

State of Green Banks 2020







Authors and Acknowledgments

Authors

Adriana Becerra Cid (Columbia University), Paul Bodnar, Tamara Grbusic, Julia Meisel, Douglass Sims (Natural Resources Defense Council), and Angela Whitney

*Authors listed alphabetically. All authors from Rocky Mountain Institute unless otherwise noted.

Contacts

Angela Whitney awhitney@rmi.org
Karim Arslan karim.arslan@gfi.green

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About Us



Rocky Mountain Institute, the Green Finance Institute, and the Natural Resources Defense Council have joined together to inform the development of the Green Bank Design Platform. This platform will assist countries in accessing the financial and technical resources they need to adapt the green bank model to their unique circumstances. Guided by findings and data in the *State of Green Banks 2020* report, the three organizations will engage with countries to understand how the platform can support the challenges they face in green bank development. This will entail mapping the skills needed to overcome capability gaps and determining the products, services, and resources required to support the successful formation of green banks.



Rocky Mountain Institute (RMI)—an independent nonprofit founded in 1982—transforms global energy use to create a clean, prosperous, and secure low-carbon future. It engages businesses, communities, institutions, and entrepreneurs to accelerate the adoption of market-based solutions that cost-effectively shift from fossil fuels to efficiency and renewables. RMI has offices in Basalt and Boulder, Colorado; New York City; Oakland, California; Washington, D.C.; and Beijing.



The Green Finance Institute is an independent, commercially focused organization, supported by Her Majesty's Treasury, the UK Government's Department for Business, Energy and Industrial Strategy, the Foreign, Commonwealth and Development Office and the City of London Corporation. As the UK's principal forum for public and private sector collaboration in green finance, it is uniquely placed to mobilize capital to accelerate the domestic and international transition to a sustainable, net-zero carbon economy that is also climate-resilient. The Green Finance Institute convenes and leads mission-led coalitions to identify and unlock barriers to deploy capital at pace and scale toward impactful, real-economy outcomes.



NRDC (the Natural Resources Defense Council) is an international nonprofit environmental organization with more than 3 million members and online activists. Since 1970, our lawyers, scientists, and other environmental specialists have worked to protect the world's natural resources, public health, and the environment. NRDC has offices in New York City; Washington, D.C.; Los Angeles; San Francisco; Chicago; Bozeman, Montana; and Beijing.



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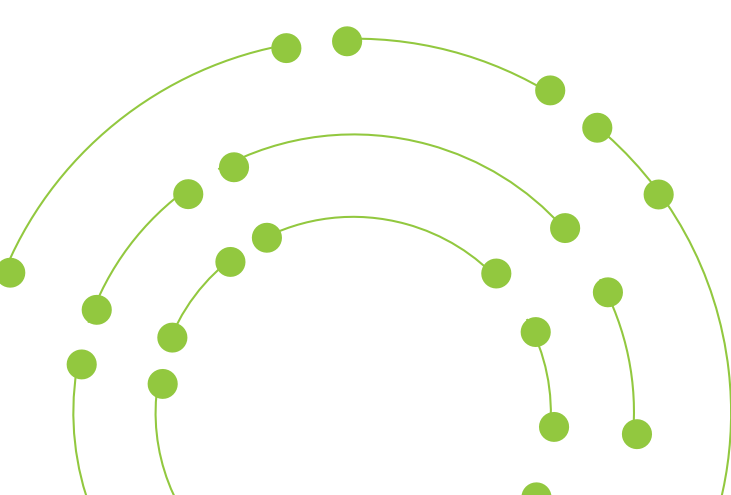




Photo RMI, Green Bank Design Platform, by Brano Gilan



Executive Summary

Around the world, a rapidly growing number of countries are exploring green banks—financial institutions or facilities dedicated to accelerating the shift to a sustainable economy. *State of Green Banks 2020* is the first aggregation and analysis of this activity, using data collected from existing and emerging green banks in 2020. Although green banks are well established in some countries, and over two dozen countries are actively exploring the model, to date there has been no single place to find information about the activities of existing green banks and the progress of new institutions. The *State of Green Banks 2020* report fills that gap.

The report showcases trends among both operational and emerging green banks. It includes an analysis of 61 institutions in 36 countries, based on data the report authors gathered through surveys and interviews (Exhibit ES1). The report highlights successes and lessons learned from existing green banks and presents trends in countries seeking to set up new green banks, including technologies they will invest in, types of financial instruments they will deploy, capitalization strategies, and obstacles green bank champions face during the establishment process.

A green bank can take several forms, but all green banks are motivated by a public purpose—accelerating low-carbon, climate-resilient, and sustainable development. A green bank is most often a publicly owned, commercially operated, specialized financing institution or facility that acts as a focal point for scaling up domestic investment in climate-friendly, sustainable projects. Most, though not all, green banks surveyed in this report have public ownership and are largely funded with public capital.

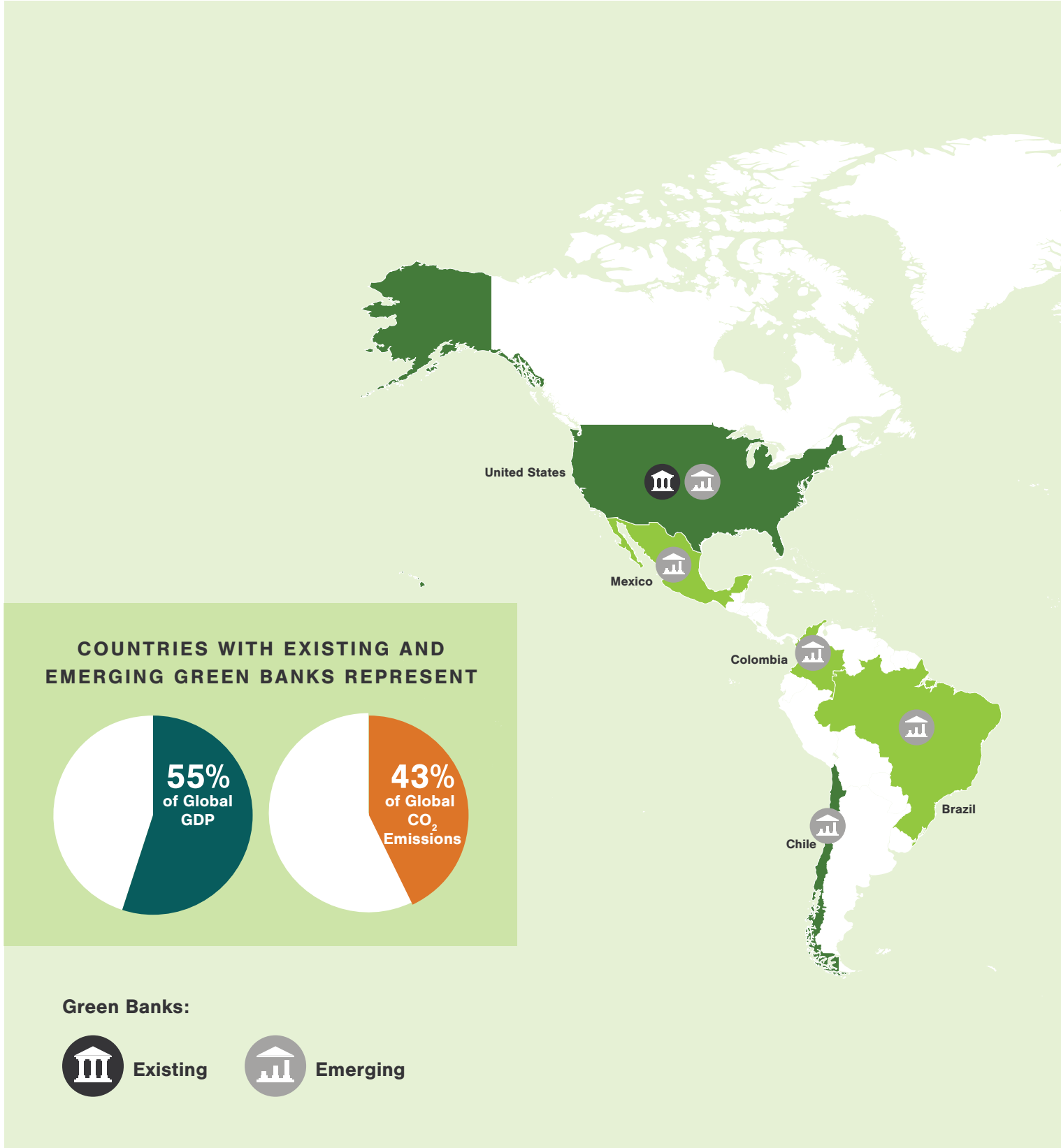
As the focal point for a country's climate finance, a green bank can tap into new sources of domestic capital (such as pension funds and sovereign wealth funds) and international capital (like multilateral development banks and climate funds). Analysis in this report shows that existing green banks have been able to use their relatively small amounts of seed capital to mobilize many multiples of additional investment.

This report is a resource for accelerating green bank establishment—and thereby, investment in climate solutions. It is meant to inform:

- Finance, environment, and energy policymakers in countries exploring green banks
- Existing practitioners seeking to understand the evolving landscape of their field
- Bilateral and multilateral development finance institutions wanting to help shape the evolution of country-led climate finance in client markets
- Diplomats engaged in the implementation of the Paris Agreement and the Sustainable Development Goals
- Private investors looking to partner with governments in frontier markets.

EXHIBIT ES1

Green Banks Around the World





Income:



*UKGIB was sold to Macquarie Group Limited in 2017, at which point it became the Green Investment Group, a private green bank.

Report Recommendations

This report presents recommendations for policymakers in countries interested in establishing green banks, highlighting the power of these institutions to drive implementation of nationally determined contributions and other national priorities, including economic recovery from the COVID-19-induced recession. Green banks can help countries secure climate finance that is sometimes hard to access while also deploying capital into new markets and technologies.

Green banks can help financial institutions and providers of climate finance achieve internal goals to align their portfolios with the Paris Agreement. Green banks also have ripple effects for domestic financial institutions, helping them understand the opportunities of investing in sustainable projects and transitioning to a green financial system.

For green bank practitioners, this report demonstrates the growing interest and expertise that is ripe for an expanded community of practice for exchanging experience and lessons between institutions. For investors, green banks make it easier to invest in climate solutions and can be important partners when investors enter new climate and sustainable development markets.

Chapter 1 provides an introduction to how and why green banks can substantially scale clean investment in their home markets. Green banks allow countries to shift the locus of control of climate finance to the national level, a critical enabler for achieving domestic climate and sustainable development goals. **Chapter 2** surveys existing green banks, their impact to date, and the key features that make these institutions uniquely suited to their local markets. **Chapter 3** examines interest in or progress toward setting up a green bank in 25 countries. **Chapter 4** explores how international providers of climate finance are supporting the expansion of low-carbon finance in-country and how green banks, as national institutional partners, can help.



Photo RMI, Green Bank Design Platform, by Brano Gilan



Notes About This Report

Analysis presented in this report is based largely on survey and interview data collected June through September 2020 to give a snapshot of worldwide green bank activity. The findings are based on 46 survey responses and 15 interviews.

This report considers an *existing green bank* to be a green finance institution that is fully staffed, capitalized, and operational, even if it hasn't yet closed its first deal. When discussing the institutions that responded to the survey in Chapter 3, the term *green bank* is used, for simplicity, to refer to the institution planned to function as a green bank, green financial institution, facility, or similar entity. Also, for simplicity, this report most frequently refers to national green banks and their role at the national level. Green banks also exist at the subnational (e.g., state or city) level, and the same principles of their potential roles apply.

Chapter 2 is based on surveys, interviews, and desk research data from 27 existing green banks situated in 12 countries. Because the analysis in Chapter 2 uses several data sources, some numbers and figures could not be aggregated in full. Depending on data availability, combined numbers and figures are based on different subsets of green banks. For each figure, the sample size is specified. For more detail on methodology, see Chapter 2. Analysis relied on publicly available data as well as responses from existing green banks to surveys and requests for information and may therefore not be inclusive of all activities of every existing green finance


institution.

Chapter 3 is based on data from 34 institutions in 25 countries, with multiple institutions responding to the survey in some countries, as well as six interviews. Because some respondents did not provide answers to every question, aggregate numbers and figures throughout the chapter are based on different subsets of developing green banks. For each figure, the sample size is specified. For a detailed list of respondents, please refer to the Acknowledgments. The results, figures, and analysis in this chapter include only institutions and countries that responded to the survey; as such, this chapter is not exhaustive in describing all developing green finance institutions globally.

Chapter 4 is based on survey data from eight multilateral and bilateral institutions. Please refer to Chapter 4 for a full list.

Country income categories and regions are taken from the World Bank Country and Lending Groups classification.¹

All figures in the report have been converted into US dollars (\$), unless otherwise indicated.





Green Banks in Theory: How Specialized Public Finance Institutions Can Catalyze Low-Carbon and Sustainable Development

All countries must invest in and build clean and resilient infrastructure for the world to address the climate crisis and develop equitably.

National goals to transform energy use and deploy low-carbon solutions across sectors require investment in projects at the local level. But to date, capital providers have not invested in green projects at the scale needed. Governments are struggling to source and subsequently deploy sufficient levels of funding for high-priority, low-carbon solutions, despite the knowledge that capital sources are themselves hungry for climate-smart investments. Specialized national institutions like green banks help implement ambitious climate targets by acting as the focal point for climate investment, addressing market barriers, and channeling private capital into low-carbon, climate-resilient projects.

The recognition that countries should be at the center of their own energy transitions emerged as an important component of the Paris Agreement in the form of nationally determined contributions (NDCs). This drive for country ownership is hamstrung by a lack of local capacity and a shortage of low-cost and long-term capital in middle-income countries, and scarce domestic savings in lower-income countries.

Public foreign investment is therefore important in demonstrating to domestic investors the value of investing in projects aligned with the Paris Agreement. Public purpose institutions dedicated to financing climate solutions empower countries to benefit from international pools of capital while building agency as well as technical and financial expertise at the national level (see Chapter 4 for more on this). Therefore, green banks are the ultimate form of national ownership for financing the energy transition to meet the goals of the Paris Agreement.²

Climate-resilient investments such as renewable energy installations, more efficient buildings, or less carbon-intensive cement and steel require capital.

Between 2016 and 2050, supply-side energy generation alone will require \$1.6–\$3.8 trillion in investment annually, substantially more than the \$546 billion that was deployed in 2018.³ New pools of capital, from pension and sovereign wealth funds to commercial and investment banks, are needed to successfully fund the low-carbon transition. Private capital will need to make up the lion's share of investment, requiring that public investments be more efficient in mobilizing much larger amounts of private capital.

A green bank is a specialized financing institution, or a separately managed facility, that acts as the focal point for scaling up domestic investment in climate solutions.

A green bank attracts investment to projects that help implement NDCs and achieve Sustainable Development Goals (SDGs) by creating financial products to address market barriers. Importantly, green banks work alongside policymakers to create the market conditions that will scale up climate solutions and enable multiple co-benefits including job creation, pollution reduction, energy access, and others (Exhibit 1). These institutions have a public-purpose mandate to use their limited capital efficiently to mobilize multiples of additional investment.

EXHIBIT 1

How Green Banks Catalyze Sustainable Economic Development



A green bank's institutional structure can meet local needs.

Green banks' institutional model and suite of financial instruments can be customized to fit the needs of the markets in which they operate.⁴ Most green banks today are stand-alone institutions, created with a dedicated green mandate. The model also includes specialized facilities within existing financial institutions and the transformation of existing institutions (e.g., development banks). While it may be easier to ensure a new institution has a dedicated green mandate matched with the right technical expertise, existing institutions have important local knowledge and may have easier access to capitalization.

Understanding a country's landscape of existing institutions and the current barriers to financing NDCs and SDGs is critical in determining whether creating a new institution or facility or adapting an existing institution suits the needs of the market. The institutional design can then be tailored based on the chosen model and what market barriers the green bank is trying to address.

Green banks become the focal point for green finance projects within a geography by being a counterparty to co-investors—including multilateral development banks, national development banks, commercial banks, and institutional investors—enabling these institutions to green their own portfolios. Specialized staff expertise, strong governance principles, and the ability to translate local and national public policies into opportunities for private investment all enable green banks to be the locus of low-carbon investment within a country. This status allows them to help create green markets, bring new entrants into the space, and achieve broader policy objectives (Exhibit 2). In this role, green banks can help “green” the financial system by driving the shift toward low-carbon investments and demonstrating to more conservative institutions the viability of these investments.

Specifically, green banks can play several critical roles to help a country meet its NDC and SDG targets:

1. Mobilize development finance institutions and other providers of climate finance by acting as a local partner and investor in low-carbon, climate-resilient projects
2. Increase bankability by creating financial products to mitigate investor risk on initial transactions in low-carbon, climate-resilient sectors
3. Drive project developers and investors to adopt impact metrics to track progress toward national climate and sustainability targets
4. Demonstrate the technical and economic feasibility of new technologies to investors
5. Build understanding and capacity within the financial sector
6. Assist policymakers to create better enabling environments for low-carbon, climate-resilient projects.⁵

EXHIBIT 2

Institutional Characteristics Allow Green Banks to Have Economy-wide Impacts

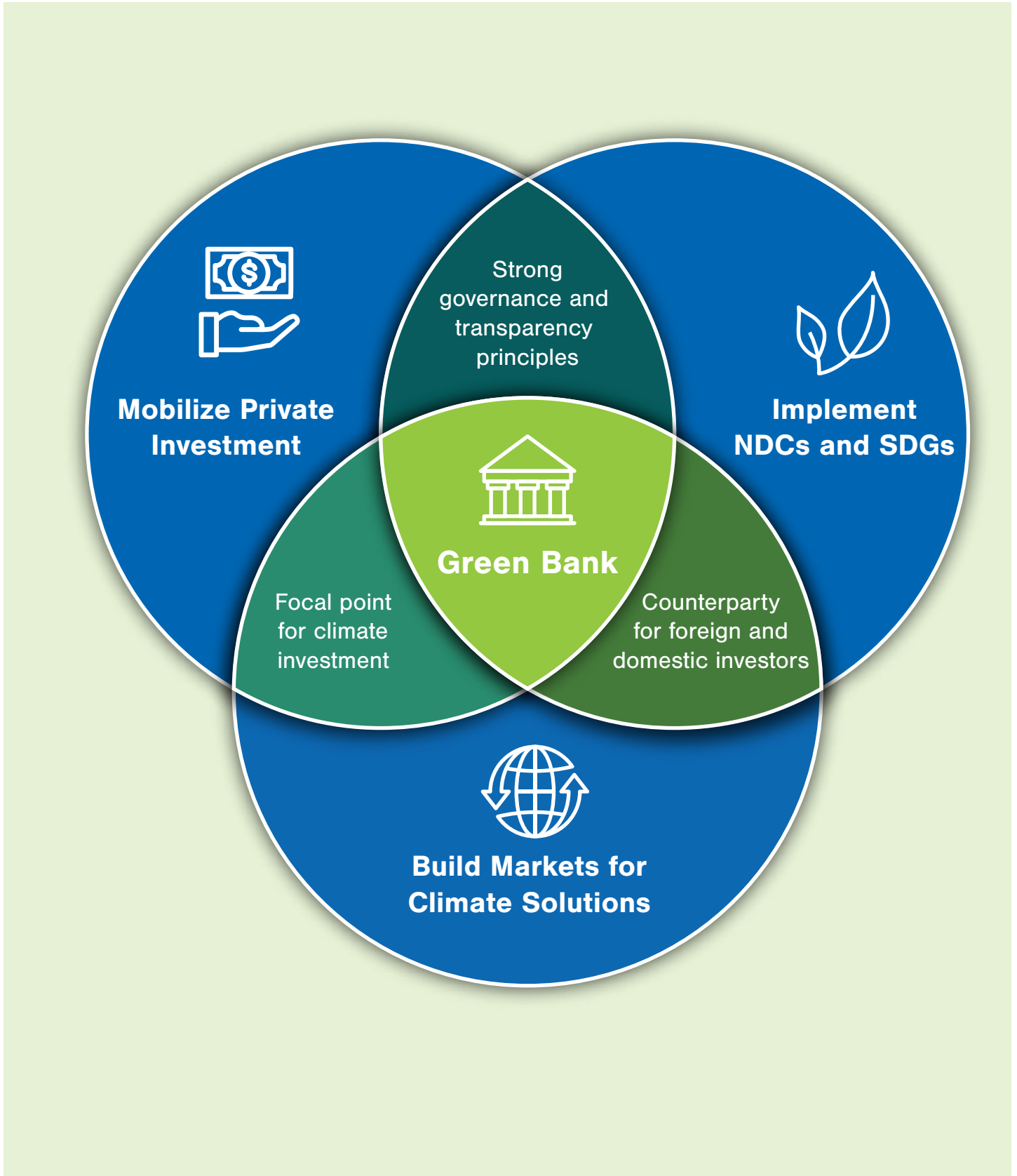
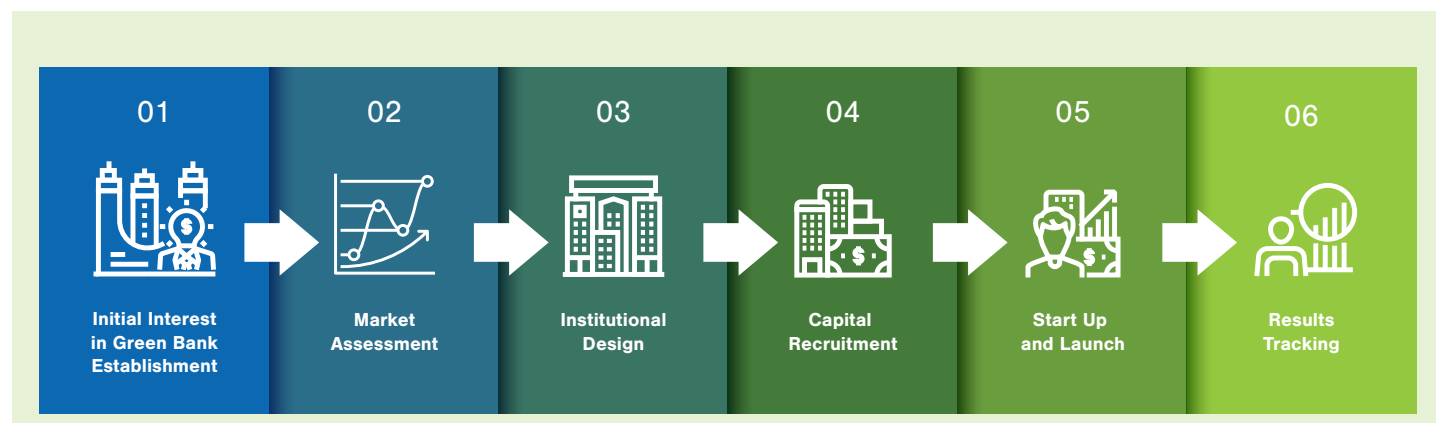


EXHIBIT 3

Stages of Green Bank Development



During the process of setting up a new green bank or transforming an existing institution, most countries encounter six stages in moving from initial interest to an operational institution (Exhibit 3).

Each stage represents an important phase and decision point. These range from understanding local circumstances and engaging stakeholders such as critical ministries, to designing the right institution to fit local market conditions, to identifying and securing capital that will allow the green bank to achieve its investment goals. While these stages depict the general path to green bank establishment, each country's experience is different, and some activities can happen simultaneously or in a different order depending on specific country circumstances. Chapter 3 explores the journeys of countries in various stages of green bank development.

Green Banks and Economic Recovery

As the world struggles with the response to COVID-19 and the economic fallout it has caused, many countries are hopeful for a green recovery. Green banks can be an important tool in building a clean and resilient economy for the future. Green banks can promote a greener financial system resulting in the mobilization of private sector capital

into green investments that ultimately support the development of new sectors and, by extension, the health of the broader economy. For example, following the global economic crisis of 2008, the United Kingdom's Green Investment Bank propelled the UK to become the largest offshore wind market in the world.

With the ability to finance smaller scale deals, green banks can help provide needed capital injections into small and medium enterprises (SMEs). SMEs face substantial economic fallout from recessions because capital for these businesses is often both hard to access and expensive. In addition, many green banks report being more accommodating with existing clients. This includes extending loans, deferring payments, and helping clients restructure transactions adversely impacted by COVID, as well as stepping in with funding when private banks step out in order to continue supporting green industries.

Similarly, green banks can provide products that will help lower costs for already struggling families—for example, providing equity for community solar projects that lower electricity bills without imposing additional debt burdens on families. For more on green recovery, see Box 6.

Many countries and existing green banks are still trying to understand the full consequences of the pandemic-induced recession and develop strategies

Capitalization Options: Public, Private, or in Between?

While most multilateral banks and funds receive large replenishments from donor countries to provide the capital that they grant or lend, green banks operate differently. Green banks receive initial capital from domestic government appropriations, multilateral and bilateral assistance, and the private sector. This initial capital provides the funds green banks need to provide loans, equity, and de-risking functions like loan guarantees or credit enhancements.

In many cases, the green bank will not receive additional appropriations or concessional finance after it has been initially capitalized and can operate on its own generated returns. In some cases where the green bank follows more of a grant-based fund model, or where the initial capital was insufficient, it may continue to receive government appropriations or foreign investment.

Though most existing green banks were capitalized from domestic public sources, capitalization can come from a variety of sources. Green banks can be public (capitalized from government funds), quasi-public (capitalized through a mix of public and private funds), or private. Green banks can use multiple funding sources including philanthropy, emissions trading mechanisms and carbon taxes, private capital, bond proceeds, and even

crowdfunding. Many emerging green banks plan to seek funding from bilateral aid agencies or multilateral institutions (See Exhibit 18).

Nearly all green banks serve a public purpose regardless of the exact mix of their capitalization sources. One advantage of being capitalized by a single public source, if available, is the relative ease of setting up a corporate structure with only one stakeholder. Combining several sources of capital may complicate institutional design due to the varied requirements of each stakeholder. For example, though Mongolia began exploring a green bank in 2013, the process of establishing its intended public-private partnership has been complex and lengthy.

A private structure may prove useful in specific circumstances. India's Tata Cleantech Capital Limited (TCCL) came into existence as a joint venture between Tata Sons Limited, an Indian private company, and the International Finance Corporation. Prior to this collaboration in 2011, there were no conversations about establishing a publicly funded green bank by the Indian government. Therefore, TCCL filled a market gap for renewable energy investments and built off the experience of other green banks by demonstrating the bankability of green projects in India. For more on this, see Investment Foci in Chapter 2.

for a green recovery. However, in a few places there have been rapid efforts to set up new institutions. In the UK there are active discussions to establish a new national investment bank as a way to help achieve the government's goal to become net zero by 2050.⁶

In the United States, there are ongoing legislative efforts to establish a national green bank. The House of Representatives has passed several pieces of legislation, including economic recovery legislation, that have included a national climate bank. If the most recent effort is signed into law, the bank would be a non-profit institution capitalized with \$20 billion.⁷

A recently published report exploring the potential of a federal green bank found that it could create over 5 million new job-years within five years of establishment: over 3.3 million direct and 2.2 million indirect.⁸

The potential for job creation may be compounded by the resilience of the clean energy market in some economies. In India, for instance, renewable energy has been one of the most resilient sectors of the economy during the pandemic, according to executives at Tata Cleantech Capital Limited.



Photo RMI, Green Bank Design Platform, by Brano Gilan

Green Banks in Practice: Catalyzing Green Markets and Communities

Nearly 30 green banks already exist worldwide: some at the national level and many at the subnational level—especially in the United States. To build a comprehensive picture of existing green banks, we surveyed and interviewed green bank practitioners around the world, in addition to conducting desk research. **The analysis presented in this chapter synthesizes impact and activities of known existing green banks worldwide**, combining data on Green Bank Network members, American Green Bank Consortium members, and several other green finance institutions that are members of neither.

Methodology

The results in this chapter are based primarily on nine interviews in addition to three survey responses and additional desk research. For organizations interviewed and surveyed, please refer to the Acknowledgments. Typically, we received one response per country, with the exception of the United States, where we received input from six state-level green banks in addition to the American Green Bank Consortium. As a consequence of multiple data sources with varying data availability, different aggregate numbers and figures represent different subsets of green banks analyzed. Each figure and number presented specifies the sample size analyzed.

Respondent Overview

This chapter presents aggregate analysis of 27 existing green banks situated in 12 countries, exploring trends and providing examples regarding their capitalization, governance, sectoral investments, and financial mechanisms offered.ⁱ **These 12 countries represent 42 percent of global GDP and 32 percent of CO₂ emissions.**ⁱⁱ

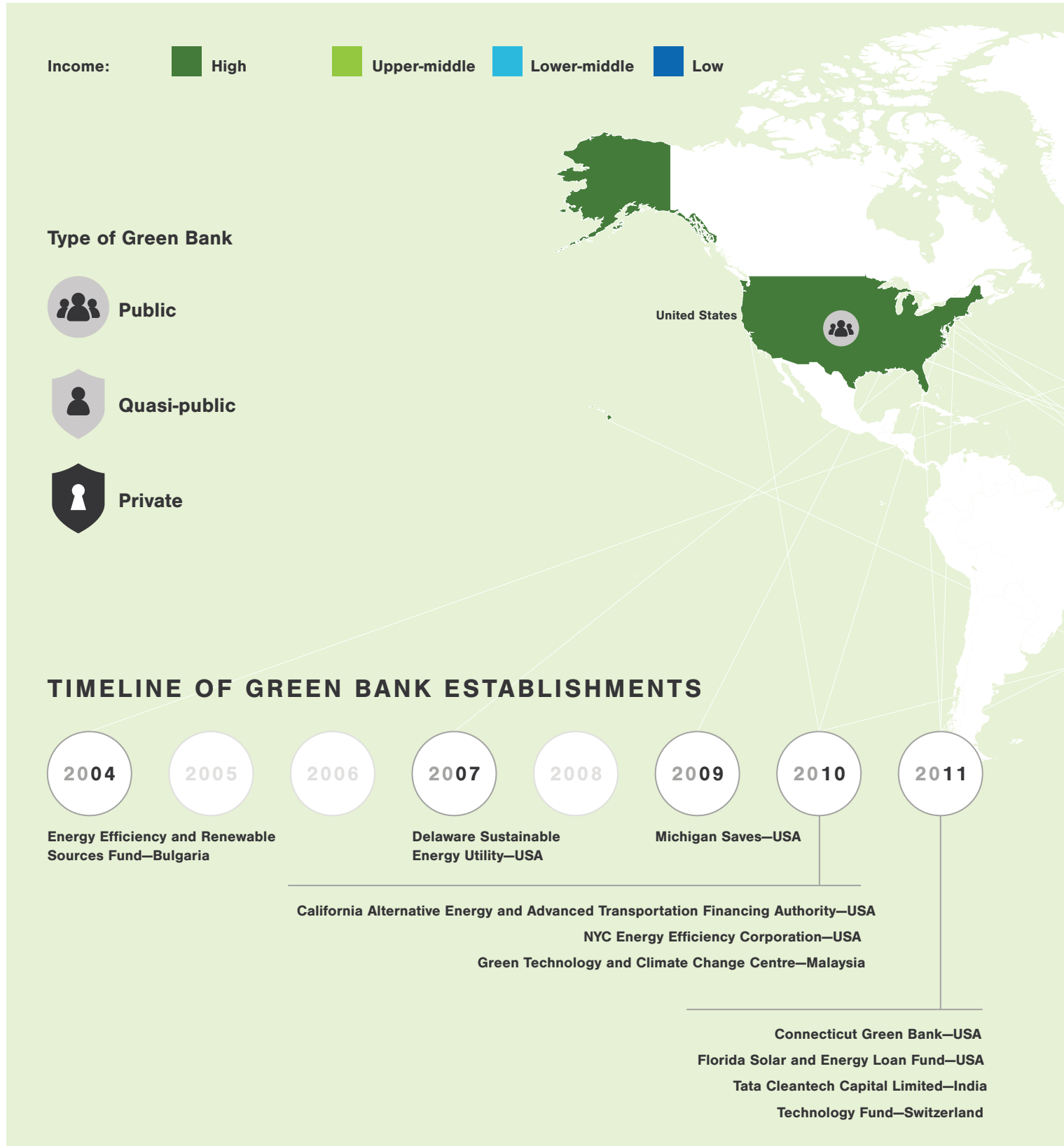
Green banks are based predominantly in high-income countries (67 percent). Three green banks are located in upper-middle-income countries, one is in a lower-middle-income country, and none are in low-income countries (Exhibit 4). Existing green banks are also overwhelmingly public (70 percent), with six quasi-public institutions and two private entities. Nearly all existing green banks were founded in the 2010s (Exhibit 4).

ⁱ This report considers an existing green bank to be a green finance institution that is fully staffed, capitalized, and operational, even though it may not have closed its first deal yet. The final list of green banks included depended on data availability as well as varying definitions of green bank activities; therefore, it may not be exhaustive.

ⁱⁱ This is calculated using 2019 GDP in constant 2010 US dollars and CO₂ emissions in 2016 kt. (Source: World Bank Open Data).

EXHIBIT 4

Existing Green Banks Around the World





*UKGIB was sold to Macquarie Group Limited in 2017, at which point it became the Green Investment Group, a private green bank.

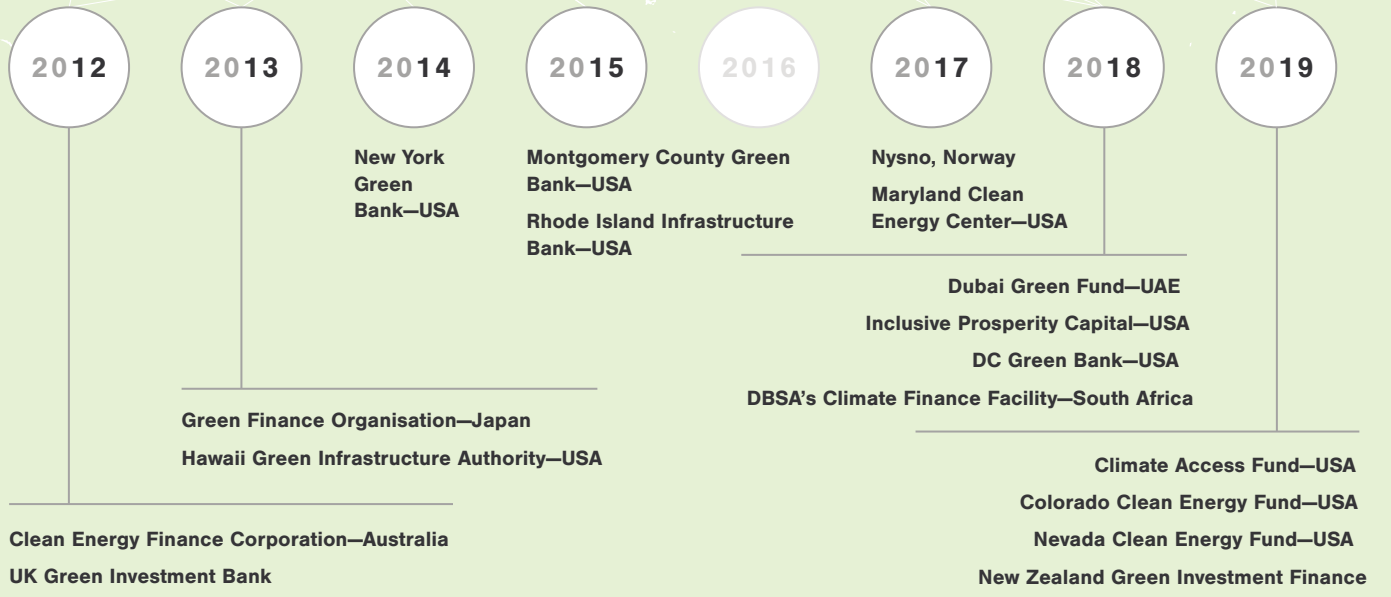


EXHIBIT 5

Existing Green Banks at a Glance



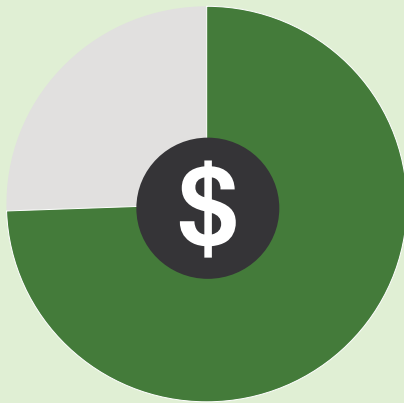
2.3
Median
leverage ratio



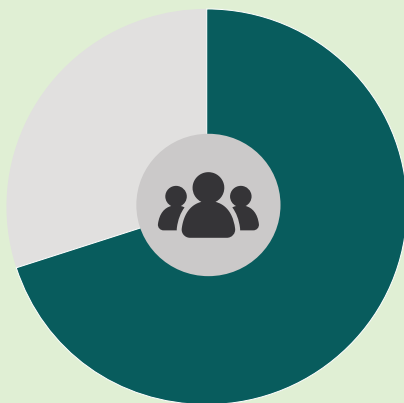
\$24.5B
Own capital
invested



\$45.4B
Private co-investment
attracted

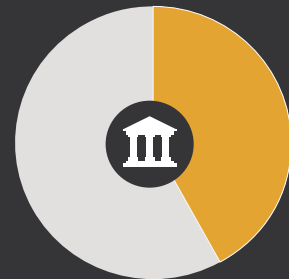


67%
are situated in
high-income
countries

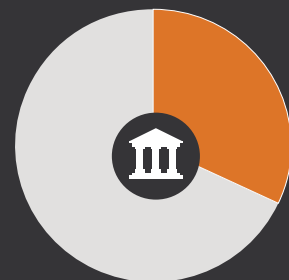


70%
are public

**Countries hosting
existing green banks
represent**



42%
of global GDP



32%
of global GHG emissions

The Importance of Governance: Australia's Clean Energy Finance Corporation

Green banks can have varying governance structures depending on specific establishment legislation and accompanying stipulations. The exact green bank structure and governance can affect not only the funding that the institution has at its disposal and the sectors it can invest in, but also its long-term sustainability. Australia's Clean Energy Finance Corporation (CEFC), the world's largest green bank, offers a relevant example of the importance of strong legislative support that affords the green bank independence and protects it from political influence.

Soon after CEFC was established in 2012, a political party opposed to the green bank model took office, introducing significant political uncertainty with regard to the young institution's

continued existence and making its engagement with investors and projects difficult. However, pent-up demand for renewable energy investment, especially large-scale wind, brought CEFC 11 transactions in the first few months, despite reluctance from some market players due to political uncertainty. CEFC leadership and staff had to spend considerable effort alleviating investors' concerns.

Ultimately, robust legislation that established CEFC prevailed, enabling the green bank to continue operations in any political climate. In addition, that same legislation had strong clauses against conflict of interest and protected board members from political removal, which helped ensure CEFC's independence regarding operations and investment decisions.

National Priorities and Green Bank Goals

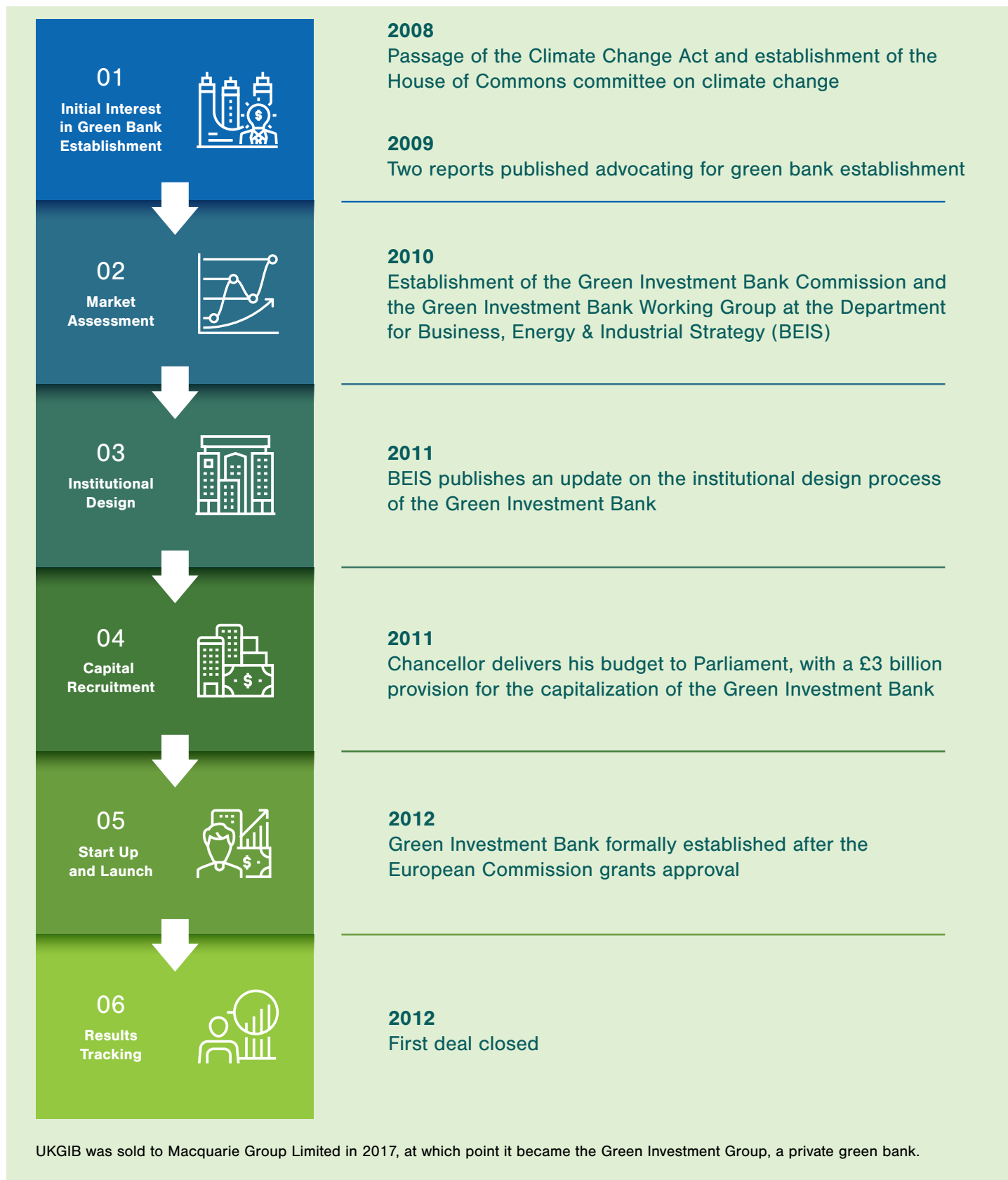
Most national green banks resulted from government directives aimed at increasing the flow of climate finance in service of achieving NDCs and mitigating the adverse effects of climate change. Consequently, with their investments, existing green banks bolster the proliferation of low-carbon, climate-resilient technologies, ranging from renewable energy and energy efficiency to sustainable agriculture.

For instance, the UK Green Investment Bank (UKGIB) was founded in the aftermath of the 2008 financial crisis to help the UK reach its climate goals by catalyzing green infrastructure investment. The

UK government estimated in 2011 that the needed level of green investment, £330 billion in a decade, could not be achieved without an intervention. This was in part due to market failures and perceived risks associated with investing in nascent technologies.⁹ Within three years of establishment, UKGIB nearly tripled investment in UK green infrastructure.¹⁰ Exhibit 6 depicts the UKGIB's journey from initial interest to full operation, using the green bank establishment stages introduced in Chapter 1.¹¹ In 2017, UKGIB became the Green Investment Group after it was sold to Macquarie Group Limited and thereby privatized.¹²

EXHIBIT 6

UK Green Investment Bank Establishment Journey



Capitalization and Financing

Capitalization

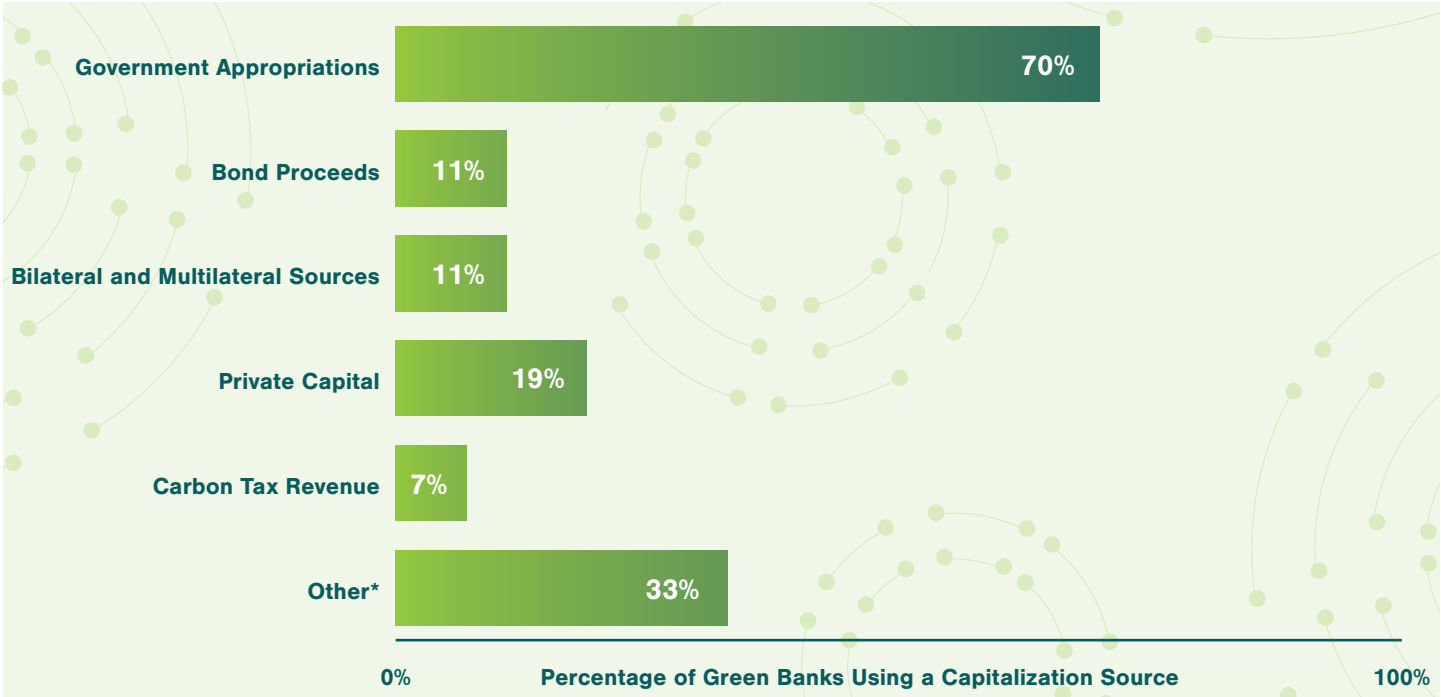
A large majority of green banks were enacted or supported by legislative acts and are within the purview of government ministries, often the Ministry of Environment or its equivalent. However, these generalizations belie the variety of green bank models already in existence. For example, India’s Tata Cleantech Capital Limited (TCCL) is a joint venture between the International Finance Corporation and Tata Capital Limited, a private company. In the United States, the Florida Solar and Energy Loan Fund (SELF) has no state support but rather raises capital from a variety of sources, including private investors and crowdfunding.

Further, existing green banks were nearly always created as new, stand-alone institutions. The exception is the Climate Finance Facility (CFF)

within the Development Bank of Southern Africa (DBSA), which is a new facility within an existing institution. As of September 2020, CFF plans to close its first deals imminently.

While government appropriations are the most common capitalization mechanism, many green banks obtain funding from a variety of sources, including private donors and investors, international organizations, bond proceeds, and other revenue generation (Exhibit 7). For example, both the Connecticut Green Bank and New York Green Bank receive funding from a system benefit charge mechanism, in which individuals contribute to the mechanism via their electricity bills. These small contributions from all ratepayers are then aggregated and used by the state for qualifying clean energy initiatives, including green banks.¹³

EXHIBIT 7
Capitalization Sources of Existing Green Banks



*Emissions trading funds, renewable energy credits, crowdfunding, philanthropy, system benefit charges.

Note: Analysis based largely on publicly available data. Many organizations are in overlapping categories because they have multiple funding sources. Sample size is 27.

Importance of Flexible Capitalization: Norway and Hawaii

Norway's Nysno offers an example of a broad and flexible mandate that allows investment in a wide array of sectors, providing opportunity for developing any new green market that exhibits promise. Nysno's mandate covers anything that reduces greenhouse gas (GHG) emissions. It is entirely capitalized and administered by the Ministry of Trade, Industry and Fisheries, which neither provides guidance on investment sectors nor weighs in on specific investments, as long as they reduce GHGs. This independence is further bolstered by EU-level laws that limit government interference into Nysno's operations.

In addition, despite its public capitalization, Nysno is an investment company operating in the private sector, which it reports works well in mobilizing private capital. Nysno's leverage ratio is 6.7, meaning it attracts nearly seven times as much private investment as public funds invested. Its flexible mandate and independence have led Nysno to invest in a wide variety of technologies, from renewable energy to materials and digitization. Looking ahead, Nysno is open to new and creative technologies that can lead to breakthrough climate impacts, including aquaculture and synthetic fuels.

In contrast, Hawaii's Green Energy Market Securitization (GEMS) Program, despite an abundance of capital available for investment, initially faced difficulty deploying that capital.

This was because of its dual governing mandates that dictated how GEMS' capitalization can be used, coupled with the elimination of the net energy metering program in Hawaii. Though GEMS is statutorily governed by the Hawaii Green Infrastructure Authority, the program also needs approval from the Public Utilities Commission (PUC) on which ratepayer(s) and what types of technologies are eligible for financing, as well as the different financing vehicles it can offer.

As a result, there are certain technologies, like energy storage, that GEMS cannot finance because of consumer advocate pressure on the PUC. Another challenge is that the program remits payment to solar contractors after satisfactory installation, leading to a time lag between loan approvals and actual funding. However, in the sectors that GEMS focuses on, it has achieved notable successes: for example, it serves nearly 80 percent of the underserved residential household market in Hawaii. Ultimately, alternative funding sources with more flexible mandates would have given GEMS greater flexibility by empowering it to pivot to other technologies when the net energy metering program ended less than a year after it began, as well as to expand existing programs faster.

Financing

Financial Instruments

Green banks rely on a variety of financial mechanisms to further their goals of low-carbon development. Nearly every existing green bank offers debt instruments in the form of loans, which typically have better borrowing terms (lower interest rates, longer tenors) than their commercially available counterparts. Some offer equity investments, grants, and guarantees (Exhibit 8). Japan's Green Finance Organisation (GFO), for instance, has centered its strategy on equity investments. The motivation is to provide a credible investment signal that will attract private co-investment into the projects, decrease project debt, and scale new green technologies faster.¹⁴

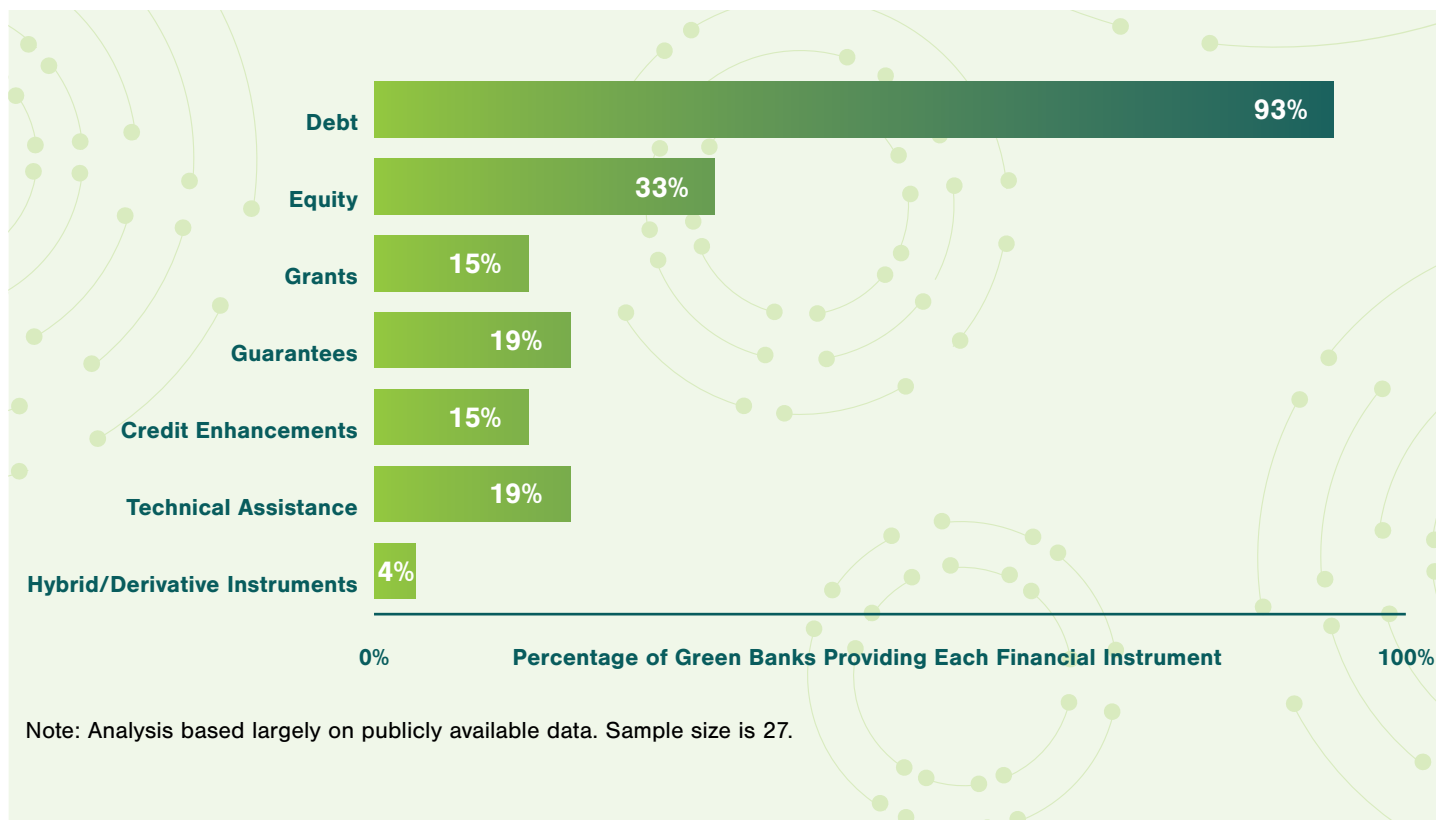
Some green banks offer technical assistance and advisory services with the goal of aiding other banks with their portfolio greening, as well as demonstrating project viability to investors, sometimes in conjunction with guarantees and/or co-financing for the project.¹⁵ This helps build green financial capacity and know-how, not only within green banks but across financial institutions in the country, thus accelerating low-carbon markets.

Finally, green banks can use their flexible mandates and innovative financial mechanisms to assist with and accelerate the financing of projects that lack standardization and are therefore not bankable at other financial institutions. This includes small-scale renewable projects below a certain dollar value. These projects, which still require due diligence, represent additional transaction costs for institutions that cannot aggregate them. However, distributed energy generation is important for expanding energy access and for building climate resilience; microgrids, for example, are far more resilient to adverse climate events than large centralized electricity systems.¹⁶ Green banks can and do fill this large market gap. This is notable, for example, in the work of US green banks such as Michigan Saves or Hawaii GEMS, which focus particularly on distributed energy for low- and moderate-income communities.



EXHIBIT 8

Existing Green Banks' Financial Instruments



Further, different green banks focus on different innovative financial instruments depending on their mission and goals. A well-known example of a green bank's use of innovative finance to spur a new sector is the UKGIB catalyzation of the offshore wind market. This made the UK the market leader with nearly 40 percent of global offshore wind only five years after UKGIB's inception.¹⁷

One of the financial mechanisms used to further accelerate offshore wind investment through the Green Investment Bank was the founding of the Offshore Wind Fund. This fund was launched in early 2017 and was the first of its kind in the world, as well as the largest renewable energy fund in Europe at the time. The Fund was aimed at addressing market failures that prevented further development of the offshore wind market, such as the lack of opportunities for non-institutional

investors to get involved in construction equity financing for new offshore wind assets.

Because of the demonstrated offshore wind expertise of the UKGIB, it was successful in attracting private co-investment into the Fund. This included five UK pension funds that managed retirements of 700,000 Britons, leading to the Fund exceeding its target capitalization of £1 billion.¹⁸ Green banks represent a novel space for pension funds, which remain an important capital pool that other green banks may seek to recruit as co-investors.

Innovative Financial Instruments at Work: Connecticut Green Bank's Green Liberty Bonds

In July 2020, Connecticut Green Bank in the United States launched an innovative Green Liberty Bond program modeled on the World War II Series E bonds: 10-year, small-denomination bonds that allowed ordinary citizens to invest in the war effort.¹⁹ The Green Liberty Bond program issues small-denomination (\$1,000) green bonds that are used to fund rooftop solar, and that are accessible to individuals. It follows a \$38.6 million issuance of asset backed securities (ABS) in 2019, the first-ever solar-backed bond issuance by a green bank.

The release of the Green Liberty Bond was preceded by a survey of Connecticut residents, which confirmed demand for the green bonds. The residents indicated they'd be most interested in investing in recycling and waste reduction, clean water, and rooftop solar.

Green Liberty Bonds are conditioned upon the use of proceeds for climate change. Bond proceeds are being used to refinance Connecticut Green Bank's Residential Solar Incentive Program (RSIP),

as well as to establish a Special Capital Reserve Fund to support the bonds. Projected revenues from solar home renewable energy credits that two Connecticut utilities will be purchasing from the Green Bank at a previously agreed upon price over the 15-year life of the bond are about \$25 million. Through their use of proceeds for green projects that combat climate change, these bonds aim to contribute to several SDGs: poverty eradication, reduced inequalities, good health and wellbeing, affordable clean energy, decent work and economic growth, and sustainable cities and communities.

The first issuance of green liberty bonds (\$16.8 million) sold out quickly, with national demand exceeding Connecticut Green Bank's supply. The transaction was closed, and all bonds issued, within approximately two weeks from the moment the bond sale started. In the next issuance, expected in 2021, the Bank hopes to both increase the overall size of the bonds and offer smaller denominations, with the goal of increasing participation among low- and middle-income communities.²⁰

Target Technologies and Sectors

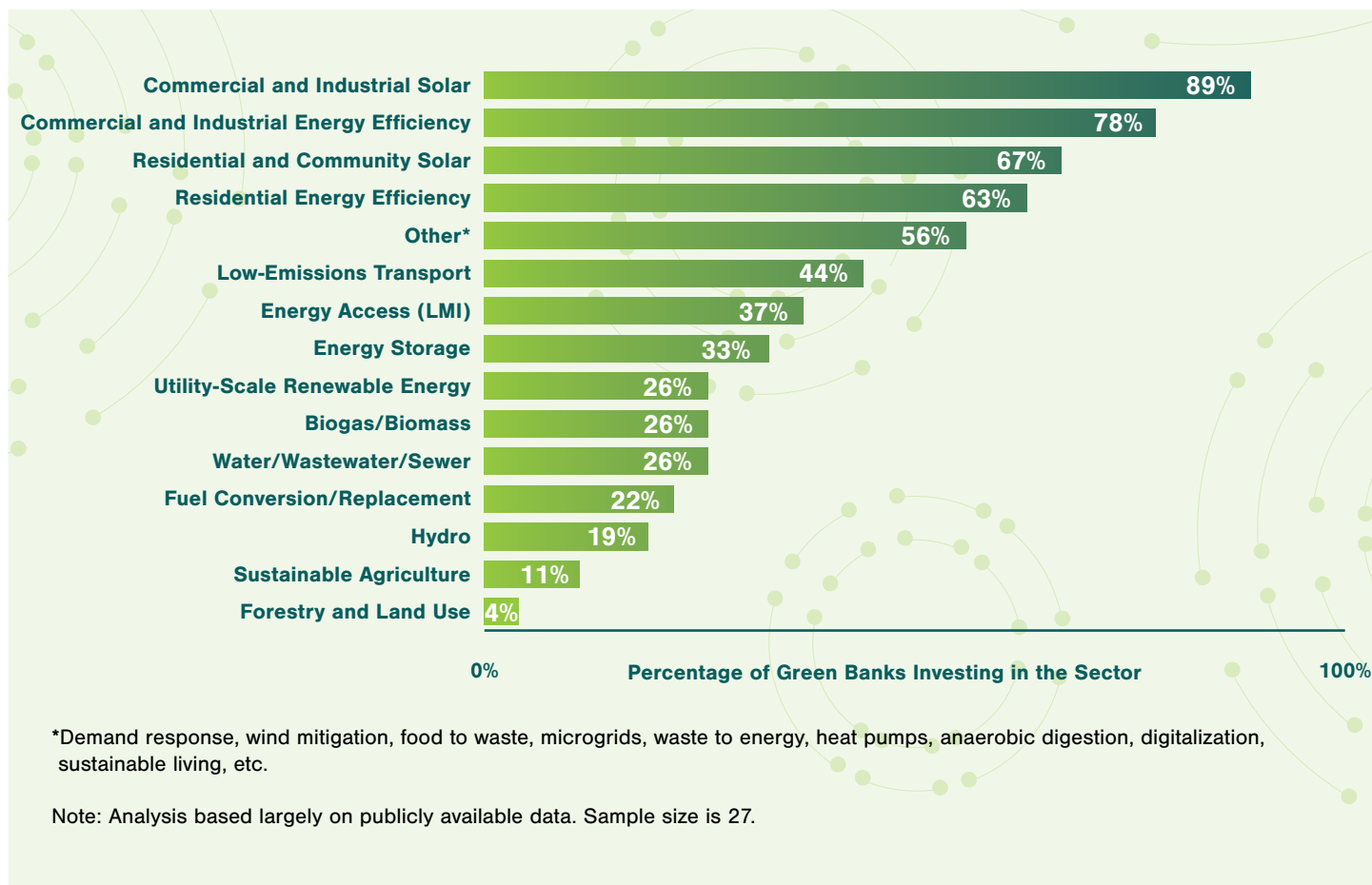
While the most well-known green bank investments may be in renewable energy, green banks' flexible yet dedicated mandates allow them to invest in a multitude of low-carbon sectors and develop new green markets. Green bank mandates evolved with time and experience in their respective markets to best accommodate the needs of their specific country environments. Flexibility coupled with dedication to low-carbon investments became a key feature because it allowed green banks to develop green sectors that best suited the country circumstances as well as to invest in the most promising technologies over time.

New trends continue to emerge as green banks worldwide invest in over 20 sectors, ranging from

solar energy and energy efficiency to sustainable agriculture and waste management (Exhibit 9). Even though commercial and industrial solar remains an area of investment for nearly every existing green bank, the second area of investment that most green banks engage with is energy efficiency. In addition, significant investment exists in the areas of low-emissions transport, energy access, water management, and energy storage. In terms of emerging and future trends, existing green banks surveyed and interviewed indicated that they see energy storage, green hydrogen, resilience and adaptation, grid decarbonization, microgrid development, electric vehicles, and air quality improvements as important future areas of green bank investment.

EXHIBIT 9

Existing Green Banks' Technologies and Sectors of Focus



Investment Foci

Green bank investment priorities vary depending on the communities they serve. While some green banks, notably India's TCCL and Green Investment Group, predominantly do large-scale project finance, others mostly support local, often underserved, communities. Ten green banks in four countries work on energy access, many of them specifically with low- and moderate-income (LMI) households. For instance, the Hawaii GEMS program, described in Box 3 above, allocated nearly a quarter of its lending to LMI, serving almost 80 percent of Hawaii's underserved residential household market. Low-income communities are critical to achieving Hawaii's 100 percent clean energy goal by 2045 and are a market segment that cannot access funding options to switch to green energy consumption.²¹

TCCL, on the other hand, has a portfolio dominated by utility-scale projects, with investments in large-scale renewables (solar, hybrid, and renewables with storage). It has contributed to the funding of over 5 GW of renewable energy in India. TCCL originally invested in large-scale renewable projects in part because no other company in India was doing so; Tata was often the first investor demonstrating the viability and economic returns of clean energy projects. TCCL was among the first private investors into energy efficiency and solar power purchase agreements in India.²² Now, there is an abundance of utility-scale renewable investors, which means that the largest green market gaps remain elsewhere (e.g., in storage or electric mobility).

Green bank investments often serve as market demonstrators by providing financing for underdeveloped technologies and/or vulnerable communities, thus filling market gaps and removing barriers to green investment and energy access. The aforementioned UKGIB's offshore wind financing offers a pertinent example of demonstration: the green bank established the bankability of projects and quickly catapulted the development of an entire industry. On the other hand, the US state-level green bank Michigan Saves, with nearly 60 percent of its residential loans in LMI markets, demonstrates the viability of working with vulnerable communities.

Even though these households are typically perceived as higher risk by financial institutions, thus reducing their borrowing options, Michigan Saves boasts a mere 1.4 percent average default rate. Such market demonstrations open doors for serving new market segments and financing new and/or unproven technologies that otherwise take too long to prove their market worth—time that the world does not have given the dire consequences of climate change.

Aggregate Results to Date

Existing green banks have shown an impressive track record in catalyzing new low-carbon markets and crowding in private investment. Twelve green banks from ten countries, including all Green Bank Network members and three additional national-level green banks (New Zealand Green Investment Finance, Norway's Nysno, and Switzerland's Technology Fund), have invested a total of \$24.5 billion of their own capital since their respective inceptions. Nine banks (from eight countries) that track their leverage ratio achieved a median ratio of 2.3:1—meaning that the median green bank attracted more than \$2 of additional private money into low-carbon projects for every dollar it invested.

Other data supports the finding that the total value of projects green banks invested in is much higher than the capital they contributed. The Green

Bank Network reports that its nine members have supported projects with a total value of almost \$70 billion as of mid-2020, over \$45 billion (or 64 percent) of which came from the private sector.²³

Finally, even though the green bank model showcases opportunities for dual achievement of development and climate goals, existing green banks are still predominantly situated in high-income countries. One reason may be that the green bank model is still young. Green banks can take years to create, particularly when trying to attract capitalization from multiple sources, including from international organizations that have lengthy application and due diligence processes (as is the case in most emerging green banks; more on this in Chapter 3). Initial capital may be more readily available in wealthier countries, which often use government appropriations for initial green bank financing. Other obstacles may lie in particulars of utility regulations, statutory mandates, and legal and financial system frameworks, which tend to be more developed in high-income countries.

The Green Bank Network

The Green Bank Network (GBN) was established in 2015 as the first professional guild of operational green banks. The GBN secretariat is co-managed by the nonprofit organizations Coalition for Green Capital and the Natural Resources Defense Council. GBN counts nine members as of October 2020: Clean Energy Finance Corporation (Australia), Connecticut Green Bank (United States), Energy Efficiency and Renewable Sources Fund (Bulgaria), Green Finance Organisation (Japan), Green Investment Group (formerly the UK Green Investment Bank), Green Technology and Climate Change Centre (Malaysia), New York Green Bank (United States), Rhode Island Infrastructure Bank (United States), and Tata Cleantech Capital Limited (India).

The Network developed a set of seven criteria for evaluation of potential members, including mandate, governance structure, management team, commitment to public reporting, and investment transparency, as well as completed capitalization and at least one transaction. Two organizations that are currently being considered for membership include the New Zealand Green Investment Finance Ltd. and the Indian Renewable Energy Development Agency Ltd.²⁴ As more institutions become operational, GBN will consider additional members.



Photo RMI, Green Bank Design Platform, by Brano Gilan

Existing Green Banks and Current COVID-19 Response

Green banks in several countries are poised to play an important role in post-COVID recovery. Many green banks are already engaging with their governments in order to ensure post-COVID recovery will be low carbon and climate resilient (LCR). CEFC, for example, engaged with the Australian national COVID coordination committee to explore opportunities for green post-COVID recovery, such as large infrastructure projects for grid connectivity improvements.

Similarly, DBSA's Climate Finance Facility (CFF) is attending a forum with the minister of environment and the prime minister to present how it can be part of the recovery plan, working to ensure there is a healthy pipeline of climate-resilient projects that can be funded as part of the economic recovery. DBSA expects that infrastructure investments will be necessary to spur the recovery; to keep those investments green, DBSA is working on presenting ready financial instruments and projects that can be immediately implemented. In terms of sectoral investments, some green banks identified trends or technologies that may become more prevalent post-COVID.

In the United States, Michigan Saves expects a longer-term increase in demand for energy efficiency investments, as people spend more time at home and become more aware of their energy bills. It also sees increased opportunities for investments in health and safety (e.g., air quality improvements, which are related to COVID-19 risks).

The US Climate Alliance (USCA), comprised of governors from 25 states representing over 60 percent of US GDP and 40 percent of GHG emissions, sent a letter to Congress on COVID-19 emergency relief and green recovery. Though the USCA communication focused on the modernization and decarbonization of resilient infrastructure across the country, the establishment of a National Green Bank was also included.





Photo RMI, Green Bank Design Platform, by Brano Gilan

Green Banks in Formation: Potential for Acceleration

To understand the state and direction of green bank exploration worldwide, we conducted a survey to learn where these efforts are taking place, why they are occurring, and what they are meant to achieve. **This new data revealed the strong interest in green banks globally, from developed and developing countries alike.** The survey also confirmed the applicability of the green bank model as a customizable solution in a wide range of circumstances.

Methodology

We sent an electronic survey between June and August 2020 to over 90 individuals in 44 countries, chosen based on a known or likely interest in establishing a green finance institution. The survey was sent primarily to government entities at the national level and to consulting firms known to work on green bank development.

The results in this chapter are based on responses from 34 institutions in 25 countries

(in some countries, more than one institution responded). Not every respondent answered every question, so the number of responses per question varies. Presented results are based on responses of individual institutions unless we specify they are country-level results, which may be based on more than one institution per country. For a full list of respondents, see the Acknowledgments.

The results, figures, and analysis in this chapter include only institutions and countries that responded to the survey. As such, this chapter does not provide an exhaustive look at all green finance institution progress worldwide and at every jurisdictional level.

Respondent Overview

The 25 countries analyzed here represent over 13 percent of global GDP and almost 12 percent of global greenhouse gas emissions.ⁱⁱⁱ Their regions and income levels vary widely. There are two low-income countries (8 percent), 10 lower-middle-income countries (42 percent), seven upper-middle-income countries (29 percent), and five high-income countries (21 percent). Six countries each responded from East Asia and the Pacific, Europe and Central Asia, and sub-Saharan Africa. Four countries are located in Latin America and the Caribbean, two are in the Middle East and North Africa, and one is in North America. No respondents are located in South Asia (Exhibits 10 and 11).

ⁱⁱⁱ GDP and GHG figures exclude the United States.

EXHIBIT 10

Surveyed Emerging Green Banks Around the World



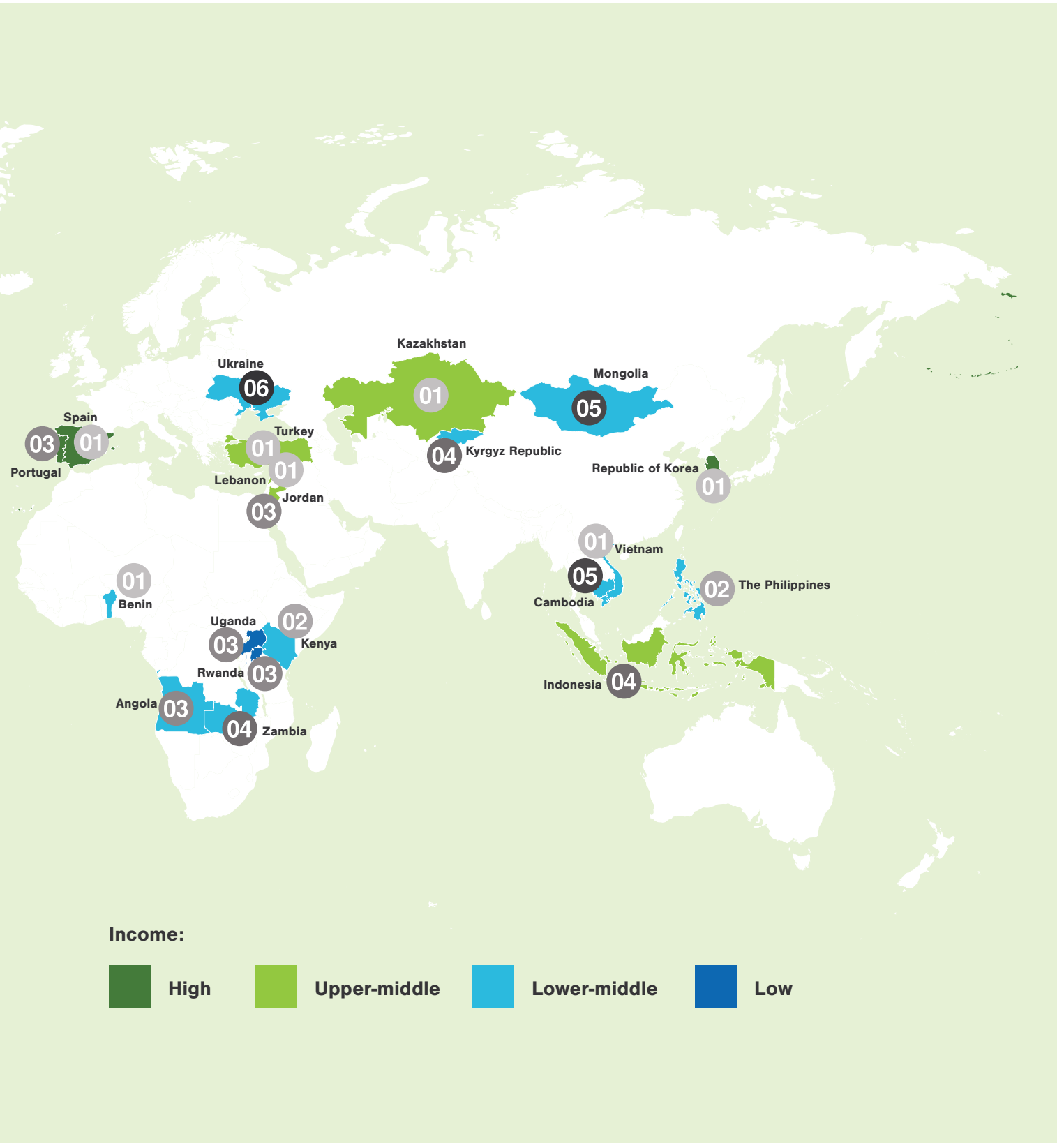
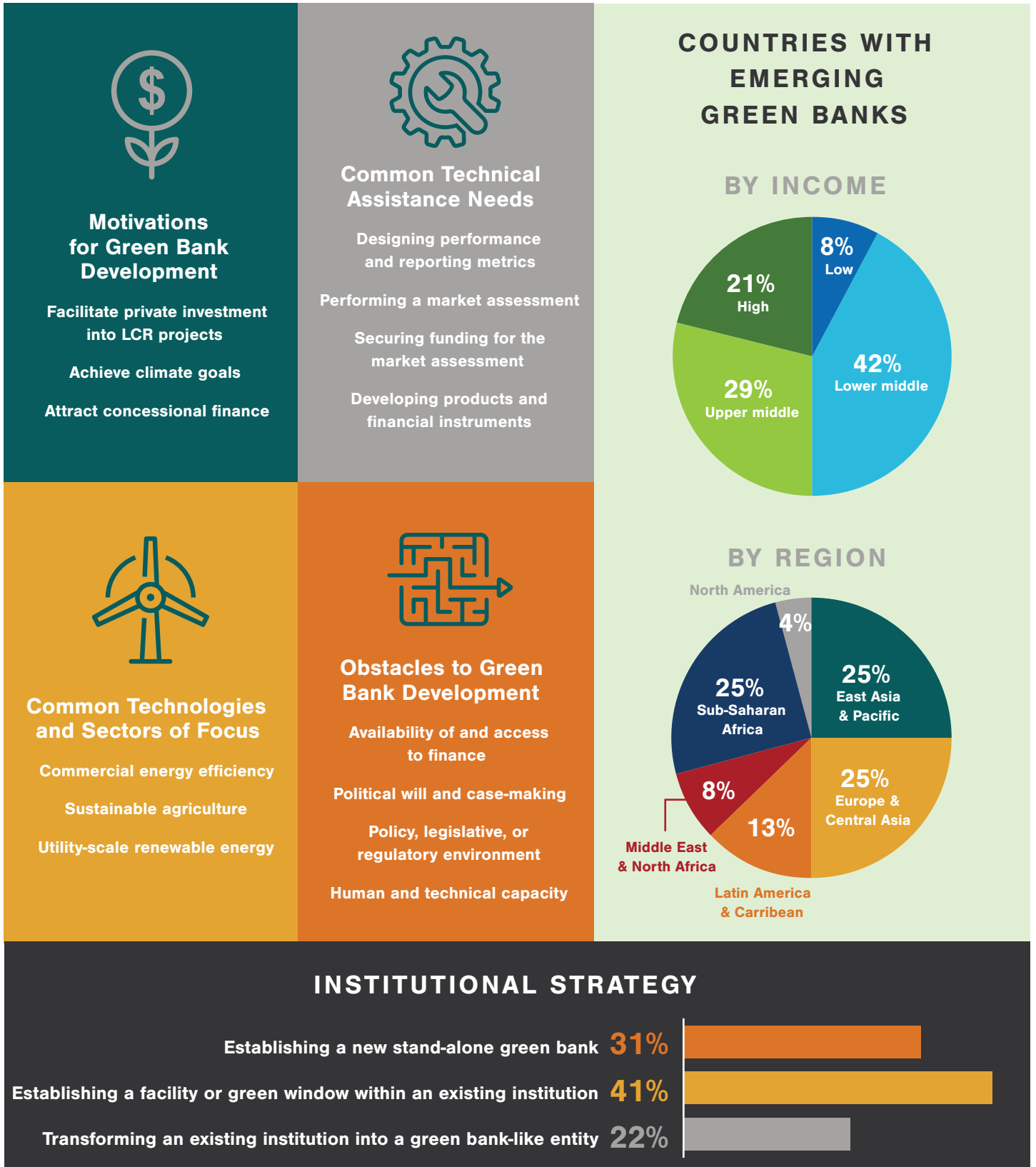


EXHIBIT 11

Emerging Green Banks at a Glance



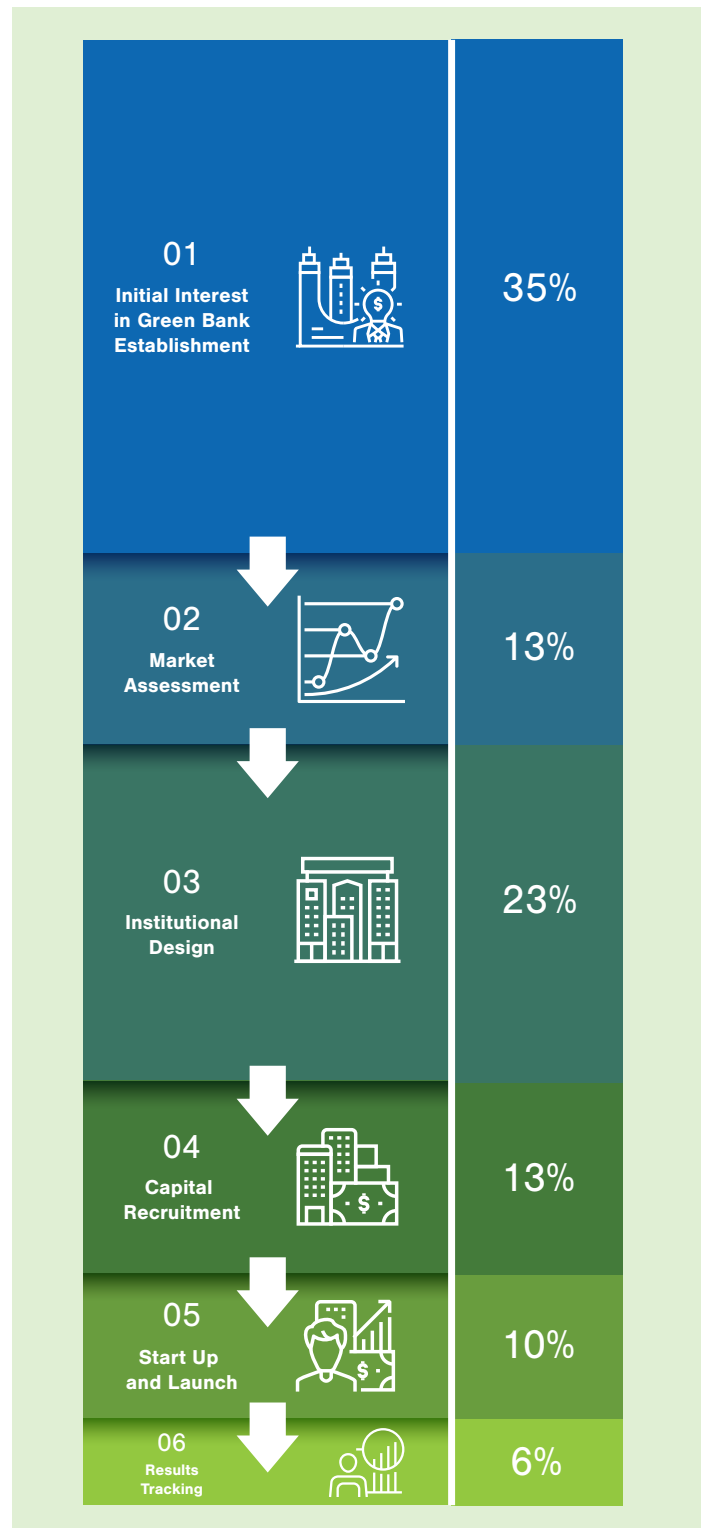
Results and Analysis

Progress toward Green Bank Establishment

Most institutions surveyed are in the beginning stages of green bank development, with 48 percent of those responding in the initial interest or market assessment stages (Exhibit 12). To better understand where institutions are on the path from initial interest to an operational green bank, we use the green bank establishment stages described in Chapter 1 as the basis for our analysis.^{iv} While these stages are roughly chronological, different institutions may take steps in different orders. For example, one survey respondent reported that they closed their first deal while still at the initial stage of determining institutional structure.

The concentration of institutions at early stages is not surprising given what we know about the high level of interest in green banks globally compared to the relatively few operational institutions. The distribution of institutions across stages is largely consistent with how much time respondents said they needed to set up their institutions. Forty-nine percent of respondents said they were two or three years away from an operational green bank, and 31 percent said they were a year away. Based on the experience of existing green banks, we think these are reasonable estimates, with the caveat that actual timelines are often longer than planned.

EXHIBIT 12
Institutions by Stage of green Bank Development



^{iv} We sought to objectively assess the stage each institution is in based on its survey responses, but some subjectivity in determining certain stages was unavoidable due to the qualitative nature of the assessment.

National Priorities and Green Bank Goals

We saw in Chapters 1 and 2 the promise of green banks and their ability to help countries and other jurisdictions meet their climate and development goals. **Survey results show that countries in the process of green bank development seem to primarily see the value of green finance institutions for attracting investment, followed by the value of achieving climate goals.** When asked what three national priorities were driving them to pursue a green bank, 81 percent of institutions chose facilitating private investment into low-carbon, climate-resilient projects, followed by attracting concessional finance (71 percent). Fifty-eight percent of respondents chose achieving climate goals (Exhibit 13).

While increasing investment and achieving climate goals are the primary motivations for setting up a green bank, there are co-benefits countries also hope to achieve. The breadth of responses related to co-benefits reflects the flexibility of the green bank model discussed in Chapter 1: in addition to attracting private investment, green banks are capable of meeting a range of national priorities. Eighty-eight percent of institutions said they would track air pollution (also the most common response for existing green banks), followed by job creation (72 percent), and water quality (52 percent). A few respondents said they would track specific impacts like reduction of natural gas consumption (Exhibit 14).

EXHIBIT 13
Priorities Driving Green Bank Development

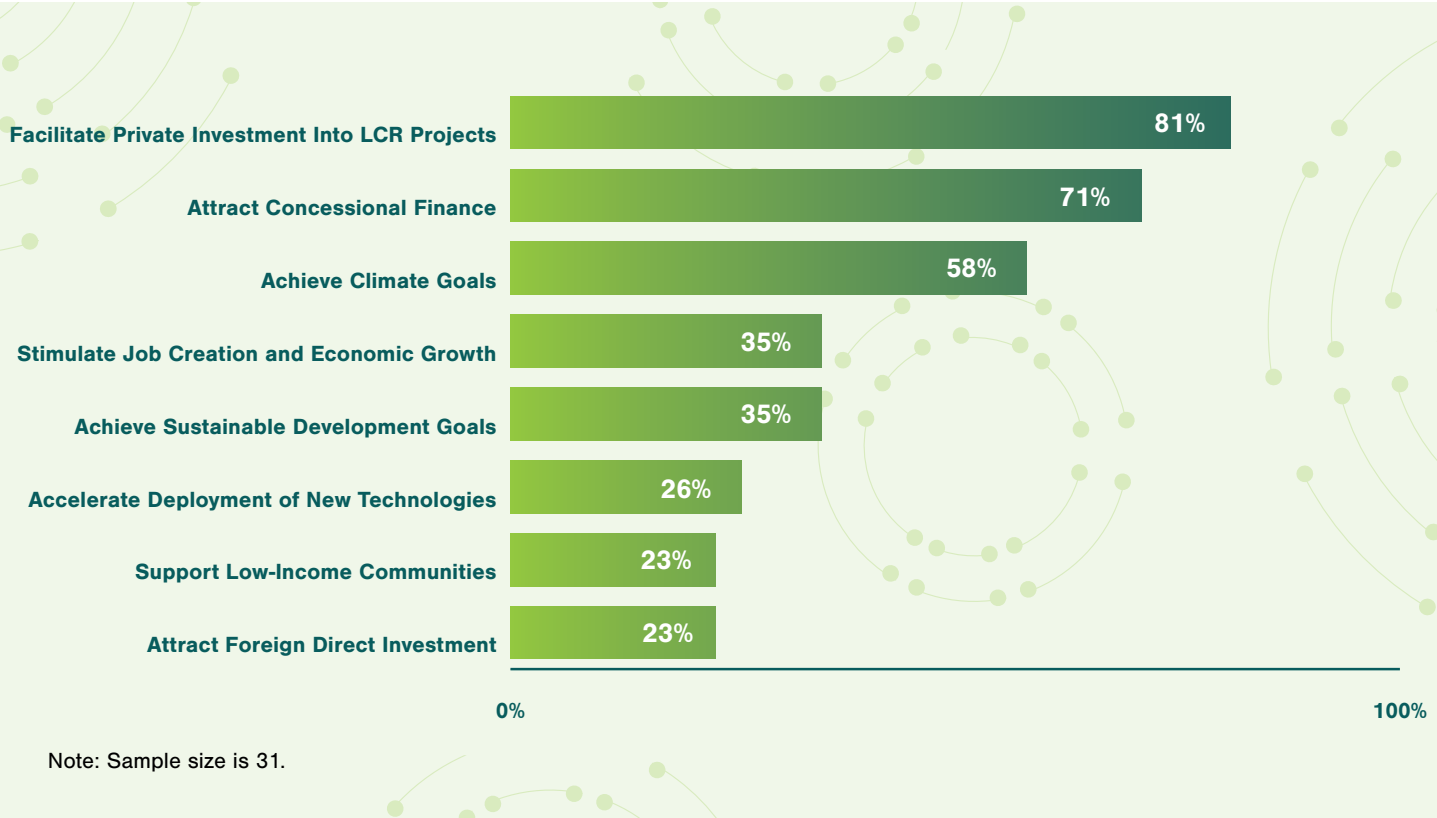
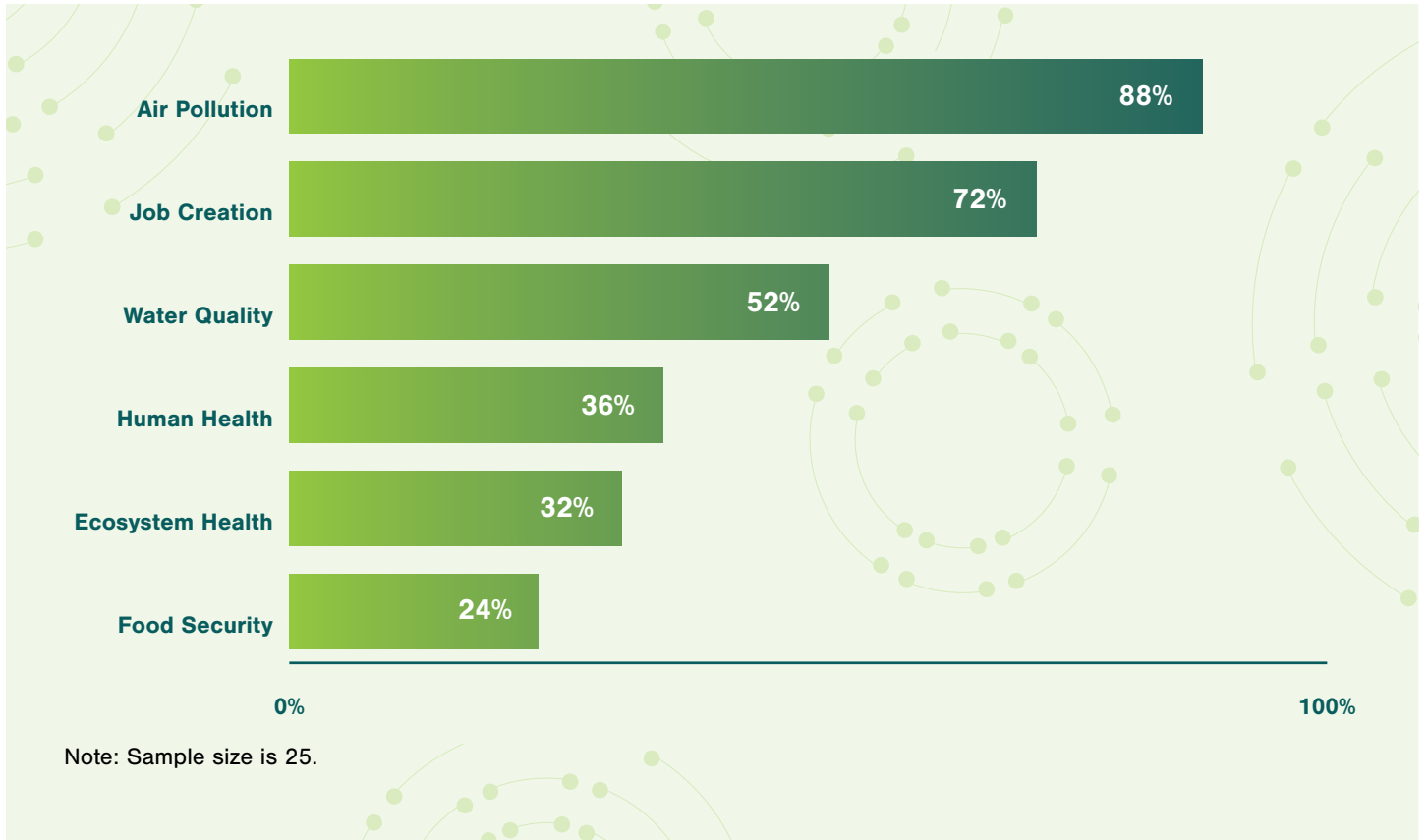


EXHIBIT 14

Intended Co-Benefits of Proposed Green Banks



Institutional Strategies

Countries interested in the green bank model are pursuing all possible modes of setting up green banks. Forty-one percent of institutions said they planned to establish a green facility within an existing institution, 31 percent said they would establish a stand-alone new green bank, and 22 percent said they would transform an existing institution (respondents could select more than one option if, for example, they have not made a final decision about an institutional strategy).

One respondent filled in their own strategy, strengthening green project pipelines. In addition to structural strategy, 25 institutions said they were encouraging existing financial institutions to green their portfolios. Within regions, countries are pursuing different strategies, although no Latin American countries chose establishing a new institution. The full list of each country's choices is in Exhibit 15.

EXHIBIT 15

Institutional Strategy and Greening Approach by Country

Country	Establishing a New Stand-Alone Green Bank	Establishing a Facility or Green Window within an Existing Institution	Transforming an Existing Institution into a Green Bank-Like Entity	Encouraging Existing Financial Institutions to Green their Investment Portfolio*
Angola		✓	✓	✓
Benin				✓
Brazil				✓
Cambodia	✓			
Chile		✓		✓
Colombia		✓	✓	✓
Indonesia		✓		✓
Jordan		✓		✓
Kazakhstan				✓
Kenya	✓			
Republic of Korea	✓	✓		✓
Kyrgyz Republic		✓	✓	
Lebanon	✓			✓
Mexico		✓	✓	✓
Mongolia		✓		✓
Philippines				✓
Portugal		✓	✓	✓
Rwanda		✓		✓
Spain				✓
Turkey	✓			✓
Uganda		✓	✓	
Ukraine		✓	✓	✓
United States	✓	✓		
Vietnam				✓
Zambia	✓			

*This is not a strategy to set up a green bank but a supportive effort to increase domestic LCR investment.

Green Bank Champions and Stakeholders

One of the first and most important steps in the green bank journey is securing buy-in from key stakeholders. This is particularly effective when an individual or entity with political influence can become a green bank “champion,” making the case for the green bank to other stakeholders. When asked who the local champions of green bank establishment are, the most common response was the green bank itself or its precursor (Exhibit 16). These included a development bank creating a new window, an existing fund being transformed into a green bank, and a nascent green bank still working to secure capitalization. In five out of eight cases, the green bank itself was the only champion noted, which may indicate the need for broader political support.

However, champions were collectively identified across the government and the financial system. Ministries of finance (or their equivalents) were a frequent response—more frequent than ministries of environment or energy—perhaps because of a growing buy-in for financing climate solutions among finance ministries. Central banks, commercial banks, and the private sector all play a role in demonstrating buy-in from the financial sector. While most responses named offices or institutions, experience has shown that committed individuals have often been the most effective green bank champions.

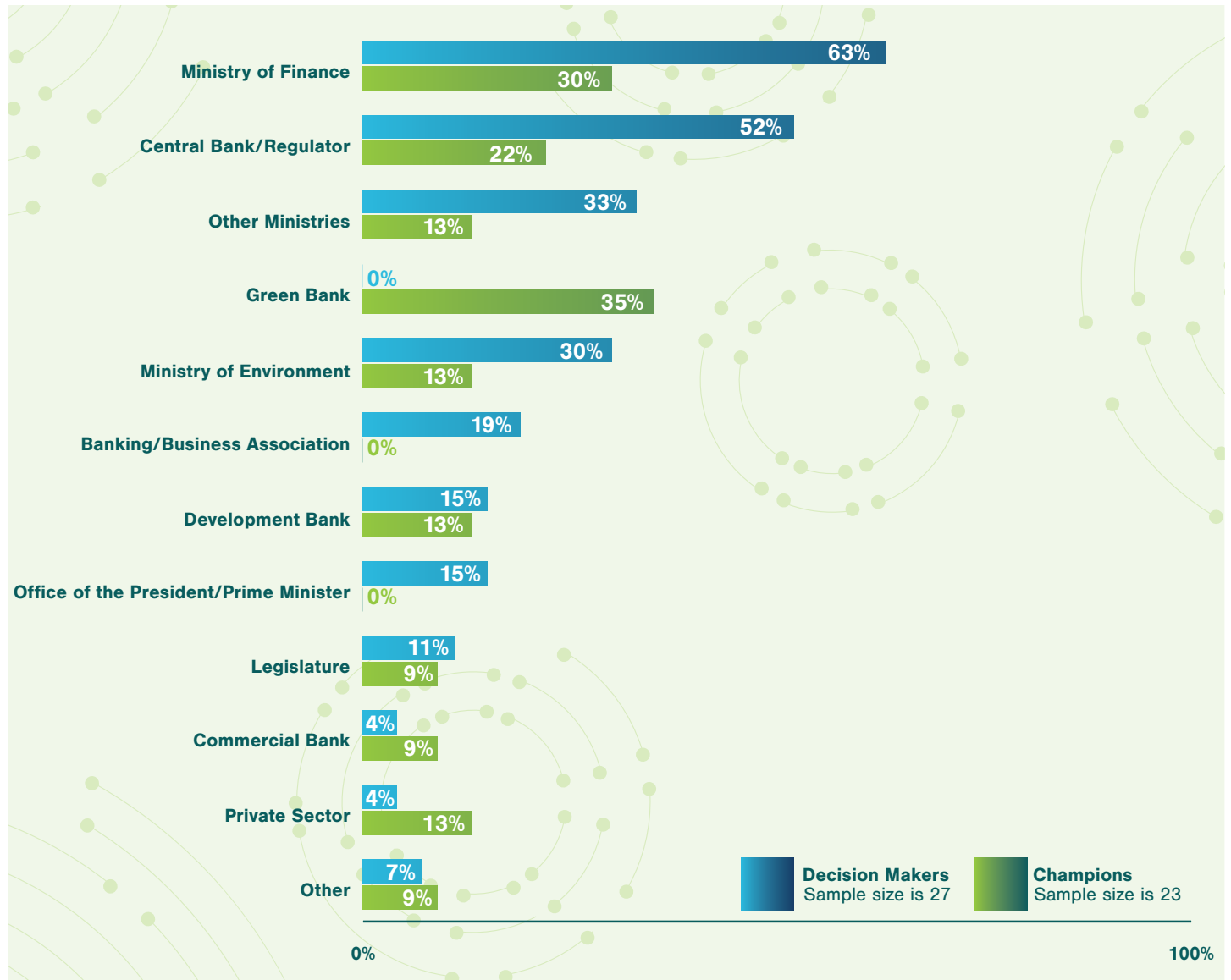
Champions in turn can secure the buy-in of key decision makers. Here, ministries of finance, central banks, and regulators were most likely to be the key decision makers with respect to green bank formation. Several institutions also noted the key role of banking and business associations. The comparison with champions is revealing and again points to the role of individual champions.

Individuals working on behalf of the new or transformed institutions may be important champions, but the institution they’re advocating for doesn’t exist yet to act as a decision maker.

We see this reflected in the experiences of existing green banks that put significant resources into securing buy-in. We also see that ministries of finance, central banks, and regulators are common as both champions and decision makers, suggesting these institutions are fertile ground for forming green banks.

EXHIBIT 16

Key Decision-Making Institutions and Champions of Green Bank Formation



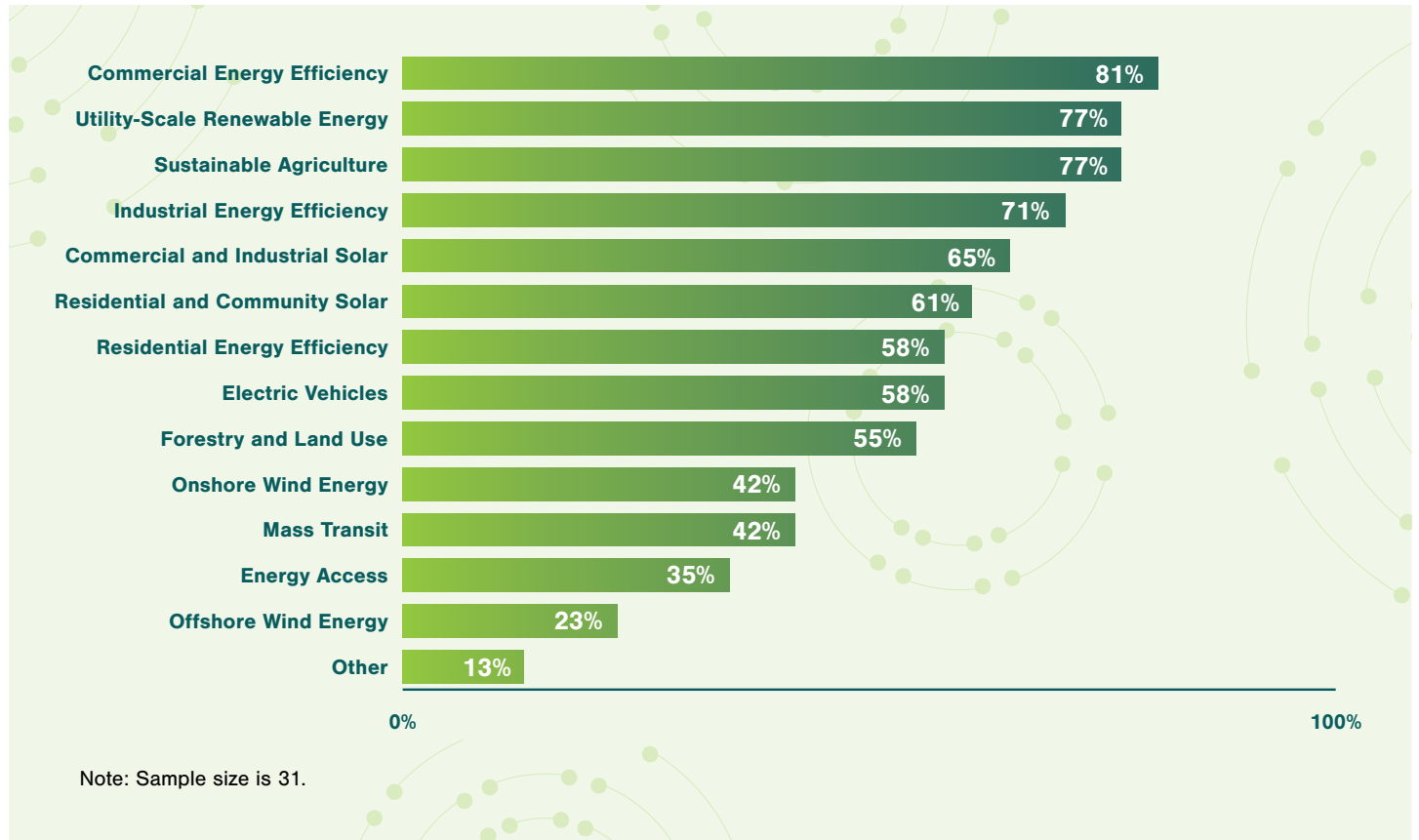
Target Technologies and Sectors

Once countries decide why they want a green bank and what they want it to accomplish, they decide which sectors and technologies to focus on in order to meet their goals. Respondents showed interest in their institutions promoting a wide range of technologies, sectors, and subsectors. As shown in Exhibit 17, institutions most commonly chose commercial energy efficiency, sustainable agriculture,

utility-scale renewable energy, and industrial energy efficiency, with the results showing a clear emphasis on energy efficiency and on the agriculture and land use sector. The broad and strong interest in agriculture and land use is noteworthy. Existing green banks work less in these areas, but interest among emerging institutions may herald a coming shift.

EXHIBIT 17

Technologies and Sectors of Focus for Emerging Green Banks



The top overall choices were largely echoed across income groups and regions. Notable exceptions include high interest in energy access and forestry and land use among low-income countries, commercial and industrial solar among lower-middle-income countries, and mass transit (in part due to more than one survey response per country) among upper-middle-income countries. In high-income countries the most common choices, after commercial energy efficiency and industrial energy efficiency, were commercial and industrial solar, electric vehicles, residential and community solar, and residential energy efficiency. On average, each responding institution chose seven to eight technologies or sectors.

Capitalization and Co-Investment

Strong capitalization is critical to ensure a green bank can support low-carbon, climate-resilient projects, and respondents showed interest in all possible capitalization sources. As shown in Exhibit 18, all capitalization sources (government appropriations, bilateral foreign assistance, multilateral development bank or fund, and private sector sources) were chosen by over half of responding institutions as a potential funder. As would be expected, reliance on bilateral assistance and multilateral funds decreased as income level increased. About three-quarters of respondents chose three or four sources, indicating a diversified approach to capitalization.

Eleven institutions provided an estimate of the proportion of capitalization targeted from each source (Exhibit 19), again showing the strong tendency to target three or more sources, as well as

the typical green bank focus on capitalization with public resources. On average, these respondents sought about 38 percent of their capitalization from government appropriations, 22 percent from bilateral assistance, 40 percent from multilateral sources, and 22 percent from the private sector (these percentages exceed 100 percent because not every respondent chose every source).

Six institutions had numeric capitalization targets, which ranged from \$100,000 to about \$274 million (excluding the proposed US National Climate Bank). Several respondents said they planned to use each dollar of capitalization to leverage between three and five times as much private sector investment—slightly higher than the median leverage ratio of existing green banks.

EXHIBIT 18
Capitalization Sources of Emerging Green Banks

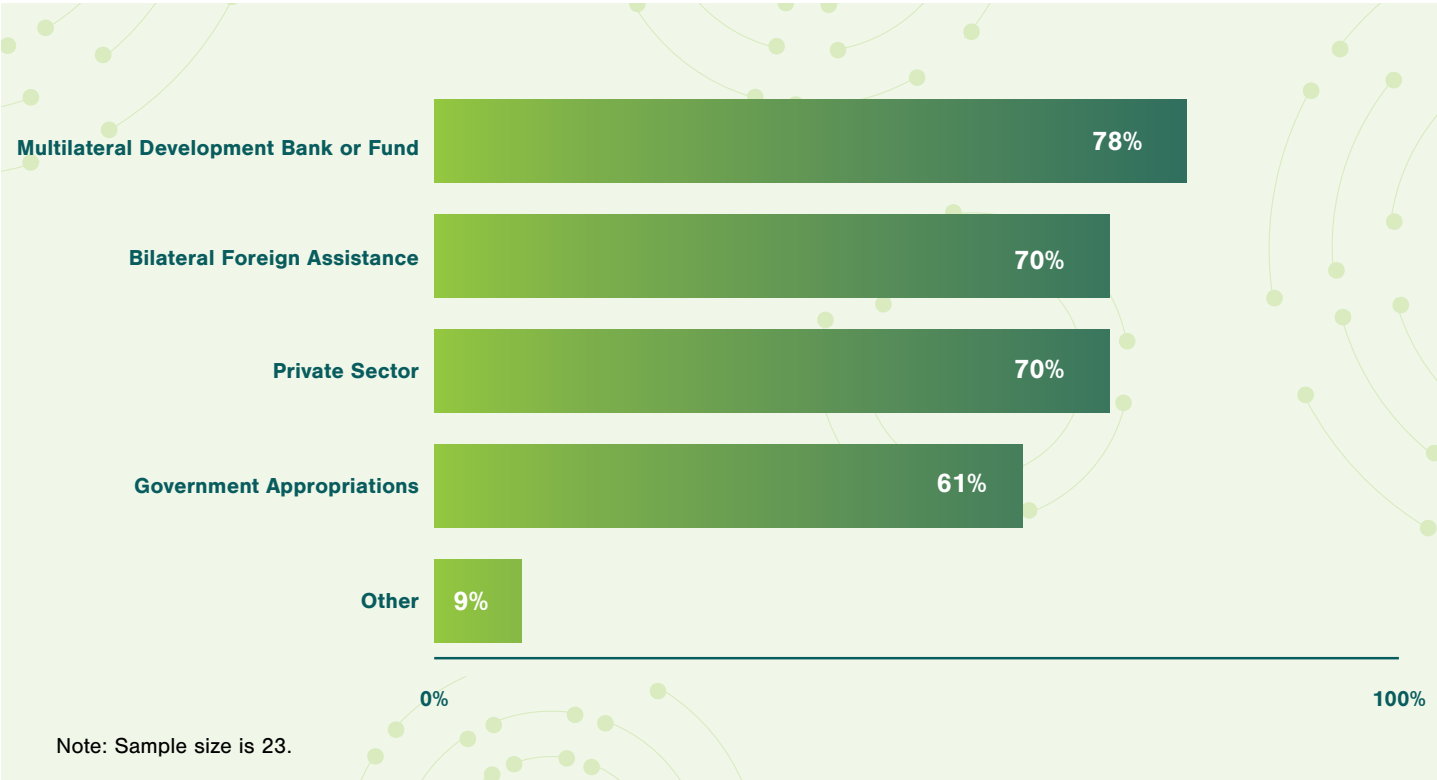
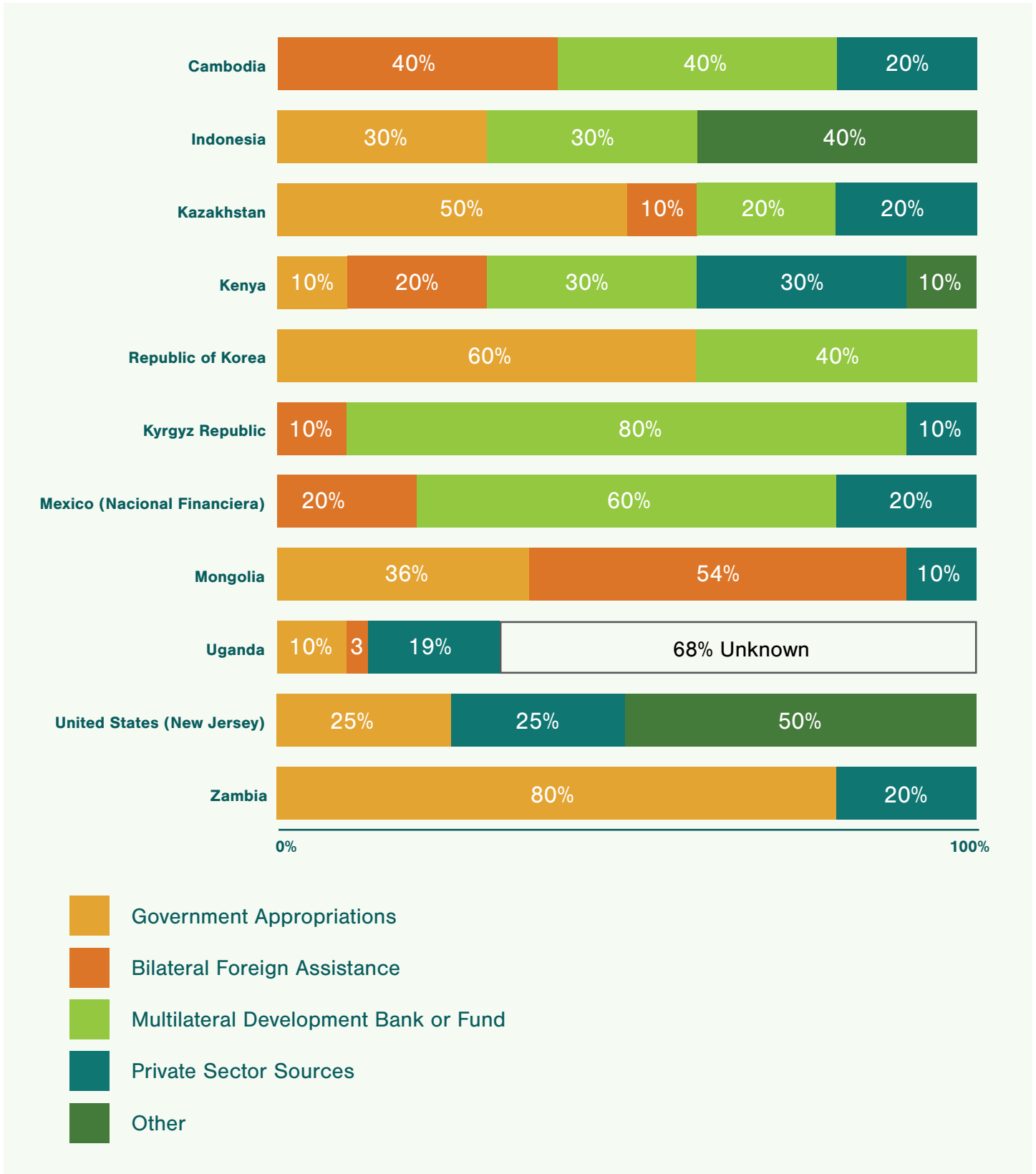


EXHIBIT 19

Selected Capitalization Estimates by Source



While most existing green banks receive domestic public capital, the diversified approach to capitalization reflected in the survey makes sense in the context of emerging market economies. Seeking more than one source may be prudent or even necessary—climate finance providers like the Green Climate Fund (GCF) require national co-investment. But the significant dependence on bilateral and multilateral sources for capitalization risks neglecting the local ecosystem needed to finance the project pipeline and may ensnare countries in a higher external debt burden. Countries accustomed to ready international assistance may need to take extra care to develop a sustainable business model and ensure stakeholders understand that attracting the private sector will be a departure from traditional climate finance.

Local capital providers are often sources of co-investment for green banks. Understanding the major existing investors can help green banks understand where to look for co-investment and how to make their case. We asked respondents

to choose up to three important co-investment providers in their markets (Exhibit 20). Commercial banks and development banks were the clear favorites, with institutional investors a distant third. It seems that most local providers have a role to play. Variation may be due more to specific circumstances in a jurisdiction than to income level or another predictor.

A key feature of green banks is their use of financial instruments to leverage the power of their initial capitalization to crowd in private sector investment. (Exhibits 21 and 22). As expected, in survey responses, grants decreased in popularity as income levels increased. Debt was the most popular instrument, with all respondents except Vietnam planning to offer it (Vietnam planned to offer only grants). The near-universal use of debt may reflect the understanding that green banks have a role in increasing access to low-cost capital that fits technology needs and mirrors existing banks' most frequent offering.

EXHIBIT 20
Local Co-Investors for Emerging Green Banks

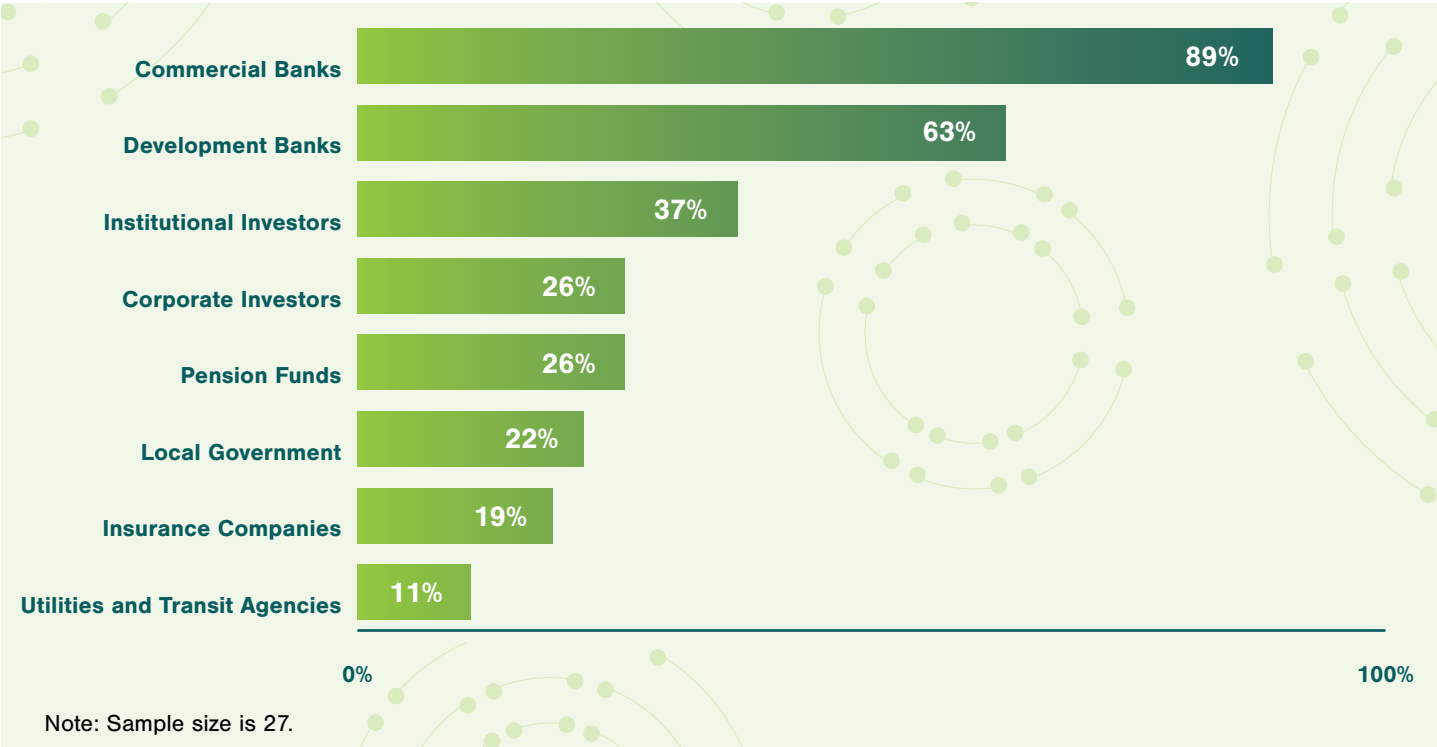


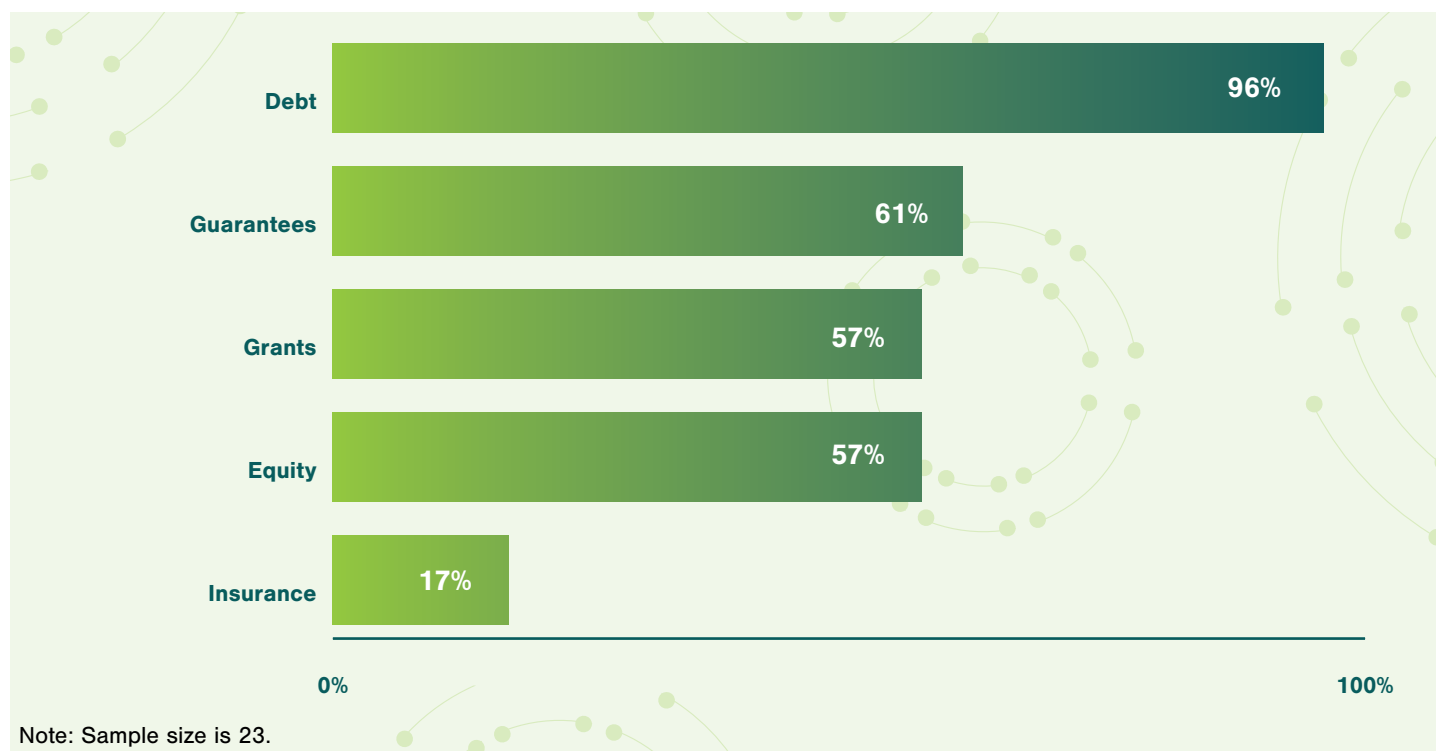
EXHIBIT 21

Green Bank Financial Instruments by Country

Country	Grants 	Guarantees 	Debt 	Equity 
Angola	✓		✓	
Benin		✓	✓	✓
Brazil			✓	
Cambodia		✓	✓	✓
Chile		✓	✓	✓
Indonesia	✓		✓	✓
Kazakhstan			✓	✓
Kenya	✓	✓	✓	✓
Republic of Korea	✓	✓	✓	✓
Kyrgyz Republic	✓		✓	✓
Lebanon	✓		✓	
Mexico	✓	✓	✓	
Mongolia	✓		✓	
Portugal		✓	✓	✓
Rwanda	✓	✓	✓	✓
Uganda	✓	✓	✓	✓
Ukraine			✓	
United States	✓	✓	✓	✓
Vietnam	✓			
Zambia	✓	✓	✓	✓

EXHIBIT 22

Emerging Green Bank Financial Instruments



The interest in more than one instrument suggests these institutions see the value in having flexibility in their investment strategies as each instrument allows an institution to address different market barriers and technology needs. Equity and guarantees were less popular with lower- and upper-middle income respondents compared to high-income respondents; future work might explore whether it is financial or technical barriers that are preventing more uptake of equity investments in lower-income countries.

Technical Assistance Needs

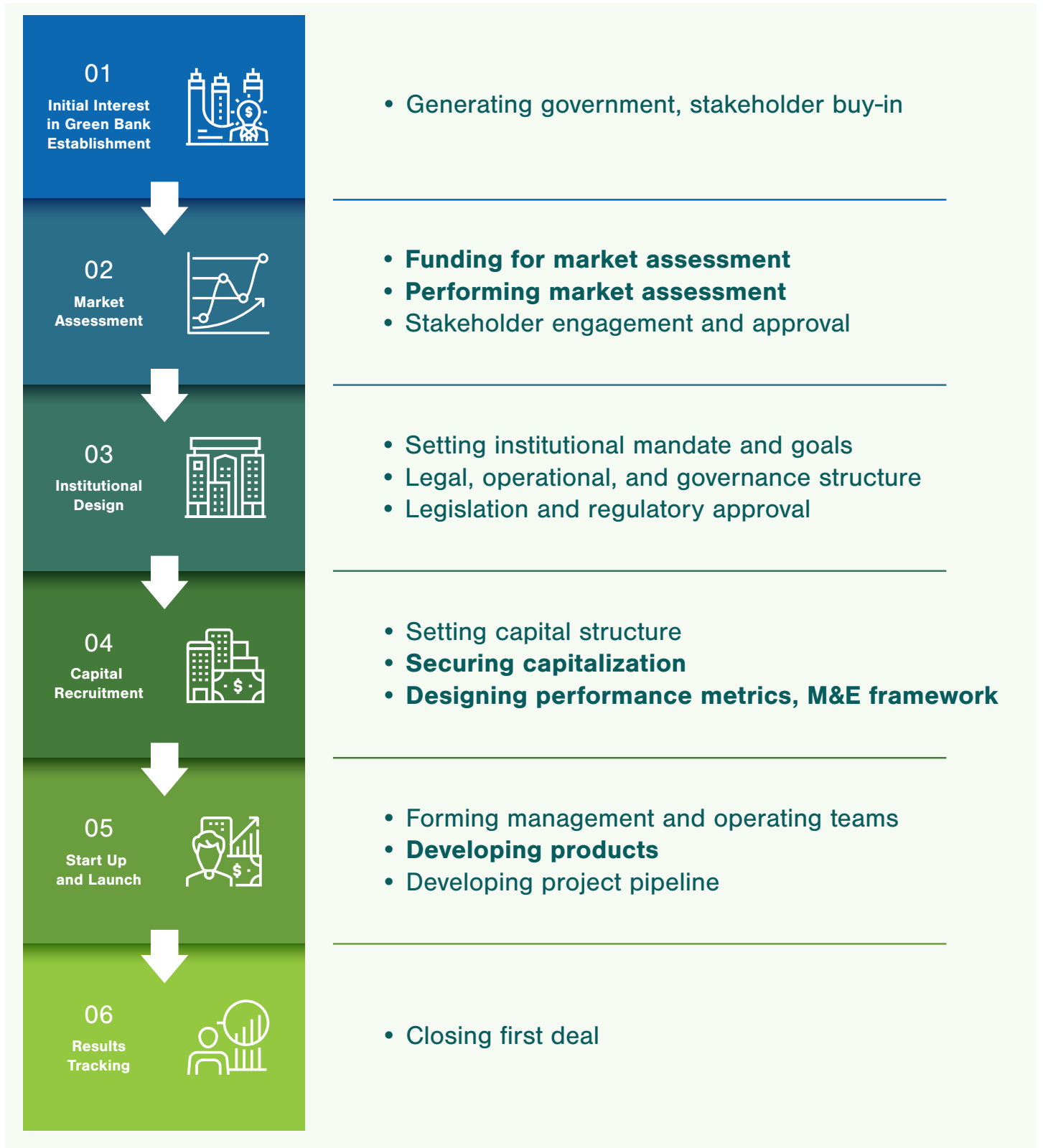
Respondents indicated they needed technical assistance for activities throughout the green bank development process. As illustrated in Exhibit 23, the stages that require the most assistance were capital recruitment, market assessment, and start-up and launch. The individual activities that most frequently require technical assistance were

designing performance metrics and associated monitoring, evaluation, and reporting frameworks; performing a market assessment and securing funding for the market assessment; and developing products and financial instruments.

It is interesting to consider the assistance needs of new stand-alone green banks on the one hand and transformed existing institutions or new facilities within existing institutions on the other. Setting the institutional mandate and goals was “harder” (i.e., required assistance more often) for new institutions and “easier” (i.e., required assistance less often) for existing institutions; the same was true for securing initial capitalization.

EXHIBIT 23

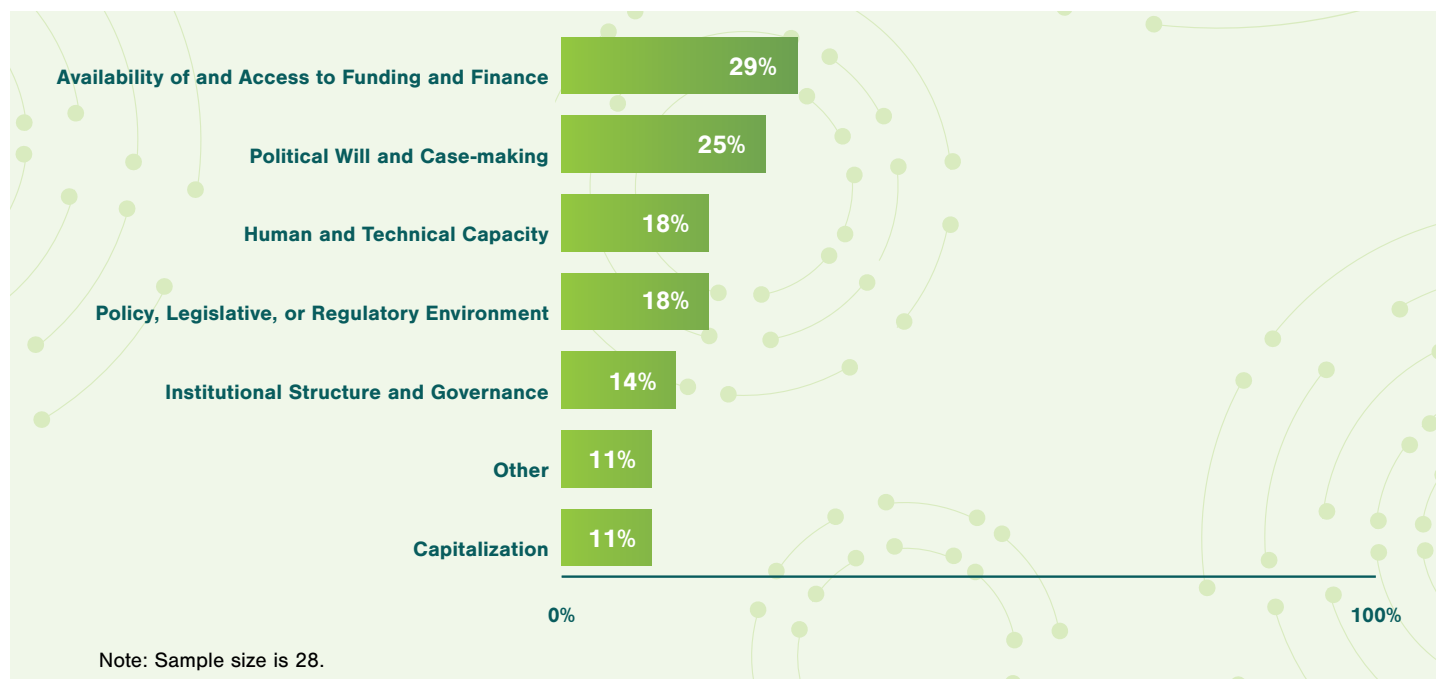
Technical Assistance Needs by Stage of Green Bank Establishment*



* Bold text indicates activities with which survey respondents most frequently reported needing technical assistance.

EXHIBIT 24

Main Obstacle to Green Bank Formation



Obstacles to Green Bank Establishment

When asked what their biggest obstacle was to green bank establishment, respondents identified access to financial resources, especially private investors, as a major theme. Several institutions noted the difficulty of even making contact with private investors unaccustomed to working with developing countries, and of attracting the interest of those investors. Some institutions also identified capitalizing the institution as a specific challenge. Respondents also highlighted a range of other challenges. Several respondents stressed the difficulty and importance of making the case for a green bank to key stakeholders and securing government buy-in. Others noted that elements of the policy, legislative, or regulatory environments were either lacking or limiting (Exhibit 24).

Several respondents shared what resources would help them address their needs. The responses have been edited for length and clarity.

- Working with the Islamic banking system where it is prevalent
- Social consensus and media support
- The support of multilateral banks will be crucial to achieve nationally determined contributions and to continue improving a green portfolio, particularly in developing countries
- Liaison to catalytic investors
- Developing financial instruments such as matching grants and a discounted system for favorable loan pricing for enterprises with a green business model
- Supplementing existing human resources to understand green business frameworks and supporting enterprises with engineering farsighted business models and inventive solutions to address the environment and climate challenge
- Technical assistance and grant funding to support project preparation

COVID-19 and Green Bank Formation

Overall, very few institutions surveyed mentioned the global pandemic and its economic fallout as challenges to their work or the green recovery as an area for future work. One exception is Portugal, where several existing institutions will become a new green bank, and where the European Union's focus on a green recovery is spurring Portugal's efforts. Portugal is expecting support from the European Investment Bank (EIB), which is aligning its agenda to the green recovery; as a result, Portugal is adapting its strategy to make sure it can secure EIB support.

In addition, Portugal learned from its difficult experience during the global economic crisis a decade ago and was able to quickly launch its recovery plan. Echoing Portugal's attunement to the agenda of MDBs, Mexico's Nacional Financiera noted the support of multilateral banks for NDC achievement and greening of portfolios is particularly important in the context of the current global economic crisis.

Discussion and Trends

The responding institutions reflect the breadth of experiences in emerging green banks. Rather than pointing to the benefits of one path to establishment over another, the results instead confirm the flexibility of the green bank model and its ability to meet varying needs in different circumstances.

Comparison: Existing and Emerging Green Banks

While countries exploring the green bank model look to lessons learned from existing green banks, they must tailor new institutions to their own circumstances. **One of the most notable differences between countries that already have operational green banks and those that are in the process of establishing them is their income levels.** While existing green banks are located predominantly in high-income (67 percent) or upper-middle income (25 percent) countries, half of emerging green banks are situated in lower-middle or low-income countries.

This difference might explain the different capitalization strategies of existing and emerging green banks. **While capitalization sources of existing green banks skew heavily toward**

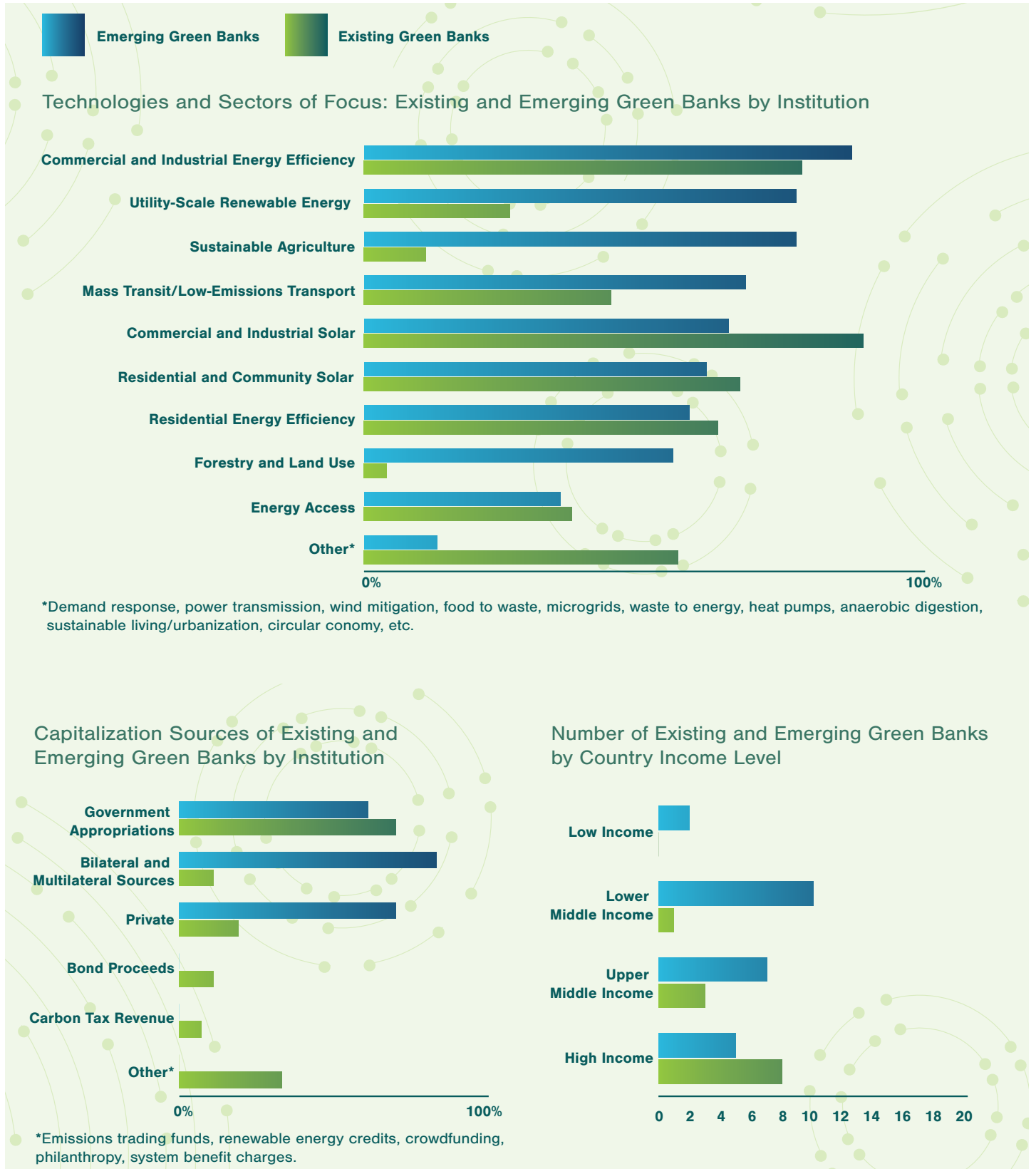
government appropriations, many emerging green banks indicated that they intend to rely largely on multilateral and bilateral assistance—more so than on government appropriations.

Developing countries may have more difficulty securing appropriations to capitalize a green bank from government funds, and therefore have to rely on cumbersome and often opaque processes of applying for foreign assistance.

Existing and emerging green banks also show variation in sectoral priorities. Some of the most popular investments for existing green banks are in solar energy, energy efficiency (both commercial and residential), and low-emissions transport. However, emerging green banks indicated sustainable agriculture, utility-scale energy, and commercial solar as their top priorities, followed by industrial energy efficiency. This example illustrates the tailored approach each country must take when designing their own institution: each country has its sectoral priorities that depend on individual economic and environmental circumstances. The comparison between existing and emerging green banks is summarized in Exhibit 25.

EXHIBIT 25

Comparison of Existing and Emerging Green Banks



Needs and Challenges

The responses of emerging green banks also echo the needs and challenges that existing green banks have already expressed. Some respondents noted their need for international support, but they also emphasized the difficulty in accessing these funds—in other words, the money is out there, but obstacles exist to obtaining it.

Some smaller and less developed countries may be ready for a green bank in terms of market development and enabling environment, but they might not know how to connect with international investors that would otherwise overlook them. Early green banks faced the same challenge and without a way to capture the lessons of other early movers they often reinvented the wheel. Institutions now have a better understanding of what to do on the road to a green bank but accelerating how they do so remains a challenge.

As a first attempt to show the growing green bank landscape, there is much relevant activity that the survey did not capture. Green bank efforts in additional countries, as well as subnational jurisdictions, are also occurring. Capturing this information in the future will help identify deeper trends within income groups or regions and continue to diversify the pool of experiences that others can draw on. Nevertheless, these results are the most in-depth attempt to date to understand global green bank progress, and a starting point to build a fuller understanding in future reports.

A Tale of Two Funds: Jordan and Rwanda

National grant-based environment or green funds have proliferated in the past decade as governments have allocated budgets or sought international grants for climate and environment goals. But the limited supply of public funds is insufficient to achieve these goals. The experiences of Jordan and Rwanda show that there are different ways to address this challenge. In retaining the fund model, Jordan seeks to innovate within its constraints, while Rwanda is creating a new institution to expand the financial instruments available to it.

Jordan Renewable Energy and Energy Efficiency Fund

The Jordan Renewable Energy and Energy Efficiency Fund (JREEEF) is capitalized with government funding and mostly provides grants. Despite this limitation, the fund attempts to use its capitalization in innovative ways, showing the potential for a fund to act as a green-bank-like entity. JREEEF must navigate some of Jordan's key challenges including high energy prices, insufficient energy production, a limited financial sector, and high percentage of unbanked population. It must do so while adding renewable energy capacity, improving energy efficiency, and increasing access to low-income populations.

To achieve these goals, JREEEF had to be creative. The fund worked intensively with local banks to help them understand the importance of renewable energy and increase their attention to the issue of insufficient clean energy penetration. JREEEF created partnerships with local banks that then became lenders in the fund's programs, with JREEEF de-risking the loans.

For example, participants in JREEEF programs, such as developers or contractors, can get a loan from a partner bank with a loan guarantee or the interest on the loan subsidized by the fund. For a household solar program, JREEEF set up a system in which households can pay a participating contractor 70 percent of the installation cost—in cash, if they wish—while the fund pays the other 30 percent. This incentive lowers the barrier to low-income participation both by reducing the cost of solar energy and by allowing households without bank accounts to participate.

As it looks to expand its reach, JREEEF is considering additional approaches. For example, banks that use Islamic finance principles often have more public confidence than other private sector institutions. The fund also sees the flexibility of terms within Islamic finance as promising for sustainable development projects.

Rwanda Green Fund

The Rwanda Green Fund (FONERWA) was created to mobilize resources for environment and climate projects to meet Rwanda's green strategy. Legally, FONERWA is only able to attract grant funding—a constraint that is not compatible with meeting Rwanda's ambitious goal of mobilizing \$11 billion in climate finance as part of its NDC. As a result, the fund, along with international partners, is developing the Rwanda Catalytic Green Investment Bank (RCGIB), a new green bank with a broader mandate to allow Rwanda to attract more kinds of finance.

As FONERWA CEO Teddy Mugabo put it, "We want to move in this direction [of the RCGIB] to be able to attract finance that goes beyond grants, and be able to...sufficiently attract the private sector so that we are able to implement our projects, which will help us achieve our NDC." Alongside RCGIB, FONERWA can continue to operate as a fund and support non-climate environmental projects.





4

International Climate Finance Providers: Key Green Bank Allies

The Climate Finance Ecosystem

After examining green bank progress to date, it may be instructive to step back and consider their context as part of the climate finance “ecosystem.” Green banks are necessary because existing financial institutions are not greening their operations and investment decisions quickly or broadly enough. One way to green the financial system is through top-down regulatory and policy innovations requiring financial institutions to integrate climate considerations.

But green banks can also drive these changes from below, for example, through knowledge sharing with private financial institutions in the areas of carbon accounting as well as climate risk identification, measurement, and management. In addition, by offering green credit lines, co-lending to projects, and providing risk mitigation and other products to foster green transactions, green banks accelerate the greening of the financial system through investment partnerships with their counterparties. Chapter 4 explores this approach by focusing on some of the most common international financial institutions working with green banks.

Understanding Providers of Climate Finance

In the historical paradigm of North-South climate finance flows, multilateral development banks (MDBs), bilateral development finance institutions (DFIs), climate funds, and other multilateral organizations have been the primary intermediaries in channeling climate finance from donor to recipient countries. The results we saw in Chapter 3, with many institutions looking to these “climate finance providers” for support, reflects this legacy. The imperative of shifting the locus of climate finance ownership, decision-making, and responsibility to the national level (i.e., to green banks) therefore represents a significant change both for countries as well as these financial institutions.

Climate finance providers nevertheless remain a critical part of the climate finance ecosystem. As these institutions align their mandates and strategies with the Paris Agreement, they are looking for ways to scale up low-carbon finance. This situation presents an opportunity for a mutually beneficial partnership: green banks can act as an effective in-country partner to climate finance providers because of their ability to identify bankable projects and deploy green capital, and climate finance providers can improve green banks’ access to finance and connection to international donor capital.

Understanding the roles of different climate finance providers can help us understand how they can support green banks and vice versa. MDBs and DFIs run programs with key government stakeholders, public or private financial institutions, and companies, giving them a deep and current understanding of countries’ goals and capacities. As a result, MDBs and DFIs can both receive and influence climate finance demand in countries, including those for institutional solutions like green banks.

Multilateral and bilateral climate funds manage pools of grants and concessional capital dedicated to climate mitigation and adaptation, giving them the ability to support various stages of green bank development. For example, the Climate Investment Funds (CIFs) can provide cheaper, longer-term capital via MDBs to new institutions getting off the ground; the GCF helped capitalize DBSA’s Climate Finance Facility.²⁵

Climate funds deploy capital via intermediaries like MDBs; MDBs and DFIs are in turn the main distribution channels and gatekeepers for the grant and concessional funding from climate funds. Collectively, these providers are important links in the climate finance chain, helping to both strengthen local capacity and deliver the technical assistance and concessional capital necessary to create climate-aligned national investment partners.

Methodology

We sent an electronic survey to climate finance providers in August 2020 to understand their perspectives on the role of green banks in the international climate finance ecosystem. Responding entities are listed in Exhibit 26 below. We explore here, based on survey responses and research, how the requirements and capacity of different climate finance providers is important in the context of fostering green bank development.

Results and Analysis Green Banks Can Help Climate Finance Providers Meet Climate Goals

Following the adoption of the Paris Agreement, MDBs have ramped up their climate efforts and are seeking to make their portfolios consistent with a well-below 2°C pathway. The European Investment Bank (EIB) is at the forefront, committing to align

all financing activities with the goals of the Paris Agreement by 2021.²⁶ EIB and several additional respondents noted that in order to access their resources, counterparties must demonstrate a commitment and actions to align with the targets set out in the Paris Agreement.

Yet, mobilizing private capital into climate solutions remains a challenge for MDBs, despite a commitment to do so.²⁷ Therefore, MDBs need to not only increase capital deployment, but also find ways to ensure their capital mobilizes many times more private capital, particularly in low- and middle-income countries. Mobilizing private capital requires ready project pipelines, which can be challenging for climate finance providers to identify.

Survey respondents universally indicated they would be more effective in deploying finance with the help of local investment partners with a focus on investing in low-carbon, climate-resilient projects. This outlook puts green banks in a good position to

EXHIBIT 26
Surveyed International Institutions



help international climate finance providers identify project pipelines, mobilize capital, and meet climate-alignment goals. To facilitate climate alignment within national financial partners, surveyed climate finance providers are providing technical assistance, assisting with fundraising in the green bond market, establishing accreditation criteria to access funding, and supporting the creation of new intermediaries that will help implement NDCs (Exhibit 27).

EXHIBIT 27
How Green Banks Meet Needs of Multilateral Development Banks



Climate Finance Providers Can Strengthen or Create Strong National Investment Partners, including Green Banks

While green banks can help international climate finance providers meet their goals by providing a project pipeline, green banks also need support further upstream to ensure a robust institution that will be able to effectively source deals. Respondents noted that effective local institutions look different in different contexts and could include separately managed, ringfenced “green funds.” These can work to renovate the mandate, strategies, operations, and technical capacity of existing national development banks, as well as creating new and specialized green intermediaries from whole cloth. The GCF, for example, is supporting versions of all three models. This diversity reflects the flexibility of green bank development approaches undertaken by countries, as shown in Chapter 3.

MDBs are supporting green bank development in diverse ways: early stage scoping, technical assistance on green bond issuance, climate strategy development, and helping green banks become accredited entities of climate funds. For example:

- Using CIFs funding, the AfDB has commissioned the Coalition for Green Capital to lead a study on the development of green banks and national climate funds in six African countries (Benin, Ghana, Mozambique, Tunisia, Uganda, and Zambia). This work is expected to lead to the development of a programmatic proposal to the GCF to support the capitalization of green banks and funds in Africa. The study demonstrates how international climate finance providers, working synergistically, can combine various funding streams and areas of expertise to help client countries. In this case, AfDB was able to match the green bank demand signal from client countries with CIFs resources.
- Using bilateral and multilateral climate funding, the Inter-American Development Bank (IDB) has focused on helping national development banks

in Latin America and the Caribbean support national climate and sustainable development commitments. The IDB deploys technical assistance for developing safeguards systems and issuing green and sustainable bonds to access capital markets, among other activities. IDB continues to explore how to adapt the green bank model to regional needs.

In the survey, five international climate finance providers indicated that providing capital to green banks, alongside other public and private investors, would be a permissible use of their capital. One MDB respondent noted it has previously helped raise capital for at least one regional development bank, which provides a relevant precedent for green banks. A climate fund noted that it recently supported a private equity fund to invest in adaptation, as well as a blended finance facility to provide microfinance loans for smallholder farmers to invest in nature-based climate adaptation solutions. Several respondents said green banks will need institutional credibility or, in the case of a new facility, management teams with substantial track records, as well as key governance and operational policies in place, to receive such investments.

Climate Finance Providers and COVID-19

“Dealing with the two crises [COVID-19 and climate change] separately is not an option, and it must be ensured that decisions made now do not compound the climate crisis, but rather help shape a sustainable and inclusive future for all. Despite its negative impacts, the pandemic has created a global turning point [allowing us] to ramp up actions on resilience, so that societies can contain the pandemic and reduce the impact of climate threats simultaneously”—Leena Klossner, vice president for operations, Nordic Development Fund

In response to COVID-19, some MDBs report a rapid increase in funding directed toward pandemic response, and some note a diversion of lending away from climate finance. However, all surveyed institutions confirmed that their climate strategies will remain in place; climate finance can be a major part of building back better. For example, the GCF approach to COVID-19 response includes accelerating investments with strong socioeconomic benefits and using readiness funding to help policymakers design green recoveries. Green banks are good candidates to receive funding under both of these strategies.







Conclusion

A green bank movement is underway, with a diverse and growing number of countries pursuing the model. Twelve countries already have operational green banks and twenty-five countries are showcasing a variety of approaches to green bank development. Key messages for specific audiences are summarized below.

For Policymakers Seeking to Set up Green Banks

- **Green banks are a proven model** for channeling climate funds, crowding the private sector into clean technology investments, and developing new green markets. In less than a decade, they have deployed \$24.5 billion and crowded in about twice as much from the private sector.
- **Green banks can help transition to a financial system aligned with the Paris Agreement** by providing expertise and capacity in low-carbon, climate-resilient sectors. They address information asymmetries and other market barriers and lower the risks of novel green projects for private investors through the use of innovative financial tools, such as green credit lines, credit enhancements, technical assistance, and others. These approaches help investors more easily transition to climate-resilient investments; once those green projects become mainstream, green banks move to financing and de-risking new breakthrough green technologies. Over time, this leads to a decarbonized financial system and increased progress toward NDC implementation.
- **Green banks are an institutional solution** that helps identify and source available pools of capital for low-carbon, climate-resilient projects and programs. They use relatively modest public funds to attract significantly more private investment to needed clean energy, sustainable agriculture, transport, adaptation projects, and other green sectors. Importantly, green banks also feed learnings back to policymakers and regulators as a way to iterate on policies that can send the right signals for investors.
- **Domestic pools of capital, such as pension funds and sovereign wealth funds, can be used to capitalize green banks or to co-invest in projects and thus support the energy transition.** Green banks can provide investment opportunities and create tailored financial products to mitigate risk for domestic financial institutions, allowing them to invest in national solutions that accelerate climate goals and build a more robust economy.
- **Serving as the focal point for international climate finance, green banks can help countries access available but hard-to-secure funding.** Mobilization of capital for low-carbon, climate-resilient projects is more of a problem than its availability. The Climate Funds Update estimated that, out of over \$30 billion pledged to climate change funds since 2003, only 23 percent was disbursed by the end of 2018.^{v,28} Countries need assistance accessing these resources and green banks are one channel to do so.
- **Green banks offer a vehicle to finance the COVID-19 recovery.** As economies plan how to build back better, green banks provide a model that can finance needed technology and infrastructure while creating jobs and addressing underlying health risks such as air pollution and access to clean water.

^v These figures cover climate funds only, not MDBs or DFIs.

For Financial Institutions Seeking to Increase Their Low-Carbon, Climate-Resilient Investments

- **Green banks can help climate finance providers reach their portfolio goals and achieve climate alignment targets.** By knowing local markets, being aligned with government targets, having specific expertise in innovative clean technologies, and having access to project pipelines, green banks can source deals as co-investors alongside MDBs and national development banks. In addition, their flexible mandate allows them to structure deals that may otherwise be outside the scope of traditional MDB investments, or those of their local counterparty.
- **Green banks need guidance in accessing international sources of capital.** Though interest in the green bank model worldwide is clearly significant, established green banks still exist predominantly in high-income countries, in part because of the difficulty in accessing finance. Seventy-eight percent of respondents indicated they planned to tap multilateral development banks or funds for initial capital, and 70 percent were looking to bilateral assistance. In contrast, public international sources helped capitalize only three existing green banks. Climate finance providers should connect with relevant policymakers and other green bank champions early to discuss their requirements for capitalizing and co-investing with the green bank to ensure their institutional criteria are considered in the design of the green bank's corporate structure.
- **Climate funds and other climate finance providers can help stand up green banks by providing technical assistance.** In the early stages of green bank development—the stage of 48 percent of emerging green bank survey respondents—technical assistance can help accelerate the establishment process. Often, the needed expertise is hard to find domestically and even more difficult to recruit internationally, particularly for lower-income countries. At the same time, developing countries are key to the achievement of global climate goals, and it is paramount to find ways to help them reach their NDCs as quickly as possible. Even though access to finance and the need for additional technical assistance in developing countries are known shortfalls, not enough has been done to address them. Green banks need technical assistance both for their establishment and to support project development.

For Existing Green Bank Practitioners Who Are Looking to Understand What Others in the Field Are Doing

- A growing number of green banks are investing in innovative technologies using new financing mechanisms. Such **innovation should be shared across institutions through groups like the Green Bank Network and other means of exchange.**
- **Emerging green banks can benefit** from advice from existing green bank practitioners on both broad strategic decision-making and tactical interventions.

For Investors Seeking Low-Carbon, Climate-Resilient Projects

- **Green banks can make new technologies or sectors more attractive** by helping address market barriers. They can do this by addressing information asymmetries; proving bankability through investing in a new sector, technology, or geography; and driving standardization to reduce transaction costs. They can additionally share market intelligence and source deals that can reduce the time and human capacity needed to identify novel projects.
- **Green banks can help align projects with traditional risk/return profiles** by structuring and securitizing deals, providing credit guarantees, or bundling smaller hard-to-finance projects like minigrids.

For Consultants and Non-Governmental Organizations

- As echoed in survey responses, **emerging green banks need technical assistance and external champions as they navigate the green bank formation process.** Technical assistance that is tailored to individual circumstances can help countries navigate the stages of green bank establishment, catalyzing the creation of green banks that are the national focal points for climate finance and that can accelerate the achievement of the goals of the Paris Agreement.





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Patricia Ojangole	Uganda Development Bank
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Additional Contributors

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Daisy Bidault	Green Finance Institute
Andrea Colnes	Coalition for Green Capital
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22830 Two Rivers Road
Basalt, CO 81621 USA
www.rmi.org

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