustainable finance. In 2020, the ASEAN central banks published a report on *The Roles of ASEAN Central Banks in Managing Climate and Environment-related Risks*, asserting climate change to be a potential threat to the economy and their responsibilities in addressing sustainability-related issues (Anwar et al. 2020).

As sustainable finance is a cross-cutting issue, several collaborative working committees and task forces dedicated to developing key elements of sustainable finance have been established. One such example is the ASEAN Taxonomy Board, which brings together financial regulators from the capital markets, banking, and insurance sectors. The board was tasked with the development of the ASEAN Taxonomy, which is a principles-based framework designed to allow each member state flexibility to adapt it to their individual country's needs whilst being consistent with regional and global sustainability goals. The ASEAN Taxonomy is supposed to provide clarity as to how financial products should be labelled and will help prevent greenwashing. The first version of the ASEAN Taxonomy was released for public consultation in November 2021 and feedback will be incorporated into later versions of the document (ASEAN Taxonomy Board 2021).

8 The first version was issued in November 2017, the revised version in October 2018. The ASEAN Green Bond Standards are based on ICMA's Green Bond Principles.

9 The AFMGM comprises of ASEAN central bank governors and finance ministers and convenes once a year to receive updates and provide guidance and direction to the working committees in charge of financial policies. A joint statement is released upon conclusion of the meeting.

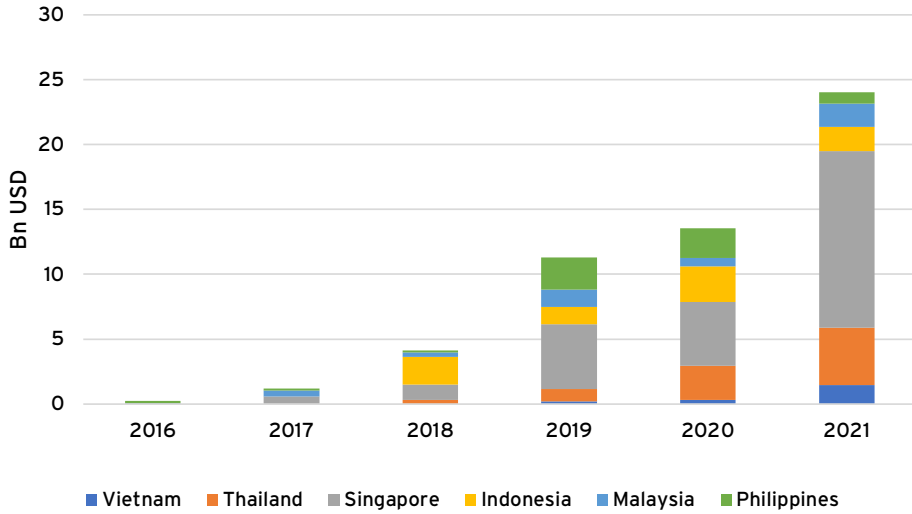
Additionally, as scaling up sustainable finance is dependent on the knowledge base and skillset of human resources, an ASEAN Learning Roadmap and Learning Curriculum on Sustainable Finance for both industry and regulatory players is being developed by the South East Asian Central Banks (SEACEN) Research and Training Centre, in collaboration with SOAS, University of London. Addressing sector-specific needs, the ASEAN Insurance Regulators Meeting (AIRM) is also developing capacity training and priority areas for the ASEAN Insurance Training and Research Institute (AITTRI).

In the next stage of development, as the number of initiatives and task forces increases, an ASEAN Green Map is being developed to ensure that there is a high-level perspective of actions and coordinated alignment in the region across banking, insurance, and capital markets (AFMGM 2022). Moreover, by the end of 2022, ASEAN will also be launching the ASEAN Sustainability Linked Bond Standards. This will complement the existing GSS bonds standards. To facilitate cross-border offerings of ASEAN sustainable and responsible funds through a 'green lane', ASEAN Sustainable and Responsible Fund Standards are also being developed.

3 SUSTAINABLE FINANCE MARKET OVERVIEW

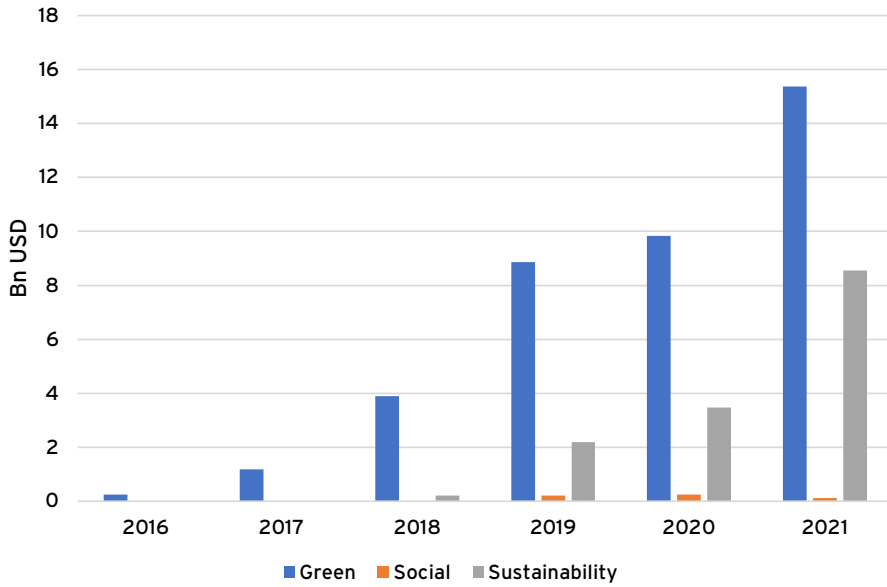
Given the number of policy initiatives in sustainable finance, the key question is how the financial sector has responded and whether these actions are having the desired outcomes and impact. Due to insufficient or inconsistent data across countries, it is a challenge to accurately measure the impact of the sustainable finance initiatives that have been implemented thus far (Augoyard et al. 2022). While there is generally little information regarding green or sustainable bank lending across ASEAN, information is available in the capital markets through the tracking of labelled GSS bonds. ASEAN issuance of GSS bonds as well as labelled GSS loans has grown each year to new record highs, with US\$24 billion of bonds and loans issued in 2021 (Figures 1 and 2) and an additional \$27.5 billion of sustainability-linked bonds and loans (Manuamorn et al. 2022). Green issuances, which is defined as those carrying a variant of the green label or where the net proceeds are verifiably green, account for 63.9% of all GSS issuances in ASEAN, followed by sustainability issuances with 35.5%. It is interesting to note that whilst sovereign issuances focused more on social and sustainability issues, non-financial corporate issuances mostly focused on green issuances (Manuamorn et al. 2022), with Singapore having the most GSS issuances within ASEAN (Figures 3 and 4).

FIGURE 1 ASEAN-6 ANNUAL GSS ISSUANCE, 2016-2021

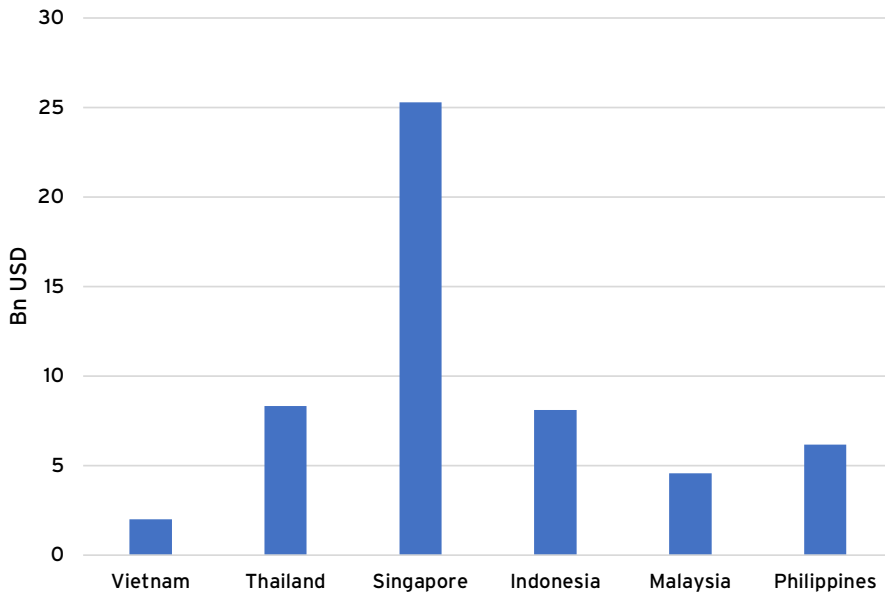


Source: Manuamorn et al. (2022).

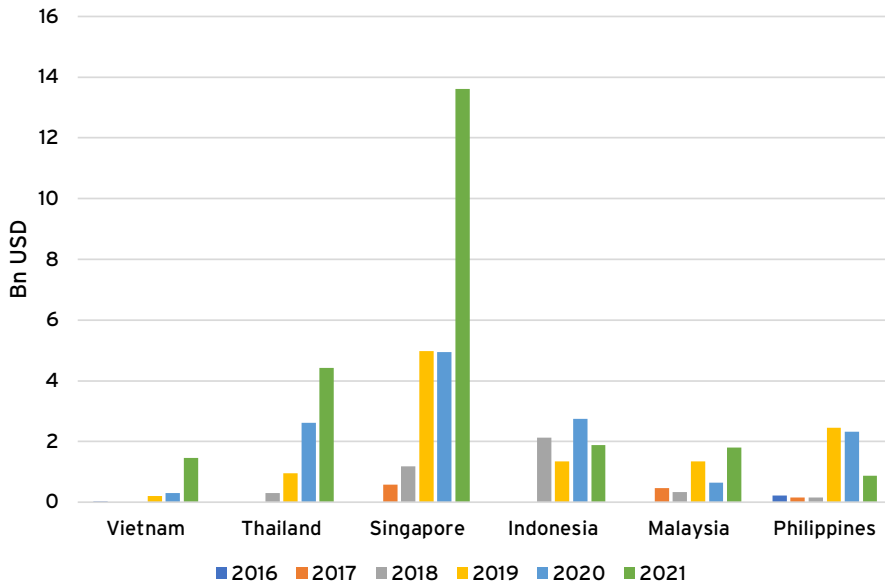
FIGURE 2 ASEAN-6 GSS ISSUANCES BY TYPE, 2016-2021



Source: Manuamorn et al. (2022).

FIGURE 3 CUMULATIVE ASEAN GSS ISSUANCES BY COUNTRY BY END-2021

Source: Manuamorn et al. (2022).

FIGURE 4 ANNUAL GSS ISSUANCE IN ASEAN-6 COUNTRIES, 2016-2021

Source: Manuamorn et al. (2022).

With regards to the banking sector, several surveys – including the most recent Sustainable Banking Assessment conducted by WWF Singapore, which surveyed 36 ASEAN banks (Nordheim et al. 2022) – demonstrate significant progress in the awareness and adoption of sustainable practices across the financial sector. Industry-issued guidelines on adopting sustainable finance practices demonstrate a general commitment to enhancing sustainable finance especially in Cambodia, Malaysia, Singapore and Thailand.

In Singapore, the MAS conducted a review of selected banks in 2021 to assess the pace of implementation as well as to benchmark practices, revealing different levels of maturity in environmental risk management practices (MAS 2022). This is similar in Thailand, where a few banks have taken concrete steps to incorporate sustainability into their business strategy. This includes the setting up of clear governance structures with dedicated sustainability committees, development of risk assessment tools and disclosure of ESG standards (Suthiwartnarueput 2021). Nevertheless, more progress needs to be achieved in this area and both Singapore and Thailand have issued consultative and directional papers detailing further steps.

Another indicator that reflects financial institutions' adoption is their commitment to international standards or principles. To date, only seven financial institutions from five countries in ASEAN – Indonesia (1), Malaysia (2), Myanmar (1), Philippines (1), and Thailand (2) – have signed up to the Principles of Responsible Banking (PRB), which is a framework created by the United Nations Environment Programme Finance Initiative (UNEP FI) to ensure that signatories' strategies and practices are in line with the Sustainable Development Goals and the Paris Agreement. With the exemption of Singapore, there is also only a small number of investors across ASEAN countries who have signed up to the UN Principles for Responsible Investment¹⁰ – Brunei Darussalam (1), Indonesia (5), Malaysia (15), Singapore (65), Thailand (3), and Vietnam (4).

4 POLICY CHALLENGES AND RECOMMENDATIONS

Sustainable finance frameworks – including for standards, taxonomies and disclosure – are being developed in most ASEAN countries, and most central banks and supervisors in the region have started to examine climate-related financial risks (Volz 2021). ASEAN banking and capital markets have also started to consider ESG risks and impacts, although sustainable lending and investment is still niche. And while progress has been made in fostering sustainable finance across ASEAN countries, progress is uneven and substantial challenges remain even in those jurisdictions that have advanced sustainable finance the most.

¹⁰ See <https://www.unpri.org>

Five out of the eight members that participated in a survey of ASEAN member states on challenges to addressing climate change conducted by the ASEAN Taxonomy Board (2021) highlighted a lack of funding and technical capacity gaps as the two biggest challenges, followed by a general lack of awareness and data. A recent survey by the Economic Research Institute for ASEAN and East Asia among borrowers and lenders on the barriers and risks that the private sector faces in scaling up low-carbon investments highlighted “incoherent policies that created a high-risk environment for investment, a lack of access to de-risking mechanisms, and insufficient capacity to communicate the opportunities amongst financial institutions and project developers” (Anbumozhi et al. 2019: i). Banks surveyed in Singapore cited a lack of readily available data that are reliable and comparable and robust methodologies to quantify financial impact, as well as a shortage of staff skilled in sustainable finance as major impediments to scale up sustainable finance (MAS 2022). It should be noted that Singapore has by far the most sophisticated financial sector in ASEAN, and that shortages in staff capacities for analysing sustainability risks and impacts are significantly larger in the other ASEAN countries, as is the lack of easily accessible and reliable data on ESG risks and impacts.

A substantial need for capacity building and training among central banks and financial supervisors in the region was also revealed in the second Asia Pacific Central Bank Sustainability Survey (Augoyard et al. 2022). Encouragingly, the survey, in which 26 central banks and supervisors across the Asia Pacific region took part in 2021, showed that considerably more attention is being paid to sustainability challenges compared to 2019, when the first survey was conducted (Durrani et al. 2020). However, while the survey showed that most central banks and supervisors in the region were planning to expand the roll-out of sustainable finance measures, it revealed major needs for capacity building and training to enable central banks and supervisors to adequately respond to the sustainability challenge. Developing the appropriate expertise among staff will be critical to ensuring that the right measures are implemented, and that central banks and supervisors can play their crucial roles in safeguarding macroeconomic and financial stability and supporting the transition to a low-carbon, resilient and more sustainable economy. Capacity building in both the private and the public sector regarding sustainability risks and impacts hence needs to be a priority. The less developed ASEAN countries in particular will benefit from international technical assistance and regional cooperation.

A further priority ought to be developing enabling policy and framework conditions in both the real economy and the financial sector to overcome existing barriers to facilitating investment in low-carbon, climate-resilient infrastructure. This will require unprecedented coordination between all stakeholders, including government, central banks and supervisors, finance sector associations and industry associations. Appropriate governance structures, laws and regulations need to be put in place, and better data frameworks need to be established that will enable access to relevant data so that both financial firms and supervisors can better assess sustainability risks and impacts and

formulate adequate policies and strategies for scaling up sustainable finance. To this end, the ASEAN central banks and supervisors should work together to harness the potential of digital technologies for mainstreaming sustainable finance practices (Dikau et al. 2022). In particular, they can help develop a better regional data infrastructure, for example through innovating open data platforms and open-source base algorithms, as well as through digital disclosure and reporting requirements.

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ANNEX 1 SUSTAINABLE FINANCE POLICIES ACROSS SOUTHEAST ASIA

Brunei Darussalam	
2016	Autoriti Monetari Brunei Darussalam publishes Financial Sector Blueprint 2016-2025
2020	Autoriti Monetari Brunei Darussalam establishes Sustainable Finance Task Force (SFTF) Ministry of Finance and Economy publishes "Towards a Dynamic and Sustainable Economy: Economic Blueprint for Brunei Darussalam"
Cambodia	
2016	Association of Banks in Cambodia (ABC) becomes member of the Sustainable Banking Network, issues Cambodian Sustainable Finance Principles-Statement of Intent and launches the Cambodian Sustainable Finance Initiative (CSFI)
2017	ABC signs a multi-party MoU with IFC and Mongolian Bankers Association to advance the concept of sustainable finance through a collaborative industry process and establishes the Sustainable Finance Committee
2018	ABC establishes the Sustainable Working Group to develop implementation guidelines
2019	ABC launches Cambodian Sustainable Finance Principles Implementation Guidelines (endorsed by the National Bank of Cambodia and Ministry of the Environment and adopted by 48 member banks)
2020	ABC conducts Banking Industry Survey on Sustainable Finance, runs training programme, and signs an MoU with the American Chamber of Commerce (AmCham) to promote sustainable finance National Bank of Cambodia joins the NGFS
2022	National Bank of Cambodia signs Memorandum of Cooperation with the Banque de France to promote capacity building in key areas of central banking expertise and sound financial systems
Indonesia	
1998	Bank Indonesia (BI) requires banks to conduct environmental impact assessments for large or high risk loans
2005	BI issues regulation on Asset Quality Rating for commercial banks requiring inclusion of environmental measures in assessments of business prospects
2012	Government issues Government Regulation on Social and Environmental Responsibility of Limited Liability Companies Otoritas Jasa Keuangan (OJK)/ Financial Services Authority becomes a founding member of the Sustainable Banking Network
2013	BI publishes Green Lending Model Guidelines for Mini Hydro Power Plant Projects
2014	OJK publishes Roadmap for Sustainable Finance in Indonesia 2015-2019
2015	IFC, USAID, OJK publish Clean Energy Handbook for Financial Service Institutions OJK publishes Roadmap for Sustainable Finance in Indonesia 2015-2019

2017	<p>OJK introduces Sustainable Finance Umbrella Policy to provide guidance for definition and principles of sustainable finance as well as an action plan for banking, capital markets and non-banking sectors.</p> <p>OJK publishes a framework and regulation for green bond issuance in Indonesia</p> <p>OJK publishes Regulation on the Application of Sustainable Finance for Financial Services Companies, Issuers and Publicly Listed Companies to provide funding sources needed to achieve SDGs and to address climate change</p> <p>OJK establishes the Bali Center for Sustainable Finance to support sustainable development programme</p>
2018	<p>OJK and WWF establish the Indonesia Sustainable Finance Initiative (ISFI) to promote and implement inclusive sustainable finance practices</p> <p>OJK launches technical guidelines for banks on the implementation of OJK's Regulation on Sustainable Finance</p> <p>Government issues first sovereign global green sukuk (\$1.25billion)</p>
2019	<p>BI introduces policy on relaxation of the loan to value (LTV) for green property mortgages to provide incentives to facilitate the purchase of environmentally friendly properties</p> <p>Government issues second global green sukuk</p> <p>BI joins the NGFS</p>
2020	<p>OJK launches incentives to increase electric vehicle financing</p> <p>OJK joins the NGFS</p> <p>Indonesia Stock Exchange launches IDX ESG Leaders Index</p>
2021	<p>Indonesian G20 Presidency establishes Sustainable Finance Working Group (SFWG) with the Ministry of Finance and BI</p> <p>OJK launches the Sustainable Finance Roadmap Phase II (2021-2025) to accelerate the sustainable transformation of the financial services sector and establishment of sustainable finance task force</p> <p>OJK launches the Indonesia Banking Development Roadmap (2020-2025), Indonesia Financial Services Sector Masterplan (2021-2025) and the Indonesia Islamic Banking Development Roadmap (2020-2025)</p> <p>OJK publishes technical guidelines for securities companies</p> <p>OJK issues statement in support of the NGFS Glasgow Declaration</p>
2022	<p>Green Central Bank Framework</p> <p>OJK launches Indonesia Green Taxonomy Edition 1.0 to classify sustainable financing and investment activities</p> <p>Government issues regulation on the carbon market</p>
Lao PDR	
2012	Bank of Lao PDR becomes founding member of the Sustainable Banking Network
2016	Integration of sustainable finance policy into the National Green Growth Strategy of the Lao PDR till 2030
Malaysia	
2014	<p>Launch of the Sustainable Responsible Investment (SRI) Framework</p> <p>Bursa Malaysia & FTSE Russell launch the FTSE4Good Bursa Malaysia Index</p>

2015	First sustainable Sukuk launched
2017	First green Sukuk launched
2018	Bank Negara Malaysia (BNM) issues guidance to help Islamic banking institutions with implementation of value-based intermediation to create positive social impacts BNM joins the NGFS Bursa Malaysia issues Sustainability Reporting Guide
2019	BNM and the Securities Commission of Malaysia (SC) established the Joint Committee on Climate Change (JC3), a collaboration among industry players and regulators SC issues the Sustainable and Responsible Investment Roadmap BNM issues Value-based Intermediation Financing and Investment Impact Assessment Framework to guide implementation of impact-based risk management system and serves as a reference for incorporation of ESG risk considerations
2020	BNM issues Value-based Intermediation Financing and Investment Impact Assessment Framework Sectoral Guides on Palm Oil, Renewable Energy and Energy Efficiency BNM starts pilot implementation of a Climate Change and Principles-Based Taxonomy Capital Markets Malaysia (CMM) and Global Compact Network launch the Global Compact Network Malaysia Centre of Excellence (CoE) CMM launches the Malaysian Sustainable Finance Initiative (MSFI) to support capacity development for Malaysia's financial sector
2021	SC launches five-year capital market masterplan BNM publishes the Climate change and Principle-Based Taxonomy (CCPT) BNM provides support for the NGFS Glasgow Declaration MOF issues US\$800 million 10-year trust certificates as the world's first sovereign USD sustainability sukuk with proceeds used exclusively for green projects
2022	World Bank and BNM issue joint report on "An Exploration of Nature-Related Financial Risks in Malaysia" BNM launches a Low Carbon Transition Facility to encourage and support SMEs to adopt sustainable practices for business resilience JC3 releases the Task Force on Climate-related Financial Disclosures (TCFD) Application Guide for Malaysian Financial Institutions UK and Malaysia sign MOU to strengthen cooperation on climate and biodiversity action SC launches the Sustainable and Responsible Investment Linked (SRI-linked) Sukuk Framework to facilitate fundraising by companies addressing sustainability concerns BNM releases discussion paper outlining a framework for a climate risk stress testing exercise to take place in 2024 covering licensed banks and insurers
Myanmar	
2019	Government publishes the Myanmar Climate Change Strategy (2018-2030) coordinated by the Ministry of Natural Resources and Environmental Conservation with finance prioritised as an action area
Philippines	
2008	Government of Philippines publishes National Disaster Risk Reduction and Management Law

2011	Securities and Exchange Commission issues Corporate Governance Guidelines for Companies Corporate Responsibility Act updated
2013	Bangko Sentral ng Philipinas (BSP) and Department of Environmental and Natural Resources of the Philippines join the Sustainable Banking Network
2015	Government of Philippines joint Catastrophe Risk Insurance Facility for Governments (Local Government Units Pool)
2016	Government issues Philippine Green Jobs Act to provide incentives to businesses that generate green jobs
2018	SEC adopts the ASEAN Green Bond Standards and issues Guidelines on the Issuance of Sustainability Bonds for the Philippines
2019	SEC issues Sustainability Reporting Guidelines for Publicly Listed Companies and Guidelines on the Issuance of Social Bonds and Sustainability Bonds BSP adopts the Sustainable Central Banking Program as one of its corporate strategies
2020	BSP issues a Sustainable Finance Framework requiring banks to integrate environmental and social risk management in their risk management frameworks BSP publishes study on the 'Impact of Extreme Weather Episodes on the Philippine Banking Sector: Evidence Using Branch-Level Supervisory Data' BSP joins the NGFS
2021	The Philippines Inter-Agency Technical Working Group for Sustainable Finance (ITSF) issues the Sustainable Finance Roadmap and Sustainable Finance Guiding Principles BSP issues Environment and Social Risk Management Framework
Singapore	
2010	Singapore Stock Exchange (SGX) publishes 'Guide to Sustainability Reporting for Listed Companies'
2015	Association of Banks in Singapore publishes Guidelines on Responsible Financing
2017	Monetary Authority of Singapore (MAS) launches Green Bond Grant Scheme to enable issuers to offset the additional costs of issuing green bonds MAS becomes founding member of the NGFS
2019	MAS expands scope of the Green Bond Grant Scheme to include social and sustainability bonds and renamed scheme as Sustainable Bond Grant Scheme (SBGS) MAS and UK sign agreements to deepen 1) connectivity between the financial centres 2) agree on a Partnership Arrangement on UK's Green Finance Initiative and 3) collaborate on skill development for financial services professionals with the Institute of Banking and Finance Singapore MAS sets up a US\$2billion green investments programme (GIP) to invest in public market investment strategies that have a strong green focus

2020	<p>MAS publishes Green Finance Action Plan and three Guidelines on Environmental Risk Management for financial institutions (Guidelines on Environmental Risk Management for Banks, Guidelines on Environmental Risk Management for Insurers, and Guidelines on Environmental Risk Management for Asset Managers) and launches the MAS Global FinTech Innovation Challenge</p> <p>MAS expands SBGS with launch of world's first grant scheme to support green and sustainability-linked loans</p> <p>MAS launches Project Greenprint to deploy technology at different states of the supply chain to better monitor commitment to relevant green standards and requirements</p> <p>MAS, Singapore Management University and Imperial College Business School launch Singapore Green Finance Center (SGFC) as a centre of excellence to drive Asia-focused green finance research and talent development</p>
2021	<p>Green Finance Industry Taskforce (GFIT) issues 1) a detailed implementation guide for climate related disclosures by financial institutes serving as a framework to help banks assess eligible green trade finance transactions 2) a framework for green trade financing and working capital as a principle-based approach for banks to assess eligible green finance transactions 3) a whitepaper on scaling green finance in the real estate, infrastructure, fund management and transition sectors</p> <p>MAS partners with the industry to pilot four digital platforms under Project Greenprint: 1) Greenprint Common Disclosure Portal, 2) Greenprint Data Orchestrator, 3) Greenprint ESG Registry, 4) Greenprint Marketplace</p> <p>SGX launches Climate Impact X (CIX), a global carbon exchange and marketplace focused on carbon credits from nature-based solutions</p>
2022	<p>MAS Managing Director Ravi Menon appointed as new chair of the NGFS</p> <p>MAS publishes information papers on Environmental Risk Management for banks, insurers, and asset managers provide an overview of the progress made in implementing the Guidelines</p> <p>Government issues inaugural 50-year sovereign green bond</p> <p>GFIT publishes consultation paper on Green and Transition Taxonomy (2nd version)</p> <p>Government publishes Singapore Green Bond Framework for sovereign green bond issuances detailing intended use of green bond proceeds, governance structure, operational approach and commitment to post issuance allocation and reporting</p> <p>MAS publishes Sustainability Report 2021/2022 setting out strategy on climate resilience and environmental sustainability</p>
Thailand	
2012	<p>Stock Exchange Thailand (SET) and Securities and Exchange Commission of Thailand (SEC) publish Guidelines for Sustainability Reporting</p> <p>Thai Bankers Association becomes founding member of the Sustainable Banking Network</p>
2013	<p>SET issues Practice Guidelines for each industry group and encouraged listed firms to join the DJSI sustainability assessment</p>
2014	<p>SET publishes CSR Reporting Requirements</p> <p>SET joins UN Sustainable Stock Exchanges (SSE) Initiative as the first exchange in ASEAN committed to promoting sustainability in its capital markets</p> <p>SEC publishes Sustainability Development Roadmap for Listed Companies</p>

2018	<p>SET launches SETTHSI Index</p> <p>SET issues Corporate Sustainability Guide for Thai Listed Companies</p> <p>SET & SEC: Enhanced ESG Disclosure Standards through 56-1 One Report</p>
2019	<p>Bank of Thailand (BOT) becomes a NGFS member</p> <p>BOT establishes working group with the Thai Banker's Association (TBA) and the TBA issues Sustainable Banking Guidelines on Responsible Lending</p> <p>IFC and BOT sign MoU to Accelerate Sustainable Finance in Thailand</p> <p>SEC issues Sustainability Development Roadmap for development of a sustainable finance ecosystem</p> <p>MOF, BOT, SEC, OIC and SET establishes Working Group on Sustainable Finance (WG-SF) under the Three Regulators Steering Committee</p>
2020	<p>MOF publishes the Sustainable Financing Framework and launches the Kingdom of Thailand's (KOT) Inaugural 15-year Sovereign Sustainability Bond worth USD3.45bn with KOT as first Thai issuer to be listed on LuxSE</p> <p>SEC publishes guidelines for issuing Green, Social and Sustainability bonds</p> <p>BOT announces sustainability as an integral part of all operations and as a strategic Challenge of the Bank's Strategic Plan 2020-2022</p> <p>Association of International Banks (AIB) sign onto the Sustainable Banking Guidelines on Responsible Lending</p> <p>BOT signs MoU with UK government, including consideration for the environment and risks from climate change</p> <p>SEC signs MoU with UK government to promote inclusive economic growth in the financial services sector</p>
2021	<p>WG - SF publishes Sustainable Finance Initiatives for Thailand</p> <p>BOT makes Sustainability Commitment in Support of the NGFS Glasgow Declaration</p> <p>BOT publishes revised Pillar 2 capital rules to include environmental, social and governance (ESG) factors in the risk assessment process (effective as of January 1, 2022)</p> <p>SEC publishes comprehensive guidance on issuance of sustainability-focused bonds</p>
2022	<p>BOT includes sustainable finance as part of the consultation paper on 'Repositioning Thailand's Financial Sector for a Sustainable Digital Economy'</p> <p>BOT issues directional paper on 'Transitioning towards Environmental Sustainability Under the New Thai Financial Landscape'</p> <p>TBA launches ESG declaration, a strong collective commitment to expediting sustainable development toward better and greener economy</p>
Viet Nam	
2012	<p>State Bank of Vietnam (SBV) and Vietnam Ministry of Natural Resources & Environment become founding member of the Sustainable Banking Network</p>
2013	<p>State Securities Commission of Vietnam (SSC) and IFC publish Handbook on Sustainability Reporting</p>
2015	<p>SBV issues Directive on Promoting Green Credit Growth and Managing Environmental and Social Risks in Credit Extension</p> <p>SBV publishes Action Plan of Banking Sector to Implement the National Green Growth Strategy until 2020</p>

2016	SBV issues Circular on lending transactions of credit institutions and/or foreign bank branches with customers
2017	SBV renews commitment to implementing the Green Growth program and the program of preventing climate change SSC and Ho Chi Minh Stock Exchange (HOSE) and German International Cooperation (GIZ) launch Sustainable Development Index (VNSI)
2018	SBV publishes Green Banking Development Scheme and Action Plan of the banking sector as well as Handbook on Environmental and Social Risk Assessment for specific sectors Government issues Decree on Government Debt instruments, Corporate Bond Issuance including green bonds and Strategy to Develop the Banking Industry in Vietnam to 2025 which incorporates green credit development
2019	SSC develops Vietnam Corporate Governance Code of Best Practices (voluntary for public companies)
2020	Ministry of Finance issues circular providing guidelines on disclosure of information on the securities market, which require ESG reporting requirements for public and listed companies in Vietnam SBV issues official letter requesting credit institutions to report on how they plan to achieve national green growth targets
2021	SSC issues guidelines on 'How to Issue Green Bonds, Social Bonds, and Sustainability Bonds'

Source: Compiled by authors, building on Volz (2019) and Dikau and Volz (2021).

ANNEX 2 ASEAN SUSTAINABLE FINANCE INITIATIVES

2017	ASEAN Capital Market Forum (ACMF) issues the ASEAN Green Bond Standards
2018	ACMF issues the ASEAN Social Bond Standards and ASEAN Sustainability Bond Standards
2019	ASEAN central banks establish a Taskforce on the Roles of Central Banks in Managing Climate and Environment-Related Risks to study the roles of central banks in managing climate and environment-related financial and macroeconomic risks
2020	<p>ASEAN Committee on Capital Market Development (WC-CMD) releases Report on Promoting Sustainable Finance in ASEAN</p> <p>ACMF publishes ACMF Roadmap for ASEAN Sustainable Capital Markets to provide actionable recommendations with strategic direction</p> <p>Task Force publishes Report on the Roles of ASEAN Central Banks in Managing Climate and Environment-Related Risks</p>
2021	<p>Taskforce established to study how ASEAN members can implement sustainable banking principles and the ASEAN Sustainable Banking Principles Initiative is approved</p> <p>Establishment of ASEAN Taxonomy Board, a close coordination between the ACMF, ASEAN Insurance Regulator's Meeting (AIRM), the Senior Level Committee on Financial Integration (SLC) and the WC-CMD</p> <p>Release of the ASEAN Taxonomy for Sustainable Finance - Version 1 and the ASEAN SDG Bond Toolkit: A Practical Guide to Issuing SDG bonds in ASEAN</p>
2022	<p>ADB and UK sign MOU to develop a US\$ 134 million trust fund to support ASEAN countries to scale up green financing: The UK-ASEAN Catalytic Green Finance Facility (ACGF) Trust Fund will leverage funds from the ASEAN Infrastructure Fund to accelerate green infrastructure in the region and help design governments stimulus programmes through the ACGF Green Recovery Fund</p> <p>Consultation on ASEAN Sustainable and Responsible Fund Standards and continued development of ASEAN Sustainability Linked Bond Standards</p> <p>Establishment of two workstreams under the Senior Level Committee Task Force (SLC-TF) to follow-up on the priority areas of capacity building for sustainable finance and the development of an ASEAN Green Map</p> <p>Development of an ASEAN Learning Roadmap and Learning Curriculum on Sustainable Finance by the South East Asian Central Banks (SEACEN) Research and Training Centre jointly with the Centre for Sustainable Finance at SOAS, University of London to provide ASEAN central banks and regulators with insights into the tools and approaches to assess and monitor environmental risk; design appropriate mitigation measures; and support the scaling up of sustainable finance</p>

Source: Compiled by authors.

CHAPTER 20

Scaling up sustainable finance and investment in the Global South: China's experience

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1 BACKGROUND OF GREEN FINANCE IN CHINA

1.1 The pressing air pollution and origin of green finance in China

Back to 2014, China has faced serious environmental pollution, especially air pollution. The average annual concentration of PM_{2.5} in major cities was as high as 65 µg/m³, and well above 100 µg/m³ in some northern cities (Lin et al. 2022), while the safety level as defined by the World Health Organization is 10 µg/m³. Experts such as Dr Ma Jun argued that air pollution can lead to economic consequences including increased healthcare expenses and declines in labour productivity. Considering the negative externalities and impacts to the environment and community, annual losses brought by air pollution may exceed trillions of yuan in China (Jun 2016). For example, it was estimated that the annual economic losses (based on the cost of disease) caused by air pollution could be equivalent to 2.9% of GDP.¹ Policymakers have realised the unsustainability of the old economic growth model that relies on carbon-intensive industries, with polluting transportation and energy structures, and began to raise green development to the national strategic level.

To substantively improve the environment, governmental agencies in China adopted strong environmental regulation measures, such as mandatory installation of end treatment facilities, and introduced a series of fiscal, financial and other policy levers to encourage environmental considerations in investment decision making. However, public resources are limited and could only cover as much as 15% of the funds needed for environmental remediation (Green Finance Working Group 2015). It was therefore proposed to mobilise private funds through a market-based mechanism, which led to the creation of a green finance system with five pillars:

¹ According to data released by the Ministry of Ecology and Environment, environment pollution led to loss of 2 trillion yuan in 2015. China's GDP was 68.89 trillion yuan in the same year; therefore, the cost of environment pollution was equivalent to 2.9% of GDP.

- **Taxonomy:** a catalogue of eligible projects and activities that contribute significantly to specific sustainable development goals (e.g., addressing environmental pollution issues, reducing carbon emissions, improving energy efficiency and so on).
- **Environmental disclosure:** an important practice in financial markets to reduce information asymmetry, ensure market integrity and protect investors' rights. It is even more important to disclose environmental information as conventional investors do not have access to or understand all environmental effects, positive or negative.
- **Incentive policies and macroprudential measures.** Policy intervention has an important role to play in identifying and acting upon market failures that impede green finance, especially those specific to green and sustainable development. For example, to support green projects with environmental benefits (positive externalities), incentive measures are needed to reduce financing costs, improve the return on investment and leverage more investment from the private sector. Mechanisms such as monetary policies, prudential policies, fiscal incentives and non-targeted incentives to foster an enabling environment have been adopted to support the green development and green finance market in China.
- **Innovative financial products** are encouraged to serve the different types of fundraisers and investors. The most commonly used products include green loans, green bonds, green insurance, green exchange-traded funds (ETFs), green asset-backed securities (ABS) and so on.
- **International collaboration and capacity building.** Participation in multilateral and bilateral platforms and cooperation mechanisms are important to mutually learn from each other, and building capacity at different levels is also a key element to ensure implementation of the green finance framework.

1.2 The rapid development of a green financial market has played an important role in controlling environmental pollution in China

Over the past few years, through a series of institutional arrangements, one of the world's largest green financial markets was established in China, with the outstanding balance of green loans exceeding RMB15.9 trillion in 2021 and the total issuance of green bonds amounting to over RMB1.7 trillion since 2016².

Partly due to the large amount of funds mobilised through the green financial system, the environmental pollution issue has been greatly improved. Notable evidence is the significant improvement in air quality. From 2013 to 2019, the number of high polluting days across 337 cities in China dropped significantly, and the frequency of PM_{2.5} hourly concentrations exceeding 300 mg/m³ in 74 cities declined by 94.2%. A study showed that

2 Statistics released by the People's Bank of China.

the pollution prevention and control measures, including green financial policies, have not only curbed the intensity of PM_{2.5}, but also significantly reduced the concentration of ultrafine nanometer particles, which contributed significantly to improved air quality.ⁱ

2 EXPERIENCE OF CHINA'S GREEN FINANCE DEVELOPMENT: THE FIVE PILLARS

Significant progress has been made in China to develop a green financial system. In 2020, China President Xi Jinping announced at the 75th Session of the UN General Assembly that China will strive to reach peak carbon by 2030 and carbon-neutral before 2060. This ambitious commitment gave another strong push to green finance and all other efforts to mitigate climate change. This section summaries the experience of green finance development in recent years, with the aim to provide a useful reference for other emerging economies that intend to develop green and sustainable finance.

2.1 The introduction and harmonisation of green taxonomies

China is one of the first economies in the world to have introduced a national taxonomy to define what is 'green'. So far, a clear and enforceable green finance taxonomy has been created and is domestically unified and aligned with international practices and standards. The first taxonomy could be said to date back to 2013, when the China Banking Regulatory Commission issued the Green Credit Statistics System, covering outstanding credits, asset quality and environmental benefits. In 2015, the China Green Finance Committee released the Catalogue of Green Bond Endorsed Projects, also known as the 'green bond taxonomy', which was later endorsed by the People's Bank of China (PBoC) for green bonds issued by financial institutions in the interbank market. This green bond taxonomy was updated in 2021, with clean coal technologies removed. In addition to the green loans and green bond taxonomies, the National Development and Reform Commission (NDRC) introduced the Green Industry Guidance Catalogue in 2019, which covered all green industries, activities and financial products and could be seen as the third green taxonomy (NDRC 2019).

It is foreseeable that too many taxonomies could be as problematic as no taxonomy at all, as the market would be confused. Harmonisation of different taxonomies has thus been actively voiced in the market and promoted by policymakers. As a result, the relevant government agencies agreed to use the Green Industry Guidance Catalogue as the basis for the other two taxonomies. In April 2021, the updated green bond taxonomy was jointly issued by the PBOC, the NDRC and the China Securities Regulatory Commission (CSRC) as a harmonised taxonomy for both green credits and green bonds in China.

In addition to domestic taxonomies, efforts have been made in China to improve compatibility and interoperability with international green finance taxonomies. In July 2020, as proposed by the PBOC, the International Platform on Sustainable Finance (IPSF) initiated a working group on the classification of sustainable finance, co-chaired

by the PBOC and the European Commission. The working group compiled the Common Ground Taxonomy (CGT) based on a comprehensive and detailed comparison between China's green bond taxonomy and the EU's Sustainable Finance Taxonomy. The CGT was launched in November 2021 during COP26 and was updated in June 2022 to covering a total of 72 climate mitigation activities (IPSF 2022).

In addition to the application for green and sustainable bonds in China and the EU, any third economy, such as Hong Kong or countries along the Belt and Road, could also adopt the CGT on voluntary basis. For example, the green finance catalogue recently released in Sri Lanka has intensively referenced the CGT.

2.2 The introduction of incentive policies and macroprudential measures to support green finance

In order to promote the development of green finance and the green product market to better support projects with environmental benefits, relevant departments and local governments in China have introduced various forms of incentive policies, including monetary, fiscal and macroprudential measures. These measures include both positive reward incentives and restraint mechanisms. For example, eligible green credit and green bonds have been included in the scope of qualified collateral for the central bank re-lending facility. In addition, the PBoC has been conducting quarterly assessments of the green finance performance of 24 major Chinese banks, including green bonds and green loans, and has incorporated the assessment results into its policies and prudential management tools such as the Macro Prudential Assessment (MPA) (PBoC 2021). In order to achieve the carbon peak and carbon neutrality goals, the PBoC has created a carbon-reduction supporting facility to support key carbon emission reduction sectors including renewable energy, energy saving and environmental protection, and carbon emission reduction technologies³ such as carbon capture, utilisation and storage (CCUS). The facility was launched during COP26 in November 2021 and encouraged financial institutions to provide preferential interest rate loans for projects with significant carbon emission reduction effects.⁴ As of March 2022, the PBoC had supported financial institutions in lending a total of RMB230.8 billion for such projects, reducing greenhouse gas (GHG) emissions by 47.86 million tonnes of CO₂ equivalent.⁵

In the meantime, the PBoC is conducting nationwide stress tests against climate change risks for financial institutions, which found that the financial risks stemming from rising carbon prices for major banks in China are mild and manageable. It is likely that China's regulatory authority will gradually incorporate climate change-related risks into the macroprudential policy framework with higher weights in the future.

3 "PBOC launches carbon reduction support tool", People's Bank of China, November 2021 (in Chinese).

4 "The relevant person from the People's Bank of China answers reporters' questions on carbon-reduction supporting facility", People's Bank of China, November 2021 (in Chinese).

5 "China's green loan stock scale ranks first in the world", People's Daily Online, March 2022 (in Chinese).

In addition to the monetary incentives and macroprudential measures, fiscal policies – such as special fiscal funds, fiscal subsidies, tax incentives/constraint mechanisms, green procurement policies, among others – have been introduced in China to support green finance development. From 2016 to 2020, the central government allocated RMB224.8 billion in four special funds covering water, air and soil pollution prevention and control, as well as rural environmental remediation.⁶ Some local governments have provided guarantees and interest subsidies for green credit and green bonds. For example, the government of Huzhou, a city in Zhejiang Province in the east of China, has been providing interest subsidies of 12%, 9% and 6% for green loans identified as ‘dark green’, ‘medium green’ and ‘light green’, respectively (Huzhou Municipal Finance Bureau 2018), with a total value of RMB12.7 million covering 137 companies in 2020.⁷

2.3 Enhanced environmental information disclosure requirements

Information disclosure is one of the foundational pillars for financial market efficiency and integrity. The same is true for environmental disclosure and the green finance market. Stakeholders from both the public and private sectors in China have thus devoted great efforts to enhancing environmental disclosure requirements.

Progress has been made in environmental information disclosure as development of green finance market has accelerated and the emphasis on environmental protection increased. In particular, the Guidelines for Establishing the Green Financial System, issued in 2016 (Ministry of Ecology and Environment 2016), required the establishment of a mandatory environmental information disclosure system for financial firms, listed companies and bond-issuing companies. These disclosure requirements normally ask entities to disclose information on emissions of major pollutants, construction and operations of environmental protection facilities, and major environmental incidents. Environmental disclosure by entities in China has been transitioning from voluntary to mandatory requirements with higher standards. In 2021, the PBoC issued the Guidelines for Financial Institutions Environmental Information Disclosure, providing the principles that financial institutions should follow, the forms of disclosure, the content and fundamental requirements in the process of environmental information disclosure (People’s Republic of China 2021). These apply to banking, asset management, insurance, trust, futures, securities and other financial institutions established in China, and encourage such institutions to disclose their environmental information on a voluntary basis at least once a year. Although the guidelines are voluntary in nature, financial firms have already actively implemented them in practice, especially those in green finance pilot zones, which cover nine cities across six provinces in China. The guidelines are

6 “The Ministry of Ecology and Environment introduced the situation of science and technology helping to win the battle of pollution prevention and control and answered questions”, MEE, July 2020 (in Chinese).

7 “Announcement on proposed subsidies for green loans in 2020”, Huzhou Municipal Finance Bureau, November 2020 (in Chinese).

based on a China–UK pilot project for disclosure by financial firms from both countries that was initiated in 2018 and is closely aligned with the Task Force on Climate-Related Financial Disclosures (TCFD).

In addition, other ministries and governmental agencies are also working very actively on enhancing environmental disclosure requirements or aligning with international practices. For example, the Ministry of Finance has been working with a group of experts in China on the International Sustainability Standards Board (ISSB) since its launch at the COP26. The Ministry has organised several meetings with top listed firms from the major carbon-emitting sectors – such as energy, transport, building and the financial sector – to hear feedback to the work of the ISSB, including on challenges faced if implemented in China and possible solutions.

2.4 Innovative green financial products

Green financial products in China have been developed almost from scratch. After the first green bond issuance by the European Investment Bank in 2016, China soon became the world's largest issuer in the world and was said to have gone “from zero to hero”.^{8,9} So far, it has formed a variety of asset categories and business segments, including green credit, green bonds, green insurance and green funds, and can support direct and indirect financing needs.

By the end of 2021, the outstanding balance of **green loans** amounted to RMB15.9 trillion, with a year-on-year growth rate of 33% (Figure 1). The aggregate outstanding loan was RMB198.51 trillion, with green loans accounting for 8%. Loans made to projects with direct and indirect carbon reduction benefits amounted to RMB7.3 trillion and RMB3.36 trillion, respectively, accounting for 67% of total green loans. Loans made to green infrastructure upgrades, clean energy and energy saving, and environmental protection reached RMB7.4 trillion, RMB4.21 trillion and RMB1.94 trillion, respectively, with year-on-year growth rates of 28.3%, 31.7% and 46.7%, respectively.

In terms of **green bonds**, which were first seen in the Chinese market in 2016, the total issuance exceeded RMB200 billion, accounting for nearly 40% of global green bond issuance in the same year. Since then, China has become one of the largest green bond markets in the world.

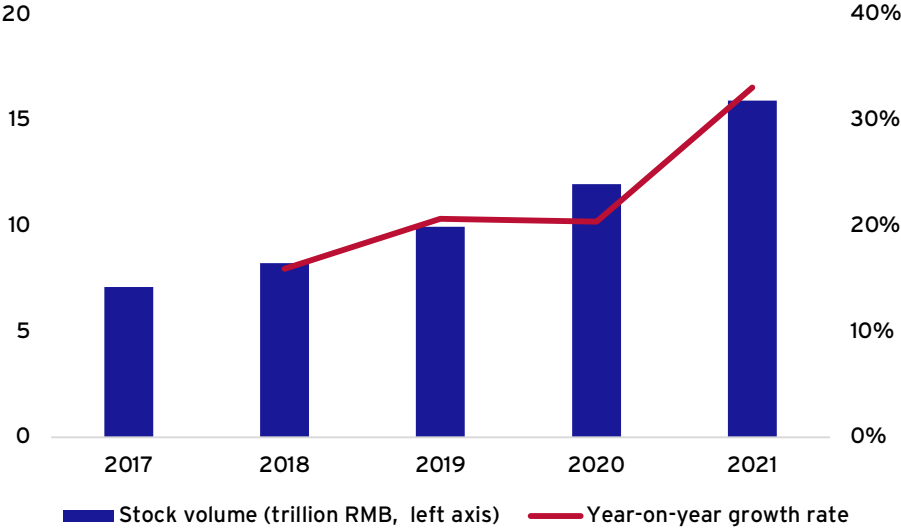
By the end of 2021, the total amount of green bonds issued by Chinese institutions exceeded 1.4 trillion RMB (Figure 2). In 2021, 628 green bonds were issued in China with a total volume exceeding RMB600 billion, a year-on-year growth rate of 180%, with the outstanding balance amounting to RMB1.1 trillion. The majority of funds raised through green bonds went to clean energy, transportation and construction projects. The capital

8 “Making green finance mainstream: The way ahead for China”, ICF, June 2019.

9 “Expert: China's green bond market is developing rapidly”, Xinhua News Agency London, July 2022.

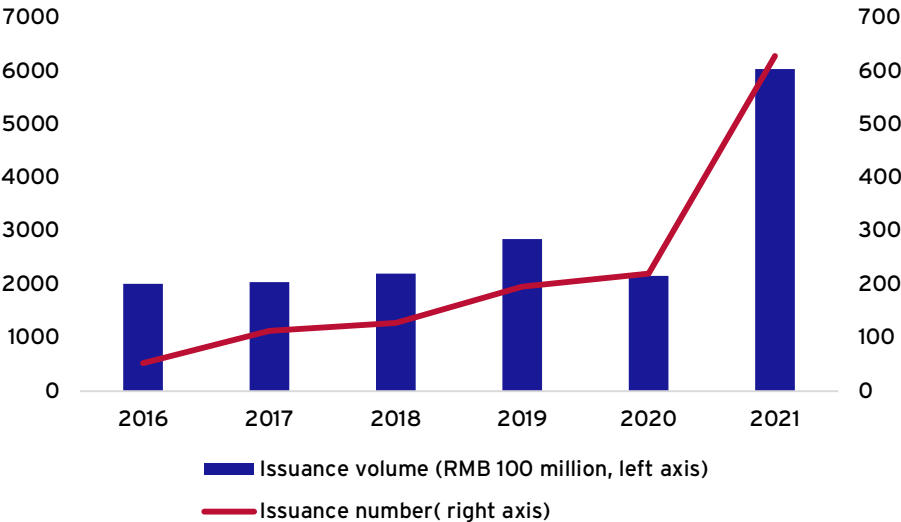
going to these sectors increased from RMB21.3 billion in 2016, or 10.56% of total green bond issuance, to RMB296.6 billion in 2021, accounting for 49.1% of total green bond issuance of the same year.

FIGURE 1 THE GREEN LOANS MARKET IN CHINA



Source: People's Bank of China

FIGURE 2 THE GREEN BOND MARKET IN CHINA



Source: PBOC, China Central Depository & Clearing

In addition, **innovative bond products** such as carbon-neutrality bonds, blue bonds, sustainability-linked bonds (SLBs), poverty alleviation special bonds, green rural revitalisation bonds and others have been launched in China in recent years. As of the first half of 2021, the cumulative issuance of labelled sustainable bonds in China exceeded RMB3.3 trillion (Climate Bonds Initiative and CIB Research 2022).

In February 2021, the first batch of six carbon-neutrality bonds were issued in China by large state-owned enterprises including the China Southern Power Grid, China Three Gorges Corporation and Huaneng Power International. By the end of 2021, a total of RMB180.7 billion in carbon neutral bonds had been issued by 84 issuers, the majority of which were to support clean energy sectors such as hydropower, wind power and others. As for SLBs, the total issuance scale amounted to RMB35.3 billion, covering eight industry sectors including electricity production and supply, steel, coal, infrastructure investment and financing, and building materials (Xu 2022). It is observed that issuers in high carbon-emission industries are relatively more willing to issue SLBs.

Other green finance products include green insurance, green funds, green trusts, green ABS, and so on. Many insurance companies have launched a series of **green insurance** products covering risks related to environmental pollution liabilities, natural disasters, agricultural production, and energy saving performance of green buildings to encourage consumption of green products and services. Many trust companies have specifically set up **green trust** departments to promote new business models in carbon emission reduction, energy conservation, environmental protection, pollution control and clean energy. As of the end of 2020, the aggregate volume of green trust assets reached RMB359 billion, and the number of green trust projects amounted to 888 (China Trustee Association 2021).

2.5 International cooperation and leadership in capacity building

International collaboration is also an important element for green and sustainable finance for both policy coordination and market connection. Chinese President Xi Jinping announced at the 76th session of the United Nations General Assembly (UNGA) in 2021 that China would step up support for other developing countries in developing green and low-carbon energy, and would not build new coal-fired power projects abroad.¹⁰ Stakeholders from China's public and private sectors have actively participated in multilateral platforms and networks, such as the G20, the Network of Central Banks and Supervisors for Greening the Financial System (NGFS), the IPSF, and along the Belt and Road region, and are actively cooperating with other economies, including the UK, EU, France and Germany. Chinese entities have also been active on the global stage in enhancing knowledge sharing and disseminating best practices in developing green finance, increasing awareness across a range of stakeholders, signalling

¹⁰ "Xi's remarks at UNGA add impetus to global development, building community with shared future for mankind, experts say", Qiushi Journal, September 2021.

policy commitment, enhancing policy coordination, and building capacity for developing countries. Through international cooperation, the country's green finance standards have been aligned with international ones, domestic and international financial markets connected, cross-border green investment promoted, and green finance in countries and regions along the Belt and Road mobilised.

For example, the G20 Green Finance Study Group was initiated in 2016 during China's Presidency and the PBoC has co-chaired the study group ever since. During 2016 and 2018, the study group facilitated the formation of a global consensus on green finance and attracted global attention to a range of key topics for the development of sustainable finance worldwide.¹¹ In 2021, the study group was upgraded to the Sustainable Finance Working Group (SFWG) and released the G20 Sustainable Finance Roadmap, with 19 actions to achieve key priorities of the sustainable finance agenda (G20 2022).

The PBoC was one of the eight members to create the NGFS at the end of 2017, with the aim to enhance the role of central banks and financial regulators in analysing and managing climate change-related risks and mobilising capital for green and low-carbon investments.¹² The NGFS has now expanded to 116 members and 19 observation institutions across five continents. China also jointly initiated the establishment of the IPSF with the EU and other economies to promote the international convergence of green finance standards, which led to the development of the CGT under the IPSF Working Group on Taxonomies.

To accelerate green investments along the Belt and Road, the China Green Finance Committee launched the Green Investment Principles (GIP) for the Belt and Road in 2018 with the City of London and a few other international initiatives.¹³ Up to now, the GIP has received strong backing from major financial institutions in China, the UK, Europe, and across the Belt and Road. GIP membership has expanded to 43 signatories and 14 supporting institutions, which are responsible for a total amount of \$41 trillion and are committed to making more green investments in the region.

Recognising that China's experience in developing and scaling up its green finance market could provide useful references for other developing countries and regions, joint efforts by local and international organisations were made to launch the Global Green Finance Leadership Program (GFLP) in 2018 as a platform for knowledge sharing on best practices and inspiring innovations for scaling up green and sustainable finance. Over the past four years, several hundred green finance specialists and government officials from over 50 economies have visited Beijing, Shanghai and other cities under the GFLP to exchange knowledge and best practices on green finance. Since the outbreak of the Covid-19 pandemic, the GFLP has hosted six influential online conferences and

11 <https://g20sfwg.org/>

12 "Origin and Purpose", Network of Central Banks and Supervisors for Greening the Financial System (NGFS), September 2019.

13 Now the UK-China Green Finance Centre.

webinars, convening thousands of participants worldwide, most of whom are from developing economies. These conferences have covered a series of green finance topics including environmental and climate risk analysis, green and sustainable finance taxonomies, the role of finance in climate transition and biodiversity conservation, carbon accounting for financial institutions, and others. Following these knowledge exchange programmes, Mongolia established the country's first green finance taxonomy with technical assistance from the China Green Finance Committee. Other countries such as Kazakhstan and Pakistan are exploring similar measures.

3 CONCLUSION AND OUTLOOK

To scale up green finance and investment in China, the 'five pillars' have helped coped with bottlenecks such as an underdeveloped policy framework, inconsistent green finance standards, lack of green finance products, insufficient environmental disclosure, inadequate incentives/restraint mechanisms, and lack of international collaboration and capacity building. Although China has formed a green finance system, a set of green finance standards/taxonomies, it is still necessary to further improve the five pillars of the green finance system in China and give full play to the role of green finance in resource allocation, risk management and market pricing to achieve carbon neutrality.

Against this background, there is a lot of work to do, including developing transition finance to help carbon-intensive activities and assets transition into green and low-carbon ones. One aspect that should be noted is that, while the green finance market is developing rapidly, statistics indicate that the share of green products is still relatively low. By the end of 2021, green bonds accounted for only a small ratio of total volume of outstanding bonds in China. Aggregate outstanding loans totalled RMB198.51 trillion, and green loans accounted for only 8%.¹⁴ This means that a vast majority of the financial assets and underlying activities are not yet green and are mostly carbon-intensive. In the run up to carbon neutrality, all current investments in high-carbon industries – including coal, steel, cement, chemical industry, etc. – may become sources of financial risks. At the same time, a large number of high-carbon enterprises need to transition to low-carbon or zero-carbon businesses. If these enterprises are unable to obtain financing to support their transition activities because they currently belong to high-carbon industries, the low-carbon transition will be difficult to achieve. Studies suggest that in order to achieve carbon neutrality, hundreds of trillions of yuan will be needed for low-carbon investment in the next 30 years (Green Finance Committee 2021) and most of these financing will need private capital, where transition finance will have an important role to play (Lin et al. 2021). To this end, China has been making progress in developing a transition finance framework, including the PBoC's pioneering of a transition finance taxonomy/

14 The ratio of green assets is actually higher than the numbers indicated, but it might be very costly for banks to do a thorough review of existing contracts and relabel them as green assets.

standard, and the China Green Finance Committee's establishment of a Transition Finance Working Group and gathering of industry professionals to carry out research into transition finance standards, disclosures and products.

In addition, there are some bottlenecks in the further development of China's green finance market. For example, the ratio of green assets could actually be higher than the numbers indicated, but it might be very costly for banks to conduct a thorough review of existing contracts and relabel them as green assets. Efforts are needed to build awareness among all stakeholders of the benefits of green investments and assets, including governments, investors and project owners.

Second, as more and more economies have announced plans and frameworks to scale up green and sustainable finance or are working on it to support their carbon neutrality goals, it is becoming more important to continue international cooperation, including policy coordination and market connection. For example, ISO study groups showed that there are already as many as over 200 definitions or taxonomies of green finance,¹⁵ and it is necessary to make efforts to enhance clarity and reduce greenwashing risks. As an important measure to reduce greenwashing, environmental disclosure is gaining momentum in many economies, but we can see a similar situation in a number of frameworks for sustainability reporting and disclosure. Fortunately, we are already seeing progress in international coordination in this area – for example, the ISSB has been taking a leading role in developing a sustainability disclosure standard as a global baseline standard to be used by many economies around the world. It is also worth noting that most of the existing disclosure frameworks are focused on environment and climate issues; other sustainability topics such as nature and biodiversity are not yet covered and also need international coordination and cooperation.

In this regard, to promote global green development, it is necessary to continue to promote global green financial policy coordination through platforms such as the G20, NGFS, along the Belt and Road and other international mechanisms. Take the GIP, for example – it plans to invite more financial institutions along the Belt and Road to join its membership and implement the green investment principles to scale up green investment in the region, with the ultimate aim of achieving the goals of the Paris Agreement and the UN SDGs (GIP 2021).

Last but not least, more green finance capacity-building activities will be carried out for stakeholders in China and other developing economies that better fit local needs through the GFLP. The GFLP will work with diversified partners such as professional associations, financial institutions and consultancies and explore new ways to conduct capacity-building activities through both online channels and offline events.

15 "Ma Jun, Director of the Green Finance Committee: To improve the comparability and consistency of sustainable financial standards", *21st Century Business Herald*, December 2021 (in Chinese).

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Emerging market and developing economies (EMDEs) have enormous investment needs in climate mitigation and adaptation and other areas to attain better and more inclusive economic, social and environmental conditions to achieve the Sustainable Development Goals (SDGs). Most EMDEs also face significant impacts and risks from climate change and nature loss that need to be accounted for by the financial sector. Central banks and supervisors as well as banks and other financial institutions in EMDEs are increasingly seeking to address sustainability risks and scale up sustainable lending and investment.

Previous attempts to mobilise private international climate and SDG finance at scale through project-based de-risking have not been successful and are unlikely to deliver at a time when private capital is retreating from EMDEs. To close the climate investment and SDG financing gap, mobilising domestic financial resources through the local banking system and capital markets and channelling them into domestic investments will be crucial. It is also important to find better approaches to mobilise international capital. Multilateral development banks play a key role in concessionary financing.

This eBook examines the challenges and opportunities of scaling up sustainable finance and investment in the Global South, and reviews existing practice. The first part of the eBook comprises thematic chapters exploring how the public sector (public banks and central banks) and the private sector (institutional investors and banks) can develop new policies, approaches and instruments and team up to scale up sustainable finance and investment in the Global South. The second part comprises regional and country case studies.

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