



# FINANCING A GREEN AND INCLUSIVE RECOVERY

*Theme Chapter of the Asian Development Outlook 2021*

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# Financing a green and inclusive recovery

*Green and inclusive recovery from COVID-19 requires both public and private capital. The large investments needed to build back better are often beyond the means of the public sector alone. Promisingly, green and social finance from private sources has grown rapidly in recent years, both regionally and globally.*

*The growth of private green and social finance is increasingly driven by financial considerations. While it was investors' environmental and social goals that initially drove global growth in sustainable finance, financial motives are coming to the fore. After Australia's ratification of the Kyoto Protocol, for instance, the debt costs of high-emitting Australian companies increased by an average of 5.4%, and equity costs by 2.5%, relative to low-emitting companies. Green and social finance helps meet the sustainable preferences of stakeholders, hedge and mitigate sustainability risks, and deliver greater resilience. Green and social finance also creates positive recognition among investors, thus broadening the financing base.*

*Evidence confirms the positive environmental and social impacts of sustainable finance. Asian firms that issue green bonds improve their environmental performance by 17% after 1 year and by 30% after 2 years on average, as measured by corporate environmental ratings. At the market level, green bond issuance is associated with reduced carbon emissions attained in response to rising awareness of the Sustainable Development Goals and increased commitment to achieving them. Social impacts are more varied, but innovative financing instruments such as impact bonds show potential.*

*Engaged public policy is central to nurturing social and green finance. Governments can use a range of policy options both to shape the markets and to participate in them. Regulations that enforce common standards for impact measurement and information disclosure are the most powerful policy option to support the development of green and social finance.*

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## 2.1 Mobilizing resources for a green and inclusive recovery

Asia's phenomenal development over several decades often adopted a "grow first, worry about cleanup and equality later" approach. Well before the outbreak of COVID-19, sustainable development that protected the environment and benefited the broader population was already becoming a priority for many Asian governments. The pandemic has since caused regional gross domestic product (GDP) to contract for the first time in more than 6 decades and had a disproportionate impact on the health and livelihoods of poor Asians. It clearly demonstrated that abnormal risks can and do become reality, driving home the need to prepare for future risks, the most dire of which is worsening climate change. COVID-19 disruption to development has underscored the importance of pursuing green and inclusive recovery that will strengthen resilience under future shocks. In short, the COVID-19 pandemic gave society additional impetus to build back better.

Building back better for environmentally and socially sustainable recovery is, however, a costly endeavor. Financing sustainable recovery is therefore an important challenge facing Asia in the wake of COVID-19. It is the central theme of this chapter.

How can the region secure the vast resources required for green investments such as clean energy and for social investments such as strong public health infrastructure? Resource requirements are often beyond the means of the public sector alone. Promisingly, green and social finance from private sources has grown rapidly in recent years, including in Asia.

Global growth in private green and social finance is increasingly driven by financial considerations, which suggests that it can be sustained. While it was investors' environmental and social goals that initially drove this growth, financial motives are coming to the fore, as this report shows. After Australia's ratification of the Kyoto Protocol imposed restrictions on emissions in that country, for instance, the debt costs of high-emitting companies there increased by an average of 5.4%, and their equity costs by 2.5%, relative to low-emitting firms. This report also shows that firms that tap green finance tend to deliver superior returns and exhibit resilience during a crisis, thanks to greater patience in their investor base. Further, green and social finance creates positive recognition among investors, thus broadening the financing base.

New evidence confirms the positive environmental and social impact of sustainable finance. Asian firms that issue green bonds improve their environmental performance by 17% within 1 year and by 30% within 2 years on average, as measured by corporate environmental ratings. At the market level, green bonds are associated with reduced carbon dioxide (CO<sub>2</sub>) emissions attained through rising awareness of the United Nations Sustainable Development Goals (SDGs) and increased commitment to achieving them. Social impacts are more varied, but innovative financing instruments such as impact bonds show potential.

This theme chapter first explains why sustainable recovery after COVID-19 requires catalyzing private capital and defines the basic concepts of sustainable finance. It then explores the key drivers of private green and social finance. It goes on to examine the actual impact green and social finance has on sustainable outcomes. A section explores complementary financing modes—public sector financing, microfinance, and carbon pricing—for cleaner and more inclusive recovery. As engaged public policy is central to nurturing green and social finance, the chapter closes with a wide range of policy options available to Asian policy makers.

## 2.1.1 Broad capital mobilization vital to sustainable development

While there is a strong and growing consensus favoring the SDGs, achieving them comes at a huge cost. The investment cost to developing countries globally to meet the SDGs has been estimated at \$3.3 trillion–\$4.5 trillion annually from 2015 to 2030 (UNCTAD 2014). As current annual investment is about \$1.4 trillion, the annual financing gap is \$2.5 trillion. The top three areas with the largest financing requirements are electric power infrastructure at \$950 billion annually, climate change mitigation at \$850 billion, and transportation infrastructure at \$770 billion (Dolumbia and Lauridsen 2019).

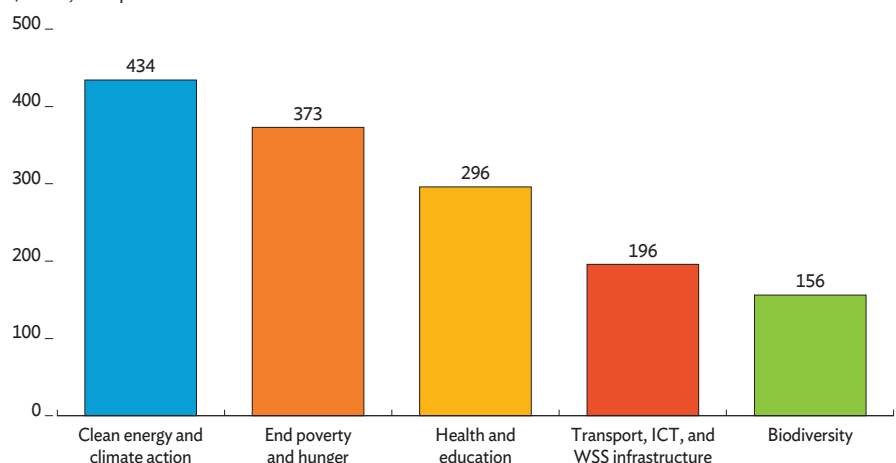
Asia and the Pacific require annual investment estimated at \$1.5 trillion from 2016 to achieve the SDGs by 2030 (UNESCAP 2019). This equals about 4% of regional GDP. Within the estimate, the SDGs are classified into five broad areas (Figure 2.1.1). The largest area is clean energy and climate action, which requires \$434 billion per year. The region also needs to invest \$373 billion annually to end poverty and hunger, \$296 billion to improve health and education, \$196 billion to expand public infrastructure, and \$156 billion to safeguard biodiversity.

The vast amount of investment needed to meet the SDGs is beyond the means of the public sector alone. In fact, public and private sources alike make substantial investments that promote environmental and social sustainability.

**Figure 2.1.1 Annual investment requirements in Asia and the Pacific, 2016–2030**

*Huge investments in green and social projects are needed to achieve the Sustainable Development Goals by 2030.*

\$ billion, 2016 prices



ICT = information and communication technology, WSS = water supply and sanitation.

Source: UNESCAP 2019.

Private finance provided 56.3% of average annual climate investment in 2017 and 2018, according to the Climate Policy Initiative (2019). The same report noted that scarce public resources must be used to maximize synergies between public and private investors and align financing from both sources with the SDGs. Further, mobilizing resources from a broader private sector base fosters risk sharing on green and social projects across the public and private sectors.

The COVID-19 squeeze on fiscal space in developing Asia makes it even more imperative to mobilize private capital for green and social investment. The economic downturn caused by the pandemic has undercut tax revenue collection in developing Asia (Nagata 2021). Tax relief is an integral part of fiscal stimulus packages launched by Asian governments to support growth in the face of the downturn, but it further reduces tax revenue. In addition, increased government spending to tackle the health and social impacts of the pandemic on top of the economic impact leaves even fewer fiscal resources available for meeting the SDGs. Increased government debt in recent years is another reason to mobilize private capital to build back better and achieve the SDGs.

To sum up, private capital is vital to close the funding gap for building back better toward a sustainable Asia. Even before the advent of COVID-19, the sheer amount of funding required for the SDGs inevitably meant a large role for private financing. The tightening of fiscal space under the COVID-19 pandemic squeezes available resources and thus further strengthens the case for catalyzing capital from private sources to help finance green and inclusive recovery from COVID-19.



## 2.1.2 What is green and social finance?

Financial markets have long recognized the importance of corporate social responsibility (Carroll 2008). Only relatively recently, though, do they aim to achieve specific social and environmental impacts on top of generating a financial return. Because of its short history, green and social finance is institutionally underdeveloped and lacks in a consistent definition, terminology, or set of agreed reporting and disclosure standards, let alone common metrics for measuring impact. A review of similarities and differences in the definitions and taxonomies of sustainable finance currently in use across five major markets suggests that a proper definition and taxonomy would deliver benefits by enhancing market clarity, building investor confidence, and facilitating measurement and tracking (OECD 2020).

Despite different definitions, some consistency of terminology has coalesced around the construct “sustainable finance.” According to the European Commission, sustainable finance generally refers to “the process of taking due account of environmental, social and governance (ESG) considerations when making investment decisions in the financial sector, leading to increased longer-term investments into sustainable economic activities and projects.” Highlighting these three objectives, sustainable finance is often described as using an ESG lens to help investors make investment decisions and assess asset performance according to both financial and sustainable criteria.

The market for sustainable finance can be divided into two subcategories. *Negative* sustainable finance aims to “do no harm” by screening out investments that fall short on the three ESG dimensions, thus avoiding investments in, for example, gambling, tobacco, or alcohol. *Positive* sustainable finance seeks out investments identified as having potential for significant positive social or environmental impact, typically aligned with the SDGs, such as green bonds and sustainability bonds.

The three ESG themes commonly identified in practice are *environmental* for green finance, *social* for impact finance, and *governance* for stakeholder finance. Each ESG theme can adopt either a positive approach to align or integrate investments with the SDGs or a negative approach to exclude or minimize investments that violate ESG criteria. A taxonomy of sustainable finance can therefore be organized in terms of the three ESG themes broken down into negative or positive investment strategies (Figure 2.1.2).

**Figure 2.1.2 Taxonomy of sustainable finance**

*Sustainable finance approaches its three themes with both positive and negative strategies.*

ESG theme	Environmental		Social		Governance	
Type of finance	Green finance		Impact finance		Stakeholder finance	
Investment approach	Negative: exclusionary	Positive: integrated	Negative: exclusionary	Positive: integrated	Negative: exclusionary	Positive: integrated
Example: investment theme	Carbon neutral	Carbon reduction	Do no harm	Address social market failure	Follow ILO standards	Corporate purpose
Example: investment focus	Divestment	New green technologies	Pay above minimum wage	Girls' education	Effective health and safety regulations	Employee board representation

ESG = environmental, social, and governance, ILO = International Labour Organization.

Source: Nicholls 2021a.

From an ESG perspective, positive green finance typically focuses on innovation and new technologies that address environmental issues such as the climate crisis and pollution. These investments typically align with climate change mitigation and adaption, the environmentally sustainable management of natural resources, biodiversity conservation, renewable energy, energy efficiency, clean transportation, and pollution prevention and control (ICMA 2019). Negative green finance typically avoids investments that fail to be carbon neutral.

Positive social finance requires the deployment of capital for deliberate, additional social impact. As such, impact investment has emerged as a new model of positive social finance, in that it helps deploy capital to address social issues directly. Negative social finance disinvests in corporate behavior deemed to violate the corporate social responsibility framework, thereby disassociating the investor from business activities that generate undesirable social consequences.

Governance finance is concerned with the effects of investment in a firm on a range of key stakeholders around it. The most distinctive features of positive stakeholder finance consider a firm's organizational ownership and forms of legal incorporation. The ultimate aim is to improve the quality of corporate governance.

While governance is one of the three components of sustainable finance, this study focuses on the other two, green finance and social finance, because the chapter's primary interest is to explore how developing Asia can finance environmentally and socially sustainable recovery from COVID-19. Green and social finance is capital deployed in a range of investments designed to achieve specific and measurable environmental or social objectives.

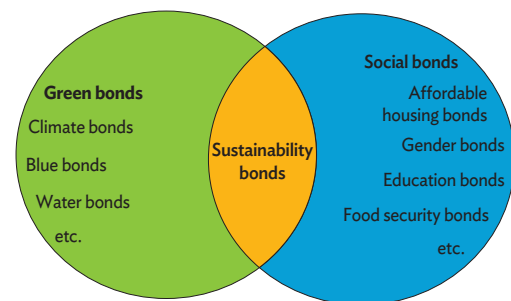
Focusing on green finance, the Asian Development Bank (ADB) defines it, for the purposes of an innovative facility for the Association of Southeast Asian Nations called the ASEAN Catalytic Green Finance Facility, as all financing instruments, investments, and mechanisms that contribute to a “climate plus” approach, promoting both climate and environmental sustainability goals. One can examine the distinct components of green finance—and parallel components of social finance for socially sustainable goals—and analyze them separately.

A distinctive feature of green and social finance is the variety of types of capital available to be deployed and co-invested for environmental and social impact. The spectrum of green and social finance includes all types of capital that are deployed for sustainable impact, such as blended or catalytic finance, debt, equity, funds, and grants. While negative green and social finance typically utilizes equity and debt instruments that aim for a market return, positive green and social finance has access to a wider range of instruments: grants, foundation assets deployed as program- or mission-related investment, blended or catalytic finance, impact investment for either submarket and market return, development finance, and green and social bonds. Green, social, and sustainability bonds are noteworthy as positive green and social finance instruments that offer a market return, thus attracting investors from capital markets worldwide. Positive ESG finance has been on the rise since 2015 (Broadridge 2020). The diversity of finance models in the green and social finance spectrum offers opportunity for the further development of innovative financial instruments for more impact toward sustainability.

Capital markets now play a growing role in green and social finance. Bond markets in particular are emerging as major sources of financing for green and social projects. Green, social, and sustainability bonds are fixed-income debt instruments whose proceeds are used for eligible projects with positive environmental and/or social outcomes. As outlined in Figure 2.1.3, sustainability bonds contain both green and social elements. Subsets of green bonds include climate bonds, water bonds, and blue bonds, and subsets of social bonds include affordable housing bonds, gender bonds, education bonds, and food security bonds. One recent innovative instrument is the sustainability-linked bond, a performance-based debt instrument with an interest rate tied to a designated sustainability outcome. A full taxonomy of eligible bonds is outlined by the International Capital Market Association, which has developed distinct green bond principles, social bond principles, sustainability bond guidelines, and sustainability-linked bond principles to improve consistency and integrity for policy makers, issuers, and investors (ICMA 2018a, 2018b, 2020a and 2020b).

**Figure 2.1.3** The green, social, and sustainability bond universe

*Sustainability bonds deliver both environmental and social impacts.*



Source: Asseline and Hiller 2021.



Another novel debt instrument in the capital market is the transition bond. Unlike green, social, or sustainability bonds that finance projects with green and/or social impacts, transition bonds help high-emitting “brown industries” such as steel and mining reduce their emissions. At least three transition bonds were issued in 2019. An example is Marfrig, a Brazilian food processor, that raised \$500 million using a transition bond in 2019 to reduce emissions attributable to its beef products by purchasing cattle from ranchers that complied with certain sustainable criteria (ADB 2020). Meanwhile, green securitization is attracting increased interest, allowing green bond holders to refinance by selling their green bonds through a securitization structure.

### 2.1.3 Recent developments in green and social finance in Asia

Green and social finance can help the region address the colossal challenge of achieving greener and more inclusive growth. Promisingly, green and social finance, especially from private sources, has grown rapidly across the world in recent years, accompanied by a great deal of innovation.

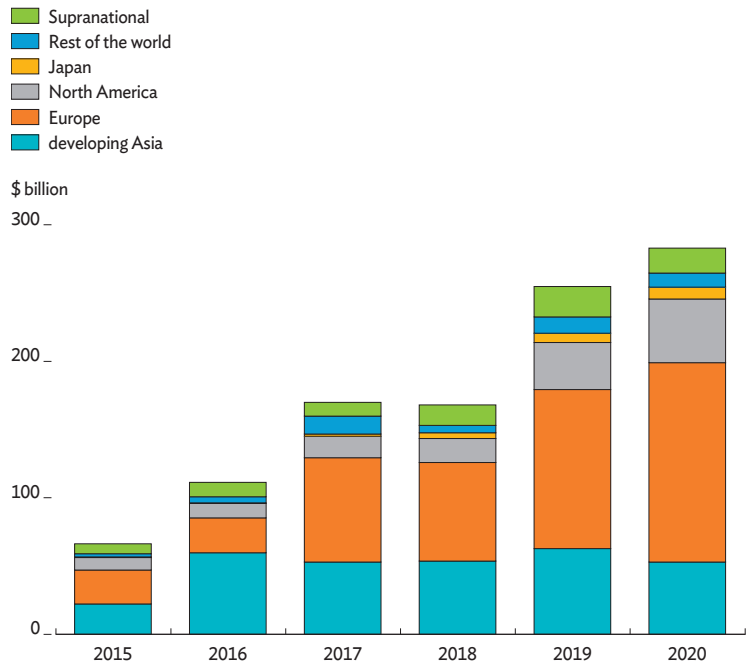
ESG investment is becoming a prominent feature of global asset management. Sustainable debt including loans, bonds, and asset-backed securities reached a new record of \$655 billion in 2020, driven largely by rapid expansion in social- and sustainability-linked bonds (Institute of International Finance 2021). Global green, social, and sustainability bond issuance reached \$491 billion and is expected to expand further to \$650 billion in 2021 (Moody's 2021a).

COVID-19 will likely have a long-term impact on investment preference for ESG assets. A survey found that a quarter of surveyed financial advisors report increased client interest in such financial instruments during the pandemic and believe that the ESG share of clients and assets will double in the next 2 years (Broadridge 2020). Also noted was that investors and stakeholders might shift their focus to social issues because COVID-19 had highlighted the risks posed by such social shortcomings as weak public health systems (The Asset 2021).

While advanced economies still dominate the global green and social finance landscape, Asian economies have been active players in this market (Figure 2.1.4). COVID-19 has influenced institutional investors in Asia regarding their approach to ESG issues, with 95% of surveyed institutions in Asia and the Pacific indicating that ESG considerations were of high or moderate importance in their investment strategies (Bfinance 2021). The comparable percentages were 91% in Europe and 70% in North America.

**Figure 2.1.4 Green bond issuance by global region**

Asia contributed about 20% of global green bond issuance in 2020.



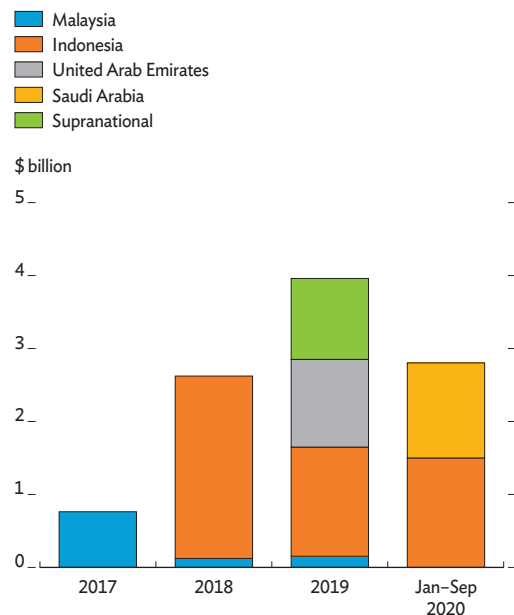
Source: Bloomberg (accessed 15 January 2021).

Along with Europe and North America, Asia has become a hub of global green bond markets. With the People's Republic of China (PRC) and Japan leading the way, the region now accounts for around a fifth of global green bond issuance (Figure 2.1.4).

Asia also leads in markets for green *sukuks*, or Islamic bonds, which use their proceeds to fund environmentally friendly projects while observing Sharia restrictions. Following the first green *sukuk* issued by Malaysia in June 2017, annual issuance of green *sukuks* increased fivefold to reach \$4 billion in 2019 (Figure 2.1.5). Globally in 2019, green *sukuk* issuance accounted for 2.4% of all *sukuks* issued that year and 1.7% of all green bonds. From 2017 to September 2020, \$10 billion worth of green *sukuks* had been issued by 11 entities in four countries: Indonesia with 54% of the total, Saudi Arabia with 13%, the United Arab Emirates 12%, and Malaysia 10%. Indonesia attained its lead position with active government issuance. Malaysia has the largest number of private issuers, which are supported by tax incentives and subsidies for green bonds (Azhgaliyeva 2021).

**Figure 2.1.5 Green Islamic bond issuance**

Developing Asia is a major player in the global green Islamic bond market.

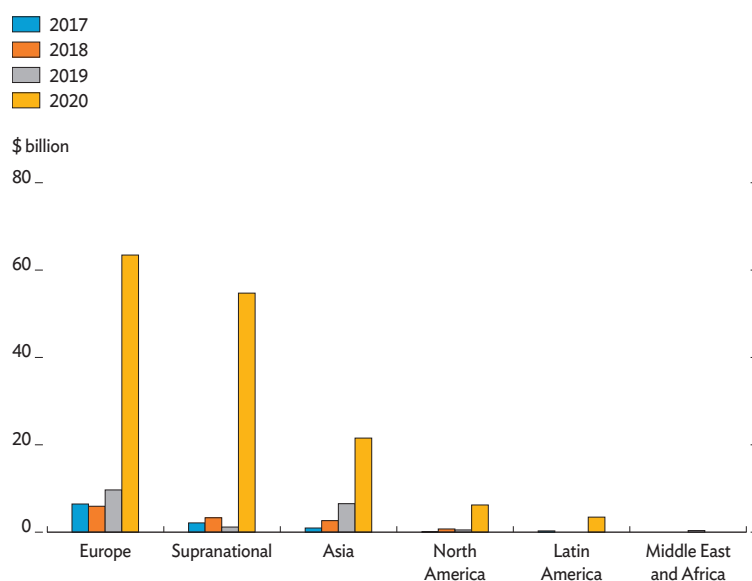


Source: Azhgaliyeva 2021.

Social bonds are an emerging component of sustainable finance. In 2020, social bond issuance grew rapidly both within the region and beyond, at least partly in response to the social challenges of COVID-19. Data on annual social bond issuance reveal that Asia has consistently lagged behind Europe in recent years. However, led by Japan and the Republic of Korea (ROK), social bond issuance in the region has grown to the extent that Asia is now, leaving aside supranational entities, the world's second-largest issuing region by a wide margin (Figure 2.1.6).

**Figure 2.1.6 Global social bond issuance by year and region**

*Asia is the second-largest social bond market in the world.*



Source: ADB 2021.

In addition to leading the developing world in green and social finance, Asia has been at the forefront in introducing regulations and policy guidance on green and social finance. Of the 41 emerging market members of the Sustainable Banking Network, 17 are in Asia and the Pacific. So are 14 of the 75 member institutions of the Network of Central Banks and Supervisors for Greening the Financial System, including two of the eight founding members: the Monetary Authority of Singapore and the People's Bank of China.

Financial authorities in many Asian economies have made significant progress toward aligning their financial systems with sustainable development goals (Volz 2018): Bangladesh; the PRC; Hong Kong, China; India; Indonesia; Japan; Mongolia; Singapore; and Viet Nam. Other Asian economies are working on it but less far along: Cambodia, the Lao People's Democratic Republic, Nepal, Pakistan, the Philippines, Sri Lanka, and Thailand.

A conducive regulatory and policy environment has contributed to the rapid growth of green and social finance in the region—growth that has continued since the COVID-19 outbreak. Strong growth is consistent with growing awareness in the Asian finance industry of the importance of green and inclusive recovery after COVID-19.

Such recovery requires that green and social finance be expanded by recruiting new sources, especially in the private sector, to finance investments toward achieving the SDGs. Fostering greater equity in the wake of COVID-19 will require significant investment in key social sectors such as health and education. At the same time, tackling climate change will require substantial investment in adaptation and mitigation, such as into clean energy and disaster-resilient infrastructure, especially in Asian economies already prone to flooding, notably Bangladesh, the Philippines, Thailand, and Viet Nam (Prakash 2018).

The bottom line is that major challenges remain in developing green and social finance. On the supply side, investable deals are lacking in some areas—notably infrastructure, health, and education—and the pipeline of projects available for investment is inadequate. Weak market infrastructure and ecosystems also pose challenges. In terms of market infrastructure, transaction costs are high for lack of commonly accepted reporting and disclosure standards or clearly defined metrics for measuring impact. In terms of ecosystems, Asian markets still suffer inconsistent sustainability ratings, and independent verifiers have limited capacity. These shortcomings generate concerns about transparency, disclosure, and potential for green- and social-washing. Policies that can help address these shortcomings are discussed in section 2.5.

Looking forward, green and social finance is set to expand further in Asia and beyond, as shown in the next section. This is because a number of economic and other factors are boosting both demand for these types of finance and their supply. These factors include changing stakeholder preferences, the need to hedge and mitigate sustainability risks, and a desire to build greater resilience.

## 2.2 The drivers of green and social finance

Green and social finance has grown rapidly in recent years, with private capital playing a large and growing role. Many factors direct capital into green and social finance, some economic, others not: (i) changes in stakeholders' preferences for sustainable goals, (ii) hedging and mitigating sustainability risks, and (iii) a desire for greater shock resilience. Each of them is discussed in turn with evidence on the role they play in expanding green and social finance. Also explored is the signaling role of green and social finance to garner for businesses positive investor recognition.

### 2.2.1 Stakeholders' changing preferences for sustainable goals

A key driver of emerging sustainable finance is change in the preferences and mandates of various stakeholders—investors, managers, shareholders, clients, and society at large—in favor of the Sustainable Development Goals. Over the past decade, sustainable investment has become an important investment strategy all around the world. At the beginning of 2018, for example, assets in the US worth \$12 trillion were managed using ESG investment strategies, a 38% increase in the 2 years from the beginning of 2016. These assets accounted for 26% of all professionally managed assets in the US. A similar pattern emerges worldwide. More than \$30 trillion in assets under management globally in 2018, about one-third of the total, were subject to some form of the sustainability or ESG framework, a 34.3% increase from 2016 (Landberg, Massa, and Pogkas 2019).

Similar patterns of preferences are observed in individual investors. A survey of millennials—younger investors expected to inherit \$68 trillion over the next decade—found 45% of them saying they wanted to invest their funds in ways that helped other members of society and that they counted social responsibility as a factor in investment decisions (Kelly 2019). An examination of the portfolio choices of active participants in employee saving plans in France, which were driven by participants' personal values, found that, when such funds included responsible equity options in their menu, participants raised their equity allocations by 2.1% (Brière and Ramelli 2020). A study of ESG investor sentiment showed that both millennials and older generations such as Gen Xers and baby boomers paid attention to socially responsible investing.



Nearly two-thirds of millennials and about half of older investors indicated that ESG was a key factor in their investment decisions (Allianz Life 2019).

Changing stakeholder preferences for sustainable goals help attract to green and social finance capital that is more patient and less sensitive to financial return. Investors forgo financial return when they invest in sustainable and responsible mutual funds, which bear higher management fees and offer lower return. Capital flow into sustainable and responsible mutual funds is more persistent than flow into conventional funds because it is partly driven by client considerations other than financial return (Białkowski and Starks 2016). Similarly, mutual fund flow is less sensitive to fund performance when more assets are invested on the basis social responsibility, because clients appreciate their nonfinancial benefits (Ghoul and Karoui 2017). Firms issuing green bonds tend to attract more long-term investors (Flammer 2021a).

Changing stakeholder preferences can similarly shape decisions made by businesses. Investors can influence corporate actions and environment and social (E&S) performance through different mechanisms: voting as shareholders, active shareholder engagement, monitoring, and otherwise conveying a preference for improved E&S performance (Chen, Dong, and Lin 2020; Dyck et al. 2019). Institutional investors influence the E&S performance of the companies they invest in (Dyck et al. 2019). Such impact is more pronounced when institutional investors are more E&S activist and based in countries with strong social norms.

## 2.2.2 Hedging and mitigating sustainability risks

Green and social finance helps investors hedge and mitigate sustainability risks. The Task Force on Climate-Related Financial Disclosures (2017) delineates the two key climate-related risks: physical risks and transition risks. Transition risks include policy and legal risks that stem from changes in regulations and litigation, technology risk arising from creative destruction in green technology, market risk that accompanies climate-related changes in market supply and demand, and reputational risk generated by stakeholders' changing perceptions of green development. Physical risks fall into two categories: acute risk from hazards and chronic risk caused by climate-change patterns.

Uncertainties tied to climate change affect equilibrium asset prices and risk premiums (Giglio, Kelly, and Stroebe 2020). Empirical evidence shows that climate-related risks have already been priced in across various asset classes such as equities, bonds, real estate, and mortgages. Greater exposure to climate-related risk affects not only firms' operations but also investors' perceptions of companies, which has financial implications for them.

Using the Paris Agreement as an impending regulation change in climate-related risk, Seltzer, Starks, and Zhu (2020) found a causal relationship between regulatory change and risk assessment, which influences the financing costs borne by issuers of corporate bonds. After the passage of the Paris Agreement, newly regulation-sensitive issuers suffered downgraded credit ratings and widening yield spreads relative to bonds issued by firms without environmental concerns.

Another international agreement on climate change is the Kyoto Protocol, through which participating countries made specific commitments to reduce carbon emissions toward satisfying national reduction targets (UNEP 2006). The protocol was adopted in Kyoto, Japan, in December 1997 and took effect in February 2005. Box 2.2.1 provides new empirical evidence that the ratification of the Kyoto Protocol in Australia significantly increased the cost of capital for emitters relative to other firms.

For investors and other financing entities, climate-related risk can be mitigated and hedged by making environmentally friendly investments. Thus, private capital has both social and economic incentives to favor green and social finance.

### 2.2.3 Greater shock resilience

Demand for green and social finance can come from its insurance-like benefits against shocks, either firm-specific or to the whole market. Market shocks, such as from a pandemic or global financial crisis, affect all market participants. Firm-specific shocks realize vulnerabilities that arise from a firm's own business operations, as through a negative corporate incident such as an environmental violation.

Firms build social capital, or trust in their economic activities, by practicing social responsibility (Lins, Servaes, and Tamayo 2017). Thus, well-built social capital strengthens the perception of trustworthiness among stakeholders. Such social capital pays off during a market crisis, which pummels confidence overall, enhancing the value of trust. Lins, Servaes, and Tamayo (2017) documented that, during a crisis, firms with higher reputations for social responsibility performed better than their peers in terms of profitability, productivity, and fund-raising ability. One possible reason is that they were supported by stakeholders' commitment to help through credit lines and consumer sales. Similarly, Albuquerque, Koskinen, and Zhang (2019) showed that the profits of firms with strong social responsibility policies were less affected by aggregate shocks, which mitigated market risk exposure and sustained higher corporate valuations.

Such social capital also provides a hedge against firm-specific shocks such as negative corporate incidents. Businesses' voluntary actions to improve social conditions create moral capital that provides insurance-like benefits and earns a positive reputation among stakeholders (Godfrey, Merrill, and Hansen 2009).

**Box 2.2.1 The Kyoto Protocol and capital costs: company-level evidence from Australia**

A firm's climate-related risk exposure can be affected by transition risk, for example, when a country joins a global initiative on climate change, such as the Kyoto Protocol, that imposes restrictions on annual emissions. Evidence has emerged from a quasi-experiment in Australia that found polluting firms tending to face higher costs for capital because of such risk. The result can be explained by two channels: cash-flow risk and investor recognition.

On 3 December 2007, Australia formally ratified the Kyoto Protocol, restricting its average annual greenhouse gas emissions over the 2008–2012 commitment period to 8% above their 1990 levels and imposing stricter environmental regulations on businesses (Ramiah, Martin, and Moosa 2013). The government's commitment to Kyoto Protocol ratification (KPR) in December 2007 therefore served as an exogenous shock that significantly intensified the climate-related risk confronting high carbon emitters compared with low carbon emitters or non-emitters.

Using a sample of publicly listed companies in Australia over the period 2002–2013, difference-in-differences analysis was conducted to examine how the cost of capital changed for emitters relative to non-emitters before and after KPR.

To gauge the cost of capital, the cost of debt was measured using the interest rate spread, and the cost of equity capital was proxied using a return that equates the current stock price with the discounted values of future earnings.

The box table reports the results of regressions of the cost of debt and the cost of equity on high emitters (*Emitter*) and post-KPR dummies (*Post*), and an interaction term between the two. Columns 2 and 4 show that, relative to non-emitters, emitters experienced an increase in the interest rate spread of 5.4% and an increase in the implied cost of equity of 2.5% in the post-KPR period. The interest rate difference is equal to 50.5% (0.054/0.107) of the sample mean, and the cost of capital difference to 11.6% (0.025/0.215).<sup>a</sup> The stronger impact of climate-related risk on the cost of debt may reflect lenders' lack of diversification options because carbon-intensive firms such as those in energy, materials, and utilities have long been their traditional borrowers.

Climate-related risk can increase firms' cost of capital through higher cash-flow risk. Exposure to climate-related risk increases firms' vulnerability to legal penalties and reputational loss, both of which hurt firm performance.

**Kyoto Protocol and the cost of capital**

*After the ratification of the Kyoto Protocol in Australia, high emitters there faced increases in capital costs relative to non-emitters.*

Variable	Cost of debt		Cost of equity	
	(1)	(2)	(3)	(4)
<i>Emitter</i> × <i>Post</i>	0.062** (2.95)	0.054* (2.50)	0.030* (2.40)	0.025* (2.02)
<i>Emitter</i>	-0.018 (-1.28)		-0.028** (-2.74)	
<i>Post</i>	0.018 (1.34)		-0.035** (-5.93)	
Firm attributes	Yes	Yes	Yes	Yes
Industry fixed effects	No	Yes	No	Yes
Year fixed effects	No	Yes	No	Yes
Observations	6,578	6,578	3,169	3,169
Adjusted R-squared	0.013	0.030	0.610	0.648

\* = statistically significant at 10%, \*\* = at 5%.

Notes: t-statistics based on robust standard errors clustered by firms are provided in parentheses. Detailed definitions of all variables are in Zhang (2021).

Source: Zhang 2021.

*continued on next page*

**Box 2.2.1 Continued**

For example, carbon-intensive firms are more likely to violate environmental regulations because they underinvest in pollutant abatement, thereby triggering customer boycotts and lawsuits (Delmas and Toffel 2004; Habib and Bhuiyan 2017; Brekke and Pekovic 2018). Under tightened carbon policies, such firms may be forced to forgo potentially profitable projects because they would emit a lot of carbon. Climate-related risk can erode firms' future revenue while increasing their operating leverage. Both effects heighten cash-flow risk and thus push up the cost of capital. This mechanism is referred to as the *cash-flow risk channel*.

Climate-related risk may additionally affect the cost of capital through negative investor recognition. As carbon emissions are an important criterion for firms' ESG ratings, socially responsible investors may abstain from investing in carbon-intensive firms. A more general observation is that investors avoid stocks with poor ESG performance (Hong and Kacperczyk 2009; Chava 2014; Riedl and Smeets 2017; Gibson and Krueger 2018; Ramelli, Ossola, and Rancan 2020; Hsu, Li, and Tsou 2020; Seltzer, Starks, and Zhu 2020). This means that firms with high carbon emissions have a smaller investor base and hence less investor recognition. One example comes from 2020, when the Japanese companies Sumitomo and Kansa wrote off their investment in Bluewaters, Australia's newest coal-fired power plant, built in 2009, because they struggled to refinance its senior loans due in August 2020. Banks are becoming increasingly reluctant to finance coal projects after being advised by regulators to take climate-related risk into account when making loans (Guardian 2020). Longstanding investor recognition theory holds that firms that are less recognized by investors incur higher costs for capital (Merton 1987). This mechanism is referred to as the *investor recognition channel*.

To understand these two economic channels through which climate-related risk increases the cost of capital—the cash-flow risk channel and the investor recognition channel—two sets of tests were performed. To test the cash-flow risk channel, several proxies for cash-flow risk were used: financial distress risk measured by the probability of default; future cash-flow volatility; exposure to market risk, as measured by their market beta, or exposure to market risk; and firm-specific risk measured by their idiosyncratic volatility.

Further tests found that these cash-flow risk proxies increased significantly for emitters after KPR relative to non-emitters. This confirmed that cash-flow risk is a channel that contributes to the higher cost of capital in the post-KPR period. High emitters experienced higher default probability, greater cash-flow volatility, firm-specific risk, and market risk.

To test the investor recognition channel, institutional ownership was used as a proxy for investor recognition. Evidence showed that levels of institutional ownership significantly declined for emitters after KPR relative to non-emitters. Moreover, during the post-KPR period, emitters were less likely to be financed by major banks. These results are consistent with the notion that institutional investors are able to perceive relatively well any threats from ESG issues to their portfolio values. Hence, they can incorporate changes in these risks, especially emerging environmental regulatory risks, into their investment decisions (Chava 2014; Riedl and Smeets 2017; Dyck et al. 2019; Krueger, Sautner, and Starks 2020). Consequently, reduction in investor recognition increased the cost of capital for emitters.

Thus, firm-level evidence from Australia indicates that those firms that pollute more than others face higher costs for capital as a result of transition risk. The underlying reason is that lenders and investors are cognizant of the higher risk associated with heavy polluters during the transition to lower-carbon growth.

*Note:*

- <sup>a</sup> The coefficient is compared with the denominator, which is the sample means, to give a sense of the average magnitude of the impact. The coefficients in columns 2 and 4 are estimated impact for emitters in the post-KPR period.

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**Box 2.2.1 Continued**

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In the event of a negative corporate incident, this goodwill mitigates negative judgement and sanctions, thus reducing loss in shareholder value. Empirical evidence shows that, compared with firms that adhere to E&S initiatives, firms without E&S practices incur larger costs from negative incidents (Ho, Nguyen, and Vu 2020) and suffer greater reputational damage and larger reductions in corporate value (Aouadi and Marsat 2018).

Green and social finance thus confers greater shock resilience. Empirically, Nemoto and Lian (2020) showed that Japanese firms with higher corporate social responsibility rankings demonstrated greater resilience during market turmoil caused by COVID-19 in the first quarter of 2020. Amundi (2020) found that, during the market selloff in March 2020, ESG-themed funds showed greater resilience than did conventional funds, with 62% of large ESG funds outperforming the Morgan Stanley Capital International (MSCI) World Index. Similarly, green bond issuers have demonstrated greater resilience during the pandemic (Box 2.2.2).

Demand for green and social finance is not the only thing affected by changing stakeholder preferences, the hedging and mitigating of sustainability risk, or the quest for resilience. So is supply. More firms may choose to tap green and social finance to attract patient capital and to become preferred by certain stakeholders. They may opt for green and social finance to hedge and mitigate sustainability risks to their operations. And, as firms recognize the benefits of earning social capital, they may tap sustainable finance to garner greater resilience during shocks.



**Box 2.2.2 Greater resilience of green bond issuers under COVID-19**

New empirical evidence is presented here on performance during the COVID-19 pandemic by firms that have previously tapped green and social finance. Analysis using a comprehensive dataset of more than 40,000 firms in 60 major economies around the world—52% of the firms in Asia—revealed that firms issuing green bonds have withstood the pandemic more successfully than others, in terms of less cratering when stock prices crashed and higher return throughout the period.

Company stock performance was measured as a percentage change in price in the first half of 2020. Maximum drawdown was measured by the largest observed loss from a peak to a trough before a new peak was reached in the same period. The two stock return performance variables were regressed on a green finance indicator, represented as a dummy variable equal to one if the firm had ever issued green bonds, otherwise zero. Other independent variables that were considered were company size, return on assets, degree of leverage, and cash holdings. The empirical specification included country and industry fixed effects. The box table reports regression results.

The stock prices of firms that issued green bonds fared better than others through the financial turmoil caused by the COVID-19 pandemic in the first half of 2020. Column 1 of the box table, in which green

bond issuance is the only explanatory variable for stock price change, reveals a positive and statistically significant coefficient estimate of 0.213, with a t-statistic of 3.23. This means that, compared with firms that did not tap the green bond market, green bond issuers sustained a higher stock return by 0.21% in the first half of 2020, which included a sharp market downturn in March. This finding remained robust after controlling for firm characteristics such as size, return on assets, leverage, and cash holdings (columns 2 and 3). The coefficient for green bond issuers in column 3, which includes all four firm characteristics as control variables, is 0.154. This suggests that green firms' stock prices outperformed other firms by 0.15% in the first half of 2020.

Similarly, these green bond issuers saw smaller stock price declines during the worst financial turmoil. In columns 4–6, the dependent variable is the maximum drawdown that a firm suffered during the COVID-19 pandemic. A larger maximum drawdown indicates that a stock suffered a larger negative price shock. Statistically significant negative coefficient estimates were found for all three model specifications, showing that the stocks of green bond issuers suffered smaller drawdowns during the market shock than did the stocks of other firms.

**Stock performance during the COVID-19 pandemic**

*Green bond issuers demonstrated better stock performance and less drawdown during market turmoil in the first half of 2020.*

	Stock price change January–June 2020			Maximum drawdown January–June 2020		
	1	2	3	4	5	6
Green finance	0.213*** (3.23)	0.155** (2.26)	0.154* (1.73)	-0.052*** (-5.48)	-0.021** (-2.11)	-0.038*** (-2.78)
Size		0.040*** (16.45)	0.040*** (9.34)		-1.883*** (-9.92)	-2.186*** (-10.39)
Return on assets		0.001*** (4.83)	0.001 (1.01)		-0.514*** (-13.95)	-0.478*** (-12.66)
Leverage		-0.003*** (-9.42)	-0.004*** (-5.15)		12.974*** (8.99)	10.872*** (5.44)
Cash holdings			0.001 (0.54)			-8.967*** (-5.72)
Observations	63,748	56,296	49,591	33,172	29,696	26,179
R-squared	0.009	0.015	0.016	0.094	0.171	0.188
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes

\* = statistically significant at 10%, \*\* = at 5%, \*\*\* = at 1%, FE = fixed effect.

Note: The numbers in the parentheses are t-statistics based on robust standard errors.

Source: Tang 2021.

*continued on next page*

**Box 2.2.2 Continued**

The coefficient in column 6, which includes all four firm attributes, is  $-0.038$ , with a t-statistic of  $-2.78$ , indicating that green stocks experienced 0.038% less maximum loss than other stocks.

This evidence shows firms that had tapped green finance demonstrating greater resilience than other firms during the COVID-19 crisis. The finding is consistent with similar analysis of the global financial crisis of 2008–2009 (Lins, Servaes, and Tamayo 2017) and earlier analysis of the COVID-19 pandemic that, instead of focusing on green finance as here, used a broad ESG measure (Ding et al. 2020). Both of these comparable studies used sizable international samples and independently reached the same conclusion: Stocks of green firms are more resilient during crises.

*References:*

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## 2.2.4 The signaling role of green and social finance

Research reported here measures the role of green and social finance in signaling corporate virtue to investors and its consequences. From the supply side, public and private financing entities can signal their commitment to the Sustainable Development Goals by tapping green and social finance, thereby attracting positive investor recognition and broadening their investor base (Ghoul et al. 2011; Chava 2014). The literature shows that firms beset by environmental issues have less diversified investor bases and pay higher costs for capital (Seltzer, Starks, and Zhu 2020; Painter 2020; Battiston and Monasterolo 2020; de Greiff, Delis, and Ongena 2018; Ng and Rezaee 2015; Beirne, Renzhi, and Volz 2020). By contrast, firms that tap green and social finance can signal to investors their awareness of positive green and social outcomes and their commitment to achieving them.

Companies signal environmental commitment by issuing green bonds, and such signaling brings positive investor recognition. Flammer (2021a) documented the growing popularity of corporate green bonds around the world and found that the stock market responded positively to the issuance of corporate green bonds and, further, that the issuing companies actually did reduce CO<sub>2</sub> emissions after their issuance. Tang and Zhang (2020) examined stock market reactions to green bond issuance by global public firms and found that public companies' stock prices increased and trading liquidity improved after the company announced green bond issues. Such evidence suggests that green bonds generate both financial and environmental benefits, and thus may be a powerful instrument in the fight against climate change.

The studies mentioned above focus on global markets. Much less is known specifically about Asian markets. Box 2.2.3 focuses on green bonds issued by Asian companies and examines market reaction to them. Results for Asian markets are qualitatively similar to those for global markets. Evidence shows that Asian stock markets respond positively to the issuance of corporate green bonds.

### Box 2.2.3 Equity market reaction to green bond issues in Asia

To assess how the equity market responds to announcements of corporate green bond issues in Asia, an event study was conducted to quantify the change in the issuing companies' stock price in response to green bond issues. A sample of 414 Asian corporate green bonds issued from 2013 to 2018 was obtained from Bloomberg. Of them, 374 with a combined issuance amount of \$100.4 billion were in developing Asia.

For each green bond, the date on which the firm announced green bond issuance was used as the event date. As the announcement date is when green bond information is released to the public, it is intuitively the date when stock market participants update their perception of the firm's prospects going forward. On the day of actual issuance, by contrast, additional information is rarely made available to the public. After merging with stock market data, the sample comprised 134 green bonds issued by publicly listed firms in 115 unique events—a lower number of events because multiple green bonds were announced on the same day.

As in Flammer (2021a), stock market performance was examined in an event window that started 5 trading days before the announcement—the event date, or day 0—and ended 10 trading days after the

event. Including the previous 5 trading days covered the possibility that information on issuance may have leaked to the public shortly before the announcement. The inclusion of the subsequent 10 trading days allowed for the possibility that the market might have needed a few days to fully digest the implications of green bonds on stock value.

For each day within the window from –5 to 10, the abnormal return (AR) was computed as the daily stock return—the actual percentage change in the issuer's stock price during the day—minus the “normal” return predicted by the market model.<sup>a</sup> Intuitively, AR captures the change in the stock price left unexplained by market fluctuations that may coincide with the event. The cumulative abnormal return (CAR) was then computed by summing up ARs across all days within the 16-day window. As such, the CAR quantified the extent to which the issuer's stock price responded to the event, considering contemporaneous market fluctuations that might have confounded the response.

The box table provides the results of the event study. For a variety of event windows, the table reports the average CAR across all 115 events, along with the standard error and corresponding p-value. The average CAR in the [–5, 10] event window is 0.5%.

### Stock market response to corporate green bond issuance in Asia

*Asian equity markets positively react to companies' green bond issuance announcements.*

Event window	Observations	Average cumulative abnormal return	Standard error	p-value
[–30, –21]	115	–0.138	0.539	0.798
[–20, –6]	115	0.032	0.429	0.941
[–5, 10]	115	0.504	0.365	0.168
[11, 20]	115	0.099	0.271	0.713
[21, 60]	115	–0.142	0.176	0.420

Source: Flammer 2021b.

*continued on next page*

**Box 2.2.3 Continued**

That is, the issuer's stock price increases by 0.5% during this time interval on a market-adjusted basis. This 16-day return corresponds to a substantial annualized return of about 8% on the basis of 252 trading days.

Event study results indicate overall that the stock market responds positively to Asian companies that issue green bonds. That is, stock market investors see green bonds as adding value. It is worth noting that valuation gains are unlikely to reflect solely any expected benefits from the green projects to be financed by green bond proceeds. Indeed, benefits are likely too small to affect stock market valuation significantly. More probably, investors see green bonds as credible signals of a company's commitment to the

environment going forward. As such, the positive stock market response indicates that investors see such a commitment as enhancing value.

*Note:*

<sup>a</sup> For a technical description of the computation of AR, see Flammer (2021a).

*References:*

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Not surprisingly, issuers often highlight the signaling role of their green bonds. In a February 2020 press release announcing its fifth green bond issue, for example, Toyota Financial Services emphasized that green bonds were “an important component” of the firm’s “diversified funding program and serve to enhance Toyota’s extensive commitment to environmental causes.” It further noted that the Toyota Financial Services green bond program was “unique in the auto industry” and enhanced “Toyota’s reputation for leadership in green innovation across industries” (Toyota 2020).

Positive investor recognition achieved through green and social finance has been shown to help broaden the investor base. Empirical evidence indicates that green bond issuances help sovereign and corporate borrowers attract new types of investors such as ethical investors and socially responsible investment funds, as well as investors with long-term investment horizons. When issuing green bonds, companies see increased bond ownership among long-term and ethical investors (Flammer 2021a). Firms also see domestic institutional ownership increase after green bond issuances (Tang and Zhang 2020). Summarizing a number of studies conducted by major investment banks, Giudice (2017) found that 89% of all investors expressed interest in or were familiar with sustainable investments, and 65% of them already engaged in sustainable investing.

Further, the literature has documented a possible cost advantage for green and social finance that could foster growth in the supply of green and social projects. Some recent evidence suggests that ESG benefits financing entities by lowering their financing costs. A study found that firms with strong ESG scores paid lower costs for capital relative

to firms with poor ESG scores in both advanced economies and emerging markets during a 4-year period ending on 29 November 2019 (MSCI 2020). This result held for the cost of both debt and equity. A comprehensive literature review of the relationship between cost and sustainability found better sustainability performance linked to lower cost of capital (Gianfrate, Schoenmaker, and Wasama 2015).

Corroborating evidence is found in the green bond market. Evidence shows that green bonds have costs similar to or lower than those of matched conventional bonds (Ehlers and Packer 2017; Baker et al. 2018; Hachenberg and Schiereck 2018; Zerbib 2019). Moreover, strong commitment to the environment—as evidenced by green labels, green bond certification, and independent verification—generates significant cost advantages for green bond issuers. Such issuers benefit from a yield reduction of 8 basis points compared with conventional bonds (Gianfrate and Peri 2019) and 6 basis points relative to other green bonds without these features (Hyun, Park, and Tian 2020). One key driver of the lower yield of green bonds is high demand for green bonds relative to their limited supply (CBI 2019). The Climate Bonds Initiative has frequently reported oversubscription for new green bond offerings in its series of market monitoring reports, indicating excess demand for green bonds relative to supply.

Green bonds enjoy a similar cost advantage over bank loans. Alonso-Conde and Rojo-Suárez (2020) evaluated the impact of financing with green bonds versus conventional bank loans on the profitability of environmentally friendly projects, finding that investments financed by green bonds earned higher internal rates of return for shareholders. Higher return was driven by the lower financing costs of green bonds relative to bank loans. The conclusion was that green finance provides economic and financial incentives for shareholders of green projects and helps align shareholders' objectives with the Sustainable Development Goals.

Finally, green finance may foster innovation in green technology while advances in green technology further boost the need for green finance. Evidence shows companies that tap green and social finance tend to be more innovative. A novel dataset of firms in the Republic of Korea was found to show green bond issuance positively associated with innovation, as reflected in higher market values for issuing firms' research and development patents (Lee, Park, and Tian 2021). Similarly, green bond issuances were positively associated with company innovation capacity, as evident in growth year on year in research and development as a share of operational income (Zhou and Cui 2019).



## 2.3 Impacts of green and social finance

Green and social finance strives to contribute to climate, environmental, and social sustainability goals. To what extent does it succeed? The impacts of green and social finance can be measured scientifically to determine whether existing instruments contributed to environmental and social outcomes and how any impacts can be managed.

### 2.3.1 Measuring and managing the impact of green and social finance

It is no small challenge to measure and manage the impact of green and social finance. A few basic impact models exist and are presented below along with discussion of the issues affecting impact disclosure, particularly the need for common standards and coherent guidelines for measurement and reporting.

#### 2.3.1.1 Green and social impacts

The Impact Management Project, which is dedicated to building a global consensus on impact measurement and management, defines impact in the context of green and social finance as *a change in an important positive or negative outcome for people or the planet*.

Green impacts typically hinge on changes to variables that are relatively easy to measure and scientifically quantify. Examples include reduced emissions of carbon or nitrous oxide, improved water quality, and greater biodiversity in a specific locality. Carbon emissions, for example, can be measured by calculating the carbon footprint, or the total output of greenhouse gas emissions caused by an organization, event, product, or person. Similarly, pollutants in the air can be quantified according to an air quality index. Water quality data are calculated by a range of measures including temperature, acidity, dissolved solids, suspended sediments, dissolved oxygen, and hardness or mineral content (Public Lab Organization 2017).

However, while an established set of scientific measures captures environmental impact data, they may not capture all the effects of green investment. This is because environmental impacts typically have a social element as well. These too need to be assessed to robustly gauge the whole impact of green investment. This is particularly true of pollution externalities in the form of social costs.

Compared with climate and environmental impacts, social impacts are more varied and sometimes difficult to measure. They typically hinge on changes to human welfare, of either individuals or communities, and cut across a potentially large range of issues. Measuring such effects may demand complex sets of impact data that are difficult to verify.

### 2.3.1.2 Impact measurement and management

Impact measurement and management are essential for allocating social and green finance. Measuring impact enables better assessment of proposals for funding and investment, adds credibility, facilitates decision making, guides future resource allocation, and creates models and benchmarks. Current practice in impact measurement and management remains institutionally underdeveloped, though, lacking common standards for impact metrics, information disclosure, and regulatory structure.

Impact data are important for making investment decisions in social and green finance. The ecosystem of impact measurement includes a range of stakeholders that intermediate between investees as data producers and investors as data consumers. The World Economic Forum (2019) identified eight key stakeholders: companies, standard setters, assurance providers, data providers, investment banks, investors, regulators, and research and knowledge management organizations.

These stakeholders typically fail to collaborate with one another, however, to agree on common units of analysis. Other areas of disagreement include the temporal dimensions of the effects, or when and for how long impact should be measured and reported; the scope of analysis, or who and what should be included or excluded; the role of externalities, or how one outside factor positively or negatively influences another; and standards for impact attribution and causality, or how much impact can be claimed (Nicholls 2009; Maheshwari, Avendano, and Stein 2016).

Because metrics for green finance impacts are relatively well defined, their impact measurement tends to be more straightforward than for social finance. As carbon is both traded on emission cap-and-trade exchanges and subject to taxation in some countries, it has a market value that translates into its monetized price. For nitrous oxide emissions and water pollution, prices are set not by a market but by calculating their negative externality costs (Marten and Newbold 2011; Walton 2019). Biodiversity can be monetized based on the value of ecosystem services: plant pollination, the protection or restoration of habitat for migratory species, water storage and retention, soil formation, storm protection, and flood control (Costanza et al. 1998).

Effective impact measurement is a prerequisite for improving impact management. Optimizing the impact of green and social finance must be linked strategically to both. Effective impact measurement and management are integral to effectively deploying sustainable finance investment.

### 2.3.1.3 Impact models

Two well-established models are often used in strategic planning to identify the processes by which an investment or project can have impact: the Logic Model and the Theory of Change (Box 2.3.1).

#### Box 2.3.1 Impact models: Logic Model and Theory of Change

The Logic Model is a linear and multistage model for measuring a specific impact. It consists of five stages of analysis that refer to both the process of implementation and the change (Twersky, Nelson, and Ratcliffe 2010). Each stage requires different measurement approaches and units of analysis. Implementation stages involve inputs, activities, and outputs, and change stages are outcomes over the short or long term (box figure).

True to the definition of impact as evidence of change, the Logic Model measures the impact of inputs, activities, and outputs solely in terms of outcomes, which come at the end of the process. Further, measuring outcomes can be complex and time consuming, prompting organizations and investees to measure, manage, and report data from other stages as intermediate measures of progress toward impact.

The Theory of Change (TOC) follows the same linear format as the Logic Model but adds analytic complexity with respect to the set of assumptions on how a particular action or set of actions will create an impact in the short, medium, and long term (Brown 2020). The TOC includes more granular detail on specific operational activities and their expected effects. It is usually developed as a multistage, predictive, and heuristic model that allows an organization to conceptualize how an intended impact may be achieved over time (Mettgenberg-Lemiere 2016).

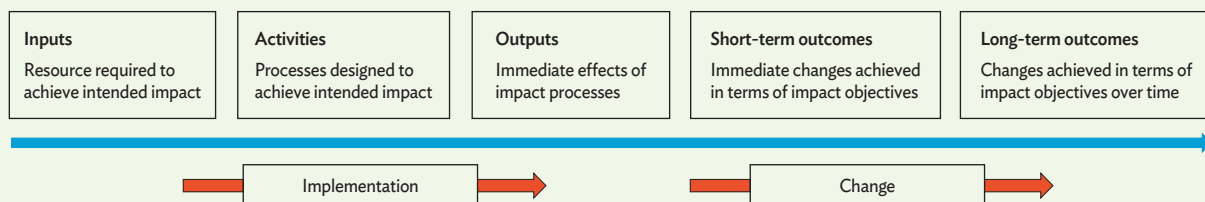
Creating an effective TOC typically engages a variety of stakeholders, including investors and other funders, senior management, employees, beneficiaries, and other partners. A well-formulated TOC helps simplify the complex process of generating desired outcomes by breaking it into clear stages of action. It allows an organization to build a narrative to communicate better with investors and other stakeholders. As a strategic management model, the TOC requires more careful design than the Logic Model but may be a more useful guide to decisions about a particular project.

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#### Logic Model

*The Logic Model measures the impact of inputs, activities, and outputs in terms of outcomes.*



Source: Nicholls 2021.

Each model follows a linear path that sets out how various types of action relate to one another causally with respect to an overall impact pathway. Typically, the models are used before implementation to inform an impact proposal, but they can also be used as management tools during the life of an investment or project. Moreover, both models can help develop impact metrics for the various stages of the impact pathway. Both models are widely used but sometimes criticized for being overly simplistic and deterministic.

#### 2.3.1.4 Impact disclosure: principles and standards

No internationally agreed standards yet exist for impact measurement or information disclosure to guide green and social finance. The consequences are a lack of common impact metrics and a scarcity of consistent and reliable data, adding complexity and transaction costs to selecting investments and measuring their impact.

Investors face a challenge in funding investments that generate certain social outcomes without being given clear definitions or assessment criteria for these social benefits (MSCI 2021). The absence of such information makes it difficult to discern which type of investment generates the largest impact and hard to address more complex questions, such as how impact performance relates to financial performance?

Effective impact measurement and management demand coherent guidelines on how to measure, report, compare, and improve the outcomes of projects and investments. In the absence of such guidelines, some progress is being made toward addressing this market failure by devising measurement standards and generating consistent and relevant data on impacts and outcomes.

A range of competing international, regional, and national standards and initiatives aim to capture sustainable finance and ESG performance (Table 2.3.1). Some efforts have been made to consolidate them. Transnational networks such as the Impact Management Project, for example, work to consolidate existing standards around a common set of agreed principles. International Finance Corporation principles offer initiatives that engage existing ESG models at the fund level, as do SDG standards at the deal level. Other significant steps toward common standards are European Union regulations on nonfinancial information disclosure and a consultation on sustainable disclosure under the International Financial Reporting Standards.

All of the sustainable finance impact disclosure principles and standards listed in Table 2.3.1 may apply to Asia, but it is less clear that any of them have been widely adopted in the region.

**Table 2.3.1 Existing impact disclosure principles and standards***Asia is getting acquainted with international impact disclosure standards and principles.*

Impact disclosure standards and principles	Selected examples
Principles	Equator Principles Principles for Responsible Investment International Integrated Reporting Council Principles
Organizational standards	Global Reporting Initiative Sustainable Accounting Standards Board Harmonized Indicators for Private Sector Operations
Green finance standards	Carbon Disclosure Project Natural Capital Declaration
Green finance regulation	European Union Non-Financial Reporting Directive
Social finance standards	Impact Reporting and Investment Standards of the Global Impact Investing Network Impact Management Project Dimensions of Impact
Transnational standards	International Finance Corporation Operating Principles for Impact Management United Nations Development Programme SDG Impact Standards
Legal forms	Community interest company Benefit corporation European Union cooperative society
Certification schemes	B corporation Fair trade

SDG = Sustainable Development Goal.

Source: Nicholls 2021b.

For example, of the 106 signatories to International Finance Corporation Operating Principles for Impact Management, only two are in Asia: UOB Venture Management in Singapore and the Osiris Group in Hong Kong, China. Demand seems to be growing in Asia for investor training and education on these issues, which suggests that the region is still learning about and getting acquainted with them.

### 2.3.1.5 Opportunities and challenges

Effectively measuring and managing the impact of sustainable finance is of central importance to the efficient allocation of capital for optimized outcomes. Looking forward, some important opportunities and challenges loom on the horizon.

With many sustainability standards currently available for investors and organizations, agreement on common principles, methodologies, or units of analysis is largely absent. Divergent standards, reporting and disclosure frameworks, and impact measurement matrixes cause information asymmetry and abet regulation arbitrage, which undermines investor confidence and efficient capital allocation.



In this context, the opportunity for regulated disclosure of impact data is significant. While the International Financial Reporting Standards consultation offers a global opportunity for standardization, it does not mandate disclosure. Policy makers can fill the gap and advance the national and regional development of sustainable finance markets by regulating information disclosure in alignment with an agreed set of standards as they emerge. Even in the absence of common standards, policy makers can still move forward with impact disclosure regulation, as have the European Union and the PRC. New technology offers an important set of opportunities to make impact measurement more efficient and effective.

Many challenges remain to generating reliable impact data. Data integrity is one, especially as it relates to accusations of green- or social-washing, or corporate posing with overstated green or social impacts (2 Degrees Investing Initiative 2019). A lack of clear regulation on impact reporting and disclosure, and the absence of any common impact standards or metrics, allow investors and financiers to exaggerate their impact—always a material issue. Despite heady growth in green and social finance in recent years, substantial concerns remain about transparency, disclosure, and the potential for green- and social-washing.

### 2.3.2 Tangible positive impacts associated with green finance

Tapping green finance can be a credible signal of commitment to sustainable impact in financial markets. Corporations issue green bonds to send signals to investors and other interested stakeholders that they are committed to the Sustainable Development Goals (SDGs), and indeed they achieve higher environmental performance ratings globally in the years that follow (Flammer 2021a).

Similar evidence has been documented for Asian green bond issuers (Flammer 2021b). Matching environmental rating scores from Thomson Reuters' ASSET4 with the Asian green bond sample in section 2.2.4 above, Table 2.3.2 shows that, on average, Asian green bond issuers improved their environmental performance after green bond issuance. Environmental ratings rose by 17% (p-value = 0.01) 1 year after issuance and by 29.9% (p-value = 0.12) 2 years after.

**Table 2.3.2** Environmental performance change after corporate green bond issues in Asia

*Asian green bond issuers improved their environmental performance after green bond issuance.*

Change in the ASSET4 environmental score	Observations	Mean	Standard error	p-value
1 year after issuance	19	17.0%	6.2%	0.01
2 years after issuance	8	29.9%	17.1%	0.12

Source: Flammer 2021b.

While this does not warrant an interpretation of causality, it shows green bonds associated with environmental benefits. At minimum, improved environmental performance after issuance indicates that green bonds are probably not a form of green-washing. Indeed, if it were green-washing, one would not expect to see any tangible improvement in environmental performance after issuance. Despite the various challenges facing the green bond market, the evidence is encouraging and suggests that green bonds have potential to be powerful tools to counter climate change. This finding confirms that corporate tapping of green finance in Asia is a reliable signal of environmental commitment.

While many studies of the environmental impacts of green finance focus on CO<sub>2</sub> emissions, another important environmental performance measure is the air quality index, which captures the amount of pollution in the air. Box 2.3.2 presents novel evidence on how the use of green bonds relates to changes in air quality using urban data from the PRC.

Table 2.3.2 shows that green financing sends a credible signal of an individual company's environmental commitment, and Box 2.3.2 suggests the same for municipalities. Box 2.3.3 extends the observation to the whole market.

Empirical evidence associates the tapping of green finance with positive environmental and social impacts. It is thus important to take into account positive social outcomes when green finance incurs additional costs. When both environmental and social outcomes are factored in, it becomes more likely that the benefits of green finance exceed its costs. The same is true for social finance.

### 2.3.3 Innovative social finance instruments and their contributions to social impacts

In social finance, social and environmental returns are typically defined and measured in advance (World Economic Forum 2013, Calderini, Chiodo, and Michelucci 2018). According to the last 2020 Annual Impact Investor Survey, the impact investment market has grown in size, depth, and sophistication over time to reach a current market size of \$715 billion (GIIN 2020).

Social finance encompasses a broad range of instruments. An emerging instrument is the impact bond, which offers innovative funding mechanisms for social programs. While green and social bonds are debt instruments, impact bonds are futures contracts structured as partnerships of investors, investee service providers, and outcome payers. Through impact bonds, investors provide up-front working capital, service providers use the invested capital to deliver services, and outcome payers repay investors their capital plus a return conditional on the achievement of agreed outcomes.

### Box 2.3.2 Green finance and sustainable impact: evidence from the People's Republic of China

Data from 265 cities in the People's Republic of China (PRC) from 2015 to 2018 were examined for evidence of green finance usage being associated with positive environmental impacts. Green finance usage in a city was measured by green bond issuance as a fraction of all bond issuance. As total bond issuance reflects the amount of financing with debt securities, the share of green bond financing in it gauges the extent to which businesses in the city signal their environmental commitment to the public. If such signals of environmental commitment are credible, cities that use more green bond financing should experience improved air quality. To capture the change in air quality, data on both the air quality index (AQI) and fine particulate matter below 2.5 micrometers (PM<sub>2.5</sub>) were examined. Higher AQI and PM<sub>2.5</sub> indicators indicate more polluted air.

To empirically examine whether a city's green bond financing was associated with future improvement in air quality, the following model specification was employed:

$$AQ_{i,t+12} = \alpha + \beta_1 \text{Greenbond}_{i,t} + \beta_2 \text{GDP Growth}_{i,t} + \beta_3 \text{Weather}_{i,t+12} + \gamma C_i + \delta M_t + \varepsilon_{i,t+12}$$

where  $AQ_{i,t+12}$  represents air quality indicators (AQI and PM<sub>2.5</sub>) for city  $i$  in month  $t+12$ , or a year after green bond issuance.  $\text{Greenbond}_{i,t}$  is a vector of green bond

usage variables, including green bond issuance of city  $i$  as a share of all bond issuance of city  $i$  in month  $t$ , as well as city  $i$ 's ratios of certified and uncertified green bond issuance to all bond issuance in month  $t$ . The specification includes other explanatory variables as controls: GDP growth in city  $i$  in the current month ( $\text{GDP Growth}_{i,t}$ ) and weather indicators such as relative humidity, wind speed, precipitation, and wind direction 12 months later ( $\text{Weather}_{i,t+12}$ ). City ( $C_i$ ) and time (month) fixed effects ( $M_t$ ) are included to capture time-invariant city attributes and changes in overall economic conditions. The error term is  $\varepsilon_{i,t+12}$ .

Box Table 1 reports empirical results. One finding is that a city with more green bond financing in a given month sees significantly lower AQI and PM<sub>2.5</sub> concentration after 12 months. In particular, columns (1) and (2) show that an increase by one standard deviation in green bond finance as a share of all bond finance is associated with decreases by 0.58% in AQI from the mean 70.4 and by 0.82% PM<sub>2.5</sub> from the mean 39.7.<sup>a</sup>

Green bonds are independently certified by a third party to ensure that proceeds are used for the green project. Certified green bonds are shown to have a stronger signaling effect (Flammer 2021). Consistent with the signaling argument in Flammer (2021), columns (3) to (6) show the signaling effect coming largely from certified green bonds.

#### 1 Green bond financing and air quality

*Cities with more green bond financing witnessed improved air quality.*

	(1)	(2)	(3)	(4)	(5)	(6)
Variable	AQI	PM <sub>2.5</sub>	AQI	PM <sub>2.5</sub>	AQI	PM <sub>2.5</sub>
Greenbond	-5.53** (-2.47)	-4.39** (-2.36)				
Certified_Greenbond			-5.87** (-2.23)	-3.84* (-1.76)		
Uncertified_Greenbond					-4.47 (-1.06)	-5.65 (-1.62)
Observations	5,344	5,344	5,344	5,344	5,344	5,344
Adjusted R-squared	0.813	0.811	0.813	0.811	0.813	0.811
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
City and month fixed effects	Yes	Yes	Yes	Yes	Yes	Yes

\* = statistically significant at 10%, \*\* = at 5%, AQI = air quality index, PM<sub>2.5</sub> = fine particulate matter below 2.5 micrometers.

Note: The numbers in the parentheses are t-statistics based on robust standard errors.

Source: Luo, Tian, and Yang 2021.

*continued on next page*

**Box 2.3.2 Continued**

Green finance may also have social impacts. As environmental improvement may contribute to positive social outcomes such as better health, this study further examined how green finance might address the negative social costs of air pollution, focusing on mortality. To examine whether green bond financing was associated with the mortality rate, annual provincial panel data was analyzed using the following empirical model specification:

$$MR_{i,t+1} = \alpha + \beta_1 GB_{i,t} + \beta_2 GDP\ Growth_{i,t} + \gamma P_i + \delta Y_t + \varepsilon_{i,t+1}$$

where  $MR_{i,t+1}$  is the mortality rate or the ratio of the number of deaths to average annual population of province  $i$  in year  $t+1$ .  $GB_{i,t}$  is green bond issuance in province  $i$  as a share of all bond issuance in year  $t$ . Similarly considered were the ratios of certified green bond and uncertified green bond issuance in a province to all bond issuance.  $GDP\ Growth_{i,t}$  is the output growth rate for province  $i$  in year  $t$ ,  $P_i$  the province fixed effect, and  $Y_t$  the year fixed effect. The error term is  $\varepsilon_{i,t+1}$ . The database is province–year panel data consisting of 124 observations covering 31 provinces in the PRC.

The empirical evidence is reported in Box Table 2. Column (1) indicates a significant and negative relationship between green bond financing and the mortality rate. Column (2) considers certified green bond financing, and column (3) uncertified green bond financing. After controlling for province and year fixed effects, one standard deviation higher green bond finance as a share of total bond finance was associated with a 0.029% decrease in the mortality rate, and 1 standard deviation higher certified green bond finance as a share of total bond finance

was associated with a 0.027% decrease in the mortality rate.<sup>b</sup> Again, uncertified green bond financing did not seem to contribute significantly to reduced mortality. While the magnitude of estimated coefficients is small, it is worth noting that the mortality rate tends to be stable. After all, many factors aside from air quality contribute to it. The direction and statistical significance of results confirm that the signaling effect of green finance is associated with positive social outcomes as well as with environmental gains.

**Notes:**

- <sup>a</sup> The magnitude is obtained using the product of the standard deviation of the independent variable times the estimated coefficient, then divided by the mean of the dependent variable. For example, in column 1, the standard deviation of green bond finance is 0.074 and the mean of the AQI in the sample is 70.4, which associates increased green bond finance by 1 standard deviation with AQI improvement by 0.58% ( $= -5.53 \times 0.074 / 70.4$ ). In column 2, the mean of  $PM_{2.5}$  is 39.7, which associates increased green bond finance by 1 standard deviation to  $PM_{2.5}$  improvement by 0.82% ( $= -4.39 \times 0.074 / 39.7$ ). Details of sample description are in Luo et al. (2021).
- <sup>b</sup> The magnitude is obtained using the product of the standard deviation of the independent variable times the estimated coefficient, then divided by the mean of the dependent variable.

**References:**

- Flammer, C. 2021. Corporate Green Bonds. *Journal of Financial Economics*. <https://www.sciencedirect.com/science/article/pii/S0304405X21000337>.
- Lou, Y., S. Tian, and H. Yang. 2021. *Green Bonds, Air Quality, and Death: Evidence from the People's Republic of China*. Asian Development Bank.

**2 Green bond financing and the mortality rate**

*Provinces with more green bond financing witnessed declines in their mortality rates.*

Variable	(1)	(2)	(3)
Greenbond	-3.81*** (-2.96)		
Certified Greenbond		-5.51*** (-2.81)	
Uncertified Greenbond			-3.17 (-1.59)
Observations	124	124	124
Adjusted R-squared	0.517	0.512	0.483
Control variables, province and year fixed effects	Yes	Yes	Yes

\*\*\* = statistically significant at 1%.

Note: The numbers in the parentheses are t-statistics based on robust standard errors.

Source: Luo, Tian, and Yang 2021.

**Box 2.3.3 Green bonds and sustainable impacts: cross-country evidence**

As many countries now pursue carbon-neutrality by specific target dates, especially since the Paris Agreement on climate change came into force in 2016, their priority for environmental protection and addressing climate change has been to tackle carbon emissions. This box presents empirical analysis of the link between green finance signals, as represented by green bond issuance, and carbon emissions, using country-level data from 54 major economies around the world from 2007 to 2019.

Analysis reveals that CO<sub>2</sub> emissions at the country level fell on average after the first green bond issuance in the market. Beyond environmental outcomes, the evidence also suggests that signals sent by green bond issuances may be associated with social outcomes through high SDG awareness. In particular, the gender gap narrows after green bond issuance. It appears that, once people become more aware of specific SDGs signaled through green bond issuance, they pursue broader ESG practice and change their behavior accordingly.

The empirical methodology is a difference-in-differences approach, with green bond issuance as the treatment variable. As the treatment could be endogenous, reverse causality cannot be ruled out. To mitigate possible endogeneity bias, country fixed effects are included to capture unobserved time-invariant heterogeneities, and year fixed effects are included to account for changes in overall global conditions. In particular, an economy's CO<sub>2</sub> emissions in tons per capita is regressed on a treatment variable that indicates an economy's first green bond issuance.

As the timing of first green bond issuance varies across countries, the difference-in-differences approach is appropriate. Box Table 1 reports estimation results for two samples. In one column, the sample period is 2010–2019, which saw accelerated green bond issuance. The other column covers the entire sample period of 2000–2019.

Box Table 1 shows that CO<sub>2</sub> emissions normally declined by a statistically significant extent after the first green bond issuance (*Green Bond Issuance\*Post*). The findings thus associate signals sent by green bond issuance with lower carbon emissions at the country level. The findings are consistent with firm-level evidence in Flammer (2021a and 2021b) and Fatica and Panzica (2020).

**1 Green bond issuance and carbon emissions**

*After first green bond issuance, economies experienced declines in carbon emissions.*

Carbon emission	Carbon dioxide emissions (tons per capita)	
	2010–2019	2000–2019
Green bond issuance*Post	–0.37*** (–2.77)	–0.77*** (–4.31)
Observations	374	914
Adjusted R-squared	0.982	0.961
Country and year fixed effects	Yes	Yes

\*\*\* = statistically significant at 1%.

Note: The numbers in the parentheses are t-statistics based on robust standard errors.

Source: Tang 2021.

*continued on next page*

In other words, impact bonds are a form of contingent future liability contract—or a payment-by-results contract<sup>1</sup>—between an investor, a service provider, and an outcome payer that directly links return to the investor to clear measures of social impact. They allow private investors to fund development projects through outcome-oriented social interventions. The Brookings Global Impact Bonds Database shows that 206 impact bonds were contracted from 2010 to the end of 2020 and raised \$434 million in 35 countries.

<sup>1</sup> In the US, they are also known as pay-for-success contracts.  
Source: <https://www.air.org/resource/pay-success-social-impact-bonds/>.

**Box 2.3.3 Continued**

Beyond environmental impacts on carbon emissions, green bond issuance may signal greater corporate and government awareness and commitment to the SDGs overall. It is therefore interesting to see whether there are changes in social performance traceable to increased SDG awareness as signaled by green finance. This was explored by analyzing the relationship between green bond issuance and gender equity, an important positive social outcome. Gender gap index data are from the *Global Gender Gap Report* by the World Economic Forum and show gender gaps in access to resources and opportunities in each country. The gender gap is regressed on the first green bond issues in a market in a difference-in-differences framework.

Box Table 2 reports the results. In column (1), the sample period covers 2010–2019. In column (2), the sample covers 5 years before and after first green bond issuance. Both coefficients on *Green Bond Issuance\*Post* are negative and statistically significant, indicating that an economy typically saw its gender gap narrow by 0.5% after first green bond issuance. While the magnitude of the reduction may seem small, it is worth noting that gender gaps are very persistent and narrow only slowly.

**2 Green bond issuance and gender equity**

*After first green bond issuance, economies narrowed their gender gaps.*

Gender gap index	(1) 2010–2019	(2) [–5, +5]
Green bond issuance*Post	–0.005** (–2.25)	–0.006** (–2.46)
Observations	528	472
Adjusted R-squared	0.941	0.946
Country and year fixed effects	Yes	Yes

\*\* = statistically significant at 5%.

Note: The numbers in the parentheses are t-statistics based on robust standard errors.

Source: Tang 2021.

**References:**

- Fatica, S. and R. Panzica. 2020. *Green Bonds as a Tool against Climate Change?* Social Science Research Network. [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3710020](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3710020).
- Flammer, C. 2021a. Corporate Green Bonds. *Journal of Financial Economics*. <https://ssrn.com/abstract=3125518>.
- . 2021b. *Corporate Green Bonds in Asia*. Asian Development Bank.
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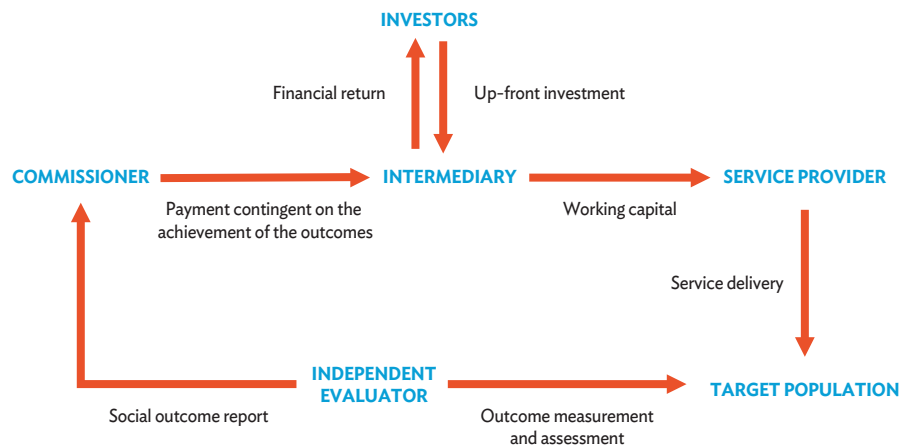
Two important types are social impact bonds (SIBs) and development impact bonds (DIBs). SIBs leverage private investment for social interventions by transferring risk from governments and service providers to third-party investors that are reimbursed only if the desired social outcomes are achieved (Carè and De Lisa 2019; FitzGerald et al. 2019; Rania et al. 2020). DIBs are SIBs applied in low- or middle-income developing countries that finance development programs with money from private investors, which normally earn a return paid by a donor if the program is successful.

The classic SIB scheme is shown in Figure 2.3.1. In the model, investors provide the required up-front working capital to the service provider to start service delivery, and they receive a return only if the outcome is achieved. The partnership is usually managed by an intermediary—typically a conventional financial intermediary or a specialized social finance intermediary—that raises capital from investors and uses the funds to support service providers who have a plan to address the targeted problem. Intermediaries support all the involved parties and manage the partnership and its contract.



**Figure 2.3.1 A typical social impact bond model**

A social impact bond is a payment-by-results contract between investors, service providers, and outcome payers.



Source: Carè 2021.

The independent evaluator, an essential figure in any SIB or DIB project, ensures unbiased evaluation of outcome achieved according to the terms and conditions of the contract. Depending on the evaluator's final assessment at the end of implementation, the commissioner, or outcome payer, decides whether or not to repay the investors—paying only if the agreed social outcome is achieved.

Two DIBs that have been implemented in developing Asia are illustrative examples and outlined below.

### 2.3.3.1 Educate Girls Development Impact Bond

The Educate Girls DIB in India was a seminal international development project to improve education for girls. Because many young girls lack access to education for cultural and economic reasons, addressing this gap offers a substantial development opportunity. Designed as proof of concept, the Educate Girls DIB sought to increase enrollment and improve learning outcomes for children in Rajasthan, India. The DIB ran for 3 years from 2015 to 2018 (Agapitova and Moreno 2017).

It was structured as follows: UBS Optimus Foundation was the investor that provided \$270,000 in up-front working capital to fund service delivery programs. Educate Girls was the service provider. The Children's Investment Fund Foundation was the outcome payer, which promised to repay to the investor its original investment and an additional return if intended outcomes were achieved. Instiglio, a nonprofit financing intermediary, provided technical assistance to all parties during DIB design and implementation.

IDinsight, a nonprofit evaluation firm, assessed whether or not the intended outcomes were achieved during implementation (Gustafsson-Wright and Gardiner 2016; UBS 2018).

The target DIB outcomes were improved (i) enrollment and retention of marginalized girls and (ii) learning performance of children. The intervention identified children who were out of school through door-to-door surveys, explained the value of education to their parents, otherwise engaged with the households of unenrolled kids through multiple channels, and took other steps to improve school attendance and encourage kids not to drop out. In all, 7,300 children were reached. The outcome metrics were two main indicators, enrollment and learning gains, both evaluated annually by IDinsight.

The outcome payment structure had two components: an enrollment objective that targeted 79% of the girls who were otherwise out of school at the inception of the DIB, with \$935.64 paid for every percentage-point increase in enrollment above this baseline; and a learning objective that entailed completing the Annual Status of Education Report (ASER) test for English, Hindi, and mathematics in grades 3–5, with \$48.28 paid for each unit of improved learning relative to a control group.

To support the teaching programs offered by Educate Girls, the DIB trained a team of community volunteers to go door to door in villages to encourage families to enroll their kids in school, as well as to enhance curriculums in public schools. These volunteers worked in over 8,000 villages and 12,500 schools in Rajasthan (Instiglio 2015).

The DIB exceeded its targets in both enrollment and learning outcomes. By the end of 3 years, Educate Girls had enrolled 768 girls, or 92% of all girls found to be out of school and eligible for enrollment, exceeding the 79% target. Moreover, schoolgirls in program villages gained an additional 8,940 ASER learning units relative to comparable students in control villages, exceeding the learning target by 60%. Learning gains were larger for program students than for control students across all grades and subjects. The gains were larger in mathematics and English than in Hindi, and program effects were larger for students with longer exposure to the program. The third year of the Educate Girls DIB was particularly effective in increasing test scores, suggesting that the program had improved its models of education provision as it progressed (IDinsight 2018; Cox et al. 2018). The final evaluation report contains some impressive results, showing achievements in the final year at 116% of the enrollment target and 160% of the learning target (IDinsight 2018; UBS 2018).

With the success of the Educate Girls DIB, the UBS Optimus Foundation was repaid its initial investment in full and received in addition payments that constituted a 15% internal rate of return. The foundation subsequently plowed part of these receipts back into Educate Girls as a bonus payment, rolling over the rest into other programs (UBS 2018).

The key facts of the program are laid out in Table 2.3.3.

**Table 2.3.3 Educate Girls Development Impact Bond**

*The Educate Girls Development Impact Bond improve girls' enrollment and learning performance.*

Item	Project data
Launch date	2015
Raised amount	\$270,000
Duration	36 months
Policy area	Education and early year development
Target population	Marginalized school-age girls
Financial intermediary	Instiglio
Service provider	Educate Girls
Impact investor	UBS Optimus Foundation
Project internal rate of return	15%
Maximum outcome payments	\$994,282
Outcome funder	Children's Investment Fund Foundation
Independent evaluator	IDinsight
Overall objective	Improve enrollment and learning in 166 schools in 140 villages in Rajasthan
Outcome metrics	Outcome 1: Learning gains: Aggregate learning gains for all students in grades 3–5 as measured by ASER test scores relative to the control group Outcome 2: Enrollment: Student enrollment defined as girls aged 7–14 heretofore out of school still enrolled by the end of the third school year
Outcome targets	Outcome 1: Gain of >5,592 ASER learning units above control group Outcome 2: Enrollment of 79% of all eligible girls heretofore out of school
Outcome achieved	Outcome 1: Gain of >8,940 ASER learning units above control group Outcome 2: Enrollment of 92% of all eligible girls heretofore out of school

ASER = Annual Status of Education Report.

Source: Carè 2021.

### 2.3.3.2 Cambodia Rural Sanitation Development Impact Bond

Cambodia has one of the highest rates of open defecation in Southeast Asia. One in three Cambodians use water from unimproved sources, and many children are stunted and even killed by disease arising from sanitation- and water-supply shortcomings (UNICEF 2019). The Cambodia Rural Sanitation DIB uses results-based finance to help the Government of Cambodia achieve the SDGs by 2025 by bringing safe sanitation to some of the poorest and most vulnerable households in Cambodia. The program contributes to universal sanitation coverage in six provinces: Kampong Thom, Kandal, Oddar Meanchey, Prey Veng, Siem Reap, and Svay Rieng (USAID 2019). The deal arose out of a partnership between the Stone Family Foundation, service provider iDE, and the US Agency for International Development. Table 2.3.4 shows the key elements of the Cambodia Rural Sanitation DIB.

**Table 2.3.4 Cambodia Rural Sanitation Development Impact Bond**

*The Rural Sanitation Development Impact Bond aims to extend universal sanitation coverage in six provinces of Cambodia.*

Item	Project data
Launch date	November 2019
Time from initial design to launch	9 months
Duration	4 years, 2019–2023
Cohort size	1,600 villages
Policy area	Water, sanitation, and hygiene
Target population	Rural communities across six provinces: Kampong Thom, Kandal, Oddar Meanchey, Prey Veng, Siem Reap, and Svay Rieng
Overall objective	Increase sanitation coverage to 85% in line with the National Action Plan for Rural Water Supply, Sanitation, and Hygiene
Service provider	iDE
Impact investor	Stone Family Foundation
Maximum outcome payments	\$9,999,999
Outcome funder	United States Agency for International Development
Outcome metrics	Each village free of open defecation
Source: Carè 2021.	

Program development followed previous work done by iDE in its Sanitation Marketing Scale-up Program, which increased latrine coverage in selected provinces of Cambodia from 29% to 67% over a 10-year period. The use of this kind of outcome-based contract pioneers a shift away from traditional donors to impact investors, in this case the Stone Family Foundation. The hope is that, if successful, the recovered investment and the return can be recycled into future impact investments.

The outcome metric adheres to the definition of “open defecation free” used by the Government of Cambodia: (i) no households practicing open defecation, (ii) at least 85% of households with access to functional improved latrines in their own homes, (iii) all households disposing of infant feces into owned or shared latrines, (iv) no evidence of human excreta in the village environment, (v) all households with handwashing facilities including soap, and (vi) community enforcement of formal and informal actions against open defecation (USAID 2019).

The Cambodian and Indian DIB cases show that impact bonds can have tangible positive impacts on the lives of poor and vulnerable people in developing countries, and that outcome-based programs contribute to achieving the SDGs. These new funding models can attract private investors looking to get the best social return from their investment. Through impact bonds, investors can achieve a social impact in a targeted community, earn a financial return, diversify their portfolio, and improve their reputation.

### 2.3.4 How multilateral development banks can foster green and social finance

Challenges and constraints in the emerging and underdeveloped green and social finance landscape indicate a role for multilateral development banks (MDBs). MDBs are ideally suited to advocate, enable, catalyze, and facilitate private capital for green and social finance because they straddle both worlds: global financial markets and the global development community. While their primary mandate is to foster development, MDBs interact extensively with private finance in their operations. The underdeveloped state of green and social finance in developing countries suggests that multilateral organizations can help unleash international private capital into green and social finance in the following ways.

First, MDBs can catalyze public and private capital. In addition to investing their own capital directly, MDBs coinvest in green and social projects by leveraging public sector funds to attract more capital from private capital sources. MDBs can lead innovative financing structures and mechanisms through various financing facilities, funds, and risk management instruments. In this way, they reduce risk to private investors and make green and social infrastructure projects more bankable.

MDBs foster the supply of green and social finance by developing project pipelines as anchor or cornerstone investors, thereby enhancing project financing capacity and improving compliance with relevant disclosure standards, frameworks, and principles. Further, MDB participation enhances the perceived credibility of projects among other investors and demonstrates best practices for future projects. In this way, MDBs catalyze private capital, technologies, and management efficiencies toward projects with variously challenging risk profiles.

Second, MDBs can advocate and support the development of market infrastructure and ecosystems to boost both supply and demand for green and social finance. They can help reconcile impact disclosure and management principles, standards, and metrics, as well as strengthen market practices through improvements to regulation, the legal framework, and ecosystems for green and social finance. This helps build investor confidence in such investments. Other roles of MDBs are to help define asset classes, set impact management and disclosure standards and metrics, structure transactions, and attract investors. MDBs can contribute further through policy advice, capacity building, and knowledge products such as information platforms and international databases. These knowledge services and products educate financiers and investors, disseminate experience and best practices, and strengthen the capacity of regulators to address market failures. Box 2.3.4 describes the role of ADB in fostering green finance.

### Box 2.3.4 Role of the Asian Development Bank in promoting green finance in Asia

Recognizing the need to develop green finance, especially by mobilizing private capital to close widening green financing gaps in the region, the Asian Development Bank (ADB) has undertaken both programmatic approaches and standard green projects that cover a range of activities, from building capacity and knowledge to catalyzing innovative finance for green projects.

One notable programmatic approach is the ASEAN Catalytic Green Finance Facility (ACGF). Launched in April 2019, the ACGF is a regional catalytic vehicle that leverages public sector funds to mitigate risk in green projects and thus attract capital from private capital sources to scale up green financing in member states of the Association of Southeast Asian Nations. The ACGF aims to approve projects with potential to reduce emissions by at least 150,000 tons of CO<sub>2</sub> equivalent annually. It uses an innovative loan product called two-step pricing, which creates an impetus for private capital mobilization. Clear bankability criteria ensure that well-prepared projects are attractive to private capital and feature green criteria specially prepared for the subregion. Since starting operations, the ACGF has seen four projects approved that together are worth \$1.7 billion. Three of them have climate financing components at more than 85% of the whole because they anticipate significant reductions in greenhouse gas emission, currently targeting cuts in carbon dioxide emission by 73,000 tons per year.

ADB invests in green projects across developing Asia. One example is the Cambodia Solar Park Project, which aims to build a 100 megawatt solar power park in Kampong Chhnang Province using public-private partnership. Another is the Shandong Green Development Fund, which leverages public funds to catalyze private capital for investment in a variety of climate subprojects. In addition, ADB helps to generate well-targeted knowledge products that can directly inform policy

inputs and projects. Such knowledge products are especially important for helping countries meet their Paris Agreement targets. One example is *Green Finance Strategies for Post-COVID-19 Economic Recovery in Southeast Asia*, a report developed in tandem with ongoing green finance projects in Thailand, which paved the way for ADB support for the first green, social, and sustainability bonds in the subregion targeting recovery after COVID-19.

ADB supports green finance market development by (i) issuing and investing in green, sustainable, and social bonds to create liquidity in the market and boost supply and demand; (ii) supporting sovereign issuers of green, sustainable, and social bonds; and (iii) building market ecosystems.

One innovative financing instrument with a highly visible role for ADB is theme bonds. ADB launched in 2010 its first theme bond for sustainable development, with water as the theme, in response to growing demand among its investor base. ADB water bonds support projects under the Water Financing Program, including agricultural irrigation in Cambodia and urban water systems in Tamil Nadu, India. ADB has expanded its theme bond offerings beyond water to health and gender. Health bonds are used to finance ADB projects tackling health challenges in Asia and the Pacific. These include improving access to health-care services for the poor in Mongolia and a COVID-19 emergency response project in the People's Republic of China (PRC). Gender bonds finance projects that promote gender equality and the empowerment of women. Examples include a smart transport system in Guizhou Province, PRC, and an agribusiness project in Bangladesh.

The ADB efforts briefly outlined above illustrate the potential for contributions from multilateral development banks to the development of sustainable finance in developing Asia.



## 2.4 Complementary financing instruments for a green and inclusive recovery

While private capital has played an important role in green and inclusive growth, other financing instruments and funding mechanisms have also contributed to sustainable development. Prominent among these complementary financing instruments are public funding, microfinance programs, and carbon pricing.

### 2.4.1 Public sector capital for SDG investments

Fiscal revenue remains a critical funding source for sustainable development because it finances public spending on the SDGs. The COVID-19 pandemic has made clear that developing economies need to prioritize significant investments in public services such as health care and education to promote inclusive growth, as well as in green energy and other green infrastructure to tackle environmental degradation. More broadly, SDG-oriented public spending—and tax revenue to finance it—will remain important in developing countries' pursuit of the SDGs. In Thailand, for example, corporate income tax has been linked to several environmental and social benefits through negative association with poverty, CO<sub>2</sub> damage, mortality, and undernourishment (Jinjarak et al. 2021).

In the aftermath of the global financial crisis of 2008–2009, many economies around the world launched stimulus packages with green development components, most notably the European Union, Japan, the PRC, the ROK, and the US. The COVID-19 crisis has lowered tax revenue, and Asian fiscal stimulus packages prioritize such urgent needs as public health and financial support for businesses and households. Nevertheless, some Asian governments still actively pursue SDG agendas. The ROK launched an economic stimulus package with a green component in July 2020, as did Japan in December. In July 2020, the PRC established its \$12.6 billion National Green Development Fund, and the following month Thailand issued sovereign sustainability bonds worth \$944.9 million to fund green infrastructure projects.

Evidence from the American Recovery and Reinvestment Act of 2009 (ARRA) indicates that green components of such legislation can direct an economy along a green trajectory over the long run by creating jobs (Popp, Vona, and Noailly 2020).

Green investments accounted for about 17% of all direct government spending under the ARRA. Specific investment areas included renewable energy, public transport and clean vehicles, energy efficiency, building retrofitting, and modernizing the electric grid. Green ARRA investments had persistent effects on job creation, and green ARRA investments boosted local demand for green skills, helping to reshape the economy toward green development.

Asia's green stimulus programs have so far been launched largely by richer economies such as Japan, the ROK, and Singapore, along with more developed emerging economies such as Malaysia and the PRC (Moody's 2021b). These programs center on the construction, utility, and transportation industries, which stand to benefit from long-term credit advantages. The PRC, for example, announced in April 2020 plans to spend \$1.42 billion to expand battery-charging networks for electric vehicles (Carbon Brief 2020). In June 2020, the ROK announced plans to spend W5.8 trillion on a green transformation of living infrastructure that takes in utilities, health facilities, and public housing; W5.4 trillion on renewable energy; and W1.7 trillion on green business models for small and medium-sized enterprises and job creation for a green COVID-19 recovery. The Government of the ROK has for years used public financing to support such enterprises through credit guarantee schemes (Box 2.4.1).

#### Box 2.4.1 Public funding for green development in the Republic of Korea

Green growth and development have emerged in recent years as policy priorities in the Republic of Korea (ROK). The government's environmental programs require large fiscal resources. This box briefly examines two of them.

##### Green financing through credit guarantee schemes

Small and medium-sized enterprises (SMEs) form an important driver of economic development. In Asia, SMEs account for over 95% of all firms, 50%–70% of employment, and 30%–60% of GDP (Yoshino and Taghizadeh-Hesary 2018). Nowadays, SMEs are increasingly getting involved in green projects with positive environmental outcomes. However, lenders and investors struggle to assess the creditworthiness of SMEs because of information asymmetry that exists for lack of solid accounting systems, documentation, or credit histories, limiting access to finance for SMEs (Yoshino and Taghizadeh-Hesary 2018).

In this regard, public financial agencies can contribute greatly to the development of green finance through credit guarantee schemes for SME green projects. A credit guarantee scheme encourages lenders to finance a specific target group or to increase their exposure to such a group by sharing credit risk.

In some cases, the need for a guarantee may end once a banking relationship has been established. This is the case when the perceived risk comes mainly from lack of knowledge about a new technology. In other cases, a guarantee may still be needed to enhance the creditworthiness of certain borrowers and projects to bypass structural barriers such as the absence of an asset-based lending framework. In the medium-to-long term, these schemes enable green projects to be financed without a guarantee. In short, the guarantee mitigates uncertainty at the initial phase of lending.

In the ROK, the Korea Credit Guarantee Fund and the Korea Technology Finance Corporation have facilitated SME access to funding for green projects through credit guarantees and advisory services. Their guarantees spur bank participation in the financing of start-ups. Most commonly, companies with green certification can get a loan guarantee from a credit guarantee scheme, or they can secure financial services from public banks that support SMEs with certified green business projects.

**Box 2.4.1 Continued**

The Korea Institute for the Advancement of Technology provides green certification of three types:

- (i) green technology, which includes 1,263 technologies divided into 10 categories;
- (ii) green business projects, with 92 of them in 9 categories; and
- (iii) green companies, so designated if at least 30% of revenue is obtained from green technologies or projects.

Green certification is fundamental to obtaining green financing. The most popular support for green technology certification derives from a loan guarantee granted by a public financial agency or from participation in a national R&D project. Public financial institutions provide public loans primarily to certified green business projects. As seen in the box figure, from 2010 to 2019, the Korea Institute for the Advancement of Technology received 10,564 green certification applications and certified more than 60% of them.

**Green New Deal**

In response to the economic downturn caused by COVID-19, the Government of the ROK launched the Korean New Deal in July 2020. Investment worth \$135 billion in green and digital projects is now being funded with \$96.3 billion from the Treasury, \$21.2 billion from local governments, and \$17.3 billion from the private sector.

In rolling out the financial package to support the program, the Korea Development Bank and credit guarantee schemes such as the Korea Credit Guarantee Fund and the Korea Technology Finance Corporation, mentioned above, will inject \$86.2 billion through loans and guarantees.

Apart from a plan to invest in advanced technology initiatives to create jobs, the Korean New Deal has a green component known as the Green New Deal. It will invest a projected \$1.5 billion to finance green SMEs, support technology development for environmental and energy SMEs, and build green industrial clusters. The whole Green New Deal is worth \$61.9 billion and aims to create 319,000 jobs by 2022 and 659,000 by 2025.

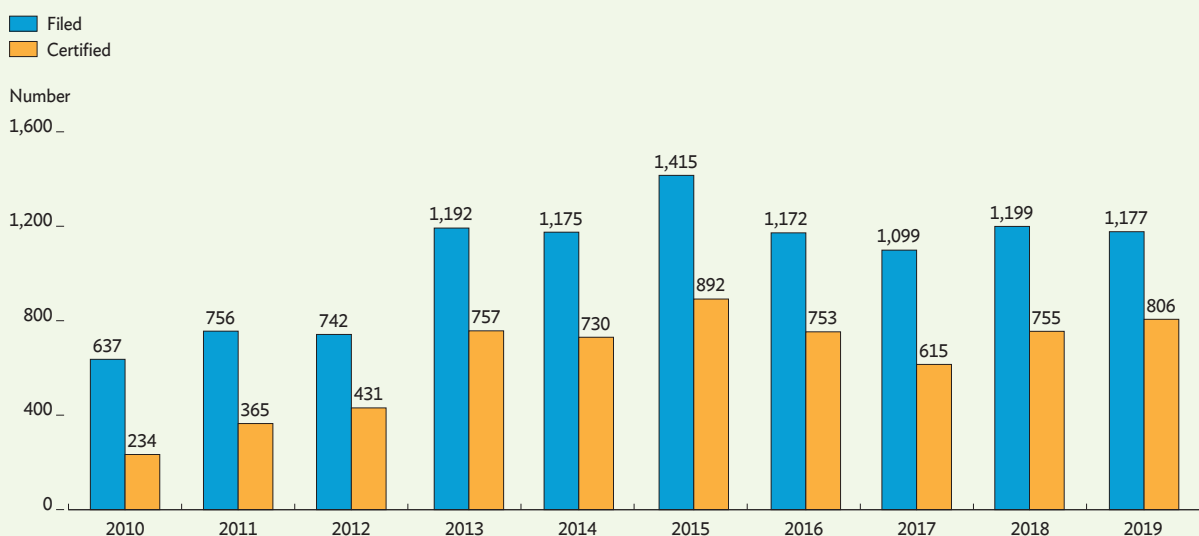
In addition to helping green SMEs in the ROK overcome barriers to finance, these efforts can provide useful insights for other countries in Asia and the Pacific as they formulate their own economic road maps for sustainable recovery after COVID-19.

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**Green technology certification by the Korea Institute for the Advancement of Technology**

The institute certified more than 60% of green certification applications received from 2010 to 2019.



Source: Kim 2021.

## 2.4.2 Microfinance to address socioeconomic challenges

Lack of access to finance is among the main causes of poverty in developing economies. The poor often have no collateral with which to obtain conventional financial services, and transaction costs for small loans are too high to make lending profitable for financial institutions. One mechanism with potential to extend financial services to marginalized groups is microfinance, which covers an array of financial services: microcredit, micro-savings, microbanks, micro-remittances, micro-guarantees, money transfers, and microinsurance (Armendáriz and Morduch 2010). Microfinance services complement bank services by providing vital financial services to underserved and disadvantaged populations: women, the disabled, the elderly, and the unemployed (Hansen, Huis, and Lensink 2020).

The main goal of microfinance institutions (MFIs) is to enhance social welfare. The social mandates of MFIs typically include a wide range of socioeconomic impacts, such as poverty alleviation, job creation, gender empowerment, rural financial inclusion, education, nutrition, disaster resilience, and health improvements. In 2018, some 916 MFIs existed worldwide. Their aggregate loan portfolio amounted to an estimated \$124 billion, serving 140 million active borrowers. Four-fifths of borrowers were women, and 65% were rural residents (Microfinance Barometer 2018). Unlike commercial banks, MFIs are generally evaluated not only on commercial criteria such as financial return but also on their social impact. Private capital is necessary to finance the expansion of microfinance, and MFIs may tap capital markets where their equity shares can be held by social investors who do not necessarily seek full financial return (Cull, Demirgüç-Kunt, and Morduch 2009). MFIs have a variety of corporate governance structures. MFIs in Bangladesh are mostly nongovernment organizations, for example, while next door in India many MFIs are commercially oriented private financial institutions.

Some studies have found positive effects from microfinance on various socioeconomic outcomes: job creation, rural financial inclusion, education, nutrition, disaster resilience, and health improvements (Wydick 2002; Tedeschi 2010; Garikipati 2012; Deloach and Lamanna 2011; Sinha 2012; Othman 2015; Samer et al. 2015; Hassan and Saleem 2017; Garikipati et al. 2017). Beneficial effects from microfinance have been documented in developing Asia, notably in Bangladesh, Pakistan, and Thailand (Kaboski and Townsend 2012; Sengsourivong and Mieno 2014; Rahman and Khan 2013; Rahman, Khanan, and Nghiem 2017; Imtiaz et al. 2014; Sehrawat and Giri 2016).

On the other hand, a number of studies reveal the limitations of microfinance. It has a questionable record in female empowerment (Karim 2011; Garikipati et al. 2017) and may push borrowers into over-indebtedness if interest rates are exorbitant (Guérin, Labie, and Servet 2015). Moreover, microcredit seems to benefit mainly the middle and upper poor, failing to reach the extremely poor and vulnerable (Adjei, Thankom, and Hossain 2009; Kondo et al. 2008; Banerjee et al. 2015), or else offers loans that are too small to establish a viable new business (Ibrahim and Bauer 2013).

The evidence of socioeconomic impact from microfinance is thus mixed. A contentious debate rages about whether microfinance programs contribute to poverty reduction. The debate was kicked off by Pitt and Khandker (1998), a seminal paper that found microcredit helping to reduce poverty, based on an analysis of a database of 1,800 households in Bangladesh. Then Roodman and Morduch (2009) analyzed the same database and failed to find significant poverty impact. The authors of the two papers have since engaged in a long-running but inconclusive debate. Another highly influential paper on the topic summarized the results of microfinance experiments in six countries: Bosnia, Ethiopia, India, Mexico, Mongolia, and Morocco (Banerjee, Karlan, and Zinman 2015). Published in the January 2015 issue of the *American Economic Journal: Applied Economics*, these six papers found that, in most economies, microfinance had a significant positive effect on credit access and business activity but no significant impact on income or social outcomes, while evidence was mixed regarding impact on consumption (Table 2.4.1). In sum, while microfinance aims to reduce poverty and achieve other social outcomes, evidence on its impact is still largely inconclusive and subject to debate.

**Table 2.4.1** Impact of microfinance: evidence from six randomized control trials

*Evidence on poverty reduction from microfinance remains inconclusive.*

Criterion	Bosnia	Ethiopia	India	Mexico	Mongolia	Morocco
Credit access	+	+	+	+	+	+
Business activity	+	+	+	+	0	+
Income	0	0	0	0	0	0
Consumption	–	–	0	0	+	0
Social outcomes	0	0	0	+	0	0

+ = positive and statistically significant effect, – = negative and statistically significant effect, 0 = no statistically significant effect.

Source: Sandefur 2015.

### 2.4.3 Carbon pricing to mobilize fiscal resources and meet environmental goals

The market has failed in the past to manage greenhouse gas (GHG) emissions sustainably because their externalities are not typically incorporated into the prices of the goods and services that produce them. Because no one pays for GHG emissions, their negative effects have long been off the market. Carbon pricing addresses this market failure by internalizing the external costs of CO<sub>2</sub> emissions—by setting their price and requiring that someone pay, thereby shifting the cost of emissions from the shared environment to the emitters responsible for them in the first place.

While sending a clear signal to GHG emitters that the free ride is over, carbon pricing also presents them with the option to either reduce their GHG emissions or start paying for them. Carbon pricing thus creates economic incentives for industry to invest in and innovate toward low-carbon technologies, goods, and services.

Carbon pricing helps countries straddle both environmental and economic objectives, enabling the achievement of environmental goals in a flexible, efficient, and cost-effective manner. Well-designed carbon pricing policies can offer triple benefits by protecting the environment, driving investment in clean technology, and raising revenue for governments to invest in low-carbon technologies.

#### Carbon-pricing instruments

Carbon pricing can take many forms, including carbon taxes, emission trading systems (ETs), carbon-crediting mechanisms, and internal carbon pricing. Carbon pricing can work by punishing emitters through a carbon tax, rewarding reducers through carbon-crediting, or guiding an organization's decisions through internal carbon pricing (Duggal 2021). The two primary carbon-pricing policy instruments are carbon taxes and ETs.

- (i) **Carbon taxes** are directly imposed by governments, fixing a price on carbon by either taxing the carbon content of fossil fuels or specifying a tax rate for the CO<sub>2</sub> emitted during their combustion. They create financial liability for emitters, giving them incentives to innovate and transition toward clean energy and energy-efficient operations. Carbon taxes can effectively modify production and consumption in favor of low-carbon goods and services, while providing needed revenue with which the government can pursue sustainable development (Carbon Pricing Leadership Coalition 2016).



Additionally, carbon tax revenue can be redistributed to support low-income households or communities that are particularly hard hit by low-carbon transitions or the physical effects of climate change.

- (ii) **Emissions trading systems (ETSs)**, also known as cap-and-trade programs, create a market in which participants trade allowances, expressed in tons of CO<sub>2</sub> equivalent, under an emission cap that is gradually tightened to bring down emissions over time. The cap in a cap-and-trade program is typically set by the government, specifying a quantitative limit on the total amount of GHG emissions it will allow. Entities covered by the ETS can buy the additional allowances they need to comply with directives or sell allowances they have but do not need. Under a cap-and-trade program, the price of emissions is determined by market supply and demand (ADB 2015). A cap-and-trade program can be implemented regionally, nationally, or subnationally—or within a sector—to help meet quantitative emission-reduction targets cost effectively.

If designed and implemented properly, both approaches can efficiently and meaningfully reduce emissions. They can also mobilize private sector capital by creating incentives to reduce CO<sub>2</sub> emissions and switch to climate-friendly energy sources. Both instruments can generate fiscal revenue that countries can reinvest in climate mitigation and adaptation. It is imperative, though, that systems impose prices sufficient to compel emitters to internalize their external costs.

If sufficiently high, carbon prices can render unprofitable such carbon-intensive energy sources as coal. A meaningful carbon tax, at perhaps \$75 per ton of CO<sub>2</sub>, is a powerful tool to reduce carbon emissions and generate additional benefits, including lower mortality from air pollution (IMF 2019a). However, carbon prices have so far remained too low to induce rapid reductions in CO<sub>2</sub> emissions that align with the goals of the Paris Agreement.

### Carbon pricing around the world and in Asia

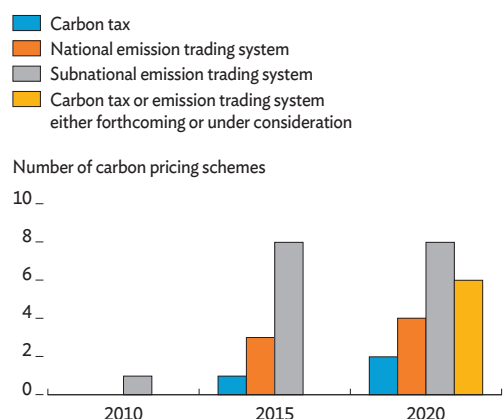
A number of economies around the world have used carbon-pricing instruments for years, and 61 carbon-pricing initiatives are either operating or scheduled for implementation, 31 of them ETSs and 30 of them carbon taxes (World Bank 2020a). The largest and most prominent ETS is the European Union ETS, which was launched in 2005, a month before the Kyoto Protocol came into force.

Momentum is growing for carbon-pricing instruments in Asia and the Pacific (Figure 2.4.1). Japan and Singapore are so far the only two economies in the region to have introduced carbon taxes. Asian economies have generally made greater use of market instruments such as ETSS. Australia, Kazakhstan, New Zealand, and the ROK have national ETSS, and subnational ETSS operate in Tokyo and several provinces and cities in the PRC. Box 2.4.2 briefly describes the ROK ETS and Singapore's carbon tax.

Despite disruption from COVID-19, Asian governments are accelerating low-carbon transitions with new carbon-neutral pledges and paving the way for a wider carbon-pricing role. Indonesia, Japan, and Viet Nam are planning national ETSS, and by February 2021 the PRC had already taken key steps toward launching its nationwide ETS (Xinhuanet 2021). In the Philippine House of Representatives, the Committee on Climate Change conditionally approved a cap-and-trade bill in February 2020 through House Bill 2184. Countries in developing Asia can build on regional experience with carbon pricing schemes to fully realize the benefits of carbon-pricing instruments to sustainable development in the region.

**Figure 2.4.1 Carbon pricing instruments in Asia and Pacific**

*Carbon-pricing schemes are proliferating in Asia and the Pacific during its low-carbon transition.*



Notes: Carbon taxes have been levied by Japan and Singapore. Emission trading systems have been implemented by Australia; Tokyo, Japan; Kazakhstan; New Zealand; Beijing, Chongqing, Guangdong, Hubei, Shanghai, Shenzhen, and Tianjin in the People's Republic of China; and the Republic of Korea. Carbon taxes or emission trading systems are under consideration or scheduled for implementation in Indonesia; Taipei, China; Thailand; and Viet Nam and for expansion nationwide in Japan and the People's Republic of China.

Source: Heubaum and Volz 2021.

#### Box 2.4.2 A carbon tax in Singapore and emission trading in the Republic of Korea

The Republic of Korea (ROK) launched Asia's first nationwide mandatory emission trading system (ETS) in 2015. Called the K-ETS, it is currently the second-largest system in the world, after the European Union ETS, and covers more than 600 of the country's largest emitters, which together emit almost 70% of ROK greenhouse gases (GHGs). Beset by early problems such as low market liquidity, the K-ETS implemented reform that progressively lowered emission caps and gradually phased out allocations of free allowances in favor of more auctioning of them (ADB 2018). The country aims to use the K-ETS to meet its nationally determined 2030 target of reducing GHG emissions by 37% below business as usual. The government has announced regulations for K-ETS Phase 3, which will be implemented from 2021 to 2025 with a notably stricter cap and further changes to how allowances are allocated (Duggal 2021).

Singapore introduced in 2019 a carbon tax for industrial facilities whose annual GHG emissions exceeded 25,000 tons of CO<sub>2</sub> equivalent. The tax thus targets the country's major emitters and will cover 80% of Singapore's GHG emissions. The rate has been set at S\$5 per ton of GHG emissions until 2023, with plans to increase the rate to S\$10–S\$15 by 2030. The Government of Singapore expects to spend nearly S\$1 billion in carbon tax revenue generated in the first 5 years on projects that abate carbon emissions.

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## 2.5 Nurturing green and social finance in Asia

Policy makers have many ways to shape green and social finance markets around their policy agendas. Innovative policy instruments are available to the government to mobilize public and private resources for sustainable development. And, perhaps more immediately, governments can reshape existing policy to align it better with local market conditions through various policy actions.

### 2.5.1 Policy instruments

Engaged public policy is central to accelerating the growth of green and social finance. Governments can use a range of policy options to shape markets as well as participate in markets through legislation, regulation, and fiscal resources such as direct investment, grants, co-investment, subsidies, tax incentives, and outcome-based commissioning and contracting.

Direct investment is the most straightforward way the public sector can participate in the market. One way is to issue green, social, and sustainability bonds, which improves market liquidity and encourages private investment. Further, governments can deploy grants to build capacity and invest in readiness on the supply side of the market, as well as fund research and knowledge sharing to build market infrastructure and ecosystems.

The public sector can participate in the market through co-investment or catalytic capital. Such co-investment may take the form of innovative impact deals and fund structures, such as guarantees or other subordinated finance at concessional rates. Catalytic capital thus leverages private capital into sustainable deals and funds. These innovative structures attract, through blended finance, a wider range of investors with different risk–return and impact profiles (OECD 2018).

The public sector can improve the risk–return profile of green and social projects with tax incentives and subsidies. Instead of paying for inputs or processes, public actors can pay for outcomes and impacts through such financial instruments as impact bonds, which can further catalyze supply and demand in the market.

Interest is growing in possibilities for developing legislation and regulation around green and social finance. Laws and rules clearly codify incentives for both supply and demand, as well as offer guidelines that help direct more investors into the market.

With green and social finance markets still institutionally underdeveloped, legislation and regulation can build a standard taxonomy and set guidelines for information disclosure and impact metrics. These efforts address concerns about self-serving green- and social-washing and thus strengthen investor confidence and foster market development.

## 2.5.2 Policy opportunities

Because an array of policy innovations already operate in one place or another around the world, adopting and reshaping them according to local market conditions can further catalyze capital for green and inclusive recovery. Looking ahead, the development of the sustainable finance market offers policy opportunities in the following five action areas: investment, catalytic financing, innovation, advocacy, and research.

**Investment.** The public sector can provide capital to meet shortfalls in funding for the SDGs. Significant scope exists for investment in deals and projects with environmental benefits like green energy and transport, clean water, and the broader blue economy, and with social benefits like poverty reduction, jobs, gender empowerment, and equitable access to health and education services. Considering that climate change threatens to be notably destructive in developing Asia—causing, for example, super typhoons and severe flooding in Bangladesh, the Philippines, Thailand, and Viet Nam—green finance offers the promise of both environmental and social impacts. Various policy options can be applied to these opportunities. Deploying grant capital can build supply capacity by making deals more readily investable. Direct investment in private debt and equity can focus on development finance and thereby combine impact with attractive risk-adjusted return.

**Catalytic financing.** Catalytic financing can be deployed in blended deals that leverage private capital to fund social and green finance. Specific instruments include credit guarantees, blended funds and deals, and other co-investment models that combine debt and equity or quasi-equity. Moreover, catalytic financing can enhance intermediary capacity by capitalizing investment platforms or institutions for wholesale sustainable finance.

**Innovation.** Innovative capital market instruments such as green, social, and sustainable bonds mobilize more capital to achieve the SDGs. The public sector can market these instruments to improve liquidity and bolster assets and investment pipelines. Further, they have a demonstration effect that educates and engages investors and issuers of the possibilities in the market. Innovative financing arrangements such as impact bonds are tailored to achieve specific measurable outcomes.

**Advocacy.** Various policy options can be used to advocate for the development of the sustainable finance market. Laws and regulations can guide financial institutions such as banks, pension funds, and insurance companies toward providing capital for sustainable finance. Legislation and regulation that enforce the disclosure of environmental, social, and governance (ESG) information and require standardized and transparent impact measurement can significantly improve the efficiency of capital allocation in the sustainable finance and to foster market development. Turning to fiscal policy, tax incentives and subsidies can be instituted to discourage harmful social or environmental activities or to reward positive ones.

**Research.** Policy makers can deploy grants for research that provides useful data or analysis to support the development of the green and social finance market. Research can facilitate the development of reliable databases that foster information dissemination and thus mitigate information asymmetry in the market. Grants can support knowledge transfer and build capacity through best practices in market infrastructure and ecosystem development.

### 2.5.3 Current policy that develops green and social finance in Asia and beyond

Various national, regional, and international policies exist to promote green and social finance in Asia and around the world.

The United Nations SDG framework provides the context for a global development agenda that includes recommendations for national, regional, and international policy frameworks. Such frameworks engage financing for the SDGs. A landmark international framework that engages green finance is the Paris Agreement on climate change, which includes a commitment from developed countries to mobilize annual funding of \$100 billion by 2020 for climate finance and to continue to invest at this rate until 2025.

As a region, the European Union has been a leader in developing sustainable finance. Examples of regional policy include the European Green Deal and the European Social Fund. In November 2019, the European Union introduced disclosure regulations on sustainable finance, most of which were scheduled for implementation in March 2021. These regulations require financial market participants and financial advisers to provide investors with ESG information on their financial products, such as on their integration of sustainability risks, consideration of adverse sustainability impacts, and alignment with sustainability principles (European Union 2019).

Developing Asia has similarly been active in using policy to develop the market. National policies and instruments related to green and social finance in four selected Asian economies are outlined in Box 2.5.1.

### Box 2.5.1 National policies to develop sustainable finance markets in selected Asian economies

Four Asian countries—Bangladesh, India, Japan, and the Republic of Korea (ROK)—have established national advisory boards to participate in the network led by the Global Steering Group for Impact Investment (GSG-UNESCAP 2020). Their salient national level policies are described below.

**Bangladesh.** The sustainable finance market in Bangladesh remains at an early stage of development, still dominated by development finance institutions. As of 2019, these institutions had invested \$834 million of the market's total capitalization of \$955 million, mostly as debt.

In 2011, Bangladesh Bank, the central bank, issued a set of policy guidelines for green banking. The rules require banks to establish sustainable finance units to promote green and social investment and to commit 5% of their loan portfolios to debt or equity in green finance. The central bank also instructed all banks to contribute 10% of their corporate social responsibility budgets to a climate risk fund.

By 2016, the central government had launched the Bangladesh Climate Change Trust Fund, the Bangladesh Climate Resilience Fund, as well as the \$200 million Green Transformation Fund. Importantly, using Islamic finance for sustainable impact expands opportunities, as 20% of all deposits and 23% of all credit are Sharia-compliant.

**India.** The sustainable finance market in India consists primarily of equities. In 2012, the Securities and Exchange Board of India created a new category, the alternative investment fund, for the purpose of pooling international and domestic sustainable finance in new social venture funds. In 2014, the government catalyzed with a stake of about 20% the Inclusive Innovation Fund, which capitalizes enterprises that benefit the poor through job creation. By 2017, the sustainable finance market had reached \$30 billion, of which \$8.6 billion were green bonds (GSG 2019a).

Legislation is used to guide business activities toward the SDGs. The Indian Companies Act, 2013 requires every large corporation to implement a policy on corporate social responsibility and to spend on related activities at least 2% of its profit, defined as the average profit over the preceding 3 financial years. The government further introduced in 2018 its *National Guidelines on Responsible Business Conduct* (MCA 2018).

Efforts have been made to spur lending for sustainable development. In September 2020, the Reserve Bank of India, the central bank, revised its priority sector lending guidelines to align with the SDGs, under which all domestic commercial banks were required to provide at least 40% of their adjusted net bank credit to specified sectors, notably agriculture, education, social infrastructure, housing, renewable energy, and micro, small, and medium-sized enterprises (RBI 2020).

**Japan.** Japan has a well-developed sustainable finance market, with 18% of all assets under management in 2018 considered to be sustainable finance. The main focus has been on green finance, and the Ministry of the Environment played an important role by establishing guidelines for green bonds. The engagement of two large institutional investors was an important driver of growth in this market, with the Government Pension Investment Fund becoming a signatory in 2015 of the United Nations Principles for Responsible Investment, as did the Pension Fund Association the following year.

Japan also leads Asia's social bond market. By 2018, Japan had issued three social impact bonds, one each in the cities of Hachioji and Kobe and one as a partnership between Hiroshima Prefecture and six cities. Japan contributed 41% of social bond issuance in Asia by value from 2017 to 2020 (ADB 2021).

**Republic of Korea.** The market for sustainable finance has evolved significantly in the ROK over the past 5 years, with strong support coming from policy makers (GSG 2019b). The first green bond in the ROK was issued in 2013 by the Export-Import Bank of Korea. In 2017, Hyundai Capital raised \$500 million from green bonds, and the Korea Development Bank issued green bonds worth \$300 million. The market for green bonds is now well developed, and the ROK has the largest social bond market in Asia, contributing 49% of social bond issuance in Asia from 2017 to 2020 (ADB 2021).

The ROK Financial Services Commission issued in 2016 the voluntary Korea Stewardship Code to encourage the use of ESG in corporate decision-making. The next year, the government deployed \$2.7 million in catalytic guarantees, loans, and equity into sustainable finance.



**Box 2.5.1 Continued**

In 2019, it established the Korea Social Value and Solidarity Foundation as a sustainable wholesale fund to leverage public capital in co-investments with the private sector, with the aim of investing \$250.5 million per year starting in 2020.

Municipal and provincial governments also provide sustainable finance. The Government of Seoul, for example, invested \$49.3 million in local sustainable projects. To date, two social impact bonds for special needs education have been issued by the governments of Seoul and Gyeonggi Province.

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## 2.5.4 Forward-looking policy directions to promote sustainable finance

Three strategic policy directions especially relevant in developing Asia are to (i) align finance with the SDGs while safeguarding financial stability, (ii) develop market infrastructure and ecosystems for sustainable finance and growth, and (iii) expand fiscal revenue to ensure green and inclusive recovery. While future policy actions are needed to further develop green and social finance in the region, recent regional developments in these three policy directions merit a closer look.

**Strategy 1: Align finance with the SDGs while safeguarding financial stability.** Environmental problems such as climate change, biodiversity loss, and soil, water, and air pollution threaten human well-being and sustainable livelihoods. It is now widely recognized that climate change and environmental degradation are serious dangers to economic activity, threatening both micro- and macrofinancial stability. Climate change can weaken individual companies' fundamentals, and such localized threats in every sector can eventually coalesce to threaten broader financial stability (Dafermos, Nikolaidi, and Galanis 2018). With respect to environmental risk, the focus has so far been primarily on the physical and transition risks of climate change (NGFS 2019; Bolton et al. 2020), but issues like biodiversity loss have recently garnered attention (van Toor et al. 2020; World Bank 2020b). The COVID-19 crisis has further highlighted the need for greater social resilience, which is now becoming a key focus for policy makers.

Financial supervisors have come to recognize sustainability risks to individual financial institutions and to the whole financial system, such that they perhaps pose a new type of shock to financial stability (Pereira Da Silva 2019). In response, the Network of Central Banks and Supervisors for Greening the Financial System developed its NGFS Climate Scenarios as a common starting point for analyzing climate risks to the economy and the financial system, and for individual financial institutions' analysis of environmental risk. The International Monetary Fund (2019b) reported that "ESG issues may have material impact on corporate performance and may give rise to financial stability risks via exposure of banks and insurers to large losses from climate change." Recent years have seen discourse intensify on the need to incorporate sustainability risks into micro- and macroprudential policy frameworks to safeguard financial stability and to scale up finance for green and social investments. An emerging role of central banks and financial supervisory authorities is to align finance with sustainability goals and mitigate financial risk (Box 2.5.2).

### Box 2.5.2 Incorporating sustainability risks into prudential frameworks

A growing number of central banks and financial supervisors have started to incorporate climate risks into micro- and macroprudential frameworks, formulating the way forward for safeguarding financial stability while supporting the transition to sustainable development (Dikau and Volz 2019). Through their regulatory oversight of money, credit, and the financial system, monetary and financial authorities are in a powerful position to support the development of sustainable finance and encourage financial institutions to price sustainability risks adequately (Volz 2017). Sustainable development needs to be embedded in the financial system in five areas: (i) enhancing market practices in terms of disclosure, analysis, and risk management; (ii) upgrading governance architecture; (iii) encouraging cultural transformation; (iv) harnessing public balance sheets; and (v) directing finance through policy (UNEP Inquiry 2015).

Toward enhancing transparency and facilitating analysis of climate and environmental risks, disclosure has become a key concern for sustainable finance. The Task Force on Climate-related Financial Disclosure, led by the Group of Twenty's Financial Stability Board, has emerged as a focal point for promoting disclosure. The task force highlights the importance of transparency in pricing risk to support

informed and efficient decisions on capital allocation (TCFD 2017). Its recommendations have been endorsed by many financial supervisors, some of which plan to integrate disclosure into prudential requirements.

Central banks in developing Asia were among the first to introduce sustainable finance policies and incorporate environmental risk into prudential frameworks (Volz 2019). The Reserve Bank of India, for example, advised commercial banks in 2007 to consider corporate social responsibility, sustainable development, and nonfinancial reporting to advance sustainable development. Bangladesh Bank issued its *Policy Guidelines for Green Banking* back in 2011 and its *Guidelines on Environmental and Social Risk Management for Banks and Financial Institutions in Bangladesh* in 2017, requiring sustainability risk management from banks and nonbank financial institutions (Bangladesh Bank 2011, 2017). In 2016, the People's Bank of China and six government agencies in the People's Republic of China (PRC) jointly issued *Guidelines for Establishing the Green Financial System*, which defined and described green finance, incentive systems, disclosure, products, and risk management measures (PBOC 2016).

*continued on next page*

**Box 2.5.2 Continued**

In the Association of Southeast Asian Nations (ASEAN), the Monetary Authority of Singapore introduced regulation that required banks to report on their sustainability practices in its supervisory assessment. Bank Negara Malaysia introduced a principle-based green taxonomy and label for banks and insurers. In the Philippines, Bangko Sentral ng Pilipinas launched a sustainable finance framework through which banks are expected to develop transition plans and integrate them into their corporate governance and risk management framework. ASEAN monetary authorities have worked together to develop the ASEAN Central Banks' Agenda on Sustainable Banking (ASEAN 2020a). The agenda can provide meaningful guidance to participants on the way forward to safeguard financial stability while supporting the transition to a low-carbon economy (ASEAN 2020b).

Central banks can also design policies to ensure that the financial industry addresses vulnerabilities arising from social issues, such as through small and medium-sized enterprise (SME) financing. Regulations on SME credit in the PRC, for example, improve SME access to finance, as evidenced by increases in the share of loans to new SME clients and the average size of SME loans (Huang and Wu 2021).

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**Strategy 2: Develop market infrastructure and ecosystems.**

Financial markets play a key role in channeling private sector funding to support SDG investments. Market practice can become distorted by unreliable ESG data, inconsistent reporting and disclosure standards for ESG information, and a lack of a clearly defined impact measurement framework. These shortcomings can abet regulation arbitrage as financial players take advantage of differences in disclosure standards. Regulations requiring a standardized taxonomy, clearly defined reporting and disclosure standards, and the use of impact measurement matrixes mitigate information asymmetry in the market. This can build confidence in investors by addressing concerns regarding the validity of claims about environmental and social outcomes and thus foster market development.

Financial market regulators and supervisors in developing Asia are adopting supportive policies to guide the green and social financial market. They have sought to promote sustainable finance by engaging with the financial industry through dialogue with multiple stakeholders, capacity building, and sustainable finance guidance. The Securities and Exchange Commission of Thailand, for example, approved its Sustainability Development Roadmap for Listed Companies in 2014, mandating sustainability reporting. The Indonesian Financial Services Authority launched in 2015 Regulation No. 51/2017 on the Application of Sustainable Finance to Financial Services Institution and, 2 years later, Regulation No. 60/2017 on Guidance for Green Bond Issuance in Indonesia. Securities Commission Malaysia introduced its Sustainable and Responsible Investment Roadmap for the Malaysian capital market.

The authorities in several countries have introduced green or sustainable taxonomies or are in the process of implementing them: the PRC in 2015, Bangladesh in 2017, Mongolia in 2019, and Malaysia in 2020. Some countries have issued their own standards for green or sustainable bonds: the PRC in 2015, India in 2016, and Indonesia and Japan in 2017. In 2017, the ASEAN Capital Markets Forum, which comprises capital market regulators from all 10 member states, issued *ASEAN Green Bonds Standards* to nurture this market and facilitate investment in green investments. In 2018, the forum published *ASEAN Social Bond Standards* and *ASEAN Sustainability Bond Standards* (ACMF 2018). The Securities and Exchange Commission of the Philippines introduced *Guidelines on the Issuance of Green Bonds under the ASEAN Green Bond Standard in the Philippines* (Securities and Exchange Commission 2019).

A viable market ecosystem is necessary to develop sustainable finance. In light of the dominance of banks in financial sectors in emerging Asia, the active involvement in green and social finance of different types of institutions—investment funds, rating agencies, external verifiers, investment banks, insurance companies, public finance institutions, and development banks—must be made integral to ecosystems for financing Asia’s sustainable development. Currently, the market suffers from inconsistent ESG ratings and inadequate capacity in external verifiers, which need to be further improved (Puongsophol 2021). In addition, supervisory efforts are required to reinforce the independence of rating and verifying agencies.

The long-term sustainability of a market requires a balance between supply and demand. In emerging Asian markets, public sector investors such as pension funds and social security funds can play a key role, through their investment policies, in creating demand for green, social, and sustainability bonds denominated in local currency. On the supply side, financial institutions are in a good position to tap capital markets by issuing thematic bonds to support smaller projects that generate positive environmental and social impacts—for example, green loans, concessional loans to SMEs, and asset-backed securities using a portfolio of green and social assets.

Public sector issuance may expand the supply of thematic bonds denominated in local currency to demonstrate how thematic bonds are issued and signal the importance of the SDGs as a national policy objective. Insufficient supply of such thematic bonds undercuts market awareness and discourages investment banks from developing the capability to underwrite thematic bonds, and institutional investors from honing the skills to assess them.

As developing Asia may have priorities regarding green and social projects that are different from those of more developed regions, it is important to build practices that fit the Asian context. Asian policy makers can work together to develop harmonized taxonomy, reporting, and disclosure standards, as well as an impact measurement matrix, that align with existing international standards, thus promoting sustainable finance as a regional agenda. ASEAN provides a good example. The ASEAN Capital Markets Forum aims to develop an ASEAN taxonomy with a more defined, sector-specific taxonomy. This would prevent green- or social-washing and attract more investment into sustainable projects. ASEAN central banks and monetary authorities have worked closely together to communicate member economies' common interests and unique circumstances. Extending the sharing of experiences and best practices among regional policy makers and stakeholders would help develop each economy's green and social financial market.

**Strategy 3: Expand fiscal revenue to ensure green and inclusive recovery.** International discourse on financing sustainable development has highlighted the need to unlock domestic resources. While foreign aid and foreign private capital can play vital roles in financing development, it is crucial to acknowledge limits on foreign investment in infrastructure and the financial vulnerabilities and risks associated with foreign finance. Equally important is to make better use of domestic savings in developing economies, many of which invest much of their savings abroad in advanced economies because capital markets closer to home are undeveloped and safe assets denominated in local currency are scarce. In light of this, domestic resource mobilization remains crucial to developing economies' achievement of the SDGs and their pursuit of sustainable, inclusive, and resilient recovery from COVID-19.

Fiscal resource mobilization is a core component of domestic resource mobilization because the government is a key player in green and social finance. Tax policy may be leveraged to promote wider policy objectives, including achieving the SDGs. While taxes are the major source of fiscal revenue in most countries in developing Asia, tax yields have not increased concomitantly with the region's strong and steady economic growth over the past few decades (Nagata 2021). Further, the economic downturn under the COVID-19 crisis has undercut tax collection across Asia. Many Asian economies consequently endure significant pressure on their national budgets and risk escalating public debt to fund large relief programs and tax forgiveness adopted for pandemic response and recovery. Some policy measures are available to regional governments to mobilize tax revenue against this uncertain fiscal backdrop (Box 2.5.3).



**Box 2.5.3 Mobilizing tax revenue to finance sustainable recovery in developing Asia**

Despite substantial efforts to strengthen tax revenue mobilization across developing Asia, many economies in the region still see their ratios of tax revenue to gross domestic product fall or stagnate. This signals that efforts to improve tax revenue performance will be challenging under the effects of the pandemic. Yet developing and implementing effective programs to mobilize fiscal revenue will help developing Asia achieve the Sustainable Development Goals.

To mobilize tax revenue for green, resilient, and inclusive recovery, Asian governments can adopt a number of policy measures to expand fiscal revenue: (i) broaden and protect the domestic tax base; (ii) enhance tax compliance by strengthening risk management, audit, and enforcement, as well as improving taxpayer services; (iii) develop more transparent and efficient tax administration with streamlined, digitalized business processes; (iv) strike a balance between raising tax revenue and promoting investment that contributes to robust recovery from the pandemic; and (v) strengthen international tax cooperation to address aggressive tax planning and outright tax evasion, and to tackle tax challenges that arise as the economy digitalizes.

In addition, fiscal policy measures such as tax incentives can improve sustainable development outcomes by, for example, promoting clean energy investments. Other options are to introduce taxes aligned with sustainable development policy objectives, including environmental taxes to achieve green development by incentivizing environment-friendly economic activities and so-called sin taxes to reduce the consumption of products that are harmful to health, such as tobacco and alcohol. Social security contributions are key to addressing the aging of Asian societies and other social development

challenges. While Asian governments may currently be preoccupied with tackling short-term COVID-19 challenges, it is still a good time for them to start planning how to secure adequate fiscal resources for sustainable post-pandemic recovery.

To support Asian governments as they address these challenges, the Asian Development Bank (ADB) announced at the 53rd Annual Meeting of its Board of Governors in September 2020 the creation of the Asia Pacific Tax Hub, a regional hub for domestic resource mobilization and international tax cooperation (ADB 2020). The tax hub will provide an open and inclusive platform for (i) strategic policy dialogue, institutional and capacity development, and exchanges of information and ideas through dialogue among ADB developing member countries; (ii) knowledge sharing across knowledge partners and international finance institutions and through revenue departments' bilateral mentoring with counterparts in Asia and the Pacific; and (iii) collaboration and development coordination across development partners. Through policy dialogue, research, capacity development, and knowledge sharing, the hub will help each ADB developing member country define goals for domestic resource mobilization and international tax cooperation that are appropriate to their circumstances and stage of development.

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## 2.5.5 Aligning Asian finance with the sustainable development agenda

Green and inclusive recovery after COVID-19 requires mobilizing public and private capital. Because it disproportionately affects the poor, the pandemic illustrates the enormous human toll that global shocks, including climate change, impose on top of their economic costs. Development disruption caused by COVID-19 demonstrated that abnormal risks, however seemingly remote, can indeed materialize, arguing for green and inclusive recovery to strengthen resilience under future shocks. Building back better requires vast investments that are often beyond the means of the public sector alone.



Promisingly, green and social finance from private sources has grown rapidly in recent years to become a major contributor to sustainable finance.

Growth in private green and social finance is increasingly driven by financial considerations. While it was investors' environmental and social goals that initially drove growth in sustainable finance, financial motives are coming to the fore. Key drivers include the changing preferences of various stakeholders, the use of green and social finance to hedge and mitigate sustainability risks, and the chance to build shock resilience, whether the shocks are at the market level or firm specific. For financing entities, green and social finance sends positive signals to investors, generating positive investor recognition and broadening their investor base.

The current social and green finance landscape remains institutionally underdeveloped, lacking reliable ESG data; consistent taxonomies, information disclosure, and reporting standards; or a clearly defined impact matrix. Nevertheless, evidence confirms that positive environmental and social impacts from sustainable finance are real. Reduced CO<sub>2</sub> emissions are documented from individual firms and in the broader market after green bond issuance, confirming that signals of environmental commitment bear results. By stimulating awareness of the SDGs, green finance offers as well such social benefits as better health outcomes and narrowing gender gaps. While social impact is more varied, some innovative financing instruments, such as impact bonds, have potential to achieve a wide range of social impacts.

Engaged public policy is central to nurturing green and social finance. Governments have a range of policy options available both to shape markets and to participate in them. Regulation that enforces common standards of information disclosure and impact measurement is the most powerful policy option. Policies that align finance with the SDGs, improve market infrastructure and ecosystems, and expand tax revenue for SDG-oriented public spending will enable Asian governments to pursue sustainability goals.

Finally, green and social finance is unavoidably integral to Asia's broader financial development. Regional financial systems have developed rapidly and now compare favorably with those in other parts of the developing world, though they still lag those in advanced economies. Therefore, by further developing the finance industry through strong yet nimble regulation that safeguards financial stability while promoting investment and innovation, the region will enhance its ability to meet the huge financial requirements of green and inclusive recovery.

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