

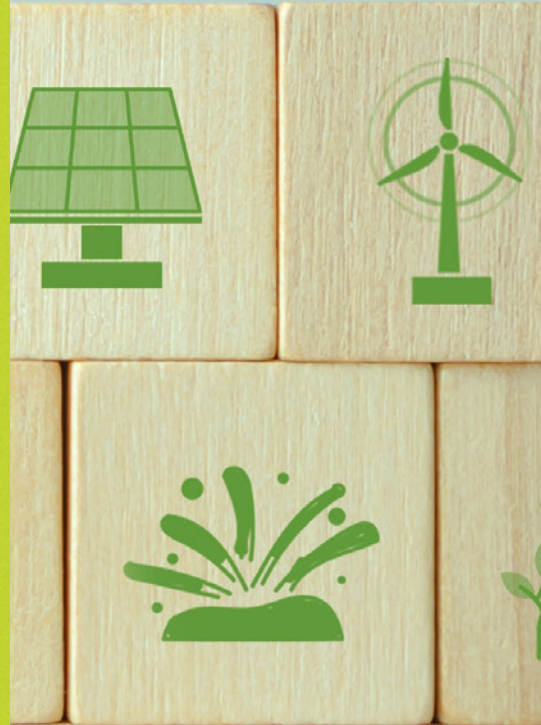
Creating an Enabling Environment for Private Sector Climate Action

An Evaluation of World Bank Group Support, Fiscal Years 2013–22



IEG
INDEPENDENT
EVALUATION GROUP

WORLD BANK GROUP
World Bank • IFC • MIGA



Creating an Enabling Environment for Private Sector Climate Action

An Evaluation of World Bank
Group Support, Fiscal Years
2013–22

An Independent Evaluation

September 6, 2023

Contents

Abbreviations	v
Acknowledgments	vi
Overview	vii
World Bank Group Management Response	xvii
Report to the Board from the Committee on Development Effectiveness	xxiii
1. Background and Context	1
Purpose and Scope of the Evaluation	2
Evaluation Questions and Methods	6
2. Relevance of World Bank Group Lending and Advisory Portfolio	7
Portfolio Overview	8
Relevance of World Bank Group EEPSCA Lending and Advisory Activities to Key Constraints to Private Sector Climate Action	14
Relevance of World Bank Group EEPSCA Lending and Advisory Activities for Countries and Sectors	23
3. Relevance of World Bank Group Country Analytics and Sector Engagements	32
Relevance of World Bank Group Enabling Environment for Private Sector Climate Action Country Analytical Work	33
Relevance of World Bank Group Enabling Environment for Private Sector Climate Action Sector Engagements	41
4. Effectiveness	52
Portfolio Effectiveness	53
Effectiveness of Renewable Energy Activities	57
Effectiveness and Success Factors	62
5. Conclusions and Recommendations	78
Recommendations	83
Bibliography	85

Figures

Figure 1.1. Evaluation Logical Framework	5
Figure 2.1. World Bank Group Lending and International Finance Corporation Advisory Portfolio for EEPSCA, Fiscal Years 2013–22	10
Figure 2.2. Enabling Environment Constraints to Private Sector Climate Action	16
Figure 2.3. Breakdown of EEPSCA Activities and Recommendations, by Constraint Typology	18
Figure 2.4. Greenhouse Gas Emissions by Sector in World Bank Group Client Countries and World Bank Group EEPSCA Project Support by Sector	24
Figure 2.5. Greenhouse Gas Emissions in Client Countries and EEPSCA Project Portfolio, by Emissions Quintile	27
Figure 2.6. Greenhouse Gas Emissions in Client Countries and EEPSCA Portfolio, by Country Income Group	28
Figure 2.7. EEPSCA Adaptation Portfolio, by Climate Vulnerability Quintile	30
Figure 3.1. Private Credit by Deposit Money Banks and Other Financial Institutions in Country Climate and Development Report Countries in 2021	37
Figure 3.2. Assets under Management Held by Institutional Investors in Country Climate and Development Report Countries in 2021	38
Figure 4.1. Staggered Difference-in-Difference Analysis—World Bank Lending on Renewable Energy Regulatory Framework	59
Figure 4.2. Staggered Difference-in-Difference Analysis—World Bank Lending on Wind and Solar Investments	60

Tables

Table 3.1. Summary of Case Study Relevance	43
Table 4.1. Examples of Good Practice Indicators in World Bank Group Projects	56
Table 4.2. Summary of Case Study Effectiveness	65

Appendixes

Appendix A. Methodology	96
Appendix B. Portfolio Analysis of Enabling Environment Constraints	120
Appendix C. Econometric Analysis of World Bank Group Enabling Environment Interventions in the Renewable Energy Sector	131
Appendix D. Case Study Summaries	146

Abbreviations

AS	advisory services
ASA	advisory services and analytics
CCDR	Country Climate and Development Report
CSA	climate-smart agriculture
DPF	development policy financing
EEPSCA	enabling environment for private sector climate action
ESCO	energy service company
FSAP	Financial Sector Assessment Program
FY	fiscal year
GHG	greenhouse gas
IFC	International Finance Corporation
PPA	power purchase agreement
PPP	public-private partnership

All dollar amounts are US dollars unless otherwise indicated.

Acknowledgments

The evaluation was led by Stephen Hutton (senior evaluation officer) and Heinz P. Rudolph (senior evaluation officer), under the guidance of Marialisa Motta (manager) and Carmen Nonay (director, Finance, Private Sector, Infrastructure, and Sustainable Development) and under the overall guidance of Oscar Calvo-Gonzalez and Lily Chu (acting Director-General, Evaluation). The core evaluation team consisted of Ridwan Bello, Anna Mortara, João Leal, Jorge Sabat, Julia de Mesquita, and Tao Tao. Case study authors include Samjhana Thapa (Ghana, Honduras), Kaler Hurcan (Nepal, Türkiye), John Pollner (Colombia), and Pablo Correa (Rwanda). The structured literature review was written by Pablo Correa. Local support and expertise were provided by Maclean Oyeh (Ghana), Milton Barahona (Honduras), and Burcin Pamuksuz (Türkiye). Bernie Sheahan provided technical advice and institutional knowledge. Estelle Rosine Raimondo (senior evaluation officer) and Ariya Hagh (extended-term consultant) provided methodological contributions and guidance. Romaine Pereira and Emelda Cudilla provided administrative support. The report was peer-reviewed by Shilpa Patel (senior adviser at the ClimateWorks Foundation and former principal adviser to the Finance Center at the World Resources Institute), Sanjay Patnaik (director of the Center on Regulation and Markets, the Bernard L. Schwartz Chair in Economic Policy Development, and a fellow in Economic Studies at Brookings), and Barbara Buchner (global managing director of the Climate Policy Initiative). The Independent Evaluation Group evaluation team and management thank all World Bank Group staff and management and the government representatives who provided valuable input to this report.

Overview

The private sector has a critical role to play in addressing climate change. Climate change caused by greenhouse gas (GHG) emissions is an urgent challenge that is pushing the Sustainable Development Goals further out of reach. The private sector is a critical stakeholder in fighting climate change because it can invest in low-carbon technologies, develop new technologies, and build climate resilience into its investments and operations. Private sector financing will be critical for meeting the needs for global finance flows; however, private sector climate finance to date has been very low. One reason for this is that most countries lack a conducive enabling environment for the private sector to engage in climate action.

This evaluation assesses the World Bank Group's efforts to improve the enabling environment for private sector climate action (EEPSCA), defining EEPSCA as the set of policies (laws and regulations), incentives, standards, information, and institutions that encourage or facilitate the private sector to invest or behave in ways that reduce GHG emissions or adapt to the current or anticipated impacts of climate change. An EEPSCA exists in the contexts of country macroeconomic conditions and broader private sector enabling environments, which may also constrain private investment in climate action. The private sector includes large, medium, and small firms; domestic and international financiers; and smallholder farmers and other producers.

Purpose and Scope of the Evaluation

The purpose of this evaluation is to derive lessons from Bank Group experience in improving the EEPSCA. The evaluation covers the Bank Group's efforts to improve the climate change enabling environment in client countries. This includes both efforts to improve upstream policies and midstream efforts to help build a pipeline of bankable projects. The evaluation covers World Bank lending and nonlending activities, including International Finance Corporation (IFC) advisory services, for operations approved during fiscal years 2013–22. IFC investment services and advisory services that target specific firms (rather than governments or industries) are not

covered because they generally do not support efforts to improve the enabling environment. Since the Multilateral Investment Guarantee Agency did not support activities on the creation of an enabling environment during the evaluation period, it is excluded from the evaluation. The evaluation excludes both higher-level macro issues and the general private sector enabling environment, as well as downstream effects of direct project financing or guarantees, including through indirect pathways, such as demonstration effects or market creation, and it does not cover climate finance or private capital mobilization issues.

Main Findings on Relevance

The Bank Group has approved a substantial portfolio of activities supporting EEPSCA, although this represents only a small portion of its climate change engagement. Between fiscal years 2013 and 2022, the World Bank approved 268 lending operations containing EEPSCA activities in addition to substantial nonlending work, whereas IFC approved 116 advisory services projects containing EEPSCA activities. World Bank support for EEPSCA increased around the time of the Bank Group's first Climate Change Action Plan and remained steady since then. The World Bank's EEPSCA activities have supported climate change mitigation more than climate change adaptation, although the share of support for adaptation has increased since 2016, and lower support for private sector adaptation is consistent with the global context. IFC support for EEPSCA has remained flat through the period and provided little EEPSCA support for climate change adaptation. Bank Group support for private sector climate change adaptation is lower than for mitigation in part because of the lack of standardized investible adaptation business models.

The most significant enabling environment constraints to private action can be described in terms of price and nonprice regulations, market information, and risk management and institutions. Climate change mitigation and adaptation involve externalities that distort market behavior when they are not internalized. These externalities can be addressed through policies that correct price signals, provide incentives or subsidies for particular sectors, or regulate high-emitting or nonresilient activities. A lack of awareness and information can be addressed by provision of information to the market,

including through provision of data or research to the private sector, by identifying green activities to firms and investors, signaling pipelines of investible projects, and removing related entry barriers. Excessive or poorly allocated risks can be addressed by mitigating or transferring those risks and building the capacity of public sector institutions to do so.

The Bank Group has engaged on the most significant constraints on private sector climate action, but it has provided insufficient support for risk management and only modest support for carbon taxes or fossil fuel subsidy reform. The World Bank has provided significant support in lending operations for activities addressing price and nonprice regulations. Although forward-looking policy recommendations embedded in Country Climate and Development Reports (CCDRs) have ambitious proposals for carbon taxes, World Bank lending operations have included these infrequently to date because of slow global progress on carbon pricing. The World Bank and IFC have frequently supported activities that addressed insufficient information, and IFC has been a pioneer on supporting regulations to identify climate-related sectors to investors, but only a few World Bank lending operations have supported development and sharing of market information. The level of Bank Group support for risk management has been insufficient, with only rare efforts to support activities that improve risk management or increase related institutional capacity of the public sector, outside of strong IFC support for solar power. These actions are also not featured in forward-looking policy recommendations. Insufficient emphasis on risk management and related public sector institutional capacity has potential effects on the ability of countries to mobilize private sector climate action at scale.

The Bank Group EEPSCA support for climate change mitigation is somewhat aligned with sectors and countries that generate GHG emissions but has had a heavy emphasis on electricity relative to other sectors. The Bank Group has provided some EEPSCA support across all sectors that are significant sources of GHG emissions in client countries (electricity and heating, manufacturing and industry, agriculture, transport, fuel use, land use change, buildings, and waste management), but it has concentrated on renewable energy and energy efficiency, which have standardized models for private sector participation, significant internal Bank Group capacity, and rapid global growth. Bank Group support for transport has been low, as has its support

for upstream policy reform in agriculture. The Bank Group's EEPSCA activities are broadly aligned to the countries with the highest emissions and are focused on middle-income countries. The main disparity is that Bank Group support to China is low relative to its share of emissions. Countries with high needs for climate change adaptation receive only slightly more adaptation support than other countries.

Country-level climate analytics, especially CCDRs, include the role of the private sector in the investment and policy needs they identify but do not offer realistic proposals for financing needed investments. The Bank Group introduced CCDRs in 2022 as a new country diagnostic that integrated climate change and development considerations. The evaluation undertook a desk review of the first batch of 23 CCDRs. These CCDRs provide valuable diagnostics and describe the actions needed to address climate change in the countries they cover, including the role of the private sector. CCDRs lay out the long-term effect of climate change and the impact of different policy scenarios, highlighting in some cases the transition costs. They provide solid diagnostics based on state-of-the-art models to identify needed investments, finding that climate change investment needs are proportionally larger in low-income countries. However, CCDRs cover unevenly the enabling environment for private sector investment across countries and sectors, and the reports do not sufficiently articulate the difficulty of bringing private sector capital to challenging contexts. CCDRs also do not include proposals for financing that are consistent with the investments they propose, and they offer insufficient attention to the financing challenges presented to the private sector by public sector's overindebtedness and the limited development of domestic capital and financial markets. Most CCDRs propose green finance but do not address the limitations of the country context for green finance instruments. Global green bond markets are small, and they may not grow at a pace sufficient to finance countries and global climate action. Financial Sector Assessment Programs are increasingly addressing climate change using dedicated notes but are overemphasizing the development of green financing, including in countries where traditional financial markets are not sufficiently developed.

In case studies, the Bank Group usually diagnoses the most important constraints to private climate action for sector interventions and usually

engages on these constraints; when it does not, this is typically because of a lack of government buy-in or political economy constraints. In case studies across eight countries, the Bank Group identified virtually all of the most significant constraints to desired private sector climate action. When there are constraints that are not diagnosed, these are usually relatively minor; in only a few cases, important issues were not diagnosed in part because they did not naturally align with sectoral boundaries. Although some enabling environment constraints can be addressed by technical solutions, others involve trade-offs that may face political economy barriers, bringing a need for politically informed policy approaches. The Bank Group usually engaged on constraints that can be addressed by technical solutions. When the Bank Group does not engage, this is usually because the constraint is a higher-level issue or has significant political economy challenges or because client buy-in or ownership is lacking. The Bank Group has sometimes been able to engage on politically sensitive issues when the external context creates a sense of urgency, such as at time of crises. The Bank Group has been able to accommodate its interventions to policy boundaries imposed by governments, including limitations in the role that they see for the private sector in the economy. In most cases, engaging substantially on enabling environment barriers required use of analytics combined with lending and nonlending instruments. The Bank Group was often able to usefully combine upstream policy changes with midstream activities that build a pipeline of projects. Evidence suggests strong collaboration between the World Bank and IFC in renewable energy sectors, whereas there is little evidence of collaboration for public-private partnership activities. Bank Group-supported approaches have frequently applied incentive policies (“carrots”) for emission-reducing or adaptive behaviors but rarely applied penalties or costs (“sticks”) to emitting or maladaptive activities.

Main Findings on Effectiveness

The Bank Group usually achieves its indicator targets related to EEPSCA, but these indicators are usually inadequate to assess whether private sector climate action is being achieved. The Bank Group portfolio on EEPSCA is relatively young; hence, only a subset of it can be assessed in terms of effectiveness. The World Bank achieved its indicator targets for enabling

environment activities 73 percent of the time and partially achieved another 18 percent. IFC achieved 70 percent of its targets and partially achieved another 1 percent of its targets. These success rates do not vary much across different types of enabling environment activity or other project characteristics. Across the Bank Group, the main reasons for indicator nonachievement were lack of political consensus or government ownership, project implementation delays, design weaknesses, and force majeure typically related to the COVID-19 pandemic or conflict. However, the indicators included in the projects are rarely adequate to assess whether private sector climate action is being achieved—two-thirds of projects capture only improvements in enabling environment or output delivery rather than capturing evidence of private sector climate action. The evaluation found examples of operations with good practice indicators for measuring private sector climate action.

World Bank lending activities have led to improvements in enabling environment for renewable energy and to private sector investment in renewable energy in countries with relatively higher financial development. The evaluation used the Bank Group portfolio on enabling environment for renewable energy and external measures of enabling environment and renewable energy investment to conduct econometric analysis to test the effectiveness of Bank Group activities. World Bank lending activities led to a significant improvement in renewable energy enabling environment after two to four years and to an increase in private sector investment for countries with relatively higher financial development. This suggests the need to support both enabling environment improvements and the financial development agenda. The analysis also found that IFC advisory services have been effective in attracting private sector investments in wind and solar renewable energy. Countries with multiple Bank Group renewable energy interventions have also received high private investment, and the effect is stronger in countries with more financial development.

The Bank Group has often been effective at achieving improvements for enabling environment, but these have only sometimes translated into private sector climate action. In most case studies, the Bank Group achieved at least some significant improvements in enabling environment, although success is mixed for activities that require overcoming political economy challenges. The Bank Group contributed to increased private sector investment in wind

and solar power in the Arab Republic of Egypt, use of climate mitigation and resilient practices in private investment in major highways in Colombia, and private sector geothermal exploration in Türkiye. However, in other cases, private sector action has not occurred because of political economy challenges, because there were important constraints that were not addressed, or because of unsupportive macro contexts for private sector development. In many cases, despite the Bank Group engagement on elements of enabling environment for several years, it is still too soon to tell if these will lead to private sector action.

Key success factors include establishing price levels sufficient to incentivize private sector action, developing standardized and replicable business models, addressing affordability for poor people, and fostering institutional reform. Policies that ensure that price levels are sufficient to incentivize private action have been critical to success or failure, although the World Bank has rightly moved away from older models, such as feed-in tariffs, which potentially create significant fiscal liabilities for governments. Development policy financing has played a powerful role in supporting critical high-level policy changes; however, they sometimes faced reversals or barriers to implementation beyond their direct conditionalities. Bank Group models that address affordability constraints by low-income households and smallholders have been critical for achieving climate action by these groups. IFC has played a valuable role in bringing investor and private sector firm perspectives into policy dialogue and a leading role in initiating Bank Group action on topics such as sustainable banking. The success or failure of institutional reform that seeks to create structures conducive to private investment has been a key determinant of enabling environment.

However, the Bank Group has often supported business models that are not scalable. Bank Group–supported business for private investment in large public infrastructure projects has involved a buildup of currency risk for governments. This accumulation of currency risk can impose significant fiscal burden, which limits the scalability of these business models. Indexing consumer tariff rates to exchange rates to pass risk on to consumers is not a feasible solution, and long-term currency hedging is also unlikely to be an immediate solution. Scalable approaches to private financing of climate action will require deepening of domestic financial sectors. Public sector

guarantees have facilitated engagements of private sector investments. However, risk allocation decision-making should optimize the use of guarantees because excessive use can inhibit scalability. Some business models are also limited by their reliance on donor finance.

Conclusions

The Bank Group has facilitated private investment into some climate mitigation sectors by developing standardized models, but progress into other climate mitigation sectors is pending, and creating standardized and replicable business models for climate adaptation is challenging. The Bank Group has developed substantial enabling environment engagements in the energy sector, especially for renewable energy. Standardization of contract terms, procurement processes, and financing models created replicable models that attracted a large base of investors. Yet, there has been much less engagement in other mitigation sectors. The Bank Group has also engaged much less on adaptation than mitigation. This is partly because business models for private investment in adaptation are less developed but also because many of the countries that are most vulnerable to climate change have contexts that make it difficult to attract private sector capital.

Proposals for scaling up private sector investment in climate action may have better uptake if accompanied by realistic proposals for financing. The Bank Group has articulated well the need for scaling up investment in climate action, including by the private sector, in its initial CCDRs, but their proposed investment plans may not be financed by domestic financial sectors, or by green finance, without further financial sector development.

Generating private sector climate action at the scale needed to achieve the world's climate goals will require scalable solutions. Business models may struggle to scale if they rely on government guarantees or donor finance. Strong public institutions will be required to determine optimal risk allocation. However, the Bank Group has not placed sufficient emphasis on building the capacity of public sector institutions to deal with complex private sector contracts or risk allocation considerations in the climate-related business models it has supported.

Recommendations

Recommendation 1. The World Bank and IFC should develop and standardize private sector business models for new areas of climate action. The Bank Group should build on its successful private sector engagements models, such as solar power and energy efficiency, and apply similar approaches to selected other sectors, such as public transport, agribusiness, offshore wind power, battery technology, waste management, and sustainable forestry. Developing business models for climate change adaptation will be more challenging than for mitigation, but the Bank Group should identify these when opportunities arise. Standard business models would include, for example, private sector contract and dispute settlement terms that meet international investor expectations, transparent and well-paced procurement processes, clear technical requirements, financing models that allow securitization of payment streams, risk allocation to the parties best able to hold them, and price levels that compensate for these risks.

Recommendation 2. The World Bank and IFC should identify and articulate realistic long-term financing strategies for climate action in relevant country-level climate diagnostics, including the CCDR. These country-specific strategies could include indirect measures that may take time to bear fruit, including policy actions to increase the depth of domestic financial and capital markets and develop the potential for developing currency hedging markets, to enable higher levels of private sector financing in the medium-long term. Proposals for investments might lay out different scenarios of what could be possible given different assumptions about private capital mobilization, financial sector growth, and international climate finance. Assessments of sources of finance might vary across countries based on the level and type of investment needed, the ability of the economy to take on currency risks, the depth and structure of the financial sector and its governance structures, the role of public banks in long-term financing, and the preferences of the government for private financing, among others.

Recommendation 3. The World Bank and IFC should explicitly consider the scalability of private sector climate business models that they support. Pathways to scalability could be explicitly included in Bank Group analytical

work, policy advice, and related advisory and lending activities that support private sector climate action. These should not rule out the use of subsidies or government guarantees for emerging sectors that are important to achieving climate goals, but interventions should involve a long-term strategy for reducing and optimizing reliance on these instruments, including support for models that diversify risks across stakeholders. Bank Group support for private sector climate business models should also include efforts to build the capacity of public sector institutions to manage and allocate risks and improve access to domestic sources of funding. To implement the recommendation, at the intervention level, the Bank Group could use concept, quality enhancement, appraisal, and decision reviews to screen activities with a scalability lens. The Bank Group could also support interventions that encourage increased corporate and household savings, such as tax incentives and pension reforms. It could also support regulatory changes to facilitate investments in climate action of domestic institutional investors, such as pension funds and insurance companies.

World Bank Group Management Response

Management of the World Bank Group thanks the Independent Evaluation Group for the opportunity to provide comments on the report titled *Creating an Enabling Environment for Private Sector Climate Action: An Evaluation of World Bank Group Support, Fiscal Years 2013-22*. The evaluation is a timely input for the Bank Group evolution process by bringing together two key priorities: tackling climate change and attracting private financing. The Bank Group’s commitment to step up its work on climate spans all spheres of its engagement—analytics, policy barriers, financing, leveraging of private capital, measurement of climate results, and partnerships. This report touches on many of these areas through the lens of the Enabling Environment for Private Sector Climate Action (EEPSCA).

World Bank Management Response

World Bank management welcomes the balanced assessment of the Bank Group support within an overall challenging context for EEPSCA and notes opportunities for improvement. The report indicates that addressing climate externalities requires policies that correct price signals, facilitate provision of incentives or subsidies, and ensure regulation of high emitting or nonresilient activities. This is a complex agenda, and the report recognizes the low levels of private climate financing in the face of enormous needs. Several factors influencing the pace of change are well described in the report: different carbon pricing mechanisms, variations in the policy environment of countries, political economy, skills and institutional constraints, shallow financial sector development in some countries, and limited risk appetite of investors. Within this context, the report identifies areas where the Bank Group’s EEPSCA support has been relevant and impactful by addressing constraints to private sector climate action, aligning support for high greenhouse gas-emitting countries, and achieving tangible results. Given the pressing context, the report notes opportunities for improvement, which management recognizes and will act on.

Management acknowledges that Bank Group efforts during the evaluation period focused mainly on climate mitigation, with increased attention to adaptation only in more recent years. During the evaluation period, 50 percent of the World Bank support was for mitigation, 22 percent for adaptation, and 28 percent for both. The report acknowledges the challenges in developing standardized and replicable business models for adaptation that are attractive to the private sector. Nevertheless, adaptation has become more prominent in World Bank support through the 2021 Climate Change Action Plan. Management will continue to address both aspects of climate change and to strengthen the focus on climate outcomes.

Management concurs with the need for stronger climate outcome indicators to measure project success, and work is underway to improve climate metrics. The report notes that “only a subset of indicators explicitly or implicitly assessed whether enabling environment changes were contributing to the desired private sector climate action, including firms’ investment in a new technology, adoption of a behavior change, or use of a new financing or risk-sharing mechanism” (55). Management is currently undertaking work on Paris Alignment and climate outcome indicators, which taken together with the theory of change in project documents, will help assess project success and contributions toward desired climate and EEPSCA outcomes.

Recommendations

Management concurs with the first recommendation to develop standardized private sector business models to be rolled out over time and aligned with sector readiness. The report proposes that business models be developed for several sectors—public transport, agribusiness, offshore wind power, battery technology, waste management, sustainable forestry, as well as in areas related to climate adaptation. Given that the readiness of each sector for new business models differs, management will begin this exercise for a few sectors that have the potential for climate mitigation and expand to other sectors, including for adaptation, based on lessons from experience and availability of opportunities.

Management agrees with the second recommendation that Bank Group diagnostics should include an assessment of the cost and sources of

funding of climate investments. Although the scope of Country Climate and Development Reports (CCDRs) has expanded since the initial reports (covered in this evaluation), management still uses them in conjunction with other diagnostics such as Country Private Sector Diagnostics, Infrastructure Sector Assessment Programs, and Financial Sector Assessment Programs. Structural constraints such as currency risks, financial sector structure and governance, and the role of public sector banks are incorporated in complementary advisory services and analytics and country dialogue. Management will endeavor to bring together and cross-reference the key issues from these analytics to get a more comprehensive picture of climate financing needs as well as opportunities for support in each country.

Management concurs with the third recommendation to assess the scalability of Bank Group–supported private sector climate business models. The review process of operations, from concept note review to decision meetings, provides opportunities for considering the scalability of operations, and this assessment is often reflected in project documents. The report identifies several challenges to scalability, including the need for deepening capital markets, likely fiscal burden on governments, accumulation of currency risks, some of which are unlikely to be addressed with a single operation or in a short period of time. Management will explore opportunities for replicable and scalable interventions and programmatic approaches to private sector engagement for climate action, including potentially through the Global Priority Program.

International Finance Corporation Management Response

The International Finance Corporation (IFC) welcomes the Independent Evaluation Group’s efforts in producing an informative evaluation report titled *Creating an Enabling Environment for Private Sector Climate Action: An Evaluation of World Bank Group Support, Fiscal Years 2013-22*.

This comprehensive evaluation comes at a highly relevant time, as the Bank Group is in the midst of implementing its 2021–25 Climate Change Action Plan and its Paris Alignment commitment started as of July 1, 2023. Climate is a global public good, meaning that policy and regulatory action will be

vital for mobilizing the private sector to contribute at the scale needed to combat and adapt to climate change. This evaluation offers a welcome opportunity to reflect on the barriers and opportunities for engaging private sector participation at sufficient scale and provides practical recommendations for doing so.

IFC management largely finds the recommendations relevant and helpful, and at the same time would like to share some observations, as follows.

Recommendations

On recommendation 1, IFC management agrees with the need to standardize, replicate, and scale models of intervention and provide risk mitigants to catalyze growth in these new areas. We also support the evaluation's finding that climate adaptation is a more challenging area for private sector engagement and investment as it is typically a non-revenue generating public good. The evaluation recognizes IFC's successful track record in replicable models such as Scaling Solar, which is a good example of coordinated Bank Group interventions around standardized public-private partnership advisory interventions with staple Multilateral Investment Guarantee Agency guarantees, IDA guarantees, and IFC financing offers. Other proven models have been in green buildings (the EDGE certification approach) and in green finance. Inspired by these successes, IFC has focused much of its Upstream expansion on increasing such replicable approaches. Current models gaining traction include onshore wind power (Scaling Wind), engagements for water utilities (Utilities for Climate), waste (Circularity Plus), cities (Apex), financial institutions (Blue Finance), mini grids (Scaling MiniGrids), real estate, and building resilience. Nonetheless, management notes that standardization in rapidly evolving markets, which is the case for many climate solutions, present challenges, and pilots, learning and a level of stability are needed before transitioning to scaled and replicable solutions.

Management agrees with recommendation 2. IFC's joint report with the International Energy Agency identifies the development of domestic capital markets as one of the priority actions for scaling up private finance for the clean energy transition.¹ The same report also recognizes that building local capital markets takes time and raises the importance of developing currency

hedging instruments, including those supported by blended finance. Blended finance is a vital potential solution in the short to medium term, especially where emerging market developing economies rely on foreign private capital flows for financing the clean energy transition. The Bank Group’s Joint Capital Markets program is a coordinated effort for the long-term development of local capital markets.

Management would like to highlight that the extent to which such strategies may be appropriate for each country circumstance and the extent to which these issues may be covered in CCDRs (versus other analytical work, which may focus on aspects of macroeconomic management, such as Country Economic Memorandums, or private capital mobilization such as Country Private Sector Diagnostics) is likely to vary in practice. Similarly, the ability to develop scenarios mentioned in the recommendation will be conditional on the availability of data and the development of robust methodologies that can be deployed across CCDRs, which would require further consideration and analysis. We welcome the further identification, support, and implementation of policy actions—via climate diagnostics and the CCDRs in particular—that help address obstacles to mobilizing private capital to climate action.

Management broadly agrees with recommendation 3, and notes that over the past two years, IFC has applied the lessons learned from scalable models and broadened its climate focus on energy and the built environment to other sectors, including agriculture, manufacturing, transport, mining, cities, water, and waste. This is reflected in the diversification of IFC climate finance across sectors. Depending on the stage of evolution of the market in question, IFC adjusts its role to either pilot, demonstrate, scale, or wholesale private investment in the market. While consideration of long-term scale is always appropriate, it is not the focus at the piloting and demonstration phases, where proof of concept is a necessary first step.

In all cases, catalyzing private investment at the unprecedented scale needed to respond to climate change, with the need to fundamentally decarbonize the global economy in a few short years, will require strong and consistent government and policy action to remove subsidies on fossil fuels and create and enforce an effective and increasing price on carbon.

¹ Other actions include increased availability of concessional finance; further development of financial instruments such as Green, Social, and Sustainability bonds, voluntary carbon markets, and aggregation or securitization platforms; and policy actions to reform energy markets and remove fossil fuel subsidies.

Report to the Board from the Committee on Development Effectiveness

The Committee on Development Effectiveness met to consider the report *Creating an Enabling Environment for Private Sector Climate Action: An Evaluation of World Bank Group Support, Fiscal Years 2013–22* and the World Bank Group management response.

The committee welcomed the report noting its timeliness and relevance in the context of the World Bank Group evolution roadmap discussion. They noted the Bank Group’s achievements and the challenges toward improving an enabling environment for private sector climate action, the need to mobilize private capital beyond the energy sector into other major sectors such as transport and agriculture, and the importance of establishing robust outcome and impact indicators to measure achievements in implementing private sector climate action.

Members expressed their full support for Independent Evaluation Group recommendations and encouraged Bank Group management to implement them in advancing the climate agenda. Members stressed the importance of articulating realistic longer-term financing strategies for climate action in country climate diagnostics, including the Country Climate and Development Reports. While members recognized that creating an enabling environment for private sector engagement in addressing climate change is a complex agenda, they encouraged management to explore ways in which private sector capital can be enabled and mobilized to support climate change adaptation efforts. They underscored the importance of developing standardized private sector business models for various sectors including public transport, agribusiness, and technology, and encouraged management to support scalable projects as needed. In addition, members appreciated management’s efforts to improve climate metrics in the context of the new Bank Group Corporate Scorecard. Members also stressed the importance of effective and strong collaboration between the World Bank and International Finance Corporation in attracting and mobilizing private capital to invest in climate action and to deliver results.

1 | Background and Context

Climate change caused by the emission of greenhouse gases (GHGs) is an urgent challenge, putting the Sustainable Development Goals further out of reach. On the world's current trajectory of GHG emissions, the global temperature will increase by up to 2.7°C by 2100. This is more than the previously envisaged 1.5°C, which has been considered a critical threshold for limiting the most severe effects of climate change (IPCC 2018; UN 2021; UNEP 2021b). According to the Intergovernmental Panel on Climate Change, this temperature rise will have devastating effects not only on ecosystems but also on human health and well-being, water, agriculture, cities, settlements, and infrastructure (IPCC 2022). The poorest communities are likely to be hit hardest.

The private sector is a critical stakeholder in fighting climate change through both mitigation and adaptation interventions. Private sector climate action can play a leading role in climate change mitigation by reducing the GHG emissions of its operations using or developing low- or zero-emitting processes and technologies. The private sector can play a role in climate change adaptation by building climate resilience into its operations and investments. The private sector can also provide the finance to support investments in mitigation and adaptation.

Private sector financing is needed to achieve the world's climate targets. Climate-related investments need to increase by more than 10 times by 2030 to satisfy the global investment needs in mitigation and adaptation. Recent assessments suggest that total climate finance flows need to reach at least \$5 trillion per year by 2030 and be sustained at this level through 2050 (IEA 2021; IPCC 2018; OECD 2017b; UNEP 2016, 2021a). According to the Climate Policy Initiative, total global climate finance flows reached only \$665 billion in 2020. Private sector finance is critical to meeting climate investment needs, particularly given constraints on public sector financing in the context of the global pandemic and high public indebtedness. However, contributions from the private sector have been modest to date (\$333 billion in 2020; Naran et al. 2022) and mostly directed to high-income countries.

Most countries lack a conducive enabling environment for the private sector to engage in climate action. The private sector operates in a context influenced by the public sector through policies, regulations, and incentives; changes in these are necessary to catalyze and increase private sector participation in climate action. In many countries, legal and regulatory frameworks are insufficient for creating the conditions for attracting low-carbon technologies. Regulations that level the playing field by correcting price externalities so that actors bear the cost or benefits of their actions to others help create the conditions for private sector investments (BCG and GFMA 2020; Bhattacharya et al. 2020; Boehm et al. 2021; Kivimaa and Kern 2016; OECD 2017a; Rosenbloom, Meadowcroft, and Cashore 2019). Investments for climate adaptation will likely remain particularly low in the absence of a compensation mechanism for the positive social externalities that they generate.

Purpose and Scope of the Evaluation

This evaluation assesses the World Bank Group's efforts to improve the enabling environment for private sector climate action (EEPSCA). The evaluation defines the private sector enabling environment for climate action as the set of policies (laws and regulations), incentives, standards, information, and institutions that encourage or facilitate the private sector to invest or behave in ways that reduce GHG emissions or adapt to the current or anticipated impacts of climate change. A private sector enabling environment for climate action exists in the contexts of country macroeconomic conditions and broader private sector enabling environments, which may also constrain private investment in climate action. The private sector includes large, medium, and small firms; domestic and international financiers; and smallholder farmers or other producers.

The evaluation tests if and how Bank Group enabling environment interventions are addressing the challenges that the private sector is facing when taking climate action. Figure 1.1 describes the logical framework for the evaluation. First, it describes the enabling environment constraints that the private sector is facing to undertaking climate action. The private sector does not have sufficient incentive to undertake climate action because it does not capture the external climate costs or benefits of its actions.

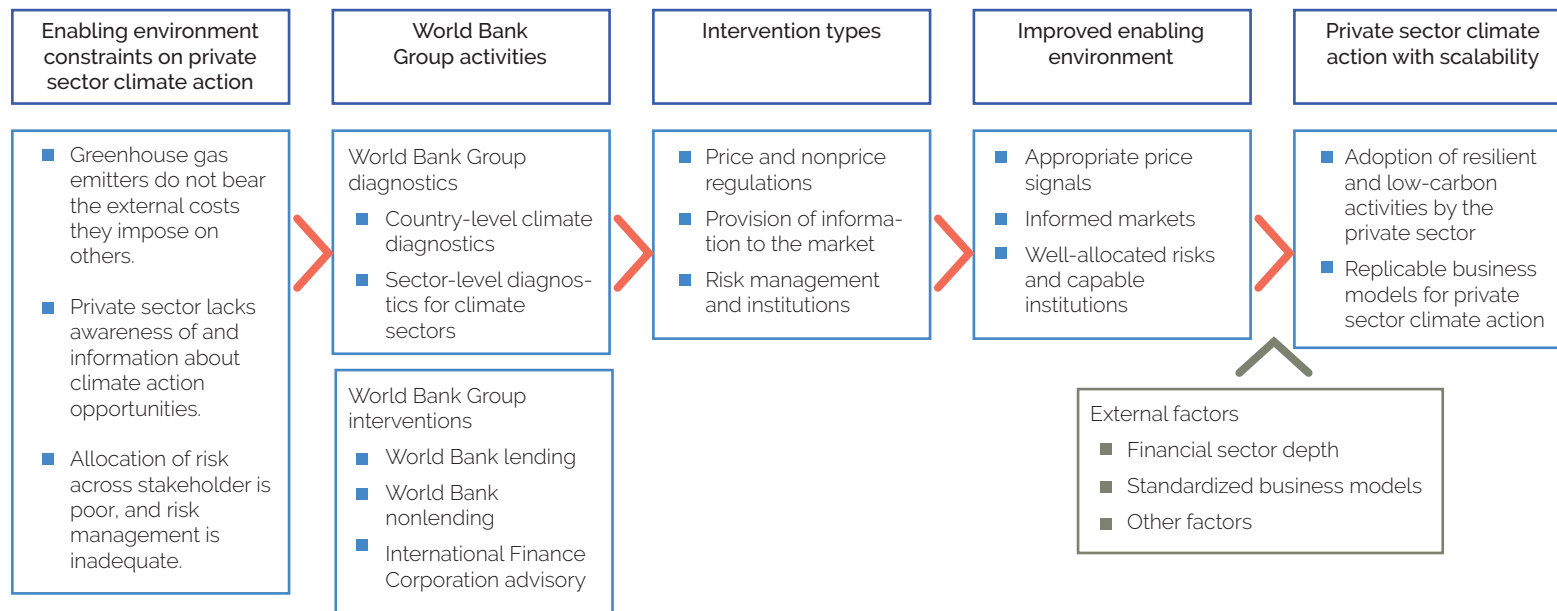
The private sector may lack awareness or information on climate activities or investment opportunities. The private sector may be deterred from investing due to poorly allocated risks between government and the private sector and inadequate public institutions to mitigate or transfer those risks. Second, it looks at how Bank Group work aims to address these constraints. It analyzes Bank Group country diagnostics, such as Country Climate and Development Reports (CCDRs) and Financial Sector Assessment Programs (FSAPs) that identify priority actions across sectors. It also analyzes sectoral diagnostics that identify the specific constraints to achieving a particular private sector climate action (such as investment in solar power, more resilient buildings, or improved industrial energy efficiency). Based in part on these diagnostics and on client demand, the Bank Group develops lending and nonlending activities that seek to address the most important enabling environment constraints. If successful, these will lead to an improved enabling environment and eventually to climate action by the private sector. This action needs to be feasible at scale to have the impact needed to meet country climate goals. The ability of the enabling environment to contribute to private sector climate action may depend on external factors, including the strength of the domestic financial sector or the presence of standardized business models. This evaluation considers business models as private sector profit-making activities and their financing, governed by permitting and regulation. Standardizing business model means providing a template of contract terms, procurement processes, and financing models, among others, which can be replicated across projects.

The evaluation covers the Bank Group's efforts to improve the climate change enabling environment in client countries. These include both efforts to improve upstream policies and midstream efforts to help build a pipeline of bankable projects. The evaluation excludes both higher-level macro issues and the general private sector enabling environment, as well as downstream effects of direct project financing or guarantees, including through indirect pathways, such as demonstration effects or market creation. It also excludes global work of the Bank Group. Although the evaluation does not cover climate finance or private capital mobilization issues, it indirectly addresses some of the challenges for financing the climate agenda. Achieving climate goals will also require actions by high-income countries, but Bank Group

activities engaging these (nonclient) countries through global convening work are not covered by the evaluation. Although included in the portfolio, the evaluation places less attention on energy efficiency interventions, which are covered by a separate evaluation (World Bank 2023c). The evaluation covers Bank Group efforts to improve the EEPSCA through World Bank lending and nonlending activities, and International Finance Corporation (IFC) advisory services (AS), but does not cover other World Bank Group climate change activities. The evaluation covers IFC AS that support enabling environment activities, targeted to the government or industry level; it does not cover the majority of IFC AS that are targeted to specific firms and so do not address enabling environment. The evaluation does not include IFC investment services, which generally do not support enabling environment activities but may have done in some cases. Since the Multilateral Investment Guarantee Agency did not support activities on the creation of an enabling environment during the evaluation period, it is excluded from the evaluation. The evaluation covers operations approved during fiscal years (FY)13–22.

The purpose of this evaluation is to derive lessons from Bank Group experience in improving the EEPSCA. The evaluation assesses the relevance and effectiveness of Bank Group support to EEPSCA and aims to identify lessons applicable to the World Bank and IFC to inform implementation of the Bank Group Climate Change Action Plan 2021 and subsequent Bank Group activities. The evaluation also aims to inform discussions on the evolution road map, which considers further increasing the prominence of the role the Bank Group plays on supporting global public goods, such as climate change.

Figure 1.1. Evaluation Logical Framework



Source: Independent Evaluation Group.

Evaluation Questions and Methods

This evaluation answers the following questions: (i) How relevant has the Bank Group's support been to creating an enabling environment for private sector participation in climate mitigation and adaptation in client countries? (ii) How effectively has the Bank Group supported creating an enabling environment in client countries to allow the private sector to engage in climate mitigation and adaptation?

To answer the first question, the evaluation assesses three aspects of relevance. First, it conducted a structured literature review to identify key enabling environment constraints on private sector climate action and conducted a systematic portfolio mapping to assess the alignment of the Bank Group portfolio with those key constraints. Second, it conducted a global data analysis to identify the sectors and countries with the highest GHG emissions and the countries with the highest needs for climate adaptation and conducted a systematic portfolio mapping to assess the alignment of the Bank Group portfolio with those sectors and countries. Third, it assessed the extent to which the Bank Group identified and acted on the most important enabling environment constraints at a country level using a structured qualitative review of key Bank Group country diagnostics and using explanatory case analysis.

To answer the second question, the evaluation assessed effectiveness in three ways. First, it conducted an effectiveness review and indicator analysis on project evaluations for completed projects. Second, it conducted a deep dive on the effectiveness of enabling environment interventions in the renewable energy sector using econometric analysis. Third, it identified factors that helped or hindered effectiveness using explanatory case analysis.

2 | Relevance of World Bank Group Lending and Advisory Portfolio

Highlights

- ||| The World Bank Group has supported a substantial portfolio of activities that seek to improve enabling environment for private sector climate action, but this portfolio has not increased in recent years.
- ||| The Bank Group's enabling environment support has focused on climate change mitigation more than adaptation; however, the share of World Bank support for adaptation has increased since 2016.
- ||| The Bank Group has engaged on the most significant constraints on private sector climate action, such as price and nonprice regulations, which help internalize climate-related externalities and provision of information to the market to improve knowledge and raise awareness, but it has provided insufficient support for risk mitigation and transfer and related institutional development.
- ||| The Bank Group has covered sectors with the greatest emissions, but support has focused heavily on the electricity sector, whereas the transport sector has had relatively little support, and there has been little upstream policy reform for agriculture.
- ||| The Bank Group's enabling environment for private sector climate action activities are broadly aligned to the countries and country income groups with the highest emissions.
- ||| Countries with greater need for adaptation have received only slightly more adaptation support than other countries.

This chapter assesses the relevance of the Bank Group's efforts to improve the EEPSCA, provides an overview of the Bank Group portfolio, assesses the degree to which Bank Group support is addressing the most important enabling environment constraints, and assesses whether the Bank Group is concentrating support on the sectors and countries that generate the most GHG emissions or the countries with the greatest need for adaptation.

Portfolio Overview

The Bank Group has approved a substantial portfolio of activities supporting EEPSCA, although this represents only a small portion of its climate change engagement. Between FY13 and FY22, the World Bank approved 268 lending operations containing 375 EEPSCA activities. These operations used both investment project financing (154 projects) and development policy financing (DPF; 102 operations) with less use of other instruments (nine program-for-results operations and three technical assistance loans). World Bank nonlending operations, including EEPSCA analysis, could not be systematically identified. Over the same period, IFC approved 116 AS projects containing 146 EEPSCA activities. These enabling environment-related AS projects targeted governments or broad industry groups rather than individual firms. The EEPSCA portfolio represents only a small portion of the Bank Group's climate change engagement—projects with EEPSCA activities constitute 11 percent of World Bank lending projects with any climate change co-benefits and 28 percent of IFC AS with any climate change co-benefits. This evaluation defined an EEPSCA activity as the components, subcomponents, or policy actions of an operation that address a distinct enabling environment constraint to private sector climate action. Appendix A provides more details on how activities were defined and identified. In most cases, a project with EEPSCA also includes other activities that are not related to enabling environment, not related to the private sector, or not related to climate change; such other activities are not part of this evaluation.

The Bank Group serves most clients on the EEPSCA. The Bank Group has provided at least some EEPSCA support to 96 countries (out of 134 countries that borrowed from the World Bank during the evaluation period). Most

countries with no support are those with relatively small portfolios of lending projects, especially small states.

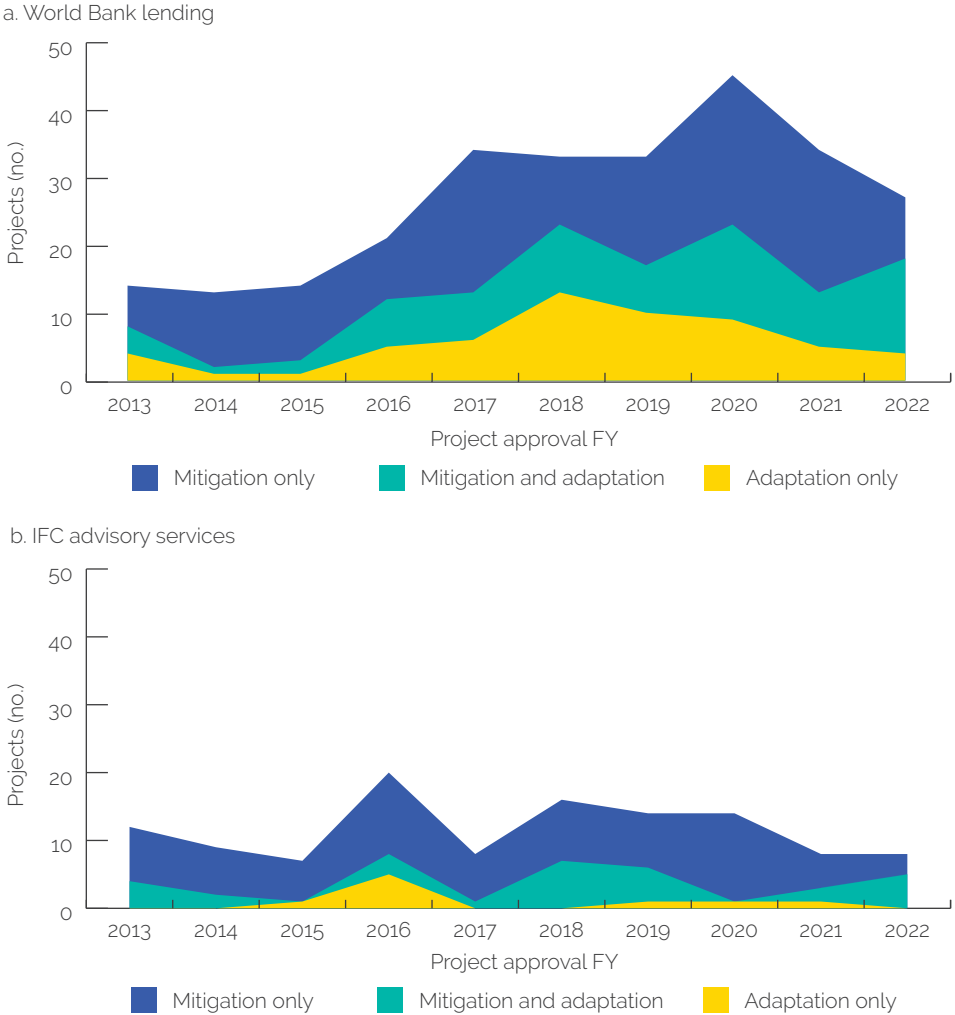
World Bank lending support for EEPSCA increased around the time of the first Bank Group Climate Change Action Plan and has remained steady since then. The Bank Group Climate Change Action Plan 2016–20 confirmed prioritization of the climate change agenda and highlighted the need for climate-related economic transformation to be enabled by a supportive policy and investment environment. Figure 2.1 shows that the number of World Bank lending projects supporting EEPSCA approximately doubled from 2015 to 2017. There was an uptick in EEPSCA support in 2020 with a significant number of COVID-19 response DPF operations that included EEPSCA policy reforms, but this was not sustained. The increasing World Bank support for EEPSCA operations is also partly due to a broader increase in climate change–related operations by the World Bank, which have had a consistent upward trend. For most of the evaluation period, 10–12 percent of all World Bank lending projects with climate change co-benefits included EEPSCA activities; however, this has declined since 2020.

The World Bank’s EEPSCA lending activities have supported climate change mitigation more than climate change adaptation, although the share of support for adaptation has increased since 2016. Across the evaluation period, 50 percent of World Bank EEPSCA lending operations supported mitigation, 22 percent supported adaptation, and 28 percent supported both. Even in low-income countries, EEPSCA support for climate change mitigation has been more common than for adaptation—in these countries, there were 27 EEPSCA projects supporting mitigation, 7 projects supporting adaptation, and 9 projects supporting both. However, projects supporting climate change mitigation could also be seen as promoting green growth or low-carbon development.

The World Bank’s climate change mitigation support has focused on provision of financial and nonfinancial incentives. The incentives were mostly directed to renewable energy generation (such as feed-in tariffs and credit lines), cost-reflective electricity pricing, removal of subsidies to state-owned electricity companies, and mitigation of financial and technical risks associated with investment in renewable energy. Others include support to legal and institutional reforms required to stimulate a pipeline of viable

renewable energy projects and to enhance competitive procurement of electricity from independent renewable energy producers. Non-energy-related mitigation activities include supporting governments to develop incentive mechanisms for reduced GHG emissions mostly from afforestation, for example, through payment for ecosystem services, emission reduction payments, and carbon credit schemes.

Figure 2.1. World Bank Group Lending and International Finance Corporation Advisory Portfolio for EEPSCA, Fiscal Years 2013–22



Source: Independent Evaluation Group portfolio analysis.

Note: EEPSCA = enabling environment for private sector climate action; FY = fiscal year; IFC = International Finance Corporation.

The World Bank’s climate change adaptation support has provided information and financial and nonfinancial incentives and has focused mostly on the public sector. The World Bank’s climate change adaptation support has included the provision of climate and hydrological data (as well as mapping of climate hazards) to the private sector, the introduction of resilient building codes, and financial incentives to support investment in climate change adaptation technologies. Many of the World Bank’s climate change adaptation activities have been focused on the public sector, rather than on private sector enabling environment, because many forms of climate change adaptation are public goods.

The main World Bank activity that supported both climate change mitigation and adaptation is the facilitation of climate-related research and development that benefits the private sector. This included, in particular, strengthening industry-academia linkages to accelerate the transfer of relevant climate mitigation and adaptation techniques from academia to the private sector. Other activities in support of both mitigation and adaptation include financial incentives to promote adoption of climate-smart agriculture (CSA) practices, sustainable forestry regulations and incentives, resilient building standards that incorporate energy efficiency, and green taxonomies.

The World Bank has also supported EEPSCA through nonlending work. The World Bank has approved many nonlending activities that support EEPSCA, including diagnostics, knowledge work, AS, and capacity building. However, the evaluation could not identify them systematically because these activities are not tagged as to whether they are likely to deliver climate change benefits. Evaluation case studies show that nonlending work has played a critical role in diagnosing constraints, identifying priority actions and serving as the basis for lending operations, supporting policy dialogue and raising awareness, and building client capacity.

IFC support for EEPSCA has remained flat through the period. As shown in figure 2.1, despite the increasing Bank Group corporate prioritization of climate change, EEPSCA IFC AS support has not increased through the evaluation period. Enabling environment support has also remained a relatively steady share of all climate change–related IFC AS; however, this share has been lower in 2021 and 2022 in part because of an increase in the number of

climate change–related IFC AS that were not related to enabling environment.¹ This evaluation is not able to draw definitive conclusions on the reasons behind the lack of increasing support. One reason may be the difficulty of developing private sector business models in adaptation (discussed further in this chapter). Over time, there has also been inconsistent IFC management prioritization of AS, especially government or industry facing AS that were not specifically linked to IFC investments. IFC internal restructurings, including the creation of upstream advisory resources and subsequent decentralization to the Regional departments, may have affected the teams’ ability to work in a coordinated fashion on identifying and standardizing new business lines. In 2018, IFC introduced its concept of “upstream” work, which seeks to remove barriers to investment, enhance the operating environment for private business, and identify and create new investment projects. The upstream approach has the potential to unlock enabling environment opportunities if resources are managed in a way that creates new business models. However, although the EEPSCA IFC AS portfolio includes 28 upstream advisory projects, these have not been enough to increase the overall trend. Thus far, IFC EEPSCA engagements have focused on a few critical activities (public-private partnership [PPP] advisory especially for solar power, sustainable banking, and green buildings) where IFC built internal capacity. Broadening in other areas could require further capacity development.

IFC has provided EEPSCA support for climate change mitigation, but relatively little EEPSCA support for climate change adaptation. Across the evaluation period, 67 percent of EEPSCA IFC AS supported climate change mitigation, 8 percent supported climate change adaptation, and 25 percent supported both. Many activities that supported both have been for sustainable banking, which has largely prioritized climate change mitigation. IFC was a pioneer in supporting a voluntary community of financial sector regulatory agencies and banking associations from countries committed to advancing sustainable finance (Sustainable Banking and Finance Network). This association, which includes 43 countries, is aimed at improving environmental and social risk management (including disclosure of climate risks) and increased capital flows to activities with positive climate, environmental, and social impact.

IFC AS has supported climate action in three main areas:

- » Climate change mitigation, including business lines related to PPP transaction AS for renewable energy projects (such as through the scaling solar program), voluntary green building standards through the Excellence in Design for Greater Efficiencies program,² provision of financial incentives to promote climate mitigation activities, and other support to enable regulators and industry groups to build a pipeline of bankable projects in the finance and green building sectors.
- » Climate change adaptation, including climate risk insurance products for farmers, regulations for banks and other financial sector intermediaries to assess their exposure to climate risk, and economic incentives for efficient water use by private firms.
- » Climate change mitigation and adaptation, including improvements to climate-related environmental, social, and governance frameworks in the financial sector and design of green taxonomies that help identify sectors and activities that contribute to climate action.

One reason the Bank Group's EEPSCA adaptation support is lower than for mitigation is the limited global progress in the development of business models for investments in climate adaptation. Lower Bank Group support for adaptation reflects the external private sector environment. Climate change adaptation activities often have public good characteristics that lack revenue streams and thus are difficult to derive bankable business models for the private sector. In addition, adaptation needs are often dependent on specific local context and likely climate change impacts; therefore, an activity that is adaptive in one context may not be in another. Globally, the private sector has less experience with adaptation investments, whereas many forms of mitigation have become standardized business lines. For some forms of adaptation, it may be difficult for the Bank Group to develop private sector business models in these areas without demonstrated models in high-income countries. However, there may also be opportunities to innovate and extend business models to client countries by addressing the specific constraints that hinder replication. The difficulty of increasing private sector participation in adaptation is a particular challenge for low-income countries, which have the greatest need for adaptation. In addition, low-income countries face a higher cost of funding, which compounds the challenge.

Relevance of World Bank Group EEPSCA Lending and Advisory Activities to Key Constraints to Private Sector Climate Action

This section assesses the degree to which Bank Group support is addressing the most important enabling environment constraints for private sector climate action. It does so by developing a typology of the most important constraints using a structured literature review of policy papers on climate change enabling environment and then assessing the alignment of the Bank Group portfolio to those constraints. The methodology for the literature review and development of the typology is described in appendix A.

A Typology of Enabling Environment Constraints

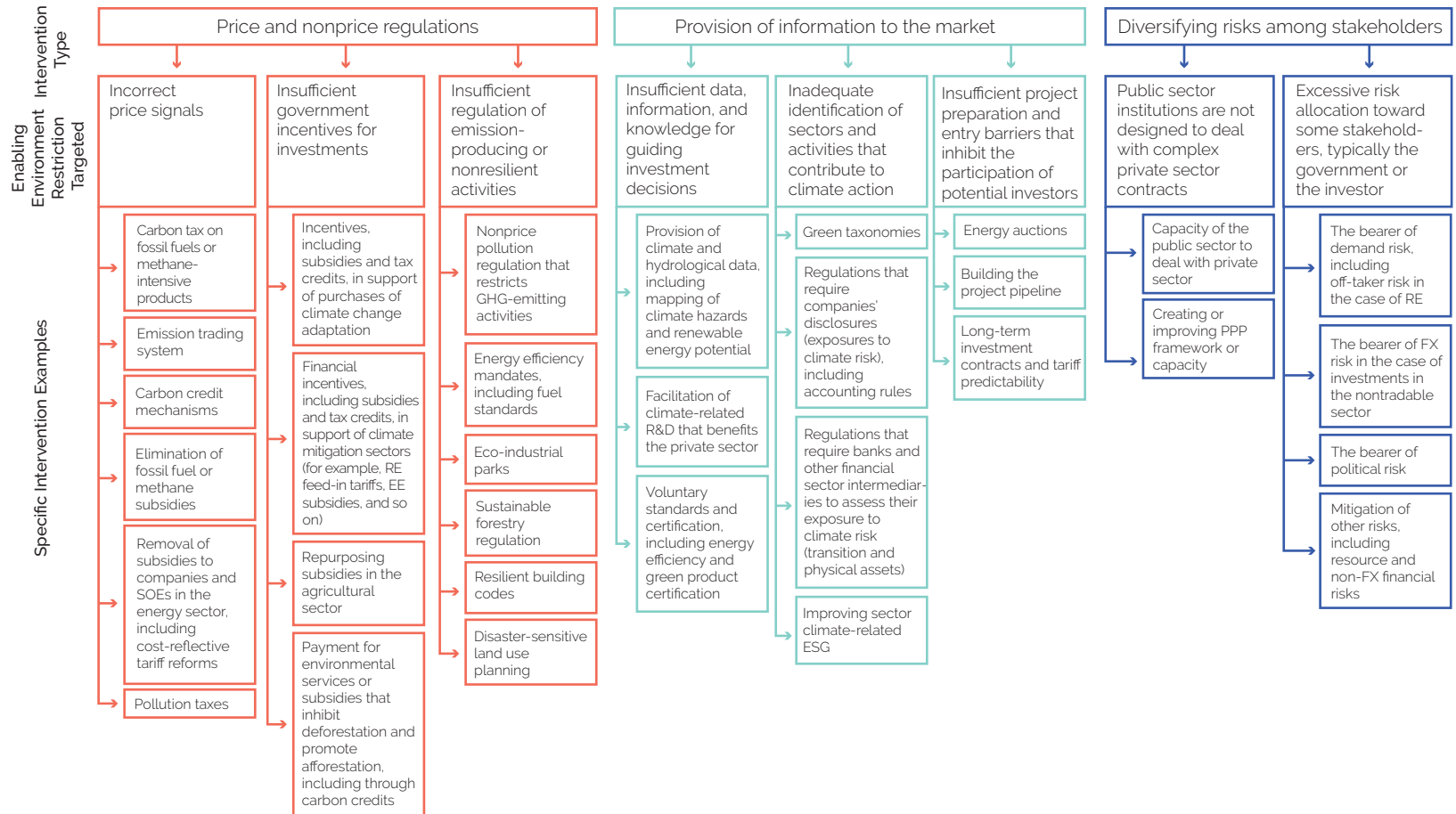
The evaluation groups enabling environment constraints on private sector climate action under three broad categories. As described in the evaluation framework (figure 1.1), three key factors are needed for markets to operate efficiently in the climate space: (i) price and nonprice regulations, (ii) market information, and (iii) risk management and related institutional development. Figure 2.2 provides a detailed typology of these three factors.

- » **Price and nonprice regulation.** Climate change mitigation (and to a lesser extent adaptation) involves negative or positive externalities associated with GHG emissions or climate resilience. Prices that force users to internalize these distortions, including carbon taxes and reduction of subsidies to fossil fuels, are at the core of setting appropriate market incentives. The private sector is also sensitive to government incentives that can help direct investment into sectors that support climate mitigation. Instruments such as tax incentives and other subsidies for renewable energy and green buildings and payments for ecosystem services for agroforestry operations create incentives for investments in these sectors. In addition, through the enactment of regulations, governments can discourage emission-producing or nonresilient activities, including pollution regulation that restricts GHG-emitting activities, energy efficiency mandates and fuel standards, or resilient building codes.
- » **Market information.** The private sector requires adequate information to make investment decisions, especially for climate change–related sectors

and actions that may be new or unfamiliar. In this context, actions and interventions that increase awareness by providing data, information, and knowledge for guiding investment decisions—including mapping of climate hazards, voluntary standards and certification of green products, and facilitation of climate-related research and development—improve conditions for private investment. Considering the increasing investor appetite for green investments, actions that promote identification of sectors and activities that contribute to climate action are useful to guide investment decisions. Finally, interventions that help countries develop pipelines of investible projects are important in bringing opportunities to investors.

- » **Risk management and institutions.** Considering that large climate-related investments, including in infrastructure, involve significant capital and long payback periods, private sector participants are sensitive to risk. Excessive risks need to be mitigated or transferred, and risks need to be allocated to the parties best able to bear them. Institutional capacity of the public sector is essential for building credibility with private sector counterparts. Because most government institutions related to building public infrastructure were designed with the purpose of executing their budgets—as opposed to designing and managing contracts with private sector counterparts—interventions and actions that support increases in the institutional capacity of the public sector are important in building trust and enabling the development of risk-sharing agreements between private and public counterparts. In large climate-related infrastructure projects, risks typically include counterparty, credit, demand, foreign exchange, financing, operational, and force majeure, among others. Stakeholders typically include public institutions, such as a line ministry or a state-owned enterprise; private sector investors; financiers, including banks and bondholders; insurance companies and other financial intermediaries; and final users. Although initial risk management schemes typically rely on government guarantees, interventions that facilitate risk allocation to the party best able to bear them are effective in channeling more private sector solutions. Risk management arrangements are bounded by contracts that establish the rights and obligations of each of the parties, including compensation when some of the parties do not fulfill their obligations. Private investors are keen on ensuring the presence of an impartial dispute settlement system before engaging in any contract.

Figure 2.2. Enabling Environment Constraints to Private Sector Climate Action



Source: Evaluation team's conception based on structured literature review.

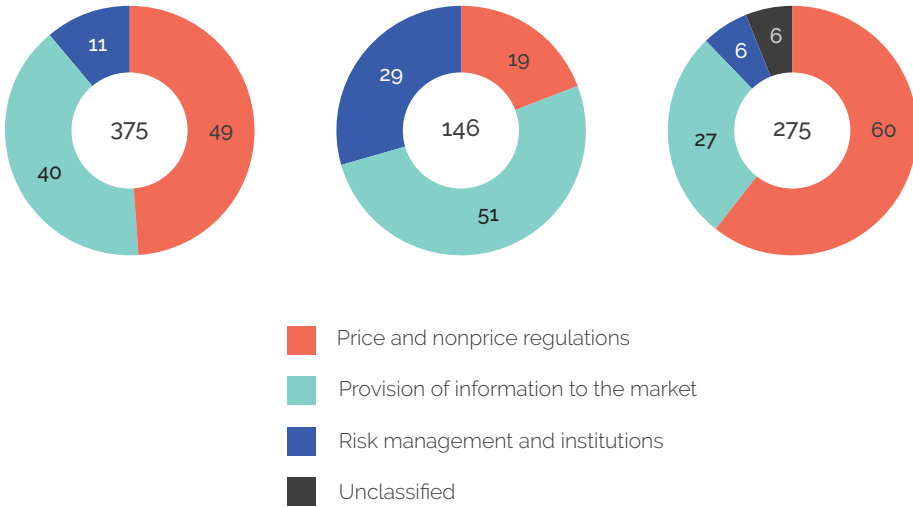
Note: EE = energy efficiency; ESG = environmental, social, and governance; FX = foreign exchange; GHG = greenhouse gas; PPP = public-private partnership; RE = renewable energy; R&D = research and development; SOE = state-owned enterprise.

Alignment of World Bank Group Portfolio to Enabling Environment Constraints

This section analyzes the Bank Group’s EEPSCA activities and its forward-looking policy recommendations against the typology described in chapter 2. It finds that the Bank Group has focused on price and nonprice regulations and provision of information to the market but has provided limited support for risk management and institutions. The findings are summarized in figure 2.3, and more detail is provided in appendix B. The evaluation identified which type of constraint was being addressed by each of the 375 EEPSCA activities in World Bank lending operations and 146 EEPSCA activities in IFC AS projects between FY13 and FY22. In addition, this evaluation analyzed policy recommendations included in the first 23 CCDRs produced by November 2022 against the same typology. These policy actions provide a signal of the intended future directions of Bank Group support. Of the 937 policy recommendations in CCDRs, 275 were related to the enabling environment for the private sector. Although the evaluation could not determine what the optimal share of Bank Group support should be for each type of constraint, it identified areas of strong support and potential gaps. The Bank Group’s EEPSCA work has focused on price and nonprice regulations and provision of information to the market. The World Bank has provided little support for risk management and institutions, and these are a small share of CCDR policy recommendations. Almost 30 percent of the IFC AS activities are related to risk-sharing between the private and public sectors, but they are narrowly focused.

Figure 2.3. Breakdown of EEPSCA Activities and Recommendations, by Constraint Typology

a. World Bank lending portfolio b. IFC advisory services portfolio c. CCDR recommendations



Source: Independent Evaluation Group.

Note: The World Bank lending and IFC advisory services portfolios, respectively, include 375 and 146 EEPSCA activities approved in fiscal years 2013–22. For CCDRs, the figure includes 275 EEPSCA recommendations from the first 23 CCDRs. CCDR = Country Climate and Development Report; EEPSCA = enabling environment for private sector climate action; IFC = International Finance Corporation.

Price and Nonprice Regulation

The World Bank has provided significant support in lending operations for activities that help include externalities in price signals, provide incentives to climate-related sectors, or regulate high-emitting or nonresilient activities. The World Bank has frequently supported cost-effective tariffs for utilities; carbon crediting mechanisms; payment for environmental service mechanisms addressing deforestation; other financial incentives, such as subsidies for renewable energy; and climate-related standards and regulations, such as resilient building codes, sustainable forestry regulations, and energy efficiency mandates.

Nevertheless, the World Bank has infrequently supported key activities that provide broad incentives for climate action, such as carbon pricing. Although interventions that affect the relative prices of clean compared with dirty technologies across multiple sectors are powerful ways of incentivizing action, their high visibility makes them contentious and creates

political economy barriers. Only 12 activities in lending projects supported implementing or increasing carbon taxes or reducing fossil fuel subsidies. In addition, the World Bank has only six lending operations related to repurposing subsidies in the agricultural sector, where the Bank Group is only beginning to engage. There were few examples of support for air pollution regulations, which could disincentivize high-emitting technologies. Carbon pricing is often proposed as the optimal solution, but the World Bank supported carbon pricing programs through lending activities in only three countries (Colombia, North Macedonia, and South Africa). This is consistent with the slow global pace on carbon pricing around the world, as documented in the *State and Trends of Carbon Pricing 2023* report (World Bank 2023b). Chapter 3 describes political economy barriers and how the Bank Group has engaged on them.

IFC seldom supported activities that addressed price and nonprice regulations, consistent with this not being its institutional comparative advantage. IFC worked with governments to develop financial and nonfinancial incentives for private investment in solar power and green buildings, which were sectors where IFC established strong internal capacity. Outside of such areas, the World Bank is often better placed to provide upstream policy support on price and nonprice regulations because high-level policy support is not part of IFC core mandates.

CCDRs have heavily emphasized price and nonprice regulations (60 percent of EEPSCA recommendations) and have ambitious proposals for carbon taxes. Approximately one-third of CCDRs' recommendations are related to the use of prices as an incentive for attracting private sector investments, including implementing or increasing carbon taxes, reducing fossil fuel or methane subsidies, and removing subsidies to companies and state-owned enterprises in the energy sector. Across the 23 CCDRs covered, 14 have recommendations for carbon taxes and 11 for reducing fuel or methane subsidies. There is some disconnect between these ambitious forward-looking proposals and the relative lack of global progress or World Bank support for carbon taxes or fossil fuel subsidies during the evaluation period.³ The remaining policy recommendations included in the CCDRs relate to regulation of emission-producing or nonresilient activities

(primarily through mandatory standards for energy efficiency and resilient building codes) and to provision of sectoral incentives.

Market Information

The World Bank frequently supported lending operations that addressed insufficient information. The World Bank frequently helped clients build project pipelines, such as through power sector plans that signal to the market that there will be investible projects. Approximately one-third of the activities related to market information provide support to project preparation. The World Bank also helped improve the predictability of tariffs in public-private contracts and built client capacity to conduct energy auctions. In addition, the World Bank frequently facilitated climate-related research and development that benefit the private sector and provided climatological data, including mapping of climate hazards and renewable energy potential. Few interventions addressed voluntary standards and certification for energy efficiency and green products because these were addressed more by IFC.

There are only a few World Bank lending operations for development of regulations to identify climate-related sectors to investors, such as through green taxonomies. Although these are promising activities for bringing private sector investments, they are relatively new even in high-income countries. For example, it was only in 2020 that the European Union adopted its green taxonomy and that the guidelines for greening the financial sector became available. However, the evaluation could not identify the extent to which these goals are supported through nonlending work.

IFC provided substantial support to improve information to markets, especially through support to develop project pipelines. This support was largely for (i) the adoption of voluntary standards (predominantly resource efficient and zero carbon building standards; Excellence in Design for Greater Efficiencies), mostly by raising awareness among regulators and industry groups of the business case for green buildings; (ii) the creation of project pipelines; and (iii) building capacity of financial institutions for sustainable finance. Support for the creation of project pipelines accounts for about one-third of the IFC AS activities related to the provision of market information.

CCDRs recommended many policy actions related to information but rarely encouraged activities that would help build pipelines of investible projects. CCDRs frequently included policy recommendations related to green taxonomies and disclosures and data for guiding investment decisions, such as climatological and hydrological data or voluntary standards and certification. However, they rarely included midstream activities to build project pipelines, in contrast to the substantial World Bank and IFC activities on this topic.

Risk Management and Institutions

The World Bank rarely supported lending operations that improve risk management or related capacity of the public sector, including risk-sharing arrangements between public institutions and private investors. Only 11 percent of World Bank EEPSCA lending activities addressed these types of constraints. The World Bank provided some advisory support for improving institutional, legal, and operational frameworks for PPPs, helped establish partial credit guarantee schemes for financial institutions and investors financing green projects, and supported the design and implementation of private insurance products for disasters caused by natural hazard. To check if this gap in risk management lending activities was addressed by nonlending work, the evaluation conducted a systematic identification of climate-related nonlending activities on PPP. This review identified 59 enabling environment activities related to PPP across 20 countries, largely in the water, transport, and energy sectors.

IFC addressed risk allocation issues in solar power but seldom engaged in other risk management activities. IFC provided PPP transaction AS for solar power through its scaling solar program across multiple regions. There are also transaction AS for streetlight tendering activities for several cities in Brazil. Among other sectors, engagements include a waste to energy activity in Bangladesh and structuring of the private sector component of a bus rapid transit in Senegal. These AS address risk allocation by helping governments establish contract terms that determine which risks are held by different stakeholders.

CCDRs rarely proposed policies related to risk mitigation or related institutional development, which may stem from CCDRs' prioritization criteria.

Only 6 percent of CCDD policy recommendations addressed these issues, primarily on actions to improve PPP frameworks in 4 out of the 23 countries covered (Jordan, Malawi, Indonesia, and the Arab Republic of Egypt). The absence of support for institutional capacity building and reform may be a consequence of the prioritization criteria used in CCDDs, which encourage urgent actions with immediate payoffs rather than those that are less urgent or have trade-offs (World Bank Group 2022b, figure 16).

Insufficient emphasis on risk management and public sector institutional capacity has potential effects on the ability of countries to mobilize private sector climate action at scale. Adequate risk-sharing arrangements are the cornerstone for financing climate-related opportunities at scale. Stronger public sector institutions open opportunities for better risk-sharing, especially in the presence of more advanced financial systems. Although contractual arrangements that allocate counterparty, demand, credit, and foreign exchange risk to government counterparts (including guarantees) may boost the interest of private sector investors, they are not scalable, considering the high levels of government indebtedness and additional government capacity to fund future commitments. These contractual arrangements replace explicit debt with implicit debt, in the form of additional contingent liabilities. External literature (CFLI, EDFI, and GIF 2021; Grimm and Boukerche 2020; OECD 2021, 2022b; World Bank Group, UNDP, and GIF 2020) suggests that allocating risks across stakeholders (government, equity investors, bondholders, banks, insurance companies, multilateral organizations, and other financial intermediaries) based on reliable contracts and institutions allows scalability of private sector investments. The structure of contracts may evolve over time to reflect the strengths and weaknesses of different stakeholders, the depth of the capital market, and the trust of the private sector in public institutions. Although some recent articles (Li, Natalucci, and Ananthakrishnan 2022; Sekyoung Choi, Zhou, and Laxton 2022) put emphasis on the role that multilateral organizations can play in de-risking private sector portfolios, credit risk is not the only variable that inhibits private sector participation, and other risks are expected to be allocated to different stakeholders. In addition, the lack of activities in low-income countries may reflect some additional structural issues that may need to be addressed.

Relevance of World Bank Group EEPSCA Lending and Advisory Activities for Countries and Sectors

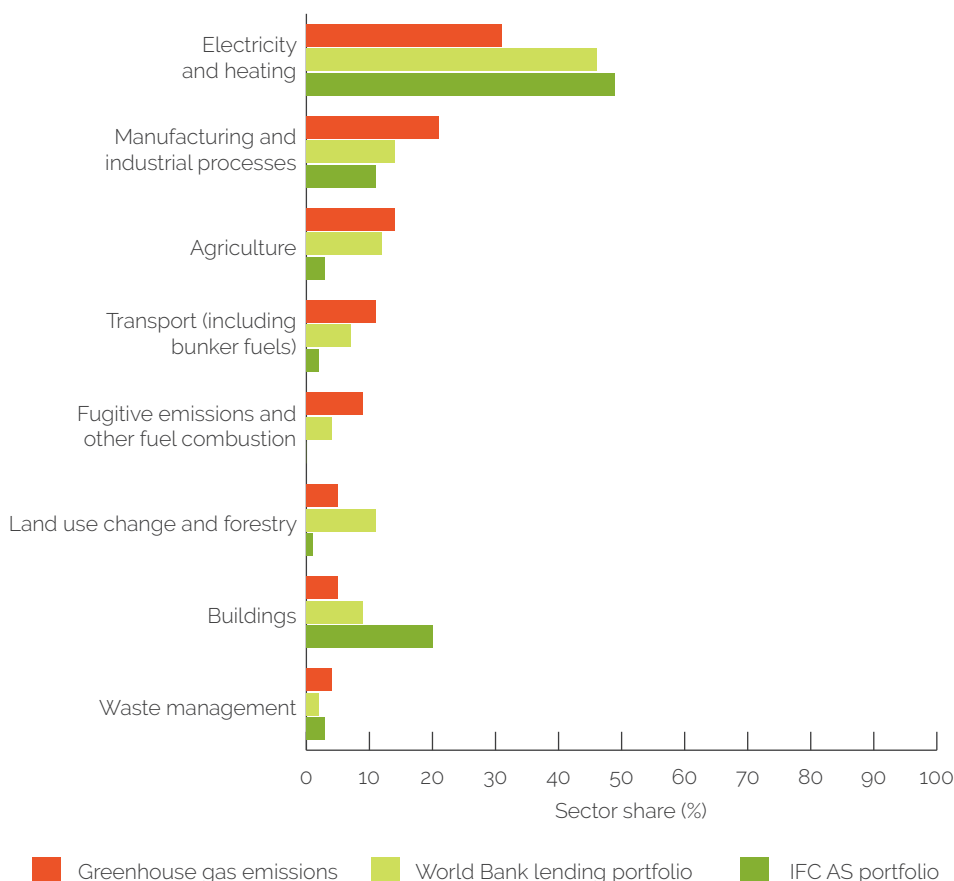
The evaluation assessed whether Bank Group EEPSCA activities were targeted toward the sectors and countries with the highest GHG emissions. The evaluation classified all Bank Group EEPSCA activities by the economic sector they addressed and compared these activities to external data on GHG emission sources (World Resources Institute Climate Analysis Indicators Tool).⁴ The analysis focuses on emissions from Bank Group client countries (countries with at least one lending operation during FY13–22), which collectively generated 66 percent of global emissions during 2013–19. The historical stock of emissions does not come from Bank Group client countries, and Bank Group client countries have much lower emissions per capita than nonclients, but the Bank Group does not engage directly with nonclients. If the Bank Group were strategically targeting emission reductions of its clients, this would imply that it would conduct more activities in sectors and countries with higher GHG emissions.

The Bank Group has provided some EEPSCA support across all sectors that are significant sources of GHG emissions in client countries. The Bank Group has provided at least some support for enabling environment for private sector climate change mitigation in all major emission source categories (figure 2.4).

The Bank Group EEPSCA support for climate change mitigation is somewhat aligned with sectors that generate GHG emissions but has had a heavy emphasis on electricity relative to other sources of emissions. Figure 2.4 shows that nearly half of Bank Group EEPSCA support (46 percent for World Bank; 49 percent for IFC) has been for electricity and heating (primarily renewable energy and energy efficiency), which constitutes 31 percent of emissions in client countries. Support for other major sectors (especially transport, agriculture, and manufacturing and industrial processes) is lower than their share of emissions. This may be because it has been easier to mobilize private capital in the electricity sector (particularly renewable energy) than for many other climate change mitigation activities. In turn, this may be due to (i) the electricity sector having standard business models for private sector participation; (ii) the Bank Group having developed specific capacity in the energy sectors, including skills and financial resources; and (iii) the rapid global

growth of the renewable energy sector, with high client and investor demand. The share of GHG emissions in client countries from electricity and heating has been rising over time (from 22 percent in 1990 to 31 percent in 2019).

Figure 2.4. Greenhouse Gas Emissions by Sector in World Bank Group Client Countries and World Bank Group EEPSCA Project Support by Sector



Source: Independent Evaluation Group analysis using emissions data from the World Resources Institute Climate Analysis Indicators Tool for 2013–19 and World Bank Group portfolio data.

Note: To align the sectors in the World Bank and IFC portfolio charts with those in the greenhouse gas emissions chart, World Bank Group EEPSCA activities that do not map to specific sectors (for example, on sustainable banking) are not shown in the portfolio charts. Sector shares of the World Bank lending and IFC AS portfolios are not mutually exclusive because a single World Bank or IFC project can contain EEPSCA activities related to multiple sectors. AS = advisory services; EEPSCA = enabling environment for private sector climate action; IFC = International Finance Corporation.

The Bank Group’s support for EEPSCA in the transport sector has been low. Transport-related mitigation activities have included removal of subsidies and the imposition of a carbon tax on liquid fossil fuels and the provision of economic incentives to assist mass transit service operators with switching

to electric vehicles. However, the overall level of support for EEPSCA in the transport sector has been relatively low (7 percent of the EEPSCA portfolio), and none of the transport-related lending projects were led by the Transport Global Practice (although transport specialists supported operations led by other Global Practices and led important nonlending work). This is consistent with findings from an Independent Evaluation Group Evaluation Insight Note on decarbonization in the transport sector (World Bank 2022b), which did not have a specific focus on private sector but noted that the World Bank could do more to use DPF to support transport decarbonization policies and reforms. Outside of the evaluation portfolio, the World Bank has supported bus rapid transit systems, including in low-income countries, but this support has been through direct financing rather than enabling environment for the private sector. IFC has only two EEPSCA projects related to transport—one related to bus rapid transit and the other related to municipal infrastructure.

The Bank Group has supported research on CSA practices and financing mechanisms for farmers to invest in these practices but has done relatively little on upstream policy reform. In the agriculture sector, the World Bank has supported research and dissemination of CSA practices coupled with the provision of matching grants and other financial incentives to support farmers' investment in CSA techniques. However, World Bank support for CSA was largely through downstream activities outside of the evaluations' scope, particularly the provision of extension services to farmers, rather than through enabling environment activities. There has been very little use of DPF in agriculture (only 2 out of 102 DPF operations in the EEPSCA portfolio related to agriculture), perhaps because of the substantial political economy barriers to reforms that may affect large numbers of poor farmers but also because the World Bank has not prioritized enabling environment or policy issues. The World Bank has published a flagship report on repurposing agricultural subsidies and other policies to support climate action (Gautam et al. 2022), but the agenda is nascent. The first CCDRs place little emphasis on agricultural subsidy reform, which is only beginning to be brought into country policy dialogue. IFC has only three EEPSCA projects related to agriculture; these support financial technology adoption by farmers, reduced deforestation from cattle ranching, and promotion of good agricultural practices.

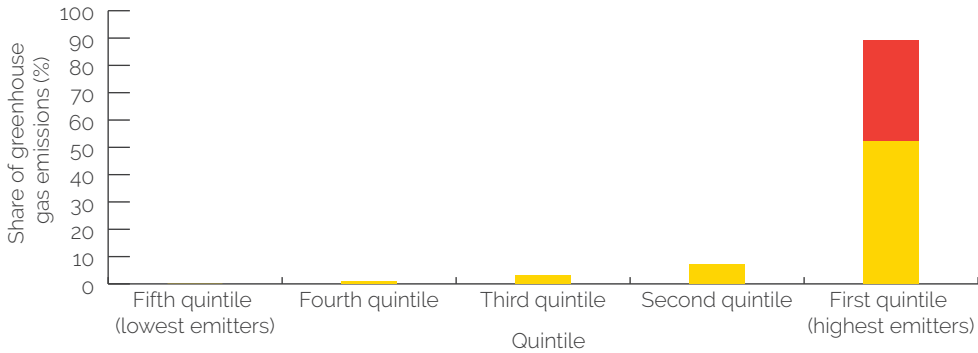
The Bank Group's EEPSCA activities are broadly aligned to the countries with the highest emissions. Figure 2.5 shows that only 44 percent of World Bank EEPSCA lending operations and 58 percent of IFC EEPSCA AS target the top quintile of emitters among Bank Group client countries, which produce 89 percent of client country emissions. However, this is due mostly to relatively low Bank Group support to China for World Bank lending and IFC AS. Excluding China, 39 percent of World Bank EEPSCA projects and 56 percent of IFC EEPSCA AS are in the other highest-quintile emitting client countries, which generate 52 percent of emissions. The top-quintile countries with the most EEPSCA projects supporting climate change mitigation are Brazil, China, Colombia, India, Indonesia, and Vietnam. There are no significant gaps in World Bank EEPSCA support among high-emitting countries—the only top-quintile emitting countries with very few EEPSCA projects are countries that borrow infrequently from the World Bank, such as the Islamic Republic of Iran, the Russian Federation, and Thailand.

The Bank Group's EEPSCA activities are broadly aligned to the country income groups with the highest emissions. Figure 2.6 shows that if China is excluded, 25 percent of client country emissions come from upper-middle-income countries, with 29 percent of World Bank EEPSCA projects and 21 percent of IFC EEPSCA AS in other upper-middle-income countries. Although the share of Bank Group EEPSCA mitigation activities in low-income countries is higher than their share of emissions, these activities are generally low-carbon-emitting activities with substantial development benefits, such as expanding energy supply and access in a low-carbon manner.

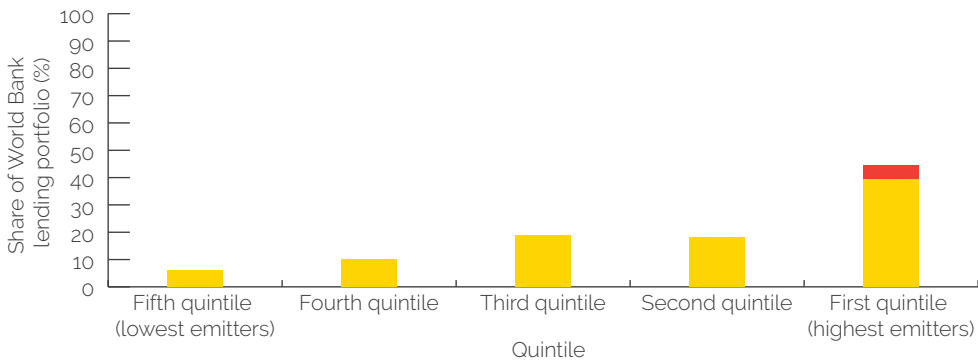
The evaluation assessed the alignment of Bank Group EEPSCA activities with client country adaptation needs. The evaluation compared the Bank Group EEPSCA portfolio with an external benchmark of country needs for adaptation (the Notre Dame Global Adaptation Initiative Country Index).⁵ This index uses 45 indicators to rank countries based on their vulnerability to climate change.

Figure 2.5. Greenhouse Gas Emissions in Client Countries and EEPSCA Project Portfolio, by Emissions Quintile

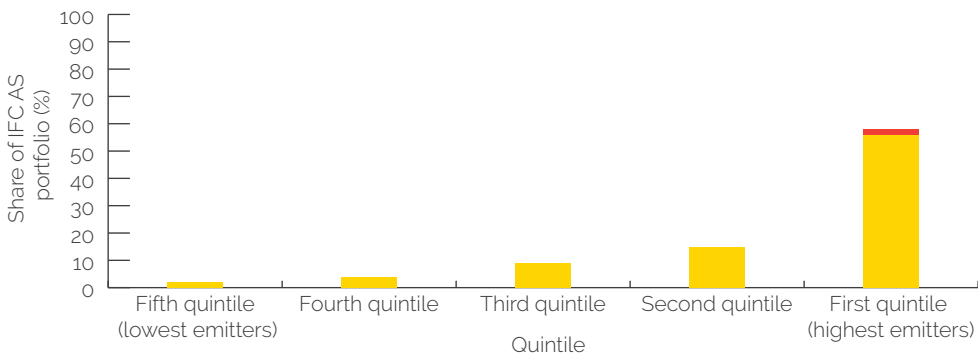
a. Greenhouse gas emissions



b. World Bank lending portfolio



c. IFC AS portfolio

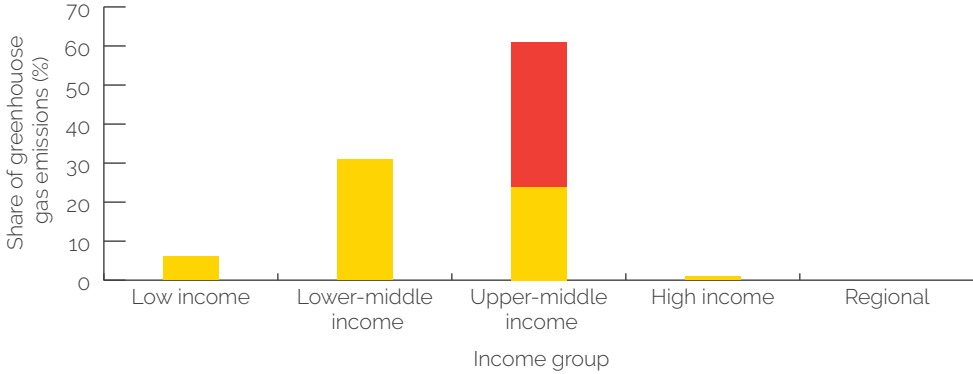


Sources: Independent Evaluation Group team portfolio; emissions data from the World Resources Institute Climate Analysis Indicators Tool for 2013–19.

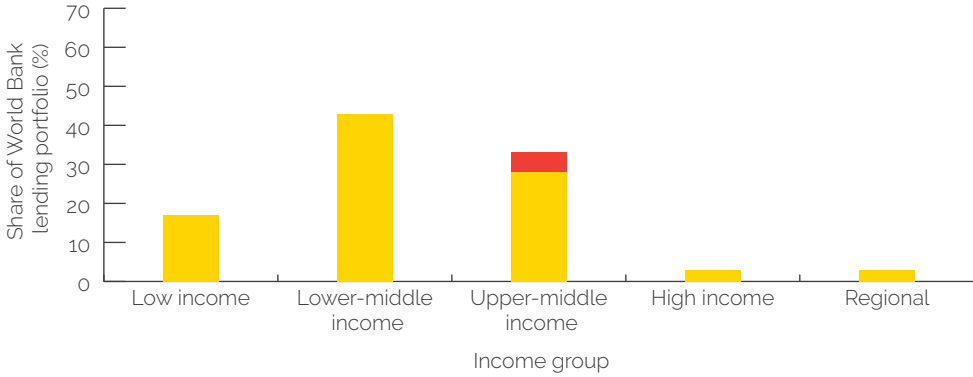
Note: The red segment in the first quintile represents China, which accounts for 37 percent of all emissions, 5 percent of the World Bank lending portfolio, and 2 percent of the IFC AS portfolio. AS = advisory services; EEPSCA = enabling environment for private sector climate action; IFC = International Finance Corporation.

Figure 2.6. Greenhouse Gas Emissions in Client Countries and EEPSCA Portfolio, by Country Income Group

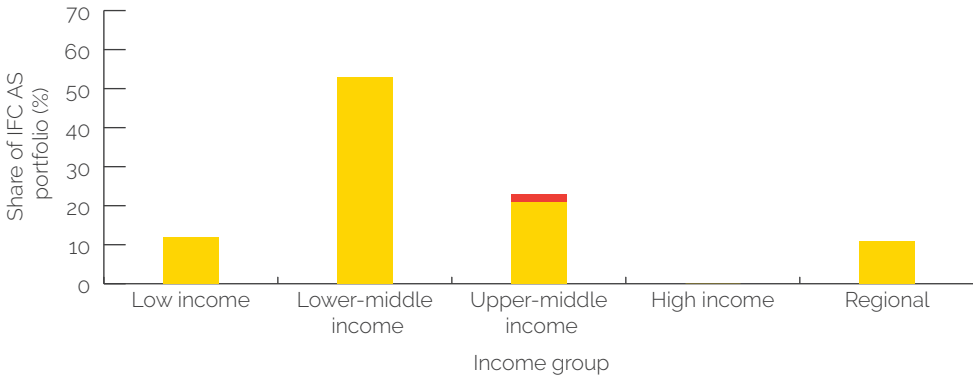
a. Greenhouse gas emissions



b. World Bank lending portfolio



c. IFC AS portfolio



Sources: Independent Evaluation Group team portfolio; emissions data from the World Resources Institute Climate Analysis Indicators Tool for 2013–19.

Note: The red segment represents China, which accounts for 37 percent of all emissions, 5 percent of the World Bank lending portfolio, and 2 percent of the IFC AS portfolio. AS = advisory services; EEPSCA = enabling environment for private sector climate action; GHG = greenhouse gas; IFC = International Finance Corporation.

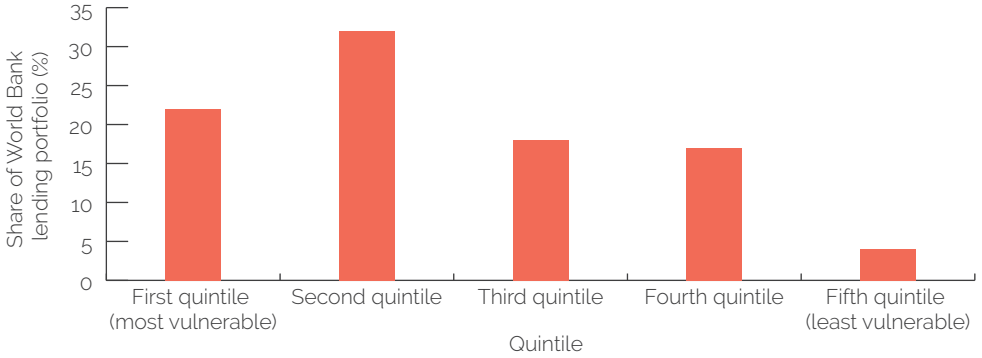
The Bank Group has supported enabling environment for private sector climate change adaptation through disaster resilience, CSA, and water resource management. The World Bank has supported disaster resilience through actions, including strengthening of the public technical and institutional capacity for providing timely early-warning information to the private sector, and introduction of standards to improve the climate resilience of buildings or infrastructure. World Bank agriculture and water resources support has included provision of hydrological and meteorological information to farmers to help them adapt their practices to increasingly unpredictable rainfall and other climatic conditions, as well as supporting national agricultural research and extension systems to develop high-yielding climate-resilient crop varieties, and provision of financial incentives (such as payment for environmental service mechanisms for the adoption of climate-resilient land management or production techniques). For IFC, adaptation-related activities have mainly included support to regulators to assess and address the climate-related risks in the financial system and the development of insurance products against natural hazards.

Countries with greater need for climate change adaptation receive only slightly more adaptation support compared with other countries. Figure 2.7 shows the Notre Dame Global Adaptation Initiative Country Index ranking for countries with the greatest vulnerability to climate change, organized into quintiles. If the Bank Group conducted activities with no consideration of need, then we would expect that, on average, each quintile of countries would receive about 20 percent of Bank Group support. However, if the Bank Group prioritized the countries with the greatest need, we would expect activities to be concentrated on the highest quintiles. The evaluation found only partial evidence of strategic prioritization. The quintile of countries with the greatest need for climate change adaptation receives 22 percent of World Bank EEPSCA projects and 13 percent of IFC EEPSCA AS; the top two quintiles together receive 54 percent of World Bank EEPSCA projects and 42 percent of IFC EEPSCA AS. Although some of the countries with the greatest need for adaptation are small states or countries experiencing fragility or conflict (where the private sector is relatively small and enabling environment activities may not be a priority), there were also no EEPSCA adaptation activities in highly vulnerable countries, such as Rwanda, Senegal,

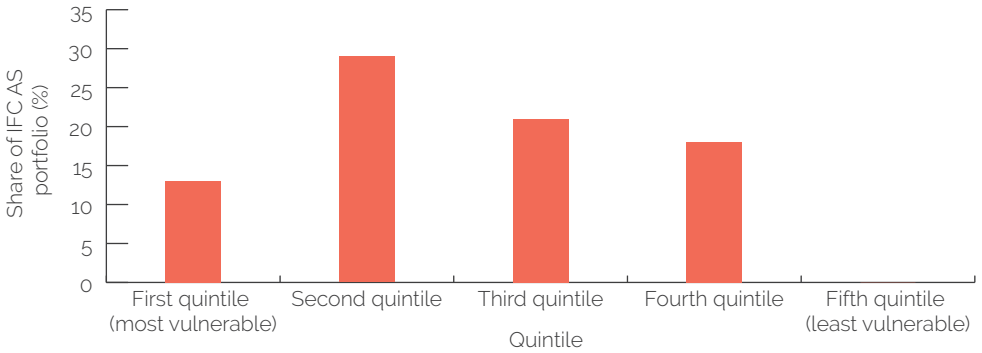
and Uganda. Highly vulnerable countries are also often low income, where private sector development is more challenging.

Figure 2.7. EEPSCA Adaptation Portfolio, by Climate Vulnerability Quintile

a. World Bank lending portfolio



b. IFC AS portfolio



Source: Independent Evaluation Group, with adaptation needs from the Notre Dame Global Adaptation Initiative Country Index.

Note: AS - advisory services; EEPSCA - enabling environment for private sector climate action; IFC - International Finance Corporation.

¹ International Finance Corporation advisory services volumes have not increased by dollar amounts even as the number of activities remains flat. The evaluation analyzed the commitment volumes, measured as the total funds managed by the International Finance Corporation, for the International Finance Corporation advisory services enabling environment for private sector climate action portfolio, and found that the pattern was the same as for the number of projects.

² The Excellence in Design for Greater Efficiencies program is covered more substantially in the Independent Evaluation Group evaluation on demand-side energy efficiency (World Bank 2023c).

³ The Organisation for Economic Co-operation and Development (2022c) reports that among 71 countries that include the largest global emitters, there was no decline in the share of greenhouse gas emissions receiving fossil fuel subsidies between 2018 and 2021.

⁴ See <https://www.wri.org/data/cait-climate-data-explorer>.

⁵ See <https://gain.nd.edu/our-work/country-index>.

3 | Relevance of World Bank Group Country Analytics and Sector Engagements

Highlights

Country climate diagnostics, especially Country Climate and Development Reports, describe actions needed to address climate change in each country, including the role of the private sector. However, they offer uneven depth across sectors in their analysis of the enabling environment needs for bringing private sector investment, they often do not offer realistic proposals for financing the proposed investments, and they propose green financing without addressing the limitations of the country context for green financing instruments.

The World Bank Group uses sector-based diagnostics well to identify the most important constraints on private sector climate action at the country level.

The Bank Group usually engages on the most important constraints identified by the diagnostics, and when it does not, it is typically because of a lack of government buy-in or political economy constraints.

This chapter assesses the relevance of the Bank Group's country and sector analytics for EEPSCAs, the degree to which core country-level diagnostics identify priorities for support of climate change-enabling environments, and the degree to which the Bank Group diagnoses and acts on the main constraints in specific country and sector contexts.

Relevance of World Bank Group Enabling Environment for Private Sector Climate Action Country Analytical Work

The Bank Group uses country-level analytical tools to identify climate action priorities, including for EEPSCA, and the evaluation undertook a limited review of these tools. This section seeks to assess the degree to which the Bank Group's core analytical tools are helpful in identifying constraints on private sector climate action at the country level. It does so by analyzing the first batch of CCDRs and climate-related notes associated with the FSAPs from the perspective of the EEPSCA and by using external data to assess the depth of domestic financial and capital markets for these countries. The evaluation reviewed the first 23 CCDRs and conducted a deeper assessment for 10 randomly selected reports (appendix A). This assessment was limited in scope to a desk review of the reports and related country data; it did not interview Bank Group teams or clients and did not assess the process of generating CCDRs or their impact. Consequently, this section is not intended to provide a comprehensive evaluation of these assessment tools. Rather, it assesses whether these tools emphasize the creation of an enabling environment, including the identification of barriers to private sector participation, and the availability of financing.

The first batch of CCDRs provides valuable diagnostics and actions needed to address climate change in the countries covered, including the role of the private sector. CCDRs are jointly produced by the World Bank and IFC and use state-of-the-art data, models, and tools to provide diagnostics and simulations. They help fill an important gap by providing consolidated analysis and recommendations. CCDRs use a scenario approach to explore sectoral and macroeconomic policies and investments that create synergies between climate action and short- to medium-term development objectives. In addition, they examine potential trade-offs between climate and

other development objectives and options to manage them. They also explore options to manage the distributional impacts of the climate-related reform agenda. CCDRs provide estimates of the magnitude of the climate investments needed to adopt low-carbon development pathways to achieve net-zero targets (or other objectives). As the magnitude of investments is greater than public sector capabilities, all reports highlight the role of the private sector in supporting countries' climate objectives. For most countries, the low-carbon development pathways proposed in the CCDRs are more ambitious than existing nationally determined contributions.

CCDRs lay out the long-term impact of climate change and the impact of different policy scenarios, highlighting in some cases the transition costs, but linkages with financing options for projects are less clear. CCDRs assess climate change impacts, using a macrostructural model, and a computable general equilibrium, using a standard set of variables and equations necessary for forecasting, economic policy, and budget planning analyses typically conducted by central ministries. Although they provide solid recommendations, the reports place limited emphasis on how countries can generate resources for implementing the proposed investments. Because the magnitude of annual investments proposed in the CCDRs is sizable (measured in percentage points of GDP) and because such levels are going to be required for decades, it is important to define more permanent sources of funding. The economic transitions implied by climate investment proposals may also require transition costs and the need for public sector expenditure to build safety nets for a just transition. CCDRs are only partially identifying these costs or considering how they may interact with the financing of climate action. For example, the Egypt CCDR proposes using the funds still devoted to energy subsidies after subsidy reforms (3 percent of GDP) for financing adaptation investments in cities (World Bank Group 2022c) and does not discuss funding social protection for vulnerable groups affected by subsidy cuts. However, the Argentina CCDR highlights the regressive impact of carbon tax and energy subsidy elimination (World Bank Group 2022a), unless the savings from subsidy cuts are recycled mostly through transfers to vulnerable population, which would leave limited additional resources to the government for financing adaptation investments.

CCDRs find that climate change investment needs are larger in low-income countries. The World Bank’s analysis of the first CCDRs summarizes the level of investments needed for a resilient and low-carbon pathway in 2022–30, finding that these should be 8 percent, 5.1 percent, and 1.1 percent of GDP for low-income, lower-middle-income, and upper-middle-income countries, respectively (World Bank Group 2022b). For most countries, the proposed climate-related investments (as a percent of GDP) are inverse to their per capita GHG emissions. CCDRs argue that in low-income countries, it is impossible to separate climate-related needs from development needs.

Identification of Enabling Environment Barriers

Although CCDRs provide solid diagnostics, including for needed sector investments, the enabling environments for bringing private sector investments into these sectors covered with uneven depth. For example, the Vietnam CCDR provides a comprehensive sectoral analysis and recommendations to support private sector participation in climate actions (World Bank Group 2022e). In other cases, enabling environment discussions cover only single constraint, for example, energy price regulations (Türkiye) or risk-sharing (the Philippines). The Egypt CCDR touches on some enabling issues at a high level, including price distortions, but does not identify priority actions, and instead suggests that the government should identify the priorities.

CCDRs do not sufficiently articulate the difficulty of bringing private sector capital to some of the lower-middle-income and low-income countries. For example, the CCDRs for Cameroon and the Sahel contain only vague references to mobilizing private sector capital. The challenges for bringing private sector capital to low-income countries are substantial, and it would be useful to recognize the need for reform and capacity building, including support for public sector institutional development and risk-sharing proposals that could attract the private sector. In Argentina’s CCDR, climate change enabling environment issues are not discussed, probably because enabling environment improvements would be ineffective without addressing macro-economic imbalances, which were discussed.

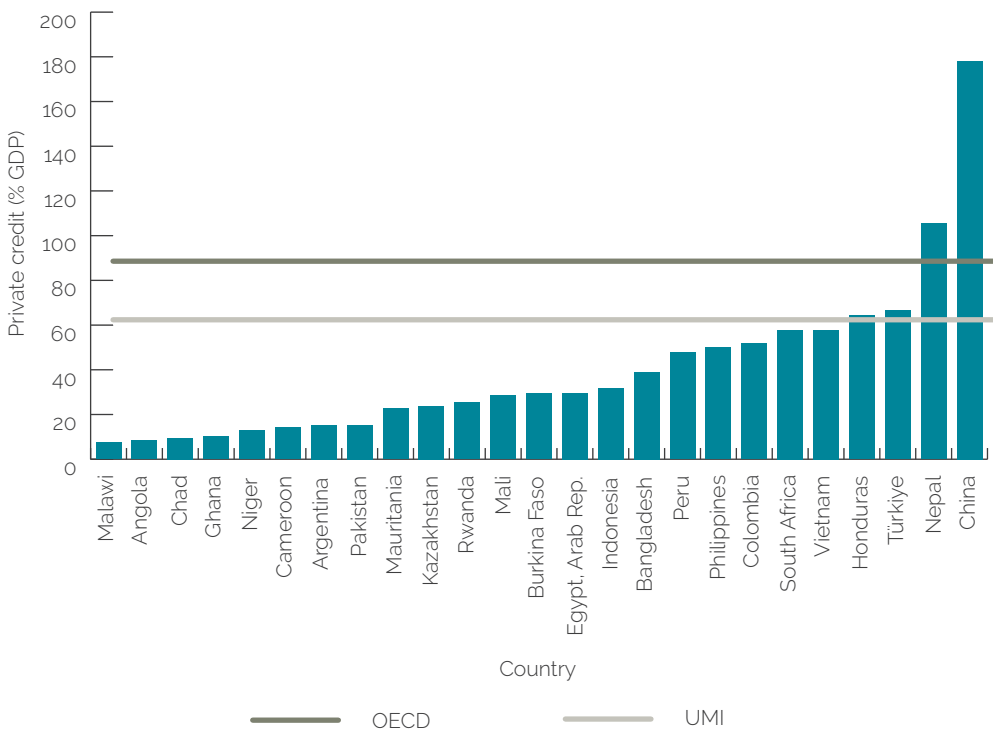
Sources of Financing for Climate Action

CCDRs often do not offer proposals for financing that are consistent with the activities they envision. The sources of financing proposed in some CCDRs seem unsubstantiated and in some cases unrealistic, given countries' financial market incentive structure, the size of their banks, and the level of development of their domestic capital markets. For the most challenging cases in the Sahel subregion, Cameroon, and Pakistan, where modeled projected investment needs for a resilient and low-carbon pathway between 2022 and 2030 are 8 percent, 9 percent, and approximately 10 percent of GDP, respectively, the discussion about financing opportunities is addressed only at a high level, including a statement about the role of the private sector. However, financing options are also not addressed in countries where investment needs are lower. For example, the Türkiye CCDR proposes annual investments equivalent to 1 percent of GDP (\$8 billion) but does not propose a realistic way of financing this (World Bank Group 2022d). With an annual inflation rate above 50 percent (as of March 2023) and with a central bank interest rate of 8.5 percent, real interest rates are in deeply negative territory. In this context, private commercial banks are lending only in limited amounts and only with short-term maturities. In addition, international investors have been exiting the equity and corporate bond market. In this business environment, the government has emphasized channeling of resources to the export sector, so availability of private sector resources for investing in climate action would be limited. In the case of Vietnam, the CCDR expects the private sector to finance an annual amount equivalent to 3.4 percent of GDP, and the report suggests that Vietnam will be able to finance these investments through the creation of green bond markets. However, Vietnam's banking system is dominated by public banks and institutional investors whose total assets are less than 10 percent of the GDP. As discussed in this chapter, the creation of a green bond market needs not simply a green tag but also a critical mass of investors willing to pay a premium for investing in assets whose use of proceeds is related to climate action. That mass of critical investors is absent in Vietnam.

CCDRs offer insufficient attention to the challenges presented to the private sector by governments' overindebtedness and the limited development of domestic capital and financial markets. Although macro models identify governments' indebtedness, the reports fall short in assessing the implications on financing

opportunities for the private sector. As credit ratings of private sector assets have the sovereign credit rating as a ceiling, high government debt increases the cost of funding for private companies and limits the availability of funding for private sector investments. The cost of funding for projects in different countries needs to take into consideration their credit risk; for example, funding a project in Argentina is 10 times more expensive than funding it in Peru.¹ Adjustments for the cost of funding may significantly increase the cost of investments needed in countries, especially if the private sector is expected to finance them. CCDRs' implicit assumption of a homogenous cost of capital may underestimate the cost of the climate investments.

Figure 3.1. Private Credit by Deposit Money Banks and Other Financial Institutions in Country Climate and Development Report Countries in 2021



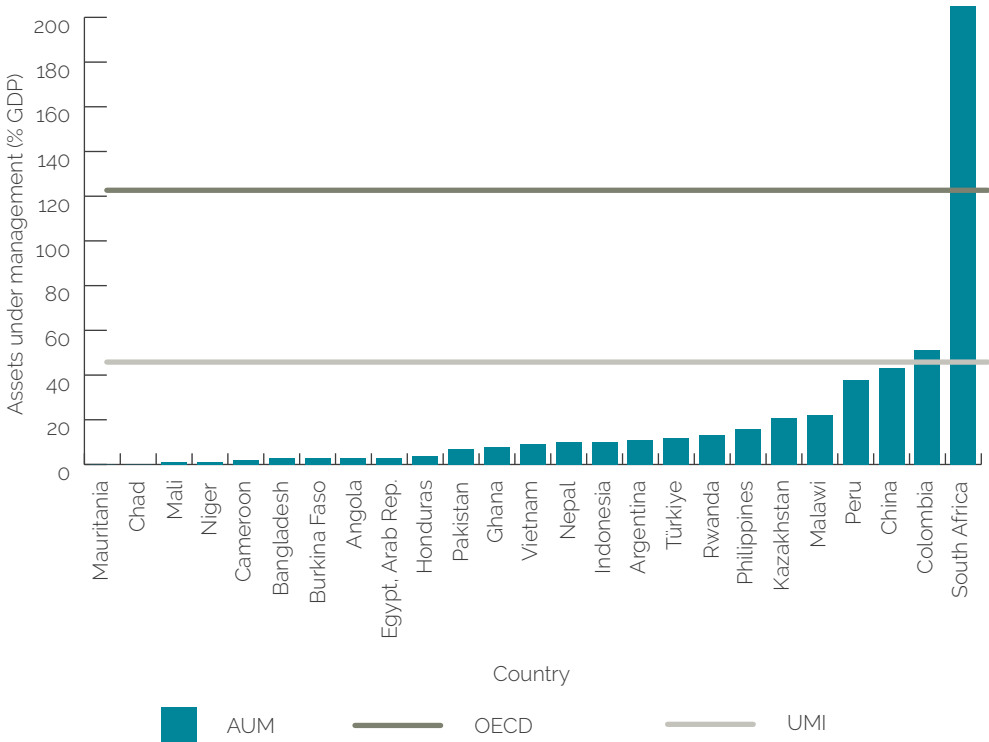
Source: Global Financial Development Database, World Bank (accessed November 2022).

Note: OECD = Organisation for Economic Co-operation and Development; UMI = upper-middle income.

In most of the countries in the CCDR sample, domestic financial and capital markets would be insufficient to finance a significant portion of the proposed climate action agenda, but CCDRs do not include sufficient recommendations

to strengthen domestic financial sectors. Commercial banks have total private sector assets of less than one-third of GDP for two-thirds of the 23 countries in the first batch of CCDRs (figure 3.1). In most countries, banks are not only small but also lack expertise in infrastructure financing (Garcia-Kilroy and Rudolph 2017; Gherzi and Sabal 2006). Assets under management by institutional investors in most countries in the sample would not be enough to provide financing for climate action products either (figure 3.2).

Figure 3.2. Assets under Management Held by Institutional Investors in Country Climate and Development Report Countries in 2021



Source: Global Financial Development Database, World Bank (accessed November 2022).

Note: AUM = assets under management; OECD = Organisation for Economic Co-operation and Development; UMI = upper-middle income.

Green Bond Financing

Most CCDRs encourage green and sustainable financing but do not address the limitations for these instruments, including limited market appetite for higher risk instruments. Nine of the 10 countries analyzed in depth in the first CCDRs make references to the opportunities for tapping international

green bonds markets, including low-income countries and lower-middle-income countries, such as Ghana, Cameroon, and countries in the Sahel. However, domestic capital markets are little developed in these countries, and the opportunities for receiving green international financing are limited by their high government debt levels and associated poor credit ratings. Investors' appetite for high-risk assets, either green or traditional, is low, especially in countries affected by sovereign debt distress (for example, Ghana). Most of the countries in the sample would have limited capacity to take additional foreign exchange risks, especially in the absence of foreign currency to support convertibility. Green financing does not solve the problem of currency mismatches.

Although the size of the green bond market has grown, meeting countries' needs for climate investments would require sustained exponential expansion and a constant flow of new green investors, which may not occur. According to Cheng, Ehlers, and Packer (2022), as of June 2022, the amount outstanding on green, social, and sustainability bonds is approximately \$2.9 trillion, the vast majority of which is in high-income countries. This is a small fraction compared with the size of the global fixed income market, which is approximately \$127 trillion (SIFMA 2022).

In high-grade markets, green bonds offer a modest premium (greenium) compared with regular bond markets, and the appetite for low-grade instruments has been low. In 2020–22, globally corporate and sovereign green and sustainability-linked bonds are between 8 percent and 5 percent of the overall bond issuance in each category, respectively. Although some countries may still benefit from a modest reduction in the cost of financing some green projects, the depth of the green bond market does not offer the scale that is needed for financing the climate action agenda. Recent literature suggests that green bonds offer an average premium of 0.08 percent compared with conventional bonds (Caramichael and Rapp 2022), which might be insufficient to make a significant difference for the Bank Group client countries. The green bond market operates largely for high-grade issuers (with credit ratings in the range of AAA to BBB), and there is no statistically significant evidence of a premium for low-grade (with credit ratings BB to C) and not rated green bonds. In 2021, 94 percent of green and sustainability-linked bonds were issued by multilateral organizations and high-income countries

(OECD 2022a) and only 2 percent were issued by lower-middle-income and low-income countries, which implies that green investors may have little appetite for low-grade green securities.

The Financial Sector Assessment Program and Other Diagnostics

Although FSAPs have not historically addressed climate change issues, they are doing so increasingly since FY19 using specific notes on climate change. The World Bank has used the established credibility of the FSAPs among ministries of finance and central banks to raise awareness of critical climate issues related to the stability of the financial sector and opportunities for climate financing. The reports offer high-quality work related to the financial stability agenda following the guidelines of the Network for Greening the Financial System (which has become the de facto standard setter).² As of April 2023, only three climate change notes were published (for Chile, the Philippines, and South Africa), in addition to a guidance note. The notes emphasize the need to improve the quality of green financial data, support reporting and disclosures, and encourage regulators and institutions to strengthen their analytical capacity by internalizing climate risk in their models.

However, FSAP climate change notes are overemphasizing the development of green financing, while traditional financial markets have not been sufficiently developed. The reports emphasize the need to align incentives across sectors and labeling green assets for investors to identify green assets. Identification of green sectors and activities is a valuable contribution to the climate agenda. Although the FSAP notes encourage sovereign governments to get financing via green bonds, this financing is presented mostly as a substitute for traditional financing. For countries that are not regular issuers in global bond markets, issuing in segmented markets may be detrimental to traditional bond market liquidity and could affect the overall cost of funding (Hashimoto et al. 2021; World Bank and IMF 2001). Increases in the cost of funding might particularly affect low-grade credit issuers. The size of the green bond market is still a small fraction of the global bond market, and it is not evident that issuing more green bonds will be accompanied by new green investors. Proposals for tax incentives for domestic green bonds may also create further distortions.³ By segmenting the markets, countries might limit

the opportunities to strengthen the traditional bond market (Hashimoto et al. 2021; IMF 2016).

Policy recommendations on financial and capital market development in other Bank Group diagnostics also do not have the level of ambition to generate private sector financing at scale. Other Bank Group diagnostic tools, including FSAPs, Infrastructure Sector Assessment Programs, and Country Private Sector Diagnostics, address issues of financial and capital market development, each with their own perspectives. However, none of them focus their recommendations on actions that could generate private sector financing at the levels envisioned in the CCDRs, such as support for domestic capital market development or increasing private sector savings. This is an important shortcoming for reports that expect to summarize the steps that countries need to take to reach their climate objectives.

Relevance of World Bank Group Enabling Environment for Private Sector Climate Action Sector Engagements

The enabling environment constraints on private sector climate action depends on specific country and sector context, which can be examined through case studies. To assess the degree to which the Bank Group diagnosed and acted on the most important constraints, the evaluation carried out 13 case studies across eight countries. These case studies considered the full set of Bank Group interventions related to a targeted private sector climate action, including analytical and advisory work, policy dialogue and awareness raising, technical assistance and capacity building, DPF, investment projects, IFC AS, and convening partners. Appendix A describes how case studies were selected and undertaken, and appendix C provides a summary of each case study.

In case studies, the Bank Group used its analytics to diagnose the most important constraints on private sector climate action. The World Bank typically uses sector-specific analytical work to identify constraints and recommend priorities, building on the knowledge of sector teams. IFC does not have a stand-alone diagnostic instrument but conducted diagnostics as part of preparing AS or drew on emerging global standard good practice in

new areas, such as sustainable banking. Across the case studies, the Bank Group identified virtually all of the most significant constraints (table 3.1). For example, the World Bank conducted a substantial set of diagnostic work on efforts to induce investment in geothermal power in Indonesia. It identified constraints, including the difficulty of competing with subsidized coal power, the expensive and high-risk nature of geothermal exploration, the insufficient prices offered in power purchase agreements (PPAs), the lack of contract timeliness and predictability, challenges in environmental and social risk management and social acceptance, and a lack of sufficient public and private capacity. In Ghana, the World Bank carried out a series of sector notes and studies on constraints to reducing forest degradation in the cocoa sector, including low productivity that promotes land clearance, limited awareness and knowledge of agroforestry techniques, insecure tree tenure that discourages farmers from retaining trees, complex land tenure that disincentives conservation, limited access to credit for farm inputs, and low income for farmers inhibiting investment. In Türkiye, the World Bank's analytics identified barriers for private investment in rooftop solar, including short-tenure contracts for feed-in tariffs that created uncertainty, a lack of subsidies to the residential sector, complex licensing, permitting and approvals procedures, a lack of technical standards, insufficient capacity and awareness of consumers, a lack of financing instruments through commercial banks, and the absence of third-party business models.

When there are constraints that are not diagnosed, these are usually relatively minor. For example, studies in Colombia identified challenges for electric mass transit systems for larger cities, which had broad integrated transport networks, but missed some issues that arose for smaller cities and towns because of a lack of economies of scale. In Honduras, the World Bank diagnosed the limited capacity of public research and development institutions as a constraint on CSA but did not support capacity building for these institutions, nor did the World Bank build the capacity of financial institutions to provide agricultural credit to producer groups.

Table 3.1. Summary of Case Study Relevance

Case Study	World Bank Group Diagnosed Critical Constraints?	World Bank Group Action on All Critical Constraints?
Colombia transport sector	✓	✓
Colombia sustainable banking	✓	✓
Egypt, Arab Rep. energy subsidy reform	✓	✓
Egypt, Arab Rep. renewable energy	✓	✓
Ghana cocoa forest management	✓	x
Honduras climate-smart agriculture	✓	?
Indonesia geothermal power	✓	✓
Indonesia sustainable banking	✓	✓
Nepal renewable energy	✓	✓
Nepal sustainable banking	✓	✓
Rwanda renewable energy	✓	✓
Türkiye new renewables	✓	✓
Türkiye energy efficiency	?	?

Source: Independent Evaluation Group.

Note: These are all simplifications of complex situations. ✓ (check mark) = largely successful; ? (question mark) = mixed success; x = unsuccessful.

In only a few cases, important issues were not diagnosed in part because they did not naturally align with sectoral interventions. For example, in Türkiye, efforts to promote energy service company (ESCO) models had limited success in part because of an absence of commercial insurance products that would mitigate cash flow risks, credit default risk, or construction risk, leaving the ESCOs to bear the full risks or purchase expensive international insurance in foreign currency. This curtailed the willingness of private banks to lend to ESCOs. The World Bank’s work on ESCOs had concentrated on more technical constraints within the energy sector. IFC’s efforts to promote green buildings in Türkiye were also not well aligned. The main barriers in the energy performance certification process were the low technical capacity of auditors and insufficient data collection, monitoring, and verification, which were not identified in IFC’s green building project note; instead, the project was designed to promote IFC’s own green building certification and acquire market share.

Whereas some enabling environment constraints can be addressed by technical solutions, others involve trade-offs that may face political economy barriers. Literature on political economy emphasizes two perspectives: a rational choice perspective and a power-based perspective (World Bank 2008). Opposition to reforms may come because actors disagree on the potential effects of those reforms or how those effects should be valued, or they may come because groups with power see their economic or political interests threatened by the reform. The political economy barriers to EEPSCA reforms observed in this evaluation are consistent with these perspectives. The evaluation observed three main types of barriers. First, governments may have concerns about the negative effects of proposed policy changes on some groups. For example, governments may be reluctant to adopt energy tariff increases, carbon taxes, or fossil fuel subsidy cuts because they are concerned that these policies may increase costs to industries and households. Second, some governments are uneasy about private sector development because they believe private companies may not maximize the public good and might increase prices, reduce service quality, or shift profits offshore. In interviews, Bank Group staff argued that some governments were concerned about private sector growth creating alternative sources of power that they would not control. Third, there can be resistance to institutional reform from key state or private sector actors who may see reforms that shift activity to the private sector as weakening their power or reducing their profits or market share.

Politically informed policy reforms can sometimes ameliorate political economy barriers. Literature on political economy suggests several strategies for politically informed policy response (Fritz, Levy, and Ort 2014). Politically responsive policy design can involve alleviating concerns about negative effects by introducing parallel policies to mitigate their effects, such as combining subsidy reform programs with social programs to support the poorest people. It can also involve engaging in reform options preferred by local stakeholders even if these contravene best practices, such as incremental approaches that build private sector participation more gradually. Enhancing information on policies and options can lessen stakeholder opposition. Multistakeholder engagement can include intensive outreach to decision makers and stakeholders, seeking to build support for reforms. However,

some political economy barriers may remain intractable until the political context changes.

The Bank Group usually engaged on constraints that can be addressed by technical solutions that did not face political economy barriers. Evidence-based policy dialogue with government leaders and senior civil servants often created opportunities for the World Bank to engage on enabling environment reforms or improvements. The World Bank and IFC were highly valued by client governments for their technical advice, credibility, and ability to introduce global knowledge. The Bank Group was often able to bring technical solutions to bear, such as new financing facilities, advice on legal frameworks, information sharing, awareness raising, and capacity building. Although the World Bank in Indonesia engaged with the government in the development of risk-sharing mechanisms to mitigate geothermal exploration risk, its engagements on policy discussions regarding fossil fuel subsidies were limited. The World Bank understood that it did not have the influence to tackle the issue directly without jeopardizing its relationship with the government; thus, it limited its engagement on subsidies to its diagnostic work and policy dialogue rather than pressing for subsidy reform as a prior action for its numerous DPF operations. In Türkiye, the World Bank worked through the Partnership for Market Readiness to conduct studies on technical aspects for the creation of an emissions trading program, such as designing and piloting a monitoring, reporting, and verification program, but the World Bank has not yet engaged on more politically challenging issues, such as determining the rules for allocations of permits.

When the Bank Group does not engage, it is usually because the constraint is a higher-level issue or has significant political economy challenges or because client buy-in or ownership is lacking. The World Bank can seek to persuade and to influence, but as a demand-driven institution, it is rightly constrained by the willingness of client governments to adopt reforms. In Ghana, although the World Bank had diagnosed constraints to better forest management in the cocoa sector since 2014, the World Bank was not able to translate these into actions because it was unable to find a successful strategy to address political economy challenges. For many years, the World Bank was not able to reach an agreement on a lending project in the sector because (i) the main cocoa parastatal lacked trust in the World Bank (in part

because it believed previous World Bank–recommended policies were unsuccessful); (ii) it has found difficulty in persuading stakeholders on the need for institutional reform or in addressing sensitive topics, such as land and tree tenure; and (iii) the government has been reluctant to borrow for the cocoa sector on International Development Association and International Bank for Reconstruction and Development blend terms. As of March 2023, a lending project is in preparation on International Development Association terms but has not yet been approved.

The Bank Group has sometimes been able to engage on politically sensitive issues, including as a consequence of crises. A fiscal crisis in Egypt in 2014 meant that the government faced extreme pressure to reduce government spending. This opened an opportunity for the World Bank to engage on reducing fossil fuel subsidies, in coordination with IFC and Multilateral Investment Guarantee Agency activities on renewable energy. This effort was successful, leading to a reduction of energy subsidies equivalent to 7 percentage points of GDP between 2014 and 2017. The subsidy reduction also increased the credibility of government contracts with the private sector for renewable energy.

In a few cases, some key constraints were beyond the Bank Group’s capacity to engage at that time. In some countries, creating an enabling environment required a series of interventions at different levels. In some cases, technical teams found difficulty in engaging in some of these discussions with stakeholders, including on the role of the private sector in the economy or the importance of market base interest rates in fostering involvement of the financial sector for financing investment projects. Political instability in Nepal had been the main barrier to the development of the hydropower sector. Only after the establishment of a new government in 2018, following adoption of a new constitution, and after urgent power shortages were addressed, was the World Bank able to get traction on institutional and policy reform in the power sector. In Türkiye, some of the main barriers to energy efficiency investments were volatility in energy prices and macroeconomic instability, which were not feasible to address with World Bank projects at the time and would require broad structural reforms.

The Bank Group has been able to accommodate its interventions to policy boundaries imposed by governments, including limitations in the role that they see for the private sector in supporting the economy. In several client countries, governments or key institutions are skeptical about private sector approaches. This has meant that the World Bank sometimes needed to make compromises in its engagement. In Rwanda, for example, the World Bank supported efforts to improve energy access by creating subsidized financing mechanisms for off-grid solar systems. The World Bank's technical analysis suggested that this was most likely to be successful if subsidized finance could be channeled directly to medium-size companies, but the government preferred to work through state-controlled credit cooperatives, even though these lacked the technical capacity to manage a pipeline of off-grid power projects. The World Bank approached this dilemma by approving a project that contained funding windows for both approaches but postponing the opening of the private sector window. After two years of operation, and the facility reaching only 1 percent of its target for new connections, the government allowed the use of the private sector window. The new window was highly successful—265,067 off-grid solar connections were made over 2020–22 (89 percent of them through the private sector window). This strategy brought some risks, in that the World Bank had approved a project that it knew was unlikely to succeed in the original form. Reaching success required flexibility and an understanding of the benefits of building long-term engagements with client countries.

In most cases, engaging substantially on enabling environment barriers required use of lending and nonlending instruments. In several cases, the Bank Group brought to bear the full set of its instruments, including nonlending diagnostics and technical assistance, investments, and policy lending. This was the case in the energy sector in Egypt, Indonesia, Nepal, and Rwanda and in the transport sector in Colombia. In a few cases, the World Bank was able to have a significant impact solely through nonlending work, but this was usually because of the influence and credibility gained from previous engagements. For example, the World Bank played an influential role in enabling environment improvements for emerging renewable energy technologies in Türkiye using only analytical work, technical assistance, and policy dialogue, but this was possible because of the trust and reputation

built from its intensive prior energy engagements, supporting the liberalization of the energy sector and substantial investments, and because the World Bank took a demand-driven approach that responded and adapted to government priorities. In other cases, engagement was more limited; the World Bank sought to bring CSA practices to smallholder farmers in Honduras by building these practices into a long-running matching grant program for small farmers through productive alliances and was not able to use this as a platform for significant policy dialogue or reform in the agricultural sector. As discussed, in Ghana, the inability to develop a lending project constrained the World Bank's ability to influence the enabling environment.

Although the evaluation did not analyze Bank Group interinstitutional coordination in detail, evidence suggests strong collaboration in renewable energy but little collaboration for climate-related PPP activities. World Bank–IFC collaboration on renewable energy was relatively strong. Out of the 18 IFC EEPSCA AS activities for renewable energy, 13 were performed during the same period that the World Bank was providing EEPSCA analytics or AS. For example, in Zambia, whereas the World Bank provided AS on solar and wind resource measurement and mapping, IFC supported transaction AS for solar generation power. For climate-related PPPs, there was no overlap between the countries where IFC AS and World Bank nonlending projects were conducted (except for some cases of regional activities), suggesting little coordination between World Bank support for upstream PPP reform and IFC PPP transaction advisory.⁴ This finding suggests some missing opportunities for collaboration. IFC interventions targeted several low- and middle-income countries, whereas World Bank nonlending activities had only a single intervention in a low-income country.

The Bank Group was often able to usefully combine upstream policy changes with midstream activities. Although high-level policy settings are important, sometimes they need to be complemented by activities to build project pipelines. In Türkiye, while upstream policies were important in establishing incentives, many barriers to new renewable energy investment were midstream issues, such as raising awareness, mitigating risk, creating business models, improving access to finance, and addressing complex procedures. In the case of Egypt, the Bank Group was able to engage in upstream policy reforms that helped stabilize the fiscal framework, including reductions in

fossil fuel subsidies for an annual amount equivalent to 7 percent of GDP. In a context where the government did not have the financial strength to honor their contracts with private sector partners in the gas industry, Bank Group interventions aimed at allowing competitive bidding, net metering, and a system of feed-in tariffs helped the country in building credibility for attracting private sector investments in renewable energy. The reductions in fossil fuel subsidies were key for signaling to private investors the government’s intentions of creating a competitive market of renewable energy in relation to nonrenewable ones. In the case of Colombia, the Bank Group engagements related to the PPP framework have paved the way for engagements with subnational governments in urban transport, more specifically in electric mass transport operations.

Bank Group–supported approaches have frequently applied incentive policies (“carrots”) for emission-reducing or adaptive behaviors but rarely applied penalties or costs (“sticks”) to GHG-emitting or maladaptive activities. Many client countries find it difficult to impose or enforce penalties (or taxes) and are more comfortable with positive incentives, which may be more politically realistic. For example, in Türkiye, the World Bank’s engagement emphasized positive incentives, such as a new risk-sharing facility for geothermal exploration, designing new financial products for rooftop solar, and support for tradable emissions permits (where firms are initially allocated permits) rather than carbon taxes. This was aligned with the broad approach applied by the government; legislation often includes both incentives and penalties to induce behavioral change or compliance, but penalties are rarely implemented or are frequently pardoned, so penalties have little enforcement power. Globally, the introduction of direct carbon pricing has been infrequent not only among World Bank lending activities but also among Bank Group client countries. One of the few examples of sticks in the case studies was in Colombia. Bank Group nonlending work contributed to the continuation and expansion of taxes on dirty fuels (although this was in the context of several carbon tax measures enacted independently by the government), and Bank Group technical work contributed to congestion pricing. Another example was the reduction of energy subsidies in Egypt. There are also risks of taking stick policy actions that in practice are ineffective. As documented in the World Bank’s *State and Trends of Carbon*

Pricing 2023, the introduction of carbon taxes on gasoline in Uruguay was in practice a rebase of the previous gasoline excise tax, without any change in relative prices to final users. However, if countries find it difficult to meet their emission reduction targets, they may have to rely more on taxes, bans, or mandates.

¹ This calculation is based on the sovereign cost of funding for Peru and Argentina in international markets, based on data from March 2023.

² Some Financial Sector Assessment Programs also cover other climate-related issues, including vulnerabilities to climate-related and environmental risks; supervisory response and guidance; deepening green finance markets; deepening markets for climate risk resilience; and greening of development finance institutions. However, designing a path to finance countries' climate agenda is beyond the scope of the Financial Sector Assessment Programs.

³ Tax incentives for domestic green bonds would interfere with the deferred taxation approach used for many large institutional investors, such as pension funds. It would deter these investors from purchasing green bonds, leaving only retail investors to purchase these assets. Tax incentives would also shift the cost of a greenium to taxpayers, and the distorted market may mean that this greenium is captured by intermediaries rather than investors.

⁴ International Finance Corporation public-private partnership advisory services involve support to governments in preparing, structuring, and implementing a transaction (for example, of a solar power plant) through to a tender process. These services include advice on project selection, project preparation, bidder prequalification, request for proposals, financial close, and contract management.

4 | Effectiveness

Highlights

The World Bank Group usually achieves its indicator targets related to enabling environment for private sector climate action, but these indicators are usually inadequate to assess whether private sector climate action is being achieved.

For renewable energy—the largest and most mature part of the portfolio—econometric analysis shows that World Bank lending activities have led to improvements in enabling environment and to investment in renewable energy in countries with high financial development. International Finance Corporation advisory activities have also led to increased private sector investment.

The Bank Group has often been effective at achieving improvements for enabling environments, although success is mixed for activities that require overcoming political economy challenges. Improvements in enabling environment have sometimes led to significant private sector climate action, but there are also many cases where private sector action has not occurred or where it is too soon to tell.

Key success factors include establishing price levels sufficient to incentivize private sector action, developing standardized and replicable business models, addressing affordability for poor people, and fostering institutional reform. However, the Bank Group has often supported business models that are not scalable, typically because they have allocated risks to governments in a way that is unsustainable, such as through guarantees or contingent liability for foreign exchange risks.

This chapter assesses the effectiveness of Bank Group enabling environment activities. It first analyzes the available evidence for the Bank Group EEPSCA portfolio. Next, it conducts a deep dive using econometric analysis on the effectiveness of enabling environment activities for renewable energy, where the World Bank has engaged on EEPSCA for the longest time and where the most data are available. Finally, it identifies success factors and challenges to effectiveness using case studies.

Portfolio Effectiveness

The Bank Group portfolio on EEPSCA is relatively young, and so effectiveness can be assessed only for a subset of projects. Out of the 268 World Bank lending projects, only 73 are closed and evaluated. For IFC AS, 58 out of 119 IFC AS are closed and have a self-evaluation, and 22 of these have an independent validation. Most closed projects are related to climate change mitigation, especially in the energy sector, because these activities were predominant in the early years of the evaluation period. This limits the degree to which conclusions can be drawn about the effectiveness of other Bank Group EEPSCA activities.

The Bank Group usually achieves its indicator targets related to EEPSCA activities. Most projects with EEPSCA activities also contain other interventions that are not focused on enabling environment and do not have objectives related to enabling environment; thus, it is not possible to use overall project performance or outcome ratings as a measure of success. Instead, the evaluation identified the project indicators that related to EEPSCA activities and assessed achievement of their targets. The World Bank fully achieved 73 percent of its EEPSCA-related indicator targets and partially achieved another 18 percent (that is, achieved 70 percent or more of the target), leaving 19 percent of indicator targets unachieved. IFC also fully achieved 70 percent of its EEPSCA-related indicator targets and partially achieved another 1 percent of its targets, leaving 29 percent of targets unachieved. It is difficult to determine whether these success rates are optimal because there is no clear benchmark. They are, however, similar to the broad 75 percent satisfactory outcome target set for World Bank projects in the corporate scorecard.

These success rates do not vary much across different types of enabling environment activity or other project characteristics. Indicator achievement rates were similar for activities that supported incentive changes through price or nonprice regulations, provided information to the market, or managed risks related to stakeholders. The large majority of indicators were for climate change mitigation; therefore, it was not meaningful to compare success rates for mitigation versus adaptation. There were no other obvious patterns in achievement rates.

For the World Bank, the main reasons for indicator nonachievement were lack of political consensus or government ownership, project implementation delays, force majeure, or unrealistic choice of targets. For the 19 percent of World Bank lending EEPSCA indicators that did not achieve or partially achieved their targets, the most common reason for lack of success was from a lack of political consensus or poor government ownership (8 percent of indicators). This was particularly common for energy reforms that required subsidy cuts or tariff increases. A DPF series in Panama could not sustain increases in power tariffs because of social opposition, whereas in Togo, the government was not willing to implement power tariff increases because of fear of political backlash. The other main reasons for indicator nonachievement were project implementation delays, where project self-evaluations argued that indicators would be achieved later, after project closure; force majeure (consequences of COVID-19 or conflict); or indicators that project evaluations concluded were unrealistic to achieve by the time of project closure.

For IFC, the main reasons for indicator nonachievement were project implementation delays, shortcomings in project design, lack of government ownership, or force majeure. For the 29 percent of IFC EEPSCA AS indicators that did not achieve or partially achieved their targets, the most common reason was project implementation delays (10 percent of indicators). However, several projects also failed to achieve results because of shortcomings in project design weaknesses or lack of government ownership. For example, a project seeking to assist the government of Odisha, India, to implement a home-based rooftop solar program was unsuccessful because the design did not take account of radical changes in the sector, where large developers shifted from housing to large commercial and industrial rooftops and where solar developers shifted from rooftop solar to utility scale solar

projects. A project supporting Excellence in Design for Greater Efficiencies building standards in China applied a generic design that was insufficiently tailored to the local context and did not consider that the housing ministry had just completed its own revision of building standards. The choice and monitoring of indicators, which in some cases were retained for activities that had been dropped from the project design, were another reason for not achieving the targets. In a few cases, the reasons were similar to those for World Bank development policy operations—a reluctance by government to increase energy tariffs meant that utilities were not on sound financial footing, and thus lenders were reluctant to invest to projects that might be affected by this. Other reasons cited for nonachievement were force majeure from COVID-19 or conflict.

World Bank and IFC project indicators are rarely adequate to assess whether private sector climate action is being achieved. Project indicators for EEPSCA activities typically capture only improvements in the enabling environment (44 percent for World Bank and 45 percent for IFC) or output delivery (19 percent for World Bank and 22 percent for IFC) rather than evidence of private sector climate action (36 percent for World Bank and 33 percent for IFC). World Bank and IFC projects with only output indicators often measured things such as development or submission of reports or proposals, or completion of technical assistance. Although some indicators that captured improvements in enabling environment were quite meaningful, such as documenting changes in energy tariffs, others documented only the implementation of a policy change, or adoption of a standard, or the creation of a new mechanism and fell short of measuring the results of these changes. Only a subset of indicators explicitly or implicitly assessed whether enabling environment changes were contributing to the desired private sector climate action, including firms' investment in a new technology, adoption of a behavior change, or use of a new financing or risk-sharing mechanism. World Bank development policy operations tend to capture private sector climate action better than World Bank investment loans. One reason for this is because EEPSCA actions in development policy operations had their own prior action, with its own dedicated indicators seeking to assess its impact, whereas EEPSCA activities in World Bank investment projects were often a small portion of the overall project and had indicators that concentrated on

measuring the effects of project works rather than enabling environment activities. IFC AS sometimes did not include indicators of private sector action because their shorter time horizons meant that they would close before private sector actions would be achieved.

Some projects include good practice indicators on measuring private sector climate action. The best designed projects have included indicators that assess whether enabling environment improvements are leading to or likely to lead to private sector climate action, across different types of enabling environment constraints (table 4.1). Although projects need to select indicators that will be achieved and measurable by project closure, projects such as those in table 4.1 demonstrate that it is often feasible to select achievable and measurable indicators that also assess progress toward private sector climate action.

Table 4.1. Examples of Good Practice Indicators in World Bank Group Projects

Type of Constraint on Private Sector Climate Action	Country, Activity, Institution	Good Practice Indicator
Incentives, price or nonprice regulations	Egypt, Arab Rep., energy subsidy reform, World Bank	Reduction in energy subsidies as a percent of GDP
	Vietnam, feed-in tariff for wind power, World Bank	Generating capacity of grid-connected wind power
	India, economic instruments for cleaner technologies in polluting industries, World Bank	Percentage of industries that have adopted environmental management systems in the state
Provision of information to markets	Ghana, sustainable banking regulation through environmental and social standards, IFC	Value of investments financed in compliance with environmental and social performance standards of participating banks
	China, green building standards, IFC	Energy use expected to be avoided (megawatt-hours per year)
	Tunisia, adoption of renewable energy plan targeting private sector through concessions, World Bank	Solar power capacity of private sector-owned projects selected under the concession scheme

(continued)

Type of Constraint on Private Sector Climate Action	Country, Activity, Institution	Good Practice Indicator
Public sector institutions are not designed to deal with complex private sector contracts	Rwanda, adoption of standard PPA approaches, IPP risk allocation, and competitive procurement procedures, World Bank	Generation projects initiated or accepted by the government over the past 24 months are consistent with the least-cost power development plan and comply with PPP law and competitive procurement procedures

Source: Independent Evaluation Group.

Note: IFC = International Finance Corporation; IPP = independent power producer; PPA = power purchase agreement; PPP = public-private partnership.

Effectiveness of Renewable Energy Activities

The evaluation conducted a deep dive on enabling environment activities for renewable energy. Renewable energy is the largest and most mature part of the Bank Group EEPSCA portfolio and a sector where sufficient data are available to make statistical analysis feasible. Using econometric analysis, we assessed the impact of upstream and midstream Bank Group EEPSCA interventions through World Bank lending, World Bank advisory services and analytics (ASA), and IFC AS related to renewable energy on (i) improvements in the enabling environment for private sector participation in wind and solar renewable energy generation and (ii) attracting private sector investments in wind and solar energy generation in the years that followed.

The analysis tested the theory that upstream and midstream Bank Group interventions in renewable energy might induce countries to improve their legal and regulatory framework and that a more favorable business environment causes private sector investors to invest in renewable energy.

The econometric analysis used external data. The analysis used an external measure of enabling environment (the Regulatory Indicators for Sustainable Energy data set) and data on private sector investments in wind and solar renewable energy generation (the Private Participation in Infrastructure database), measured in terms of dollar amounts at financial

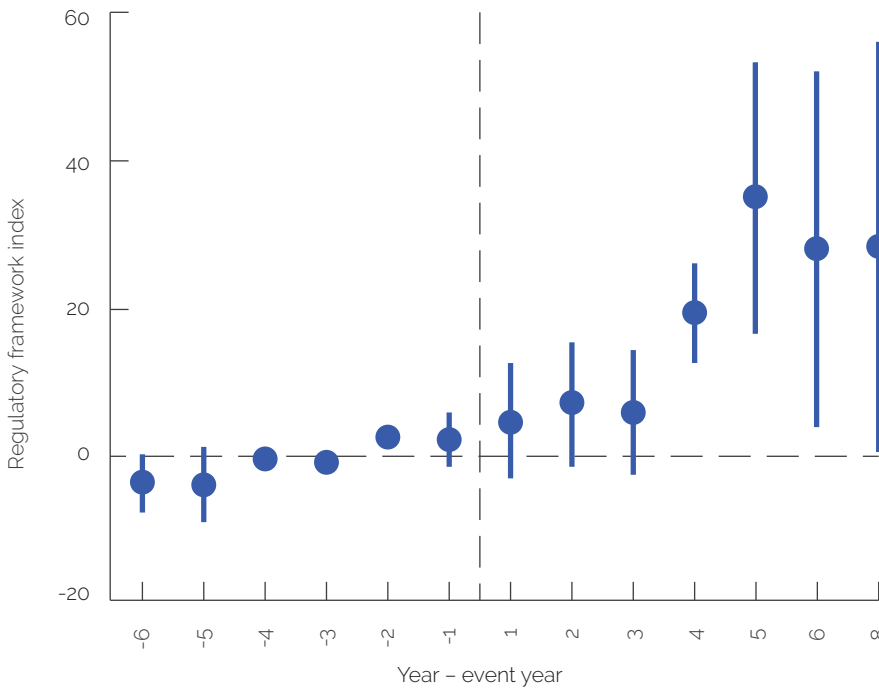
closure. Robustness tests for private investments were conducted using data on energy generation and installed capacity as proxies (with data from the Organisation for Economic Co-operation and Development–International Energy Agency database and the International Renewable Energy Agency). The analysis uses a difference-in-difference methodology, which statistically compares the effect of the interventions on countries that received treatment (treatment group) with another group of similar countries that did not receive interventions (control group). Details of the methodology are provided in appendix A.

The econometric analysis finds that World Bank lending activities have led to an improved enabling environment for investing in renewable energy generation and increased private sector investment in countries with more financial development. As shown in figure 4.1, World Bank lending leads to a (weak) significant positive impact on enabling environment two years after the interventions and a significant impact after year four. This suggests that World Bank lending has been effective in supporting enabling environment reforms that improve the renewable energy regulatory environment. Although the impact of World Bank lending on private sector investments is inconclusive when tested for all countries in the sample (figure 4.2, panel a), the evidence suggests (weak) significance when tested for a subsample of treated countries with higher financial development, controlling for country income (figure 4.2, panel b; as defined by the International Monetary Fund Financial Development Index database).¹ This shows that countries with greater financial development have benefited the most from improved enabling environment in terms of attracting private sector investments.

Both enabling environment improvements and financial development are needed to support private sector action in climate. Although these results of the econometric analysis confirm the World Bank’s catalytic role in supporting regulatory reforms that promote private sector participation in renewable energy, they also provide a warning about the effectiveness of these policies in countries with limited financial access. Improvements in the enabling environment might not be a perfect substitute for financial development. Investments in countries that are financially more integrated with the global market and are more known among the investors’ community have more funding opportunities compared with financially isolated

countries with smaller banking sectors and underdeveloped capital markets. This implies the need to support both enabling environment and financial development improvements. It is beyond the scope of this evaluation to assess whether enabling environment and financial development interventions have been coordinated in these countries.

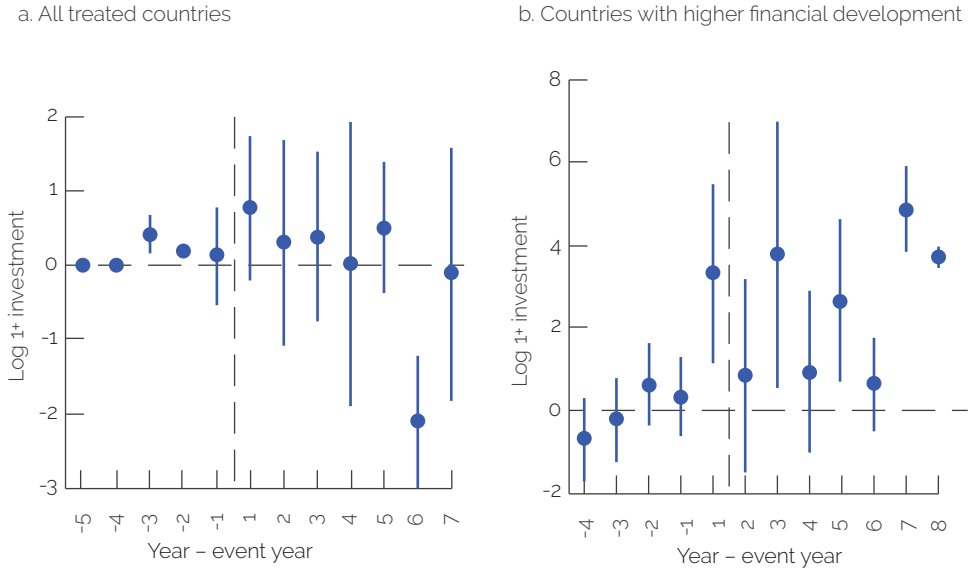
Figure 4.1. Staggered Difference-in-Difference Analysis—World Bank Lending on Renewable Energy Regulatory Framework



Source: Independent Evaluation Group analysis.

Note: Error bars are at 95 percent significance.

Figure 4.2. Staggered Difference-in-Difference Analysis—World Bank Lending on Wind and Solar Investments



Source: Independent Evaluation Group analysis.

Note: Error bars are at 95 percent significance.

Both enabling environment improvements and financial development are needed to support private sector action in climate. Although these results of the econometric analysis confirm the World Bank’s catalytic role in supporting regulatory reforms that promote private sector participation in renewable energy, they also provide a warning about the effectiveness of these policies in countries with limited financial access. Improvements in the enabling environment might not be a perfect substitute for financial development. Investments in countries that are financially more integrated with the global market and are more known among the investors’ community have more funding opportunities compared with financially isolated countries with smaller banking sectors and underdeveloped capital markets. This implies the need to support both enabling environment and financial development improvements. It is beyond the scope of this evaluation to assess whether enabling environment and financial development interventions have been coordinated in these countries.

IFC EEPSCA AS have been effective in attracting private sector investments in wind and solar renewable energy. These interventions are mostly transaction AS that support client countries, including subnational governments, in “the last mile” for attracting private investments. They include, for example, support in designing the auction for the creation of a solar farm or urban electrification of cities. It is plausible that the involvement of IFC in the design of the auction-built confidence among potential investors in the transparency of the process. Considering the operational nature of these services, it is not surprising that the evidence does not find that IFC AS projects improve the regulatory framework.

World Bank analytical work and AS for renewable energy have been effective in improving the regulatory framework, but we did not find clear evidence of its impact on attracting private sector investments. The econometric analysis also tested the effectiveness of World Bank ASA for renewable energy. The effects of the upstream and midstream policy interventions are positive and significant in improving the regulatory framework, but the effect on private investment was inconclusive. When tested for the impact on the proxies (generation and installed capacity) and for the subgroup of countries with financial development, the results were equally nonsignificant. These results should be seen as inconclusive (rather than evidence that nonlending work has been ineffective) because the large variety of interventions in World Bank ASA makes it difficult to identify which activities could plausibly lead to investment outcomes.

The evaluation also tested whether countries that received multiple EEPSCA interventions were able to attract more private investment in renewable energy. Although the difference-in-difference method assessed the impact of each intervention on enabling environment and investment, it was unable to test effectiveness of cumulative interventions carried out by the Bank Group. To address this, the evaluation used principal component analysis to assess the combination of World Bank lending, World Bank ASA, IFC AS, and IFC investment services. Principal component analysis develops a treatment intensity index that captures the information related to the number of EEPSCA interventions received by countries through the years. Through a nonparametric estimation, principal component analysis estimates the relationship between the treatment intensity index and the impact on private

investments in renewable energy generation and private renewable energy installed capacity.

Countries that have received multiple Bank Group renewable energy interventions have also benefited from high private investment, but the effect is stronger in countries with more financial development. Although initial tests for the whole sample suggest that countries that have received more intensive Bank Group EEPSCA treatment have also been able to attract more private capital, the evidence is weak due to possible selection biases. We mitigated the selection bias by separating the sample between countries with higher and lower financial development. The analysis suggests that (i) countries with less financial development received fewer Bank Group renewable energy interventions and (ii) countries with more Bank Group renewable energy interventions benefit the most in attracting private investments when financial development is higher.

Effectiveness and Success Factors

The evaluation used case studies to identify factors that have supported or inhibited effectiveness and lessons. Each case study assessed the degree to which the Bank Group has contributed to improvements in enabling environment and the degree to which enabling environment improvements led to private sector climate action. Analysis of case studies also highlighted the degree to which supported business models included features that limited their ability to achieve impacts at scale. Table 4.2 provides a summary of the findings of the analysis, which are described in this chapter.

Achieving Effectiveness in Case Studies

The Bank Group has often been effective at achieving improvements to enabling environments using technical measures that do not impose significant negative effects on existing stakeholders. In most case studies, the Bank Group achieved at least some significant improvements in enabling environment. The Bank Group was most successful for constraints that could be addressed through technical measures that did not require significant trade-offs or impose negative effects on existing stakeholders. In Rwanda, the World Bank contributed to the government's adoption of a

least-cost power development plan, which incorporated a substantial role for the private sector, the adoption of a PPP law establishing competitive procurement procedures, and establishment of standardized PPA procedures. These provided clarity, certainty, and transparency to the private sector and contributed to substantial private investment, with 10 new private energy plants signing PPAs (compared with a single new small public investment). In Colombia, the development of regulations better defining green investments and regulations modifying requirements for institutional investors has helped mobilize pension funds and others to invest in green infrastructure projects while complying with prudential standards.

The Bank Group has had mixed success for activities that require overcoming political economy and governance challenges, particularly from entrenched government stakeholders. Although these interventions are higher risk, they also offer potential for substantial impacts; therefore, the Bank Group should accept some tolerance for failure. For geothermal power in Indonesia, the World Bank was able to address capacity limitations for tendering processes, build a common understanding on development in conservation areas, and establish exploration risk-sharing facilities. However, it made limited progress on improving the pricing or process for PPAs (until a new regulation in late 2022) because this would require buy-in from the national power company. The power company had a limited incentive to undertake these actions because it faced pressure to minimize the supply cost of power, and thus was reluctant to pay more for renewable energy, and because it faced excess supply from existing generation sources, mostly coal, leaving little need for new PPAs. As a consequence, there have been no major private investments in geothermal power in recent years, and the risk-sharing facility remains unused. Nevertheless, if the enabling environment for geothermal energy could be improved to the point where projects were investible, geothermal energy could play a major role in helping the country to meet its long-term ambitions for phasing out coal. The World Bank's efforts to improve the enabling environment for hydropower in Nepal were only partially successful because of the complex political economy. The World Bank convened stakeholders and sought to build consensus for reform. It was able to use DPF to support the drafting of a new electricity act that would liberalize the sector and allow private power plants to access the transmission grid

and export power, and the issuance of a regulation requiring cost-reflective power tariffs. However, the key regulation has not been issued, and the act has been awaiting adoption by the parliament since 2020 (in part because of opposition from key stakeholders). As a consequence, investment in hydropower has been limited compared with its potential. Yet Nepal has substantial potential for hydropower, and exports of power to India could help substitute for coal power there.

Improvements in enabling environments have sometimes led to significant private sector climate action. In Türkiye, World Bank support to geothermal resource exploration through a risk-sharing mechanism helped stimulate private sector investment. Exploration had largely ceased after the end of a publicly funded exploration program, but now with the mechanism, 2 subprojects had completed drilling as of January 2023, 4 were about to start drilling, and 21 were shortlisted. In Colombia, revisions to the legal framework and new regulations contributed to a substantial increase in usage of electric buses—from near zero at the beginning of the program to 973 in 2022. The use of electric vehicles and bicycles increased, and air pollution declined. Efforts to incorporate climate mitigation and resilience practices into privately financed roads were also successful, achieving \$13 billion of projects in operation, including \$4.5 billion in domestic financing. Success on private sector action should also not be determined solely on the quantity of private sector action but also the quality, in terms of costs imposed on governments or consumers. As discussed in this chapter, some models have generated private sector climate action only by building up government contingent liabilities (which may generate some private investment but inhibits scalability).

Private sector action has not occurred in several cases because enabling environment efforts were partially successful, political economy challenges stymied reforms, important constraints were not addressed, or macro and financial contexts for private sector development were unsupportive. In Ghana, the World Bank has been unable to engage substantially on most constraints for several reasons, most prominently the difficulty in generating buy-in from the cocoa parastatal. Efforts to support hydropower in Nepal have not been successful because the key reform law remains unpassed. In Indonesia, efforts to catalyze geothermal power investment have been unsuccessful because prices have not been high enough to attract investors,

although a new regulation with higher prices was issued in late 2022. In Türkiye, the unfavorable macroeconomic situation means that financing is highly constrained, and energy service companies' balance sheets are not strong enough to meet banks' loan conditions; thus, efforts to expand this model have been only modestly successful.

Table 4.2. Summary of Case Study Effectiveness

Case Study	Improved Enabling Environment?	Private Sector Climate Action?	Scalable?
Colombia transport sector	✓	✓	<i>Local currency guarantees^a</i>
Colombia sustainable banking	✓	?	n.a.
Egypt, Arab Rep. energy subsidy reform	✓	✓	n.a.
Egypt, Arab Rep. renewable energy	✓	✓	Foreign exchange guarantees
Ghana cocoa forest management	x	x	No business model developed
Honduras climate-smart agriculture	✓	x	Donor finance
Indonesia geothermal power	?	x	Projects not bankable
Indonesia sustainable banking	✓	?	n.a.
Nepal renewable energy	?	x	Excessive risks for large hydropower
Nepal sustainable banking	✓	?	n.a.
Rwanda renewable energy	✓	✓	<i>No scalability constraints identified for grid RE</i>
Türkiye new renewables	✓	?	<i>No scalability constraints identified</i>
Türkiye energy efficiency	✓	?	ESCO projects not bankable

Source: Independent Evaluation Group case studies.

Note: These are all simplifications of complex situations. ✓ (check mark) = largely successful; ? (question mark) = mixed success or too soon to tell; x = unsuccessful. Emphasized text shows business models that are generally scalable (italic), partially scalable (bold italic), or have elements that inhibit scalability (bold). ESCO = energy service company; n.a. = not applicable, as some activities are not promoting specific business models.

a. In Colombia, early models for green highway public-private partnerships relied on guarantees, although later did not.

In many cases, despite the Bank Group engagement on elements of enabling environment for several years, it is still too soon to tell if these will lead to private sector action. Supporting the full chain of activities needed to catalyze private sector climate action can require years of dedicated support. For example, in Türkiye, IFC AS was highly successful in developing and operationalizing a national certification framework for green organized industrial zones, but the full impact of the framework will materialize only after further legislation and efforts to address financing barriers. In all three cases on sustainable banking (Colombia, Indonesia, and Nepal), the Bank Group has provided advice based on rapidly evolving global best practices. Awareness of banks and their regulatory and supervisory authorities of climate risk has improved, and key regulations have been issued on climate risk classification and reporting, but countries are still early in the process of assessing the climate exposure of their financial systems. For example, in Nepal, IFC helped the central bank establish environmental and social risk management guidelines and regulations that require 62 banks and financial institutions to comply with the guidelines by reporting on their portfolios. However, delays in mainstreaming the guidelines into their lending practices mean that changes in business behavior have not yet materialized. In addition, insufficient enforcement of the reporting requirements may have created unfair competition because banks that meet the requirements and collect the necessary data from their customers are seen as more difficult to work with and so are at a competitive disadvantage.

Factors of Success

Policies that ensure that price levels are sufficient to incentivize private action have been critical to success or failure, although the World Bank has rightly migrated from models such as feed-in tariffs to auctions. Price incentives are at the core of investment decisions because the private sector is willing to tolerate substantial risks if it is compensated for these. Achieving sufficient price levels for clean technologies, both by adopting incentive policies and by removing subsidies or supports for less resilient alternatives, has played a major role in the success or failure of EEPSCA interventions. However, the literature suggests that initial successful approaches to price incentives, such as feed-in tariffs, are no longer needed to incentivize

investments in standardized technologies and that auctions can reduce the cost of new projects, with the exception of small projects (Dobrotkova, Audinet, and Sargsyan 2017; United States Department of Commerce 2023). In Indonesia, the requirement that PPA prices for geothermal power could not exceed the average supply cost in local grids, which were largely driven by subsidized coal power, meant that the private sector was unwilling to invest and that innovative geothermal exploration risk-mitigation measures were left unused. For rooftop solar in Türkiye, adoption of net metering replaced an expiring feed-in tariff program, providing significant incentive for households to purchase solar systems.

World Bank and IFC capacity building has played an important role in building the ability of government to design and implement policies and for the private sector to adopt climate action. Insufficient institutional capacity or awareness was a commonly diagnosed constraint. For example, low awareness of firms and banks on energy efficiency options constrained their ability to undertake energy saving investments. Limited capacity of government agencies to design and implement auction mechanisms or advanced contracting inhibited their ability to encourage private sector participation, and IFC transaction advisory helped address this. The Bank Group has provided capacity-building support as part of virtually all of its EEPSCA activities, either as subcomponents in lending projects or through stand-alone advisory. Government agencies frequently benefited from capacity-building efforts that expanded their ability to undertake key technical, legal, and financial activities. However, capacity-building efforts were seldom well monitored, as project indicators rarely measured capacity or capacity improvements in a tangible way, relying on output data on training programs. In a few cases, failure to address capacity limitations was a contributing factor to a lack of success.

DPF has played a powerful role in supporting critical policy changes related to EEPSCA, although they sometimes face barriers to implementation. In Nepal, the use of DPF helped leverage the authority of the Ministry of Finance to ensure progress on reforms by other government institutions and provided some degree of continuity in sector reforms in a context of frequent changes in key ministerial and top civil servant positions. However, the instrument was unable to overcome opposition from other internal stakeholders that opposed to reform the electricity sector. In Indonesia, DPF

included a prior action supporting standardized procedures for PPAs, but the procedures were never fully adopted in part because of a lack of support from key stakeholders.

Government support and compensation to vulnerable populations for policies that seek to correct climate-related externalities are important to mitigate harmful effects. External literature points to the importance of supporting vulnerable groups when carbon price policies are adopted (IMF 2013; Sanghi and Steinbuks 2022). Although the Bank Group has limited ability to influence political support for reforms, it can advise on measures that help mitigate the side effects of these measures on vulnerable populations and consequently avoid their possible reversal. In the case of Egypt, the World Bank supported the government in energy subsidy reductions in 2014–17, including advice on a program of household subsidies that targeted vulnerable groups. The implementation of the subsidy reduction program took place gradually to give time to households and corporations to adapt, and for the first two years did not affect liquefied petroleum gas subsidies, which are a source of energy used mostly by lower-income families. The Bank Group supported progressively other social programs for affected populations, including conditional cash transfer programs. Although some energy subsidies still remain in Egypt, the adjustment was close to 7 percentage points of GDP between 2014 and 2017, and mitigation measures were important to alleviate the impact of the reform on poor people.

After the COVID-19 pandemic, most countries are better prepared to identify vulnerable population groups, which could make targeted compensation more feasible. As documented in the forthcoming Independent Evaluation Group evaluation on financial inclusion (World Bank 2023a), the COVID-19 pandemic brought better technologies to governments for identifying vulnerable populations and reaching out to them through cash transfers. During the pandemic, many countries started to use electronic cash transfers to support their populations. As part of strategies for mitigating the side effects of carbon pricing on vulnerable populations, the Bank Group may want to consider working with governments also in mitigation policies, while carbon pricing policies are introduced.

Bank Group models that address affordability constraints by low-income households and smallholders have been critical for achieving climate action by these groups. Climate action by smallholders or low-income households often faces serious affordability constraints. Successful Bank Group approaches have found ways to address these by incorporating subsidized financing mechanisms. For example, private sector off-grid companies in Rwanda were unable to expand beyond higher-income households at first, but access among lower-income households expanded significantly after providing them with subsidies through a World Bank–financed renewable energy fund. As a result, most new connections were for the poorest households.

IFC has played a valuable role in bringing investor and firm perspectives into policy dialogue and building the capacity of the private sector to engage. A particular strength of IFC has been its ability to consult and engage with the private sector and raise its awareness on a range of climate related issues, including on how to comply with upstream regulations. For example, in Colombia, IFC’s analytical and advisory work on incorporating performance standards for environmental and carbon reduction rules under PPP contracts met the need of the private sector to understand the commercial feasibility of such projects and cost and price in the cost of such measures in its bids. In the case of Egypt renewable energy projects, IFC was instrumental in reaching an agreement with the government regarding the terms of the contract that would facilitate project bankability, including the need of having an impartial system for dispute settlement. IFC also brought expertise on project finance structures and related risk management regulation to improve the design of private sector contracts.

IFC has played a leading role in initiating Bank Group action on topics such as sustainable banking. It was a pioneer in Bank Group efforts to promote sustainable banking regulations, initiating programs in Nepal and Indonesia that later received World Bank support and working as part of a joint Bank Group program in Colombia. Its advice to financial regulators and central banks, through the Sustainable Banking and Finance Network, laid the foundations for ongoing reform programs.

External factors, such as standards imposed on imports, have shifted incentives, unlocking action in a way that was not possible from domestic policy

dialogue and capacity building. In Ghana, standards for cocoa certified as produced without deforestation helped motivate adoption of sustainable practices, as these offer a price premium. In Türkiye, desire to harmonize legislation with the European Union has been a driving force for electricity market development and reform. In Honduras, a desire for coffee exporters to receive international certifications, such as those for organic produce or for avoiding deforestation, helped encourage adoption of practices so that growers could access specialty export markets.

Institutional reforms that seek to create structures conducive to private investment have been a key determinant of enabling environment success. In many countries, institutional structures have favored state provision of infrastructure, with a limited role for the private sector. Many countries have large national energy utilities that are not supportive of a major role for the private sector. Reforms that open access or establish a clear role for the private sector have been critical. The ability to develop institutional structures that provide a development strategy incorporating the private sector accompanied by a defined pipeline of projects in the power sector in Rwanda, for example, played an important role for unlocking investment. Before Bank Group interventions, most new infrastructure was driven by bilateral, and sometimes opaque, agreements without a planned strategy, leading to high costs and low investor trust, but a new regulatory framework with standardized contracts and competitive procurement played a major role in mobilizing the private sector. In the case of Egypt, despite successful engagements in the renewable energy sector that allowed the attraction of private sector capital to renewable energy, economywide productivity has stagnated. According to the 2022 Systematic Country Diagnostic for Egypt, public sector institutional reforms are on the critical path to dynamizing the role of the private sector. These reforms that facilitate greater risk-sharing would be essential for the renewable energy sector to continue to grow.

Developing standardized business models has helped facilitate private investment in climate mitigation sectors, especially wind and solar power. Standardized approaches to contracts and regulations help attract investors by improving transparency and bringing predictability in the selection process and the rights and obligations of the different parties, reducing investor uncertainty. Standardizing includes both practices within a country

to create a level playing field and adopting some standard best practices across countries, though still allowing differences based on country context. Standardization applies to elements such as contract and dispute settlement terms, procurement processes, and technical requirements. For example, in Egypt, IFC played an important role in bringing the private sector perspective to the conversations with the government in terms of creating a bankable contractual framework for multiple midsize contracts. The initial procurement round was unsuccessful because of lack of agreement on the arbitration terms, but IFC helped broker an agreement and unlock private investments in solar for approximately \$2 billion in the second round. In Indonesia, the inability to establish standardized contracts and prices for geothermal power and the need for contracts to be individually negotiated with the national power utility were a barrier to investment. In Rwanda, shifting contracts for new power plants to a standardized procurement system rather than bilateral agreements helped build investor confidence that the process would be fair. In Colombia, IFC support for prefeasibility studies helped identify the viability of electric bus business models, which was critical to subsequent investment. IFC has had success in many countries with its standardized approach to scaling solar power.

Factors That Inhibit Scalability

It is critical that business models established with Bank Group enabling environment support have the potential to scale to meet the needs for climate investment. This section describes how some business models supported by the Bank Group through EEPSCA activities have included factors that supported or limited their scalability. Limitations to scalability were primarily due to allocation of risks to governments in a way that is unsustainable. Although there is an argument for government to adopt risks early in the development of a new industry, business models need to adjust over time to adopt scalable approaches.

Business models supported by the Bank Group for private investment in large public infrastructure projects have sometimes involved a buildup of currency risk for governments. In many case studies, the Bank Group has supported enabling environment activities that seek to trigger private investment in large public infrastructure projects. Most of these climate

mitigation projects are in the nontradable sector, including those in energy and urban and road transport. Although revenue generation from these projects comes from domestic users paying tariffs in local currency, in most cases financing has come from international sources creating currency mismatches. A common PPP business model, especially for the energy sector, involves a government-guaranteed contract promising a stream of payments made to the investor company for a number of years, at a tariff structure that involves some level of adjustment according to the value of foreign exchange currency (foreign exchange indexation) that satisfies the investor. Although this contractual framework makes projects bankable, it requires the government to hold currency risks for years, with limited possibilities for mitigating the risks. In road programs in Colombia and renewable energy in Türkiye and Egypt, governments initially took on the foreign exchange risks to facilitate private investments, and these were successful in kick-starting the sector.

Accumulation of currency risk can impose a significant fiscal burden. Although the business model described in this section can work at the scale of a group of projects, it might not be suitable for financing the entire climate agenda because of the fiscal implications. After periods of macroeconomic instability, exchange depreciations in many client countries have created an increase in government financial obligations to private sector providers. For example, in the past five years (as of April 2023), currencies in Colombia, Egypt, and Türkiye have depreciated 65 percent, 75 percent, and 375 percent, respectively, against the US dollar, dramatically increasing the cost of the government obligations. In Egypt, the Bank Group–supported enabling environment improvements helped trigger a group of projects supported by IFC in connection with the Benban Solar Park. These projects reached financial closure in October 2017, with an average PPA tariff paid by the government utility of \$0.071 per kilowatt-hour. This tariff was to be adjusted based on exchange rates, so that 70 percent of US dollar fluctuations would be reflected in the tariff. Measured in local currency, exchange rate depreciations meant that the tariff in April 2023 would be approximately 53 percent more expensive to the government than its value in October 2017.

The potential fiscal burden limits the scalability of these business models. The magnitude of the ensuing financial obligations means that governments cannot continue to offer these terms for new investments without further

jeopardizing fiscal stability, especially for governments that already face high levels of debt (Hausmann and Panizza 2011). For example, in Egypt, for the period 2022–40, the CCDR identifies investment needs for renewable energy to be approximately 10 percent of the GDP. With a government debt-to-GDP ratio already in the range of 90 percent, a PPP model relying on government foreign exchange guarantees may face resistance from investors in supporting the scale of needed investments. In the case of the fourth generation Colombia road programs (2014–15), supported by the Bank Group, the government built up very high foreign exchange liabilities through guarantees on availability payments and revenue payments to concessionaries. The fifth generation of road PPP no longer offers foreign exchange guarantees, while it supports domestic financing of projects. Although it is too early to tell whether these projects will get financing, with the Bank Group support, the government approved amendments to the law that facilitate investments of pension funds in infrastructure projects.

Indexing consumer tariff rates to exchange rates to pass risk on to consumers is not a feasible solution. For nontradable sectors, such as transport and energy, countries may have difficulty in defining tariff structures for final users that are linked to foreign currencies. Theoretically, it could be done, but in practice would be difficult to implement as it would require tolerating volatile price swings for households and vulnerable populations.

Long-term currency hedging is also unlikely to be an immediate solution. Long-term currency hedging markets are unlikely to develop in countries with a small domestic investor base. Although IFC and other multilateral organizations offer longer-term currency hedge quotes (foreign exchange currency swaps) for some clients, in the absence of markets where domestic investors are willing to hold these risks, prices tend to be expensive compared with more liquid markets. In the absence of the development of domestic capital markets, the price of these foreign exchange swap mechanisms will continue to be expensive (BIS 2019). Although the provision of short-term foreign exchange currency swaps might help in some cases, in countries with high-interest rate volatility, prices of these instruments might be too expensive to ensure project bankability.

Scalable approaches to private financing of climate action will require the deepening of the domestic capital market and financial sector. Scalable approaches will require long-term debt financing either in local currency (Essers et al. 2014; Park, Shin, and Tian 2018) or in foreign currency but swapped into local currency using market hedging instruments. Such approaches would optimize the provision of government contingent liabilities and minimize those in foreign currencies. The Bank Group could contribute by supporting the creation of mechanisms that increase private savings that enable the development of long-term investors, including contractual savings mechanisms, such as pension funds and annuity companies, and encouraging their participation in climate financing. These developments could contribute to fostering domestic financing of projects and also to the creation of a long-term foreign exchange currency swap market. In the case of the Colombia roads, the World Bank supported actions to enable the participation of domestic pension funds through the creation of debt funds. Such actions enable the financing of projects without requiring government foreign exchange support. In Nepal, because tariff indexation for hydroelectric generation projects is linked to the local currency, interest from international investors has remained low. Under these contractual conditions and the absence of domestic capital market development, private investment in hydropower will remain a challenge. Globally, it will become increasingly difficult to mobilize private investment into large climate-related public infrastructure projects in the absence of policies that foster domestic capital market development.

Public sector guarantees have facilitated engagements of private sector investments. In the context of incomplete information and lack of track record of governments dealing with private sector contracts, such as PPAs, the private sector finds comfort in the provision of guarantees. Public guarantees help make private sector investments possible by enabling them to attract financing at low cost. For example, PPAs in Egypt enabled \$2 billion of investments in renewable energy. Investors prefer standardized public guarantees rather than real asset guarantees. However, public guarantees in countries should be perceived mostly as an entry point for attracting private investors rather than an instrument for permanent financing of climate-related investments.

Excessive use of government guarantees can also inhibit scalability. As in Colombia, PPP concessions for toll road projects received government guarantees that mandated minimum payments regardless of road user numbers. During the COVID-19 pandemic, when road travel declined, some of these guarantees triggered and the Colombian government had to make payments to private sector companies. Besides the fact that the payments to private companies were triggered at a moment of significant fiscal constraint, the model of allocating the risk of traffic to the government has proven to be suboptimal.

Literature on toll road PPPs finds that flexible-term contract models for concessions offer a better risk allocation and avoid the use of public guarantees. Although it is common for countries to offer PPP concessions for a fixed term and organize bidding processes based on the lowest tariff, investors in these contracts typically require some form of government guarantee, such as a minimum traffic requirement, because traffic estimates have resulted in significant inaccuracies (Engel, Fischer, and Galetovic 2001, 2013). Flexible-term contracts (in terms of the number of years) offer a solution to this dilemma by extending the concession term if traffic volumes are below expectations and thus mitigate the investor's risk without requiring a public guarantee. Under these models, bidders compete based on the present value of revenues. These models have been successfully operating in Chile since 1999.

In the context of high levels of government indebtedness and sizable needs for climate-related public infrastructure, risk allocation approaches should optimize the use of public guarantees when supporting projects. Governments could be better off if instead of allocating projects at the lowest up-front cost, using guarantees in foreign currencies, they allocated projects with slightly higher tariffs but with guarantees in local currency. Following the example of Egypt Benban energy projects, the government would be better off today if the tariffs with the energy generation company were 30 percent higher, but the indexation formula was initially set in local currency. By the same argument, governments would be better off by allocating toll road concession with no government guarantees, but a flexible duration of the concession period, than offering minimum traffic guarantees, but for a fixed concession period (for example, 20 years). The opportunities for risk diversification increase as domestic financial and capital markets become more sophisticated. Considering the high level of government

indebtedness of many countries, the business models for attracting private capital supported by the Bank Group should factor in the need of optimizing the use of government contingent liabilities.

There are also cases where some enabling environment improvements have been achieved, but the models supported by the Bank Group may not be scalable because of a reliance on donor finance. Development finance is always likely to be limited, and business models supported by it should have a clear strategy for transition. In Honduras, the model pursued by the World Bank supplies matching grants to smallholder farmers to finance on-farm investments. Although the evidence shows stories of success among small farmers having access to finance and selling their products abroad, the program relies on International Development Association resources to provide this match, which covers 60 percent of subproject financing. This means that model cannot expand beyond the availability of concessional donor financing, and consequently the scale of the program is very limited; projects operating since 2008 have reached only 12,878 smallholder farms, in a country with an estimated 270,632 smallholder farms, and there is only weak evidence that the project is increasing agricultural finance beyond the direct loans subsidized by the program. In addition, only a limited set of CSA practices have been adopted in part because CSA was introduced more recently as a theme to an established program, and the program has not yet been made conditional on CSA. The main practice adopted was use of organic fertilizer, which may help farmer income by allowing them to reach specialty coffee buyers with a price premium, but the impact on climate resilience might be limited. In Rwanda, efforts to support off-grid solar also relied on donor finance, but the model had a finite end point of universal access, and long-term growth in energy consumption would be met by grid expansion.

¹ Financial development is defined as a combination of depth (size and liquidity of markets), access (the ability of individuals to access financial services), and efficiency (ability of institutions to provide financial services at low cost and with sustainable revenues, and the level of activity of capital markets).

5 | Conclusions and Recommendations

The Bank Group is successfully supporting clients to improve the EEPSCA, although the level of activity has not increased in recent years. The Bank Group has approved a significant portfolio of lending, nonlending, and AS activities. It has generally engaged on the most significant constraints on private sector climate action. It is strategically targeting mitigation-related enabling environment to the large middle-income countries that generate the most emissions and have the most potential for mobilizing private capital. It has provided comprehensive support in the energy sector, which is the largest source of emissions in client countries, and where emissions are continuing to grow rapidly. However, World Bank support and IFC support have remained relatively flat since 2016.

The World Bank and IFC have drawn on their individual institutional strengths. The World Bank has often provided comprehensive support, with analytics and diagnostics identifying key constraints and priority actions, policy dialogue to bring options to key decision makers, technical assistance to bring international best practice and experience, use of policy lending to strengthen reform champions to proceed with upstream policy reform, and investments that create financing platforms or provide key data. IFC has played a key role in bringing investor and firm perspectives into policy dialogue and transaction advisory and building the capacity of the private sector to engage on climate and has been a pioneer in some sectors, such as sustainable banking, solar and wind power, and green buildings. IFC tended not to engage on enabling environment on sectors outside of the core industries where it had established capacity and business models, preferring to come with downstream investments when the enabling environment was sufficiently advanced to allow initial investments.

The Bank Group's diagnostics play a key role in identifying priorities and influencing clients to act. The Bank Group uses its sectoral diagnostic tools and brings its deep technical knowledge to identify critical constraints and

engage policy makers, and often mobilizes its full set of instruments to pursue goals related to private sector climate action. Its new CCDRs incorporate the private sector in the investment and policy needs they identify.

Although there are gaps in data, Bank Group enabling environment activities have usually been effective in achieving their immediate goals and have sometimes contributed to significant private sector investment. Across sectors and types of activities, the enabling environment portfolio is generally successful at achieving its immediate goals, but the project evaluation system is not set up to generate evidence on indirect and subsequent effects that occur after project closure. Consequently, it is not surprising that most projects do not generate sufficient evidence to assess whether private sector climate action is occurring. However, where external data exist for renewable energy, evidence shows that Bank Group support is contributing to an improved enabling environment and increased private sector investment. Success factors have included establishing prices sufficient to incentivize private action, providing midstream support to identify feasible investments and build government capacity to manage those investments, addressing affordability constraints for poor households, and achieving institutional reform to set a conducive environment. Achieving private sector climate action works best under clear price signals, adequate information, strong public institutions, and risk diversification opportunities. All of this is in the context of macroeconomic stability and conducive private sector context, including rule of law.

Some important areas of support may warrant additional attention. The World Bank has provided relatively little support for risk management and related public sector institutional development, which will be crucial for countries' ability to mobilize private sector climate action at scale. The World Bank has also infrequently engaged on policies that discourage GHG-emitting activities, such as regulation of air pollution. The Bank Group has rarely engaged on EEPSCA in the transport sector. Whereas the World Bank has frequently engaged on setting cost-reflective tariffs for power utilities, it has infrequently supported carbon price regulation policies or repurposing agricultural subsidies in its lending operations, in part because of limited client uptake.

The Bank Group's ability to engage on enabling environment has been constrained by political economy barriers. Subsidies for fossil fuels and agriculture distort markets and promote unsustainable development pathways, but removing subsidies can have impacts on the poor or incumbent industries. Carbon taxes are often recommended but have been implemented by few countries, especially given concerns about penalizing industries in a time of economic stress. Repurposing agricultural subsidies to achieve climate goals might face fewer political economy challenges than subsidy removal, but this agenda is recent. Influential stakeholders may resist reforms they perceive as threatening their political or economic interests. On issues with political economy barriers, it has been difficult for the Bank Group to build client government support for reforms. Politically responsive policy design, enhancing information, and multistakeholder engagement may be able to mitigate political economy barriers in some circumstances. Bank Group efforts that try to address these kinds of enabling environment activities have a significant failure rate, but the institution needs to continue to engage on these reforms, given the potential upside for achieving climate action. When the Bank Group has managed to achieve success on these reforms, it has often been because external circumstances, including fiscal crisis, have created the impetus for change. In some circumstances, the Bank Group may not be able to address critical enabling environment constraints in the short term. In these contexts, the Bank Group should remain engaged, continue outreach, and remain ready to reach if a conducive context or a reform champion arise.

In low-income countries, enabling environment support for private sector climate action is likely to remain modest in scale. Engaging on private sector enabling environment for climate in low-income countries is difficult because they face a higher cost of funding under challenging market conditions and because their main needs are for adaptation, where business models for bringing investments are less developed and state capacity for enforcing resilient standards or codes is limited.

The Bank Group has facilitated private investment into climate mitigation sectors by developing standardized business models, but progress has been limited outside of renewable energy. The Bank Group has developed substantial enabling environment engagements in the energy sector, especially

for wind, solar, hydropower, and energy efficiency, including green buildings. Standardization of contract terms, procurement processes, and financing models created replicable models that attracted investors. However, there has been much less engagement in other sectors. The Bank Group could draw on its experience to build standardized approaches in other mitigation sectors including transport, which is a major source of emissions but one where the Bank Group has engaged relatively little on private sector enabling environment. Although the goods and services offered by companies differ across sectors, their project revenue structures often have significant similarities, especially for sectors that provide public infrastructure. When companies receive predictable revenues, they can build tradable investment vehicles (such as asset-backed securities) out of the expected project cashflows and receive debt financing from a wide group of investors. Business models built on securitization of future streams of payments could use similar financing structures to those used for renewable energy or toll roads. Existing models of private sector participation could also benefit from applying low-emission technologies and resilience standards.

Creating standardized and replicable business models for attracting capital for climate adaptation is a new challenge, where the Bank Group could play an important role. The Bank Group has engaged much less on private sector enabling environments for adaptation than for mitigation. Although it has provided important support for adaptation-related information and resilience standards, the World Bank has engaged on climate adaptation in the most vulnerable countries only slightly more than in other countries, and IFC's enabling environment support for climate adaptation is modest. However, the successful business models supported by the Bank Group for attracting private capital into mitigation-related public infrastructure apply to assets that generate some type of revenue, such as power generations and toll roads. These models have not been developed for adaptation sectors. Many important forms of adaptation enabling environment change the composition of existing investment flows to incorporate resilience, rather than channeling new investment; it may be possible to build standardized financing approaches for bringing in resilient practices and standards. A further challenge is that many of the countries that are most vulnerable to climate change are small states or countries affected by fragility, conflict,

and violence, where private sector investment can be difficult to attract. Nevertheless, the Bank Group should identify opportunities for climate change adaptation and seek to develop business models where feasible.

Proposals for scaling up private sector investment in climate action may have better uptake if they are accompanied by realistic proposals for financing. The Bank Group has articulated well the need for scaling up investment in climate action, including by the private sector, in its initial CCDRs. Although the evaluation did not assess the influence or impact of these reports, their investment proposals may not be influential unless they are accompanied by identification of realistic proposals for sources of financing and actions that will help these take place. In most countries, the scale of investment proposed will not be generated from domestic financial sectors. Green finance is not at a scale where it could meet these needs, and the future rate of increase in demand for green finance is uncertain. The ability of country enabling environment improvements to generate investment is closely related to the degree of financial depth. Even as it pursues enabling environment improvements, the World Bank should also provide support for financial sector development. Although other Bank Group diagnostic tools, including FSAPs, Infrastructure Sector Assessment Programs, and Country Private Sector Diagnostics, address issues of financial and capital market development, none of them focus their recommendations on actions that could generate private sector financing at the levels envisioned in the CCDRs.

Generating private sector climate action at the scale needed to achieve the world's climate goals will require scalable solutions. The emergence and deepening of new sectors that apply low-carbon or resilient approaches are critical for achieving climate change goals. Government guarantees can help initiate investments in new sectors in the context of insufficient information and lack of track record of the government contracting with the private sector. However, business models may struggle to scale if they rely on government guarantees, which can have negative fiscal impacts on client governments. Similarly, models that rely on donor finance will reduce scalability, unless development finance is increased substantially. Determining the optimal risk allocation for private sector investment in public infrastructure requires strong public institutions with the capacity to assess trade-offs and determine who is best placed to hold different risks. However, the Bank

Group has sometimes supported business models that rely excessively on foreign exchange and other public sector guarantees and has not placed much emphasis on building the capacity of public sector institutions to deal with complex private sector contracts or risk allocation considerations in the climate-related business models it has supported. The opportunities for risk diversification increase with the ability to access domestic financial and capital markets.

Recommendations

Recommendation 1. The World Bank and IFC should develop and standardize private sector business models for new areas of climate action. The Bank Group should build on its successful private sector engagements models, such as solar power and energy efficiency, and apply similar approaches to selected other sectors, such as public transport, agribusiness, offshore wind power, battery technology, waste management, and sustainable forestry. Developing business models for climate change adaptation will be more challenging than for mitigation, but the Bank Group should identify these when opportunities arise. Standard business models would include, for example, private sector contract and dispute settlement terms that meet international investor expectations, transparent and well-paced procurement processes, clear technical requirements, financing models that allow securitization of payment streams, risk allocation to the parties best able to hold them, and price levels that compensate for these risks.

Recommendation 2. The World Bank and IFC should identify and articulate realistic long-term financing strategies for climate action in relevant country-level climate diagnostics, including the CCDR. These country-specific strategies could include indirect measures that may take time to bear fruit, including policy actions to increase the depth of domestic financial and capital markets and develop the potential for developing currency hedging markets, to enable higher levels of private sector financing in the medium-long term. Proposals for investments might lay out different scenarios of what could be possible given different assumptions about private capital mobilization, financial sector growth, and international climate finance. Assessments of sources of finance might vary across countries based on the level and type of investment needed, the ability of the

economy to take on currency risks, the depth and structure of the financial sector and its governance structures, the role of public banks in long-term financing, and the preferences of the government for private financing, among others.

Recommendation 3. The World Bank and IFC should explicitly consider the scalability of private sector climate business models that they support. Pathways to scalability could be explicitly included in Bank Group analytical work, policy advice, and related advisory and lending activities that support private sector climate action. These should not rule out the use of subsidies, donor finance, or government guarantees for emerging sectors that are important to achieving climate goals, but interventions should involve a long-term strategy for reducing and optimizing reliance on these instruments, including support for models that diversify risks across stakeholders. Bank Group support for private sector climate business models should also include efforts to build the capacity of public sector institutions to manage and allocate risks and improve access to domestic sources of funding. To implement the recommendation, at the intervention level, the Bank Group could use concept, quality enhancement, appraisal, and decision reviews to screen activities with a scalability lens. The Bank Group could also support interventions that encourage increased corporate and household savings, such as tax incentives and pension reforms. It could also support regulatory changes to facilitate investments in climate action of domestic institutional investors, such as pension funds and insurance companies.

Bibliography

- Baker, Andrew C., David F. Larcker, and Charles C. Y. Wang. 2022. “How Much Should We Trust Staggered Difference-in-Differences Estimates?” *Journal of Financial Economics* 144 (2): 370–95.
- BCG (Boston Consulting Group) and GFMA (Global Financial Markets Association). 2020. *Climate Finance Markets and the Real Economy: Sizing the Global Need and Defining the Market Structure to Mobilize Capital*. Boston: BCG; Washington, DC: GFMA.
- Bhattacharya, Amar, Richard Calland, Alina Averchenkova, Lorena Gonzalez, Leonardo Martinez-Diaz, and Jerome Van Rooij. 2020. *Delivering on the \$100 Billion Climate Finance Commitment and Transforming Climate Finance*. Independent Expert Group on Climate Finance. New York: United Nations.
- BIS (Bank for International Settlements). 2019. “Establishing Viable Capital Markets.” CGFS Paper 62, Committee on the Global Financial System, BIS, Basel. www.bis.org/publ/cgfs62.pdf.
- Boehm, Sophie, Katie Lebling, Kelly Levin, Hanna Fekete, Joel Jaeger, Richard Waite, Anna Nilsson, Joe Thwaites, Ryan Wilson, Andreas Geiges, Clea Schumer, Maggie Dennis, Katie Ross, Sebastian Castellanos, Rajat Shrestha, Neelam Singh, Mikaela Weisse, Leah Lazer, Louise Jeffery, Lydia Freehafer, Erin Gray, Lihuan Zhou, Matthew Gidden, and Madeleine Galvin. 2021. *State of Climate Action 2021: Systems Transformations Required to Limit Global Warming to 1.5°C*. Washington, DC: World Resources Institute.
- Caramichael, John, and Andreas Rapp. 2022. “The Green Corporate Bond Issuance Premium.” International Finance Discussion Paper 1346, Board of Governors of the Federal Reserve System, Washington, DC. <https://doi.org/10.17016/IFDP.2022.1346>.
- CFLI (Climate Finance Leadership Initiative), EDFI (European Development Finance Institutions), and GIF (Global Infrastructure Facility). 2021. *Unlocking Private Climate Finance in Emerging Markets: Private Sector Considerations for Policymakers*. New York: CFLI.

- Cheng, Gong, Torsten Ehlers, and Frank Packer. 2022. "Sovereigns and Sustainable Bonds: Challenges and New Options." *BIS Quarterly Review* (September): 47–55.
- Dobrotkova, Zuzana, Pierre Audinet, and Gevorg Sargsyan. 2017. "What Drives the Price of Solar Photovoltaic Electricity in Developing Countries?" *Live Wire* 2017/72, World Bank Group, Washington, DC. <http://hdl.handle.net/10986/26191>.
- Engel, Eduardo, Ronald Fischer, and Alexander Galetovic. 2001. "Least-Present-Value-of-Revenue Auctions and Highway Franchising." *Journal of Political Economy* 109 (5): 993–1020.
- Engel, Eduardo, Ronald Fischer, and Alexander Galetovic. 2013. "The Basic Public Finance of Public-Private Partnerships." *Journal of the European Economic Association* 11 (1): 83–111. <https://doi.org/10.1111/j.1542-4774.2012.01105.x>.
- Essers, Dennis, Hans Blommestein, Danny Cassimon, and Perla Ibarlucea Flores. 2014. "Local Currency Bond Market Development in Sub-Saharan Africa: A Stock-Taking Exercise and Analysis of Key Drivers." Working Paper 2014.08, Institute of Development Policy and Management, University of Antwerp, Antwerp.
- Fritz, Verena, Brian Levy, and Rachel Ort. 2014. *Problem-Driven Political Economy Analysis: The World Bank's Experience*. Washington, DC: World Bank.
- Garcia-Kilroy, Catiana, and Heinz P. Rudolph. 2017. *Private Financing of Public Infrastructure through PPPs in Latin America and the Caribbean*. Washington, DC: World Bank Group. <https://openknowledge.worldbank.org/server/api/core/bitstreams/63ccdae3-5c42-5d02-ab75-f1937e887c79/content>.
- Gardner, John. 2022. "Two-Stage Differences in Differences." Preprint, arXiv:2207.05943. <https://arxiv.org/abs/2207.05943>.
- Gautam, Madhur, David Laborde, Abdullah Mamun, Will Martin, Valeria Piñeiro, and Rob Vos. 2022. *Repurposing Agricultural Policies and Support: Options to Transform Agriculture and Food Systems to Better Serve the Health of People, Economies, and the Planet*. Washington, DC: World Bank and International Food Policy Research Institute. <https://openknowledge.worldbank.org/entities/publication/a3c86032-523e-5975-b15d-8a5dc44e18b9>.

- Gherzi, Henrique, and Jaime Sabal. 2006. “An Introduction to Project Finance in Emerging Markets.” Estudio IESA 29, Instituto de Estudios Superiores de Administración, Caracas.
- Goodman-Bacon, Andrew. 2021. “Difference-in-Differences with Variation in Treatment Timing.” *Journal of Econometrics* 225 (2): 254–77.
- Grimm, Michael, and Sandrine Boukerche. 2020. *Enabling Institutional Investment in Climate Smart Infrastructure*. Washington, DC: World Bank Group. <https://openknowledge.worldbank.org/handle/10986/34327>.
- Hashimoto, Hideo, Yen Mooi, Guilherme Pedras, Arindam Roy, Kay Chung, Tadeusz Galeza, Michael G. Papaioannou, Peter Katz, Zsolt Bango, Jose Antonio Gragnani, Bryan Gurhy, and Cindy Paladines. 2021. *Guidance Note for Developing Government Local Currency Bond Markets*. Washington, DC: International Monetary Fund and World Bank.
- Hausmann, Ricardo, and Ugo Panizza. 2011. “Redemption or Abstinence? Original Sin, Currency Mismatches and Counter Cyclical Policies in the New Millennium.” *Journal of Globalization and Development* 2 (1): 1–35.
- IEA (International Energy Agency). 2021. *Net Zero by 2050: A Roadmap for the Global Energy Sector*. Paris: IEA.
- IMF (International Monetary Fund). 2013. *Energy Subsidy Reform: Lessons and Implications*. Washington, DC: IMF. <https://www.imf.org/en/Publications/Policy-Papers/Issues/2016/12/31/Energy-Subsidy-Reform-Lessons-and-Implications-PP4741>.
- IMF (International Monetary Fund). 2016. *Staff Note for the G20 IFAWG—Development of Local Currency Bonds Markets: Overview of the Recent Developments and Key Themes, Seoul, Korea, June 20, 2016*. Washington, DC: IMF. <https://www.imf.org/external/np/g20/pdf/2016/121416.pdf>.
- IPCC (Intergovernmental Panel on Climate Change). 2018. *Global Warming of 1.5°C: An IPCC Special Report on the Impacts of Global Warming of 1.5°C above Pre-industrial Levels and Related Global Greenhouse Gas Emission Pathways, in the Context of Strengthening the Global Response to the Threat of Climate Change, Sustainable Development, and Efforts to Eradicate Poverty*, edited by Valérie Masson-Delmotte, Panmao Zhai, Hans-Otto Pörtner, Debra Roberts, Jim Skea,

Priyadarshi R. Shukla, Anna Pirani, Wilfran Moufouma-Okia, Clotilde Péan, Roz Pidcock, Sarah Connors, J. B. Robin Matthews, Yang Chen, Xiao Zhou, Melissa I. Gomis, Elisabeth Lonnoy, Tom Maycock, Melinda Tignor, and Tim Waterfield. Cambridge: Cambridge University Press.

IPCC (Intergovernmental Panel on Climate Change). 2022. “Summary for Policymakers.” In *Climate Change 2022: Impacts, Adaptation and Vulnerability*. Working Group II Contribution to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change, edited by Hans-Otto Pörtner, Debra C. Roberts, Melinda M. B. Tignor, Elvira Poloczanska, Katja Mintenbeck, Andrés Alegría, Marlies Craig, Stefanie Langsdorf, Sina Lösschke, Vincent Möller, Andrew Okem, and Bardhyl Rama. Cambridge: Cambridge University Press.

Kivimaa, Paula, and Florian Kern. 2016. “Creative Destruction or Mere Niche Support? Innovation Policy Mixes for Sustainability Transitions.” *Research Policy* 45 (1): 205–17.

Li, Bo, Fabio Natalucci, and Prasad Ananthkrishnan. 2022. “How Blended Finance Can Support Climate Transition in Emerging and Developing Economies.” *IMF Blog*, November 15, 2022. <https://www.imf.org/en/Blogs/Articles/2022/11/15/how-blended-finance-can-support-climate-transition-in-emerging-and-developing-economies>.

Menon, Ravi. 2021. “What We Need to Do to Make Green Finance Work.” Keynote speech at the *Financial Times* Investing for Good Asia digital conference, Singapore, September 8. <https://www.bis.org/review/r210909d.pdf>.

Naran, Baysa, Jake Connolly, Paul Rosane, Dharshan Wignarajah, Githungo Wakaba, and Barbara Buchner. 2022. *Global Landscape of Climate Finance—A Decade of Data: 2011–2020*. San Francisco: Climate Policy Initiative. www.climatepolicyinitiative.org/wp-content/uploads/2022/10/Global-Landscape-of-Climate-Finance-A-Decade-of-Data.pdf.

NGFS (Network for Greening the Financial System). 2020. *A Status Report on Financial Institutions’ Experiences from Working with Green, Non-Green and Brown Financial Assets and a Potential Risk Differential*. Paris: NGFS.

OECD (Organisation for Economic Co-operation and Development). 2017a. *Investing in Climate, Investing in Growth*. Paris: OECD.

- OECD (Organisation for Economic Co-operation and Development). 2017b. *Private Finance for Climate Action: Estimating the Effects of Public Interventions*. Paris: OECD.
- OECD (Organisation for Economic Co-operation and Development). 2021. *Financial Markets and Climate Transition: Opportunities, Challenges and Policy Implications*. Paris: OECD. www.oecd.org/finance/Financial-Markets-and-ClimateTransition-Opportunities-challenges-and-policy-implications.htm.
- OECD (Organisation for Economic Co-operation and Development). 2022a. *Global Outlook on Financing for Sustainable Development 2023: No Sustainability Without Equity*. Paris: OECD. <https://doi.org/10.1787/fcbe6ce9-en>.
- OECD (Organisation for Economic Co-operation and Development). 2022b. “OECD Blended Finance Guidance for Clean Energy.” OECD Environment Policy Paper 31, OECD, Paris. <https://doi.org/10.1787/596e2436-en>.
- OECD (Organisation for Economic Co-operation and Development). 2022c. *Pricing Greenhouse Gas Emissions: Turning Climate Targets into Climate Action*. Paris: OECD. <https://doi.org/10.1787/e9778969-en>.
- Park, Donghyun, Kwanho Shin, and Shu Tian. 2018. “Do Local Currency Bond Markets Enhance Financial Stability?” ADB Economics Working Paper 563, Asian Development Bank, Manila.
- Prasad, Ananthkrishnan, Elena Loukoianova, Alan Xiaochen Feng, and William Oman. 2022. “Mobilizing Private Climate Financing in Emerging Market and Developing Economies.” IMF Staff Climate Note 2022/007, International Monetary Fund, Washington, DC.
- Rosenbloom, Daniel, James Meadowcroft, and Benjamin Cashore. 2019. “Stability and Climate Policy? Harnessing Insights on Path Dependence, Policy Feedback, and Transition Pathways.” *Energy Research & Social Science* 50 (April): 168–78.
- Rudolph, Heinz, and Jorge Sabat. Forthcoming. “The Impact of World Bank Group Interventions on Attracting Private Sector Investments in the Renewable Energy Sector.” Independent Evaluation Group, World Bank, Washington, DC.
- Sanghi, Apurva, and Jevgenijs Steinbuks. 2022. “Securing Energy Subsidy Reform: When Textbook Solutions Clash with Reality.” *World Bank Blogs*, June 24, 2022.

<https://blogs.worldbank.org/eastasiapacific/securing-energy-subsidy-reform-when-textbook-solutions-clash-reality>.

Sekyoung Choi, Esther, Lihuan Zhou, and Valerie Laxton. 2022. “How to De-risk Low-Carbon Investments.” Insights, World Resources Institute, Washington, DC. <https://www.wri.org/insights/de-risking-low-carbon-investments>.

SIFMA (Securities Industry and Financial Markets Association). 2022. *2022 Capital Markets Fact Book*. New York: SIFMA. <https://www.sifma.org/wp-content/uploads/2022/07/CM-Fact-Book-2022-SIFMA.pdf>.

Stern, Nicholas. 2008. “The Economics of Climate Change.” *American Economic Review* 98 (2): 1–37.

Tirole, Jean. 1988. *The Theory of Industrial Organization*. Cambridge: MIT Press.

UN (United Nations). 2021. “Nationally Determined Contributions under the Paris Agreement.” Synthesis Report by the Secretariat, Conference of the Parties Serving as the Meeting of the Parties to the Paris Agreement, Third Session, Glasgow, October 31–November 12.

UNEP (United Nations Environment Programme). 2016. *The Adaptation Finance Gap Report 2016*. Nairobi: UNEP.

UNEP (United Nations Environment Programme). 2021a. *Adaptation Gap Report 2021: The Gathering Storm—Adapting to Climate Change in a Post-Pandemic World*. Nairobi: UNEP.

UNEP (United Nations Environment Programme). 2021b. *Emissions Gap Report 2021: The Heat Is On—A World of Climate Promises Not Yet Delivered*. Nairobi: UNEP.

United States Department of Commerce. 2023. *Understanding Power Purchase Agreements*. Washington, DC: United States Department of Commerce. <https://cldp.doc.gov/sites/default/files/PPA%20Second%20Edition%20Update.pdf>.

Williamson, Oliver E. 1985. *The Economic Institutions of Capitalism: Firms, Markets, Relational Contracting*. New York: Free Press.

World Bank. 2008. *The Political Economy of Policy Reform: Issues and Implications for Policy Dialogue and Development Operations*. Washington, DC: World Bank.

- World Bank. 2022a. *Evaluation of World Bank Group Support to Creating an Enabling Environment for Private Sector Participation in Climate Action, Fiscal Years 2013–22*. Approach Paper. Independent Evaluation Group. Washington, DC: World Bank.
- World Bank. 2022b. *Transport Decarbonization*. Evaluation Insight Note. Independent Evaluation Group. Washington, DC: World Bank.
- World Bank. 2023a. *Financial Inclusion: Lessons from World Bank Group Experience, Fiscal Years 2014–22*. Independent Evaluation Group. Washington, DC: World Bank.
- World Bank. 2023b. *State and Trends of Carbon Pricing 2023*. Washington, DC: World Bank.
- World Bank. 2023c. *World Bank Group Support to Demand-Side Energy Efficiency*. Independent Evaluation Group. Washington, DC: World Bank.
- World Bank and IMF (International Monetary Fund). 2001. *Developing Government Bond Markets: A Handbook*. Washington, DC: World Bank and IMF. <http://hdl.handle.net/10986/13865>.
- World Bank Group. 2020. *Climate Change in APEC: Assessing Risks, Preparing Financial Markets, and Mobilizing Institutional Investors*. Washington, DC: World Bank Group. <https://openknowledge.worldbank.org/handle/10986/33423>.
- World Bank Group. 2022a. *Argentina—Country Climate and Development Report*. Washington, DC: World Bank Group.
- World Bank Group. 2022b. *Climate and Development: An Agenda for Action—Emerging Insights from World Bank Group 2021–22 Country Climate and Development Reports*. Washington, DC: World Bank Group. <http://hdl.handle.net/10986/38220>.
- World Bank Group. 2022c. *Egypt—Country Climate and Development Report*. Washington, DC: World Bank Group.
- World Bank Group. 2022d. *Türkiye—Country Climate and Development Report*. Washington, DC: World Bank Group.

World Bank Group. 2022e. *Vietnam—Country Climate and Development Report*. Washington, DC: World Bank Group.

World Bank Group, UNDP (United Nations Development Programme), and GIF (Global Infrastructure Facility). 2020. *Catalyzing Private Sector Investment in Climate Smart Cities*. Washington, DC: World Bank Group. <https://openknowledge.worldbank.org/handle/10986/35928>.

Xu, Xiaoyun, Wenhong Xie, and Manshu Deng. 2022. *Global Green Taxonomy Development, Alignment, and Implementation*. London: Climate Bonds Initiative. https://www.climatebonds.net/files/reports/cbi_taxonomy_ukpact_2022_01f.pdf

APPENDIXES

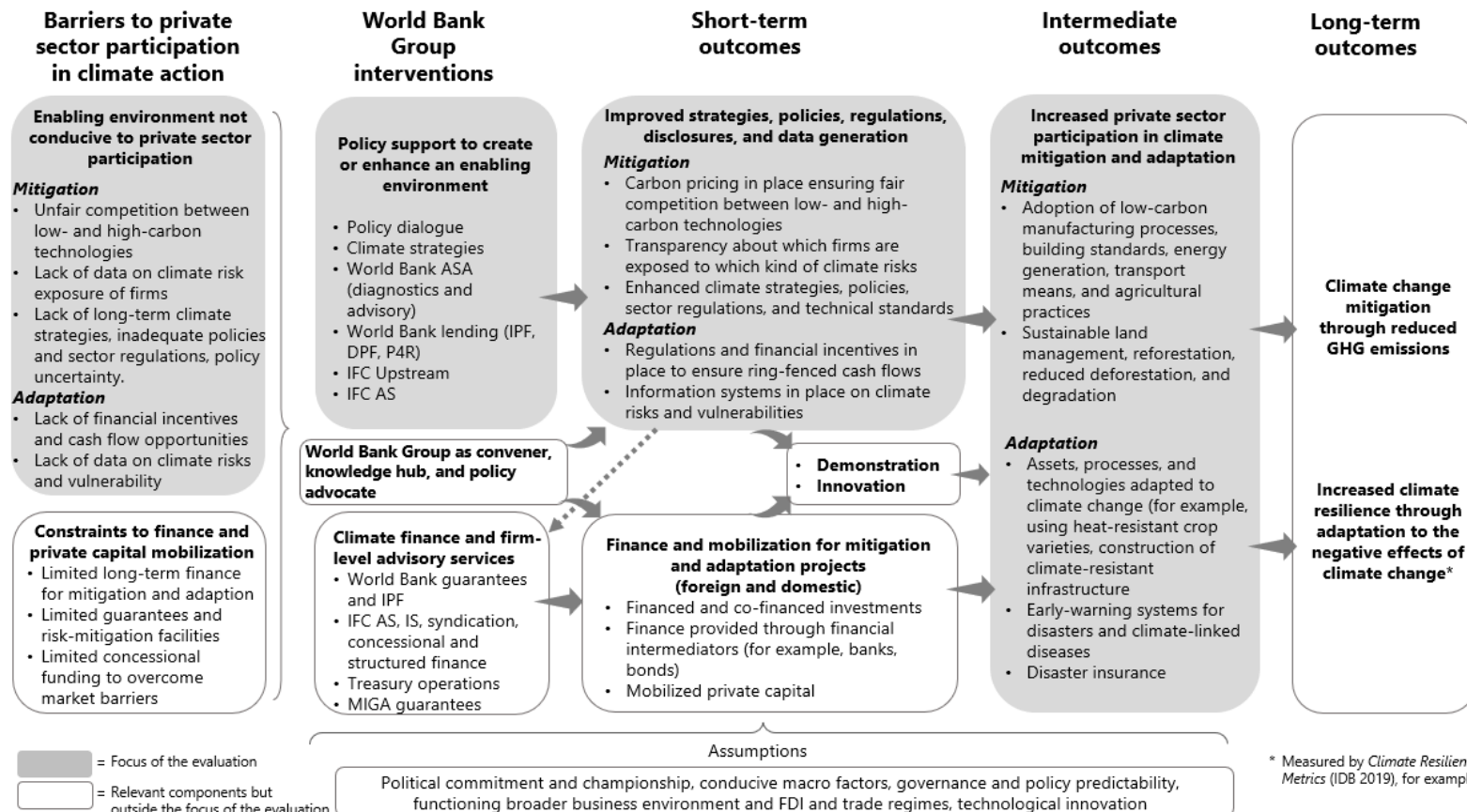
Independent Evaluation Group

*Creating an Enabling Environment for
Private Sector Climate Action*

Appendix A. Methodology

The evaluation uses a theory of change (figure A.1) to guide its understanding of the World Bank Group's contribution to improving the enabling environment for private sector in climate action (EEPSCA). The rationale for the theory was outlined in the evaluation Approach Paper (World Bank 2022a). The evaluation questions and methods were designed to test many of the causal assumptions embedded in this theory by assessing the relevance and effectiveness of World Bank support for the EEPSCA.

Figure A.1. Evaluation Theory of Change



Source: Independent Evaluation Group.

Note: AS = advisory services; ASA = advisory services and analytics; DPF = development policy financing; FDI = foreign direct investment; GHG = greenhouse gas; IDB = Inter-American Development Bank; IFC = International Finance Corporation; IPF = investment project financing; IS = investment services; MIGA = Multilateral Investment Guarantee Agency; P4R = Program-for-Results.

The evaluation uses a mixed methods approach to assess the relevance and effectiveness of the Bank Group's support to client countries to create enabling environment for private sector participation in climate change mitigation and adaptation. The evaluation's methodology includes a range of qualitative and quantitative methods, such as stakeholder interviews, portfolio review and analysis, case studies, analysis of external emissions and climate vulnerability data, and review of key Bank Group country diagnostics products. Figure A.2 provides an overview of the evaluation design and shows the methods that the evaluation applied to address each evaluation question.

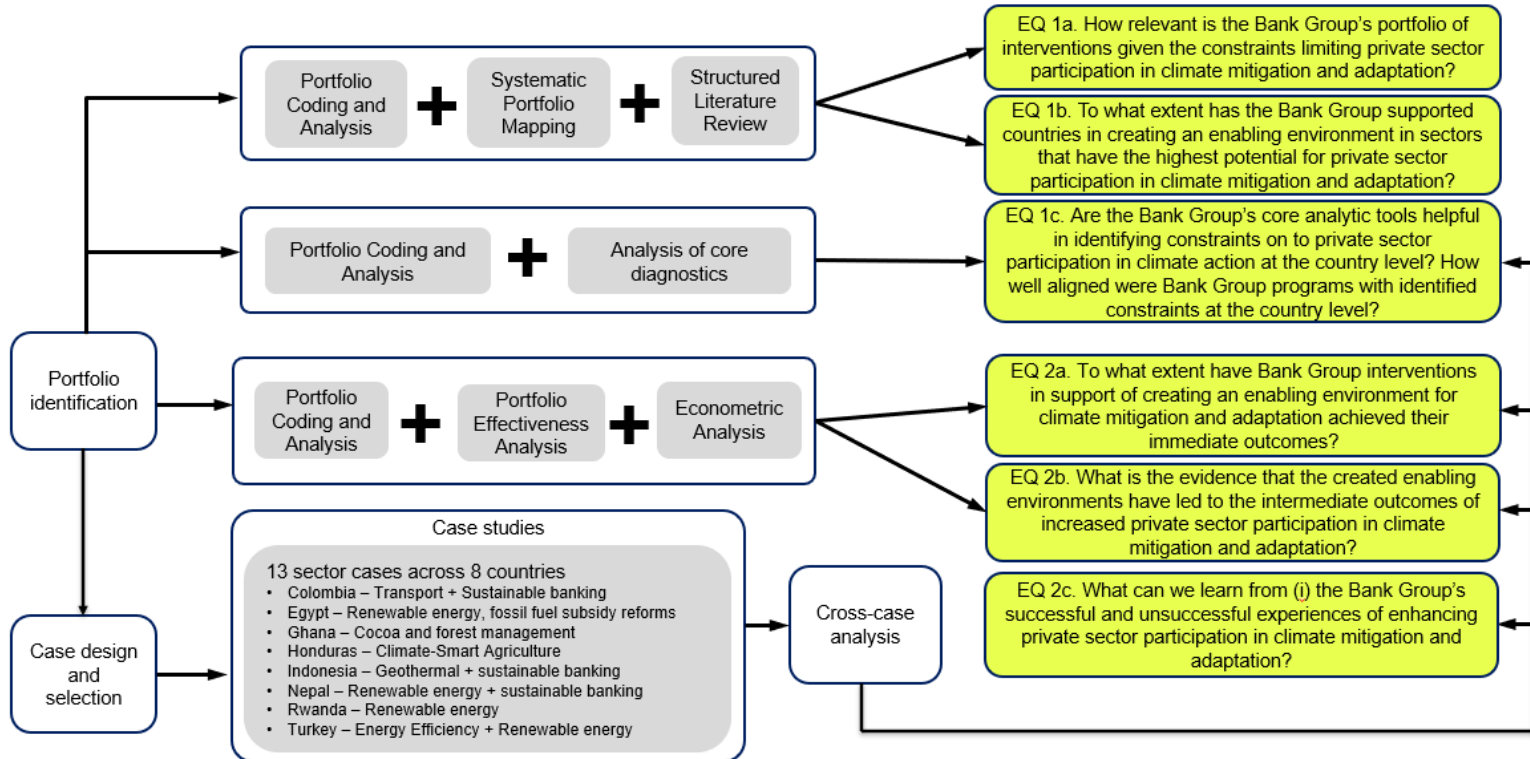
The evaluation questions were as follows:

1. How relevant has the Bank Group's support been to creating an enabling environment for private sector participation in climate mitigation and adaptation in client countries?
 - a. How relevant is the Bank Group's portfolio of interventions given the constraints limiting private sector participation in climate mitigation and adaptation?
 - b. To what extent has the Bank Group supported countries in creating an enabling environment in sectors that have the highest potential for private sector participation in climate mitigation and adaptation?
 - c. Are the Bank Group's core analytic tools—for example, Country Climate and Development Reports (CCDRs) and financial sector assessments—helpful in identifying constraints to private sector participation in climate action at the country level? How well aligned were Bank Group programs with identified constraints at the country level?
2. How effectively has the Bank Group supported creating an enabling environment in client countries to allow the private sector to engage in climate mitigation and adaptation?
 - a. To what extent have Bank Group interventions in support of creating an enabling environment for climate mitigation and adaptation achieved their immediate outcomes?

- b. What is the evidence that the created enabling environments have led to the intermediate outcomes of increased private sector participation in climate mitigation and adaptation?
- c. What can we learn from the Bank Group's successful and unsuccessful experiences of enhancing private sector participation in climate mitigation and adaptation?

An initially planned extension to question 2.c that would identify lessons from downstream International Finance Corporation (IFC) investment projects or Multilateral Investment Guarantee Agency guarantee projects was dropped during implementation.

Figure A.2. Evaluation Design



Source: Independent Evaluation Group.

Evaluation Portfolio

Portfolio Identification

The evaluation considered all active or closed World Bank lending and IFC advisory services (AS) projects approved during the period of fiscal years (FY)13–22 as operations potentially eligible for selection in the evaluation portfolio. For IFC, the evaluation covered AS, which are the main instrument IFC uses to influence the enabling environment. For the World Bank, while both lending and nonlending activities are used to support enabling environment, it was not possible to systematically identify nonlending activities, for the reasons explained in this appendix. Within these eligibility parameters, the evaluation team defined the relevant portfolio as projects that have activities that meet three criteria—activities aimed at (i) improving the enabling environment (ii) for the private sector to (iii) undertake climate change mitigation or adaptation. Table A.1 describes major categories of activities that were included or excluded.

To identify the relevant World Bank lending portfolio, the team followed a four-step process. First, the team identified climate change–related operations by selecting projects that were mapped to the climate change theme code (theme code 81) or had a climate co-benefit value greater than 0 percent. Second, using the resulting pool of projects, the team conducted a text search for an extensive taxonomy of keywords related to private sector participation, to enabling environment, or to climate change mitigation or adaptation activities in particular sectors (box A.1). Third, the team augmented the resulting portfolio with relevant projects from two recently conducted Independent Evaluation Group evaluations on climate change–related topics (disaster risk reduction and energy efficiency; World Bank 2022b, 2023), for which intensive coding exercises had already been carried out. In a fourth and final stage, the team manually validated the preliminary portfolio and retained projects that met the aforementioned triple criteria. In assessing projects to be retained into the final portfolio, the team applied a consistent set of inclusion and exclusion criteria shown in table A.1. Overall, the team manually screened 910 World Bank lending projects and retained a final portfolio of 268 projects.

The team used a similar methodology to identify the relevant IFC AS portfolio, with two notable exceptions. First, unlike the World Bank lending portfolio,

the IFC AS portfolio did not borrow from the portfolio of previous evaluations, which had not identified nonlending work systematically. Second, after applying the relevant filters, the resulting portfolio was small—containing only 208 projects—and this allowed the team to proceed to a manual review without performing a keyword search. These 208 projects reviewed were government-facing or industry-facing operations and excluded operations targeted exclusively at individual firms. Overall, the team manually screened 208 IFC AS projects and selected a final portfolio of 116 IFC AS projects for the period FY13–22. Table A.2 presents the data sources and filters used in identifying the World Bank lending and IFC AS portfolios.

The evaluation was not able to systematically identify World Bank nonlending activities and include them in the evaluation portfolio. The World Bank carried out 17,496 active or closed nonlending activities between FY13 and FY22. Unlike World Bank lending or IFC advisory activities, these activities are not tagged for climate change co-benefits; thus, it would be very difficult to automatically identify which of these might be relevant for climate change. World Bank nonlending activities also have limited text attributes and project documentations, which further rendered text searches and manual screening impractical. The team conducted a systematic assessment of nonlending activities in two areas—for renewable energy and for public-private partnership—but these tasks were labor-intensive and not replicable across all areas. This assessment used theme and sector codes to identify nonlending operations related to renewable energy and public-private partnership, followed by a manual project-by-project download of the Concept Note of these operations, and then manual screening of the resulting portfolio.

Table A.1. Summary of Inclusion and Exclusion Criteria Used for Manual Portfolio Screening

Sectors	Included Content	Excluded Content
Agriculture	Climate-smart agriculture (research, policy framework, upscaling), weather forecasting (hydromet) data sharing to guide investment decision-making process	Direct investment in climate-smart agriculture infrastructure (for example, irrigation facilities) or capacity building (for example, technical assistance to smallholder farmers)

(continued)

Sectors	Included Content	Excluded Content
Energy	Policies and regulations that enhance renewable energy private investments through pricing (tariff setting), contracts (IPP, PPA), subsidies (feed-in tariffs), policy framework for cost-reflective tariff reforms, licensing policies for renewable energy	Direct investment in renewable energy, support for technology transfer projects, direct investment to privatize generation, transmission or distribution, ESCOs
Renewable energy sources	Solar, wind, biomass, geothermal	Gas, wood
Water	Provision of climate and hydrological data to map climate hazards, policy framework for cost-reflective tariff reforms	Wastewater management, water and sanitation, solid waste management, irrigation management
Pollution	Air pollution regulations or taxes	Plastic value chain shifts, subsidies for kitchen stove upgrades
Buildings and manufacturing and industrial processes	Policies to mainstream building standards (for example, EDGE), energy efficiency mandates, eco-industrial parks	
Disaster risk reduction	Private investment disaster risk reduction (for example, support institutional framework to strengthen financial resilience to natural disasters, provision of climate and hydrological data, including mapping of climate hazards, land use planning, disaster insurance regulation for resilience)	Disaster early-warning systems, public or private contingency emergency response component and dam flooding safety investments
Transport	Elimination of fuel subsidies, nonprice pollution regulation that restricts GHG-emitting activities	Public sector investment in roads' resilience
Environment, REDD+, and land use change	Carbon credit mechanisms, sustainable forestry regulations, payment for environmental services or subsidies that inhibit deforestation and promote afforestation, regulatory and institutional arrangements for implementation of REDD+	Direct support to specific REDD+ projects, REDD+ projects that did not clearly articulate any enabling activities for private sector action, deforestation or biodiversity projects, regularize land ownership in forests to stimulate investments in carbon credits

Source: Independent Evaluation Group.

Note: Included content and excluded content are not comprehensive but are examples of major bundles of activities that were included or excluded during the screening process, typically because they were deemed to not meet the definition of enabling environment, private sector, or climate action. The team used a more detailed list during screening. EDGE = Excellence in Design for Greater Efficiencies; ESCO = energy service company; GHG = greenhouse gas; IPP = independent power producer; PPA = power purchase agreement; REDD+ = Reducing Emissions from Deforestation and Forest Degradation.

Box A.1. Keywords Used for Text Analytics

adopt + technolog, afforest, air quality, applianc label, attract + private, auction+so-
lar, bankab + pipeline, bid+geothermal, bid+hydro, bid+solar, bid+wind, bidd + private,
Building code, Building standard, carbon credit, carbon market, carbon pric, carbon
tax, carbon trad, catalyz + private, climate change policy, climate change strate-
gy, climate smart agriculture, climatesmart agriculture + investment, climatesmart,
agriculture + research, climatesmart agriculture + upscal, climatesmart agriculture +
uptak, competiti + encourage, competiti + enhance, competiti + promote, competiti
+ strengthen, competitive bidding, cost based, cost recovery, cost reflective, crowd
+ private, CSA + research, deforest, disaster + early warning, disastersensitive + plan,
drought resilien, droughtresilien, ecosystem + payment, emission standard, enable
+ private, encourage + private, Energy Service Compan, facilitate + private, financial
viability+electricity, forest+policy, green building, hydromet + forecast, incentiv + private,
incentive + carbon, incentive + climate, independent power plant, independent power
plant, independent power producer, insurance regulations, knowledge + consolidation,
land use + disaster, landuse + disaster, lowcarbon + private, Market development, mar-
ket information + renewable, mobiliz + private, offtaker, payment+ecosystem services,
payment+environmental services, performancebased incentive, performancebased
payment, pollution+policy, power purchase agreement, PPP, private + forest, private
sector development, private sector participation, public private partnership, rail+com-
mercial, rail+policy, REDD, renewable energy + bid, resilient + building, resource map +
geothermal, resource map + solar, resource map + wind, site identification + renewable,
spatial planning, spatial planning + disaster, stimulat + private, subsid + energy, subsidy
+ fuel, subsidy + power, support + private, sustainable cit, sustainable land + climate,
sustainable land+regulat, tariff + renewable, tariff+electricity, technical standard, tech-
nolog + transfer, technology + transfer, unlock + private, weather + forecast.

Source: Independent Evaluation Group.

Note: Search terms separated by the "+" symbol must appear no more than three words apart in the projects' text attributes to be considered a match. Before running search, text attributes and keywords were first depunctuated. Additional keywords were tested but dropped if they did not identify more than a trivial number of additional operations. CSA = climate-smart agriculture; PPP = public-private partnership; REDD = Reducing Emissions from Deforestation and Forest Degradation.

Table A.2. Data Sources and Filters Used to Identify Portfolios

Institutions	Data Sources	Filters Used
World Bank lending	World Bank standard reports, Operations Policy and Country Services theme codes World Bank climate co-benefits data, portfolio data from disaster risk reduction and energy efficiency evaluations	Approval FY, project status, climate co-benefits, theme code, enabling environment taxonomy
IFC AS	IFC iPortal	AS implementation plan approval FY, project status, climate percentage, enabling environment percentage

Source: Independent Evaluation Group.

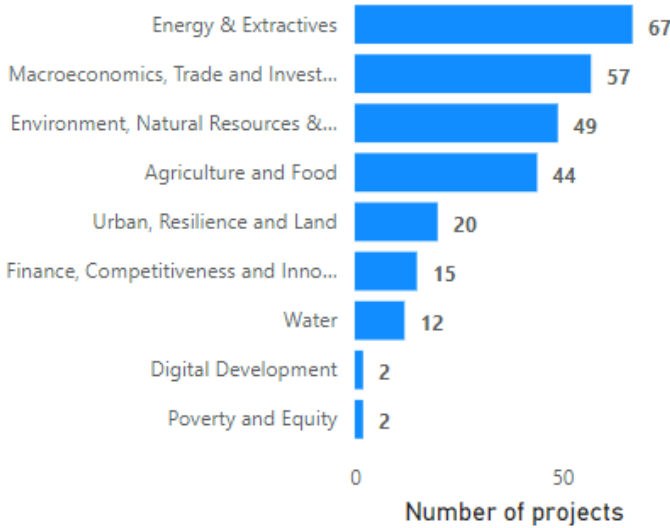
Note: AS = advisory services; FY = fiscal year; IFC = International Finance Corporation.

Portfolio Description

The World Bank lending portfolio consists of 154 investment project financing, 102 development policy lending, 9 Program-for-Results financing, and 3 technical assistance loans. The portfolio is young—64 percent of projects in the portfolio were approved in the second half of the evaluation period (FY18–23). Nevertheless, nearly half of the projects in the portfolio (48 percent) are closed. The World Bank lending portfolio is dominated by four Global Practices: Energy and Extractives; Macroeconomics, Trade, and Investment; Environment, Natural Resources, and Blue Economy; and Agriculture and Food. Together, these four Global Practices account for 81 percent of the World Bank lending portfolio. Most of the Macroeconomics, Trade, and Investment operations are development policy operations containing policy actions that relate to sustainable development and infrastructure sectors. Other Global Practices represented in the portfolio are Urban, Disaster Risk Management, Resilience, and Land; Finance, Competitiveness, and Innovation; Water; Digital Development; and Poverty and Equity (figure A.3). The geographic spread of the portfolio is concentrated in Latin America and the Caribbean (23 percent), but sizable shares of

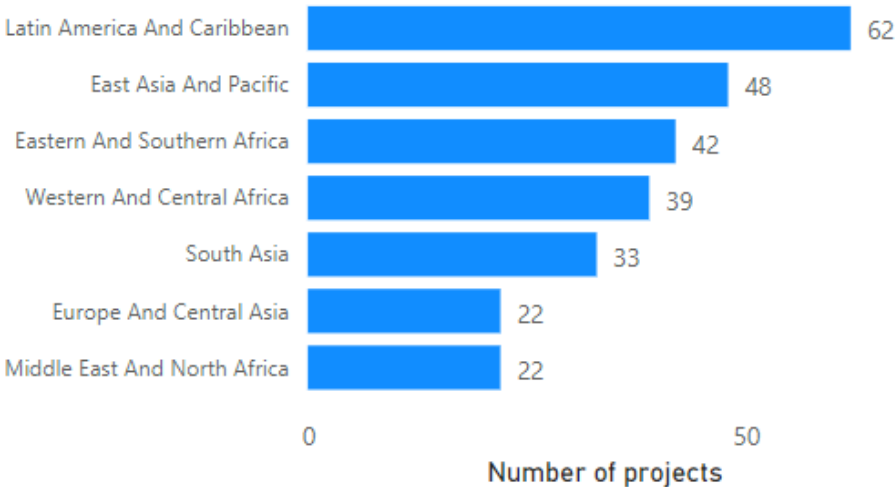
the portfolio are in East Asia and Pacific (18 percent), Eastern and Southern Africa (16 percent), and Western and Central Africa (15 percent; figure A.4).

Figure A.3. World Bank Lending Portfolio by Global Practice



Source: Independent Evaluation Group.

Figure A.4. World Bank Lending Portfolio by Region



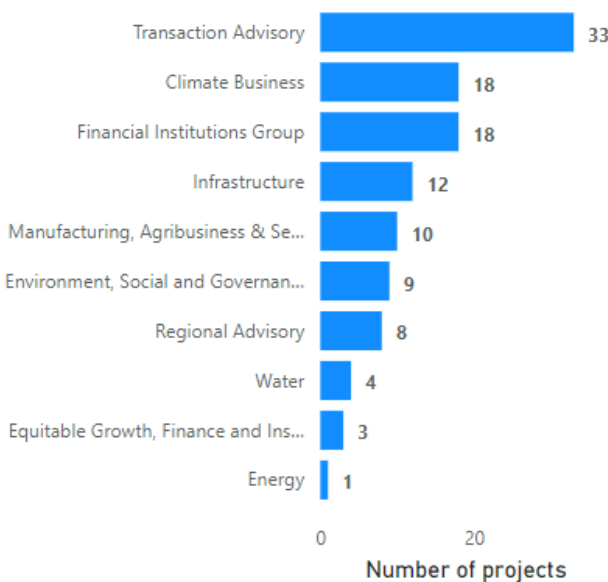
Source: Independent Evaluation Group.

The IFC portfolio consists of 116 government-facing or industry-facing AS projects. Compared with the World Bank lending portfolio, the IFC AS portfolio is older—only 52 percent of projects in the portfolio were approved in the second half of the evaluation period (FY18–23). The portfolio is concentrated

in the following business areas: Transaction Advisory (28 percent), Climate Business (15 percent), and Financial Institutions Group (15 percent; figure A.5). The evaluation included AS projects that have an upstream flag but did not include upstream seeds projects because these were more about identifying future investment opportunities for IFC rather than aiming to improve the enabling environment. In terms of geographical spread, the top three Regions represented in the portfolio are Africa (27 percent), East Asia and Pacific (21 percent), and South Asia (17 percent; figure A.6).

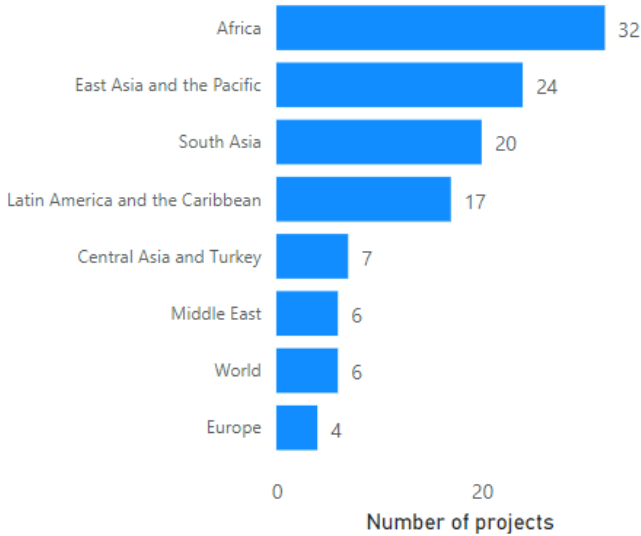
Enabling environment activities are rarely the focus of Bank Group operations. For both the World Bank and IFC, enabling environment activities were seldom the main objective or focus of the operation. Usually, they were related to a particular component or subcomponent in an operation that also contained downstream activities that were not part of the scope of this evaluation. This means that project ratings could not be used as a measure of effectiveness because those ratings were based on an assessment of goals that included many activities outside of the evaluation scope. It also meant that it was not meaningful to assess the financing volume or project cost of the portfolio because most project financing usually went to downstream investments rather than enabling environment activities.

Figure A.5. International Finance Corporation Advisory Services Portfolio by Business Area



Source: Independent Evaluation Group.

Figure A.6. International Finance Corporation Advisory Services Portfolio by Region



Source: Independent Evaluation Group.

Limitations of Portfolio Review

The portfolio identification suffers from a few limitations. First, the keywords used in the text search, though extensive, are imperfect. During case studies, the evaluation team occasionally found additional relevant projects that had not been identified by the keyword search. The evaluation team attempted to address this issue by validating the portfolio identified through keyword search with counterparts at the World Bank and IFC. A second limitation relates to the difficulties in identifying the triple criteria of enabling environment, private sector, and climate action in project documentation. During manual screening of the portfolio, the evaluation team found that project documents did not always clearly articulate whether or not project activities are aimed at the public sector, private sector, or both. In addition, on a few occasions, it was tricky to identify whether or not an activity counts as climate action. The team attempted to address this issue by engaging in frequent and collective deliberations on borderline cases and consultation with relevant Global Practices. Projects that did not clearly articulate their relevance to EEPSCA were excluded from the portfolio. Third, the evaluation was not able to systematically identify a portfolio of EEPSCA nonlending activities. It did

this only for renewable energy and public-private partnership and in case studies. Fourth, some IFC activities could have been excluded if they were not tagged as climate change related, as it took some time for the IFC climate-tagging to be fully implemented. Finally, the evaluation did not include IFC investment services, which in a few cases might have included some enabling environment activities. Identifying these would have been a difficult exercise given the substantial IFC IS climate change portfolio.

Evaluation Methods

Structured Literature Review and Constraint Typology Development

Following the literature on competitive equilibrium (Tirole 1988; Williamson 1985) and the economics of climate change (Stern 2008), the evaluation identified three key factors that are needed for markets to operate efficiently in the climate space: (i) price and nonprice regulations, (ii) market information, and (iii) risk management and related institutional development. Each of these factors relate to interventions that address constraints for enabling private sector participation in climate action (as shown in table A.3). The typology includes an additional layer of specific interventions (shown in figure 2.2) associated with different constraints.

The typology is consistent with the findings of a structured literature review carried out for this evaluation, covering 219 documents, including gray literature, survey papers, studies of specific projects, and published papers that use the enabling environment as a keyword (published after 2016). The research question for the structured literature review was as follows: What does the existing literature say about the interventions that enable private sector participation in climate actions by lifting a set of predefined restrictions? The literature tries to capture cross-cutting issues associated with climate action across sectors, while in some cases, they are sector specific. In addition, for each of the restrictions identified in table A.3, the structured literature review offers a discussion of the relevant topics associated with each group of interventions, organized in eight areas (as shown in table A.4). Finally, the structured literature review does not provide a ranking of prioritization of interventions.

Table A.3. Summary of Enabling Environment for Private Sector Climate Action Typology

Intervention Type	Constraint Targeted
Price and nonprice regulations	Incorrect price signals
	Insufficient government incentives for investments in priority sectors
	Insufficient government regulation of emission-producing or nonresilient activities
Market information	Insufficient data, information, and knowledge for guiding investment decisions
	Inadequate identification of sectors and activities that contribute to climate action
	Insufficient project preparation and entry barriers that inhibit the participation of potential investors
Risk management and institutions	Public sector institutions are not designed to deal with complex private sector contracts
	Excessive risk allocation toward some stakeholders, typically the government or the investor

Source: Independent Evaluation Group evaluation team's conception based on structured literature review.

Table A.4. Main Enabling Environment for Private Sector Climate Action Topics Analyzed in the Structured Literature Review

Intervention	Enabling Environment for Private Sector Climate Action Topics				
Price and nonprice regulation—Incorrect price signals	Overall findings	Carbon tax on fossil fuels or methane-intensive products	Emissions trading system	Elimination of fossil fuel or methane subsidies	Other factors
Price and nonprice regulation—Insufficient government incentives for investment	Overall findings	Financial incentives—Adaptation technologies	Financial incentives—Mitigation sector	Repurposing subsidies in the agricultural sector	Payments for environmental services or subsidies that inhibit deforestation

(continued)

Intervention	Enabling Environment for Private Sector Climate Action Topics				
Price and nonprice regulation—Insufficient regulation for emission-producing or nonresilient activities	Overall findings	Energy efficiency mandates	Sustainable forestry regulation	Disaster-sensitive land use planning	
Provision of information to the market—Insufficient data, information, or knowledge for guiding investment decisions	Overall findings	Provision of climate data	Facilitating climate-related research and development	Voluntary standards and certification	Other factors
Provision of information to the market—Inadequate identification of sectors	Overall findings	Green taxonomies	Firm's disclosure	Financial regulation on climate risk	Improving sector climate-related ESG
Provision of information to the market—Insufficient project preparation and entry barriers	Overall findings	Building project pipelines	Long-term investment contracts and tariff predictability	Other factors	
Diversifying risk among stakeholders—Public sector institutions capability to deal with complex private sector contracts	Overall findings	Public sector institutional capability	Creating or improving framework or capacity	Other factors	
Diversifying risk among stakeholders—Excessive risk allocation toward some stakeholders	Overall findings	Demand risk	Currency risk	Political risk	Risk mitigation (operational and nonfinancial)

Source: Structured literature review.

Note: EEPSCA = enabling environment for private sector climate action; ESG = environmental, social, and governance.

Portfolio Coding

The Bank Group lending and IFC AS portfolios were identified, as described in this appendix, and then coded to support portfolio analysis through various methods. This coding identified the type of constraints that were addressed (following the constraint typology), the economic sector addressed, and whether mitigation, adaptation, or both were supported. Coding was conducted at an activity level. The activity was defined as the components, subcomponents, or policy actions of an operation that address a distinct enabling environment constraint to private sector climate action. Different subcomponents were grouped together under an activity if and only if they supported the same private sector climate action and the same enabling environment constraint. This meant that, for example, a project might have multiple activities supporting investment in solar power by addressing different constraints (providing price incentives for solar power and signaling to investors the potential for investible projects by establishing an energy sector plan, including private investment), or multiple components of a project might all be under the same activity if they all addressed the same constraint.

Systematic Portfolio Mapping

The analysis assessed the alignment of the Bank Group's EEPSCA activities with the typology of enabling environment constraints and external data on greenhouse gas (GHG) emissions and adaptation needs. To answer the evaluation question 1.a, the team used a systematic portfolio mapping to assess the alignment between the constraints identified in the typology and those addressed by Bank Group interventions. To answer the evaluation question 1.b, the evaluation team used data on GHG emissions from the World Resources Institute Climate Analysis Indicators Tool. Although the data from the World Resources Institute Climate Analysis Indicators Tool provides GHG emissions by year and sector for 193 countries from 1990 to 2019, to align to the evaluation period, the analysis focused on 2013–19 emissions from Bank Group client countries with at least one lending operation in the evaluation period (as it would not be reasonable to compare World Bank lending operations with those in countries that were not World Bank borrowers). The evaluation classified Bank Group EEPSCA activities into the

type of economic sectors they addressed and then compared the sectoral share of the EEPSCA portfolio with sectoral share of GHG emissions from the World Resources Institute Climate Analysis Indicators Tool data. The evaluation also identified the GHG emissions for client countries based on income groups and then compared each country group's share of emissions with the share of the EEPSCA portfolio. For adaptation, the team leveraged climate vulnerability data from the Notre Dame Global Adaptation Initiative and computed the share of EEPSCA portfolio in groups of countries classified based on their climate vulnerability.

Core Analytics Analysis

To address the evaluation question 1.c, the team conducted a structured review of the recommendations from the CCDRs followed by a mapping of these recommendations to the enabling environment typology.

The review considered the recommendations from the first batch of 23 CCDRs. The review screened the 937 policy recommendations from these CCDRs to identify actions that related to enabling environment for the private sector; 275 policy actions met these criteria. These recommendations were classified using the same methodology of the systematic portfolio mapping and analyzed against this typology.

In addition, the team randomly selected 10 reports to conduct a structured qualitative analysis. This assessed (i) the extent to which the CCDR supported private sector enabling environment issues; (ii) the quality of the analysis; (iii) the extent to which the CCDR supported reliable financing sources for its proposed investments, including domestic financing from private sources; and (iv) the extent to which the CCDR assessed market constraints for mobilizing private capital.

The analytics analysis also included a review of the three climate change notes associated with the Financial Sector Assessment Programs and the associated guidance note. The team conducted a structured qualitative analysis to assess the quality of the analysis and the extent to which they proposed policies to support financing alternatives for private sector participation in climate action.

Planned analysis of the Country Private Sector Diagnostics was dropped because these are being covered by a dedicated Independent Evaluation Group evaluation. Planned analysis of the Infrastructure Sector Assessment Program reports was also dropped.

Case Studies

The evaluation used an explanatory case analysis method to identify factors that have helped or hindered the Bank Group to act on the most important enabling environment constraints on private sector climate action in specific country contexts and to generate lessons on what has worked and what has not to achieve improvements in enabling environment and to contribute to private sector climate action. In line with the conceptual framework, the evaluation assumes that the Bank Group diagnoses constraints to private sector action and acts to improve the enabling environment through analytical and advisory work, policy dialogue and awareness raising, technical assistance and capacity building, development policy financing, investment projects, IFC AS, and convening partners.

A case study design was developed to contribute to answering evaluation question 1.c (How well aligned were Bank Group programs with identified constraints at the country level?) and evaluation questions 2.a, 2.b, and 2.c.

Case studies were carried out across eight countries. These case study countries were identified based on (i) the presence of significant World Bank lending and IFC AS portfolio on enabling environment in the targeted sector for that country (especially closed and evaluated projects that may provide some data on results and where enough time has passed to allow for an assessment of downstream effectiveness), and (ii) coverage of different country types, across different regional contexts, and medium-to-large countries where the potential for private sector climate action is significant and covering both the International Development Association and the International Bank for Reconstruction and Development.

Within each country, up to two case studies were carried out. A case was defined as the package of support that the Bank Group provides to countries to improve the private sector enabling environment for climate action to contribute to achieving a particular private sector climate action.

Using this method, case studies were selected and carried out for Colombia (private sector climate change mitigation and adaptation actions in the transport sector, including highway concessions and public transport, and sustainable banking), the Arab Republic of Egypt (private investment in wind and solar energy and fossil fuel subsidy reforms), Ghana (reduced deforestation from cocoa production), Honduras (climate-smart agriculture for smallholder farmers), Indonesia (private investment in geothermal power and sustainable banking), Nepal (private investment in hydropower for export and sustainable banking), Rwanda (private investment in grid renewable energy and off-grid solar systems), and Türkiye (private investment in new renewables, including rooftop solar photovoltaic systems, offshore wind, and direct geothermal energy, and private investment in industrial energy efficiency). The need to select cases that were well advanced and where it could be feasible to assess effectiveness meant that it was difficult to find cases for climate change adaptation and that case studies predominantly featured the energy sector activities that had been most common in the early part of the evaluation period.

Each case study followed a protocol consisting of a document review, key stakeholder identification, semistructured interviews conducted primarily through virtual missions, and the completion of a structured case template. Document review included project documents and evaluations and other relevant documentation. Interviews were conducted with World Bank task team leaders and IFC investment officers, key managers, senior leaders in key government agencies with which the Bank Group had engaged, development partners, private sector company management, civil society, and other stakeholders. The structured case template required case studies to answer questions on the key constraints on private sector climate action, the activities of the Bank Group and alignment with those constraints, the effectiveness of Bank Group enabling environment activities in terms of improving the enabling environment and catalyzing private sector climate action, and factors that explained success or failure. The virtual mission approach was challenging because most development partners had returned to regular field missions, and government officials in many countries were reluctant to prioritize meeting with the evaluation team virtually.

Cross-cutting findings were generated through cross-case analysis. The template structure used for case studies made it easier to identify when similar findings were generated across cases, although the disparate nature of the activities and different sectors provided some challenge. Each case study specifically assessed (i) whether Bank Group engagements were aligned with binding constraints; (ii) the ability to engage on broad pricing issues, including carbon pricing, subsidies, or taxes; (iii) the degree to which the Bank Group approach incorporated both “carrots” and “sticks”; (iv) the extent to which the Bank Group approach engaged on both “upstream” and “midstream”; (v) how the Bank Group interventions engaged with political economy barriers from government, the private sector, and the broader economy; (vi) how risks were allocated and whether there was use of government guarantees or similar mechanisms; (vii) sources of financing (international, domestic, and so on); (viii) issues related to IFC and its comparative advantage; and (ix) how the Bank Group partnered with others.

Portfolio Effectiveness Analysis

The portfolio effectiveness analysis assessed the extent to which the Bank Group’s support for creating an enabling environment in client countries to allow the private sector to engage in climate mitigation and adaptation has produced the desired immediate and intermediate outcomes. The effectiveness analysis was carried out on the set of World Bank lending projects and IFC AS projects that were closed and evaluated. The analysis was based on the Implementation Completion and Results Report and the Implementation Completion and Results Report Review for World Bank lending and on the Project Evaluation Report and (where it exists) the Evaluation Note for IFC AS. For each EEPSCA activity, the effectiveness analysis identified the project indicators that assessed progress or results for that activity, selected the best or most advanced indicator used, and compared the results of that indicator against the indicator target. Indicators were deemed to be fully achieved if they achieved their target value or partially achieved if they achieved at least 70 percent of their target value, otherwise they were considered to be unachieved. The analysis used only the final target, so indicator targets that were revised before completion had those targets revised. Indicators were also classified based on the type of information they

measured: whether they measured only outputs, changes in enabling environment, or evidence of private sector action. Analysis looked for patterns in achievement of indicators based on a number of characteristics, including the typology of enabling environment constraints, whether the activity supported climate change mitigation or adaptation, and whether they measured outputs, enabling environment, and private sector action, sector, region, and others. The effectiveness analysis also undertook qualitative analysis for (i) reasons why indicators were not achieved and (ii) synthesis of the lessons section of project evaluations.

Econometric Analysis

The evaluation Approach Paper proposed to undertake portfolio-level difference-in-difference analysis comparing changes in private sector participation over time in countries supported by Bank Group enabling environment activities, but this was infeasible given the lack of cross-cutting data. Instead, the evaluation undertook an analysis focusing on the renewable energy sector, which was the largest and most mature Bank Group enabling environment engagement, and one where external data existed on enabling environment and private sector investment.

The purpose of the econometric analysis is to assess the impact of the Bank Group interventions related to enabling environment for private sector participation in attracting private sector investments in the renewable energy sector. The Bank Group uses several types of enabling environment interventions to support countries to attract private sector investments in the renewable energy sector. These interventions include World Bank lending, World Bank advisory services and analytics, and IFC AS. The methodology includes event studies (staggered difference-in-difference) to test the impact of each of these interventions on both improvements in the enabling environment and in increasing private sector investments in the renewable sector. The analysis is conducted using treatment and control groups. In addition, the methodology includes the use of principal component analysis to assess the impact of all Bank Group interventions related to enabling environment as a bundle on increasing renewable energy generation capacity. The sample period goes from FY13 to FY22.

The analysis uses external data sources, including the World Bank Private Participation in Infrastructure database, the Organisation for Economic Co-operation and Development and the International Energy Agency, the International Renewable Energy Agency, the Regulatory Indicators for Sustainable Energy, and the International Monetary Fund Financial Development Index to test the impact of the Bank Group interventions on improving the enabling environment and private investments in renewable energy.

The estimation of the staggered difference-in-difference follows Gardner (2022), whose implementation considers only untreated or not-yet-treated observations in the control group to deal with potential sources of bias when staggered difference-in-difference are used in practice (Baker, Larcker, and Wang 2022; Goodman-Bacon 2021). Rudolph and Sabat (forthcoming) provide details of the methodology, data, and findings.

Cross-Cutting Financial Sector Analysis

The evaluation undertook a cross-cutting financial sector analysis on 26 countries, including those covered by the first batch of CCDRs and the countries covered by evaluation case studies to assess the capacity of the domestic markets to support financing for the climate action agenda.

For these countries the analysis reviewed a series of standard indicators from the Bank Group Global Financial Development Database, the Bank Group International Debt Statistics, the International Monetary Fund Global Debt Database, Organisation for Economic Co-operation and Development Global Pensions Statistics, and Cbonds (for high-frequency market data) to assess the depth of the domestic financial and capital markets. The review considered both the volume of assets managed by institutional investors and lending capacity of domestic banks, as well as price formation indicators, especially those related to interest rate volatility.

Connections between Methods

Although the timeline of the evaluation did not make it possible for a high degree of interdependence between methods because many methods had to proceed in parallel, there were some connections. Portfolio identification was critical for enabling selection of case studies and conducting the

systematic portfolio mapping, portfolio effectiveness analysis, and econometric analysis. The econometric analysis also built on identification of the renewable energy nonlending portfolio. Identification of case studies informed some selection of countries for the cross-cutting financial sector analysis. Evaluation findings and conclusions were triangulated across methods.

References

- Baker, Andrew C., David F. Larcker, and Charles C. Y. Wang. 2022. “How Much Should We Trust Staggered Difference-in-Differences Estimates?” *Journal of Financial Economics* 144 (2): 370–95.
- Gardner, John. 2022. “Two-Stage Differences in Differences.” Preprint, arXiv:2207.05943. <https://arxiv.org/abs/2207.05943>.
- Goodman-Bacon, Andrew. 2021. “Difference-in-Differences with Variation in Treatment Timing.” *Journal of Econometrics* 225 (2): 254–77.
- Rudolph, Heinz, and Jorge Sabat. Forthcoming. “The Impact of World Bank Group Interventions on Attracting Private Sector Investments in the Renewable Energy Sector.” Independent Evaluation Group, World Bank, Washington, DC.
- Stern, Nicholas. 2008. “The Economics of Climate Change.” *American Economic Review* 98 (2): 1–37.
- Tirole, Jean. 1988. *The Theory of Industrial Organization*. Cambridge: MIT Press.
- Williamson, Oliver E. 1985. *The Economic Institutions of Capitalism: Firms, Markets, Relational Contracting*. New York: Free Press.
- World Bank. 2022a. *Evaluation of World Bank Group Support to Creating an Enabling Environment for Private Sector Participation in Climate Action, Fiscal Years 2013–22*. Approach Paper. Independent Evaluation Group. Washington, DC: World Bank.
- World Bank. 2022b. *Reducing Disaster Risks from Natural Hazards: An Evaluation of the World Bank’s Support, Fiscal Years 2010–20*. Independent Evaluation Group. Washington, DC: World Bank.
- World Bank. 2023. *World Bank Group Support to Demand-Side Energy Efficiency*. Independent Evaluation Group. Washington, DC: World Bank.

Appendix B. Portfolio Analysis of Enabling Environment Constraints

This appendix provides additional details on the degree to which the World Bank lending portfolio, the International Finance Corporation (IFC) advisory services (AS) portfolio, and the policy recommendations of the first 23 Country Climate and Development Reports (CCDRs) align with the key enabling environment constraints on private sector climate action.

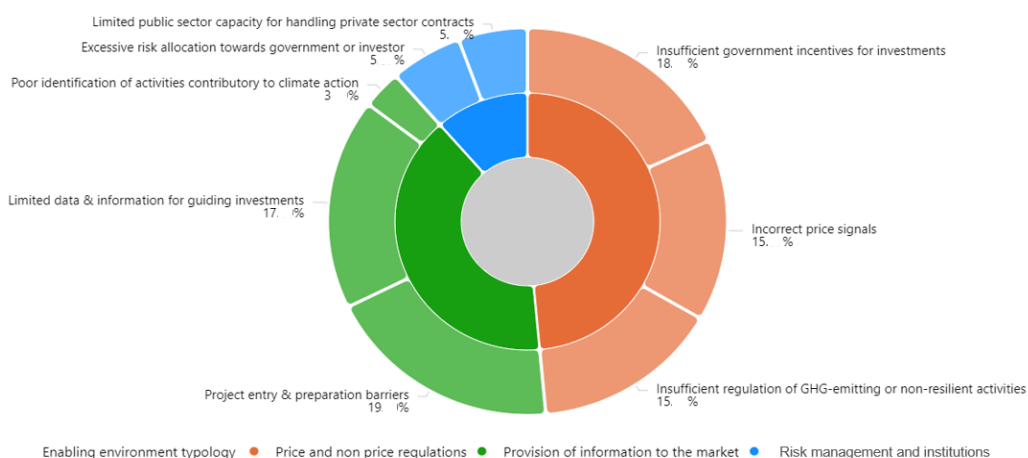
The World Bank has frequently supported lending operations that address price signals and nonprice incentives (49 percent of World Bank enabling environment for private sector climate action [EEPSCA] activities; figure B.1). Among these activities, about one-third were each related to incorrect price signals, government incentives, and regulation on emission production.

- » More than 60 percent of the activities related to incorrect price signals are carbon credit mechanisms and removal of subsidies to companies and state-owned enterprises in the energy sector, including cost-effective tariff reforms. Among the 182 activities, there are 12 that relate to carbon taxes or reductions in fossil fuel or methane subsidies. Out of these 12 activities, the ones related to carbon pricing include three countries (Colombia, North Macedonia, and South Africa). This low number of interventions is consistent with the slow progress in introducing carbon taxes around the world, as reported in the World Bank *State and Trends of Carbon Pricing 2023* (World Bank 2023). In addition, there are only six interventions related to emissions trading systems. This is in part because World Bank support in this area has been primarily through nonlending activities, which are helping to build the technical basis for future carbon pricing endeavors. For example, the Partnership for Market Readiness supported activities in 23 countries to build the architecture for carbon pricing (PMR 2020) and has now been replaced by the Partnership for Market Implementation.
- » More than half of the activities related to government incentives are related to financial incentives, including subsidies and tax credits, in support of climate mitigation sectors, especially renewable energy. Similar interventions

related to climate adaptation are scarce. Approximately 20 percent of the activities in this segment are related to payment for environmental services or subsidies that inhibit deforestation and promote afforestation, including through carbon credits. Although only six activities related to repurposing subsidies in the agricultural sector, this is a new angle of interventions that the World Bank wants to pursue.

- » Regarding insufficient regulation of emission-producing or nonresilient activities, most activities are energy efficiency mandates, including fuel standards; resilient building codes; and sustainable forestry regulation. There were few examples of support for air pollution regulation, which could disincentivize high-emitting technologies.

Figure B.1. EEPSCA World Bank Lending Portfolio, Fiscal Years 2013–22, by Type of Constraint



Source: Independent Evaluation Group.

Note: EEPSCA = enabling environment for private sector climate action; GHG = greenhouse gas.

The World Bank also frequently supported lending operations that address insufficient information (40 percent of World Bank EEPSCA activities). Among the activities that relate to information, almost half of them are about addressing insufficient project preparation (approximately 40 percent are about the provision of information and the other 10 percent relate to inadequate identification of sectors).

- » Regarding insufficient project preparation and entry barriers that inhibit the participation of potential investors, two-thirds of the activities are related

to supporting countries in building up a project pipeline, signaling to the market that there are investible projects. According to the literature (Grimm and Boukerche 2020; Prasad et al. 2022; World Bank Group 2020), lack of project preparation inhibits investors' appetite and narrows competition opportunities. It can also create adverse selection problems because those who are willing to invest are the ones better prepared to deal with gaps in the contract or incomplete information. Project preparation is a key area with important value added for attracting a wider range of private sector investors. The rest of the activities are related to capacity building to enable energy auctions and efforts to improve the predictability of tariffs in contracts set with the private sector.

- » Regarding insufficient data information and knowledge for guiding investment decisions, most activities are related to the facilitation of climate-related research and development that benefits the private sector and the provision of climate and hydrological data, including mapping of climate hazards and renewable energy potential. The World Bank has a few interventions related to voluntary standards and certification, including energy efficiency and green product certification. The issues of voluntary standards of certification are addressed more by IFC, but mostly in the support of green building standards.
- » Regarding inadequate identification of sectors, there are only a few projects (mostly on green taxonomies). Although the World Bank might be addressing these issues through nonlending work, the low levels of support through lending projects seem disconnected from the global agenda of helping investors and financiers to identify investment opportunities through enhancements in disclosure by the investable companies and projects (NGFS 2020; World Bank Group 2020).

International regulations are encouraging and, in some cases, forcing companies to disclose their carbon footprint, and bank regulations are increasingly adding climate risk into their risk management schemes. Because international banks with a domestic presence in World Bank Group client countries are expected to report their climate exposure to home regulators, Bank Group efforts to bring best practices to countries are needed. The use of green taxonomies can help markets mitigate problems of greenwashing

and help companies in the corporate sector provide market signals and potentially access green funding, when available (Menon 2021; Prasad et al. 2022; Xu, Xie, and Deng 2022).

The World Bank only rarely supported lending operations that address risk management, including risk-sharing between the public and private sectors (11 percent of World Bank EEPSCA activities). Among the activities that relate to institutions and risk-sharing, almost half of the activities are related to addressing excessive risk allocation to some stakeholders and the other half are related to strengthening the institutional capacity of the public sector to deal with private sector institutions. The most common activities are advisory support for the creating or improving the institutional, legal, and operational framework for conducting public-private partnerships (PPPs) for renewable energy; provision of partial credit guarantee schemes to financial institutions that lend to businesses and investors investing in green projects; and support for the design and implementation of national insurance against natural disasters for businesses.

Because World Bank lending provides only a partial perspective of interventions, the evaluation looked at the World Bank EEPSCA portfolio related to PPP. It included 59 activities across 20 countries and seven regions and subregions. The portfolio is diversified across sectors, including Water (31 percent); Transport (19 percent); Energy and Extractives (14 percent); Urban, Disaster Risk Management, Resilience, and Land (11 percent); and others (25 percent). This portfolio offers a good set of activities that address issues of risk allocation and institutional capacity (both at the national and subnational levels) and complement World Bank lending activities. Except for Ghana, the World Bank activities in this bucket are performed in middle-income countries.

Insufficient emphasis on risk management and public sector institutional capacity has potential effects on the scalability of projects. Adequate risk-sharing arrangements are the cornerstone for financing climate-related opportunities at the scale. Although contractual arrangements that allocate counterparty, demand, credit, and foreign exchange risk to government counterparts (including guarantees) may boost the interest of private sector investors, they are not scalable, considering the high levels of government

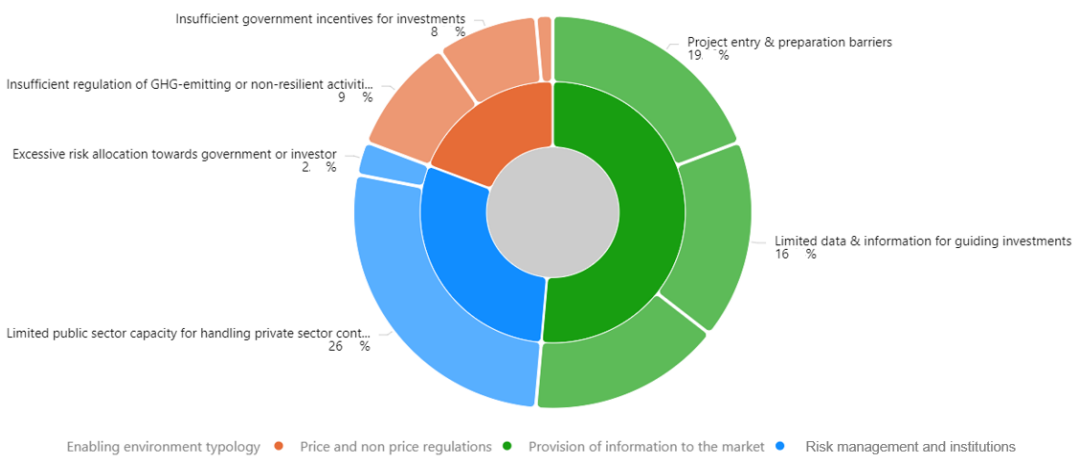
indebtedness and additional government capacity to fund future commitments. These contractual arrangements simply replace explicit debt with implicit debt, in the form of additional contingent liabilities. External literature (CFLI, EDFI, and GIF 2021; Grimm and Boukerche 2020; OECD 2021, 2022; World Bank Group, UNDP, and GIF 2020) suggests that allocating risks across stakeholders (government, equity investors, bondholders, banks, insurance companies, multilateral organizations, and other financial intermediaries) based on reliable contracts and institutions allows scalability of private sector investments. The structure of contracts may evolve over time to reflect the strengths and weaknesses of different stakeholders, the depth of the capital market, and the trust of the private sector in public institutions. Although some recent articles (Li, Natalucci, and Ananthakrishnan 2022; Sekyoung Choi, Zhou, and Laxton 2022) put emphasis on the role that multilateral organizations can play in de-risking private sector portfolios, credit risk is not the only variable that inhibits private sector participation, and other risks are expected to be allocated to different stakeholders. In addition, the lack of activities in low-income countries may reflect some additional structural issues that may need to be addressed.

World Bank lending operations address most of the significant constraints identified in the literature, but there is a gap in support for risk management approaches and only modest support for direct and indirect carbon price actions. Because interventions are country specific, this evaluation is unable to draw a conclusion on the optimal share of support for each of the interventions. However, the scarce support for activities that support governments in improving their risk management capacity and ability to share risks with private sector shareholders may be potentially concerning. In its absence, opportunities for scaling up private sector projects into climate-related public infrastructure projects are limited. Also notable is the low number of activities related to carbon taxes and the reduction of energy subsidies. This finding could reflect the difficulty of generating political support for carbon pricing activities and offer a word of caution for future World Bank engagements.

International Finance Corporation Advisory Services

IFC’s EEPSCA engagement focuses on its institutional mandate and strengths. IFC AS has frequently supported projects that address insufficient information (51 percent of EEPSCA AS activities), where its most common activities are related to (i) the adoption of voluntary standards (predominantly Excellence in Design for Greater Efficiencies standards), mostly by raising awareness among regulators and industry groups of the business case for green buildings; (ii) support for the creation of project pipelines; and (iii) building capacity of financial institutions for sustainable finance (figure B.2).

Figure B.2. International Finance Corporation Advisory Services EEPSCA Activities, Fiscal Years 2013–22, by Type of Constraints



Source: Independent Evaluation Group.

Note: EEPSCA = enabling environment for private sector climate action; GHG = greenhouse gas.

IFC has also often engaged on risk management (29 percent of the EEPSCA AS activities). Most activities in this category support risk-sharing between the public and private sectors through PPP transaction AS for solar energy projects. Although the statistical analysis suggests that these activities have been effective in attracting private sector capital, the scope of the activities is narrowly limited to transaction AS in solar energy.

There is no overlap between the countries that are supported by World Bank advisory services and analytics and IFC AS on climate-related PPP activities,

except by the regional and subregional activities. This suggests that countries supported by upstream PPP reform are rarely the ones where IFC conducts transaction AS. Although the World Bank PPP advisory services and analytics portfolio is diversified across sectors, the focus of the IFC transaction AS is mostly on solar energy. Although the climate-related World Bank PPP advisory services and analytics focus on middle-income countries, the IFC interventions include also low-income countries.

There are only a handful of activities that address excessive risk allocation toward the government (which has effects on the scalability of these private investments in climate action). Since the IFC clients are largely in the private sector, IFC has only a few activities that support the public sector institutional capacity. Although the lack of attention to risk allocation might not be a problem for IFC, when combined with the relatively low attention from the World Bank, it potentially becomes a significant problem for countries to achieve their net-zero goals.

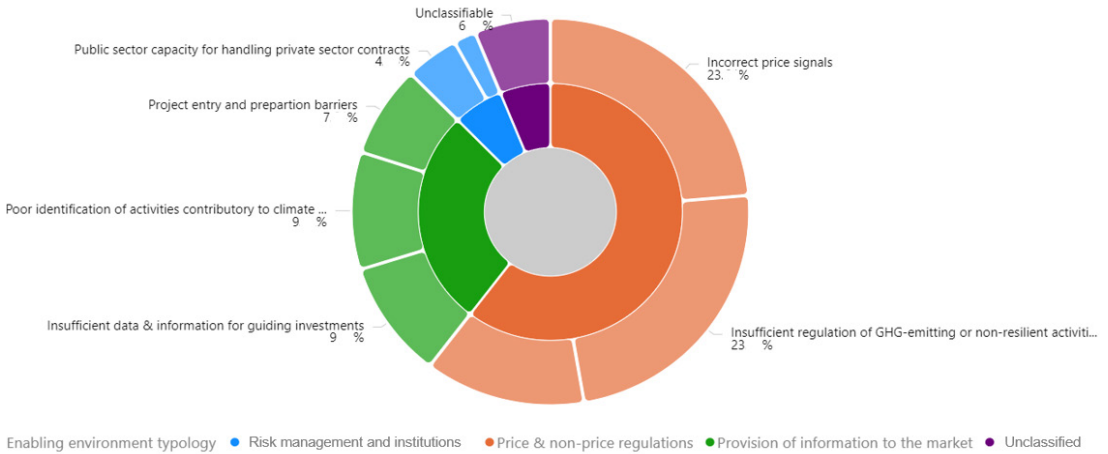
IFC has rarely supported projects that address price signals and nonprice incentives (19 of the EEPSCA activities) and has done so primarily by working with governments to develop financial and nonfinancial incentives for private investment in grid and off-grid solar energy solutions and green buildings (perhaps, because this kind of high-level policy support is not part of its core mandate). The activities performed in this category are aligned with IFC's strong internal capacities.

Country Climate and Development Report Recommendations

For the first batch of CCDRs, less than a third of policy recommendations engage on private sector enabling environment constraints. The evaluation reviewed the first 23 CCDRs, which had been released by November 2022, and classified their policy recommendations using the same typology of enabling environment constraints on private sector climate action. Out of the 937 policy recommendations in these CCDRs, we identified 275 that related to private sector enabling environment. The low share of policy recommendations related to the private sector may be a function of the composition of teams producing the CCDRs. Out of the 275 recommendations, 60 percent are

related to price and nonprice regulations, 27 percent to information, 6 percent to risk-sharing arrangements, and 7 percent are unclassified (figure B.3).

Figure B.3. Country Climate and Development Report Private Sector Enabling Environment Policy Recommendations, by Type of Constraint



Source: Independent Evaluation Group.

Note: GHG = greenhouse gas.

The largest share of CCDR recommendations (60 percent of the EEPSCA recommendations) on price and nonprice regulations emphasizes the use of price signals compared with Bank Group activities. In this cluster, approximately one-third of the recommendations are related to the use of prices as an incentive for attracting private sector investments, including carbon taxes, reduction of fossil fuel or methane subsidies, and removal of subsidies to companies and state-owned enterprises in the energy sector. From the sample of 23 countries, 14 have recommendations for carbon taxes and 11 for reducing fuel or methane subsidies. As discussed in the World Bank lending portfolio, the World Bank engaged only in 3 countries in activities related to carbon taxes. The other third of recommendations in this cluster relates to insufficient regulation of emission-producing or nonresilient activities (including mostly mandatory standards for energy efficiency and resilient building codes). The remaining policies are related to sectoral incentives.

The second largest share of CCDR recommendations (27 percent of the EEPSCA recommendations) relates to providing information to the market.

Within this cluster, 36 percent of the recommendations are related to activities to help identify sectors and activities that contribute to climate action, including green taxonomies and green disclosures; 44 percent of recommendations are related to insufficient data, information, and knowledge for guiding investment decisions, including the provision of climate and hydrological data, and voluntary standards and certification.

The lower level of support for the provision of information to the market may reflect an optimistic perception of the readiness of private investors to invest in climate action and the capacity of governments to present bankable projects. The most notable absence is for recommendations for supporting midstream activities that will help develop pipelines of bankable projects (which has been one of the most frequent activities performed by the World Bank). The recent interest by the Bank Group in supporting green taxonomies and climate disclosure is not being followed by a significant number of recommendations in the CCDRs.

The smallest share of CCDR recommendations related to risk-sharing between the public and private sector (6 percent of the EEPSCA recommendations). Half of these recommendations in this cluster are about creating or improving the PPP framework and are focused on four countries—Jordan, Malawi, Indonesia, and the Arab Republic of Egypt—but absent in others.

The relatively small representation of recommendations that support institutional development and risk-sharing arrangements could be a consequence of the prioritization criteria used in the CCDRs. This criterion favors urgent actions with immediate payoffs compared with those that are less urgent or impose trade-offs (World Bank Group 2022, figure 16). The fact that the criteria do not explicitly prioritize the role of the private sector creates a structure of incentives that might not be sustainable. In addition, criteria based on urgency might be subjective and discourage efforts for public sector institutional development and capacity building, which take longer time to materialize, but could be more sustainable for achieving net-zero goals. This prioritization scheme may not adequately prioritize private sector solutions in the context of the Cascade approach. Improving risk-sharing arrangements involves greater effort in supporting financial sector development.

References

- CFLI (Climate Finance Leadership Initiative), EDFI (European Development Finance Institutions), and GIF (Global Infrastructure Facility). 2021. *Unlocking Private Climate Finance in Emerging Markets: Private Sector Considerations for Policymakers*. New York: CFLI.
- Grimm, Michael, and Sandrine Boukerche. 2020. *Enabling Institutional Investment in Climate Smart Infrastructure*. Washington, DC: World Bank Group. <https://openknowledge.worldbank.org/handle/10986/34327>.
- Li, Bo, Fabio Natalucci, and Prasad Ananthkrishnan. 2022. “How Blended Finance Can Support Climate Transition in Emerging and Developing Economies.” *IMF Blog*, November 15, 2022. <https://www.imf.org/en/Blogs/Articles/2022/11/15/how-blended-finance-can-support-climate-transition-in-emerging-and-developing-economies>.
- Menon, Ravi. 2021. “What We Need to Do to Make Green Finance Work.” Keynote speech at the Financial Times Investing for Good Asia digital conference, Singapore, September 8. <https://www.bis.org/review/r210909d.pdf>.
- NGFS (Network for Greening the Financial System). 2020. *A Status Report on Financial Institutions’ Experiences from Working with Green, Non-Green and Brown Financial Assets and a Potential Risk Differential*. Paris: NGFS.
- OECD (Organisation for Economic Co-operation and Development). 2021. *Financial Markets and Climate Transition: Opportunities, Challenges and Policy Implications*. Paris: OECD. <https://www.oecd.org/finance/Financial-Markets-and-ClimateTransition-Opportunities-challenges-and-policy-implications.htm>.
- OECD (Organisation for Economic Co-operation and Development). 2022. “OECD Blended Finance Guidance for Clean Energy.” OECD Environment Policy Paper 31, OECD, Paris. <https://doi.org/10.1787/596e2436-en>.
- PMR (Partnership for Market Readiness). 2020. *Towards a Low-Carbon Future: 2020 Annual Report*. Washington, DC: PMR.
- Prasad, Ananthkrishnan, Elena Loukoianova, Alan Xiaochen Feng, and William Oman. 2022. “Mobilizing Private Climate Financing in Emerging Market and

Developing Economies.” IMF Staff Climate Note 2022/007, International Monetary Fund, Washington, DC.

Sekyoung Choi, Esther, Lihuan Zhou, and Valerie Laxton. 2022. “How to De-risk Low-Carbon Investments.” Insights, World Resources Institute, Washington, DC. <https://www.wri.org/insights/de-risking-low-carbon-investments>.

World Bank. 2023. *State and Trends of Carbon Pricing 2023*. Washington, DC: World Bank.

World Bank Group. 2020. *Climate Change in APEC: Assessing Risks, Preparing Financial Markets, and Mobilizing Institutional Investors*. Washington, DC: World Bank Group. <https://openknowledge.worldbank.org/handle/10986/33423>.

World Bank Group. 2022. *Climate and Development: An Agenda for Action—Emerging Insights from World Bank Group 2021–22 Country Climate and Development Reports*. Washington, DC: World Bank Group. <http://hdl.handle.net/10986/38220>.

World Bank Group, UNDP (United Nations Development Programme), and GIF (Global Infrastructure Facility). 2020. *Catalyzing Private Sector Investment in Climate Smart Cities*. Washington, DC: World Bank Group. <https://openknowledge.worldbank.org/handle/10986/35928>.

Xu, Xiaoyun, Wenhong Xie, and Manshu Deng. 2022. *Global Green Taxonomy Development, Alignment, and Implementation*. London: Climate Bonds Initiative. https://www.climatebonds.net/files/reports/cbi_taxonomy_ukpact_2022_01f.pdf.

Appendix C. Econometric Analysis of World Bank Group Enabling Environment Interventions in the Renewable Energy Sector

This appendix offers a summary of the main methodological issues and results of the econometric study that analyzes the impact of the World Bank Group interventions related to renewable energy in (i) improving the enabling environment for private sector participation and (ii) attracting private sector investments. The analysis uses two methods: the staggered difference-in-difference (DiD) and the principal component analysis (PCA).

Methodology

The evaluation uses a staggered DiD model to test the impact of different Bank Group interventions (World Bank lending, World Bank advisory services and analytics [ASA], and International Finance Corporation [IFC] advisory services [AS]) on (i) improving the enabling environment and (ii) attracting private sector investments. The estimation of the staggered DiD follows Gardner (2022), whose implementation considers only untreated or not-yet-treated observations in the comparison group (Baker, Larcker, and Wang 2022; Goodman-Bacon 2021).

Analytically, the regression model can be written as follows:

$$y_{i,t} = \sum_{j=-\underline{T}}^{-1} \beta_j D_{i,t,j} + \sum_{j=1}^{\bar{T}} \beta_j D_{i,t,j} + \alpha_i + \alpha_t + \epsilon_{i,t}$$

where $y_{i,t}$ is the outcome variable (enabling environment or renewable energy investments) observed at country level i at an annual basis t ; the event study dummies $D_{i,t,j}$ take a 1 if country i , in year t , is observed j years before or after its first policy treatment time; the coefficients β_j measure the effect of the treatment j periods before or after the policy occurs; α_i and α_t are country and

time fixed effects; $\epsilon_{i,t}$ is the error term for country i at time j . All standard errors are clustered at the regional level.¹

For each of the interventions (World Bank lending, World Bank ASA, and IFC AS), we assess the impact of the interventions on the following:

1. Improvements in the enabling environment for private sector participation in the renewable energy sector. The outcome variable is the quality of the regulatory framework.
2. Private sector investments in wind and solar energy. The outcome variable is the value of the investments through financial closure, measured in US dollar amounts. This outcome variable is a relatively short-term measure of the impact of the interventions. To ensure the robustness of the analysis, we also present the impact of the Bank Group interventions on renewable energy generation and installed capacity.

In addition, the evaluation uses the PCA to test the impact of multiple Bank Group interventions on attracting private sector investments in renewable energy, measured as renewable energy generation. Although the DiD methodology focuses on the impact of each intervention separately (that is, World Bank lending, World Bank ASA, and IFC AS), PCA allows studying the impact of the multiple interventions (as a bulk) received by a country during a certain time. This analysis is relevant for Bank Group interventions because client countries receive Bank Group interventions with different degrees of intensity. Technically speaking, PCA transforms different interventions into an index (Bank Group treatment intensity index), which captures most of the information contained in the data set with all interventions. Subsequently, the evaluation estimates the impact of the continuous time-varying measure of the intensity index on renewable energy generation.

To estimate the intensity index for the sample of countries, we count the number of studied interventions that a country i has received until time j by applying the cumulative count function:

$$\delta_{i,j,t} = \sum_{t=-T}^t I(i_{ij,t}) \quad \forall i, j, t$$

where $I(\cdot)$ is the indicator function that takes a 1 if a country is treated ($i_{j,t}$ equals 1).

To construct the intensity index, the methodology uses a PCA with the three Bank Group interventions used in the report plus IFC investments in renewable energy, received by countries over time ($\delta_{i,t}$). The intensity index measures a common factor that drives the positive correlation between the cumulated occurrence of the World Bank interventions at the country level ($F_{i,t}$).

Subsequently, the evaluation estimates the impact of the continuous time-varying measure of Bank Group treatment intensity index on renewable energy generation, following Lindo et al. (2020) and using the nonparametric estimation method proposed by Robinson (1988). The focus of attention is to capture the potential nonlinear relationship between our Bank Group treatment intensity index and renewable energy outcomes through the parameter $\beta_F g(F_{i,t})$:

$$y_{i,t} = \alpha_i + \beta_F g(F_{i,t}) + \beta_1 GDP_{i,t-1} + \epsilon_{i,t}$$

where $y_{i,t}$ is the outcome variable observed at country level i in time t ; α_i is country fixed effects; $g(\cdot)$ is a Gaussian kernel function; $F_{i,t}$ is our Bank Group treatment intensity index; $GDP_{i,t-1}$ is the lagged GDP per capita of country i , which controls for macroeconomic conditions that could determine the potential of renewable energy in country i at time t ; $\epsilon_{i,t}$ is the error term for country i at time t . Following the same logic explained in the DiD regression, the standard errors are clustered by geographic continent.

Data

Data on enabling environment for private sector investments in the renewable energy sector are taken from the Regulatory Indicator for Sustainable Energy scores for the period 2010–21. Specifically, the evaluation uses the score that captures financial and regulatory support for electricity.² Data on investment by financial closure consider investments in solar and wind and are taken from the World Bank Private Participation in Infrastructure database. This variable is measured in US dollar amounts. Data on the generation and the installed capacity of renewable energy are taken from the

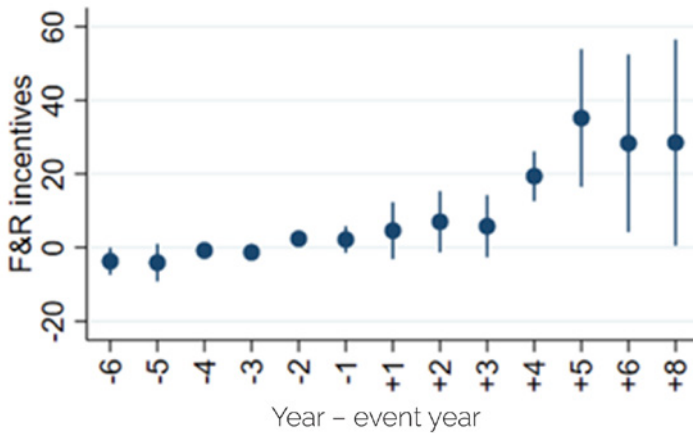
Organisation for Economic Co-operation and Development–International Energy Agency database and the International Renewable Energy Agency. Financial development data are taken from the International Monetary Fund Financial Development Index.³

The treated group for World Bank lending, World Bank ASA, and IFC AS interventions consists of 12, 63, and 10 countries, respectively. The identification of projects for World Bank lending and IFC AS follows the same enabling environment for private sector climate action methodology used across the evaluation. For World Bank ASA, the identification of project follows activities mapped to the following sector codes: renewable energy hydro, renewable energy biomass, renewable energy geothermal, renewable energy solar, and renewable energy wind. Countries in the comparison group were chosen using the nearest-neighbor method—a well-established method for conducting cross-country analysis (Lin and Ye 2007).⁴ Countries in the comparison group have similar GDP per capita. Thus, for each treated country, we chose another country that has not been treated with a similar 2008 GDP per capita, using data from the Penn World Table.

Main Results—Staggered Difference-in-Difference

As a first step, we tested whether World Bank lending operations affected improvements in the regulatory framework that fosters private sector participation in energy generation. This test is important to the extent that allows us to isolate the effect of the impact of the interventions on the enabling environment from effective investments. As shown in figure C.1 lending operations show a significant and positive effect in supporting an enabling environment for private sector participation in the renewable energy sector.

Figure C.1. Staggered Difference-in-Difference—World Bank Lending on Renewable Energy Regulatory Framework

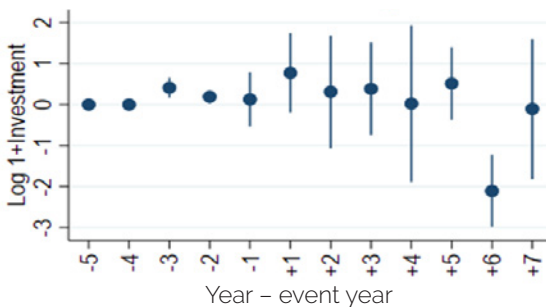


Source: Independent Evaluation Group analysis.

Note: F&R = financial and regulatory.

However, the evidence is insufficient to demonstrate that World Bank lending operations that include prior actions related to enabling environment for private sector participation in renewable energy affect private sector investments in this sector, compared with the comparison group. As shown in figure C.2, the evidence suggests that the effects of the first lead years are not statistically significant. Similar nonsignificant results are found when tested against energy generation and installed capacity.

Figure C.2. Staggered Difference-in-Difference—World Bank Lending on Wind and Solar Investments

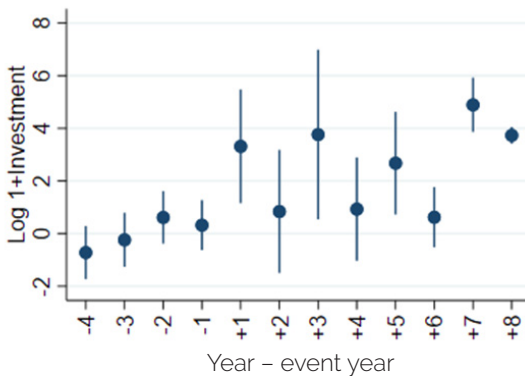


Source: Independent Evaluation Group analysis.

However, the evidence suggests a weak significance of the impact of World Bank lending countries on private sector investments in wind and solar

energy in countries with a higher level of financial development. Because it was intriguing that World Bank lending was effective in improving the regulatory framework, but ineffective in bringing private sector investments in renewable energy, we tested whether the inability to attract financing was a consequence of credit constraints. As shown in figure C.3, investments through financial closure show a positive and significant impact for lead years 1, 2, 5, and 7. To the extent that parameters in lead years 2 and 4 are nonsignificant, the evidence of the positive impact of World Bank lending interventions cannot be interpreted as strong. By convention, while the results are not sufficient to reject the null hypothesis, the evidence should be considered weak. In addition, the results do not suggest the presence of a pre-trend (which supports the validity of the results).

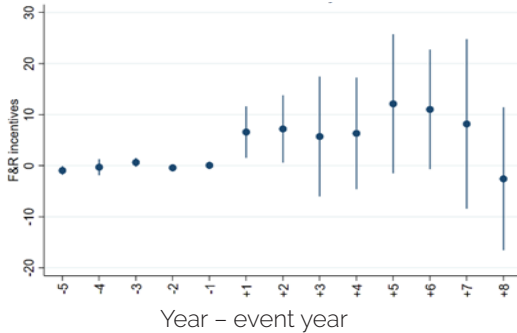
Figure C.3. Staggered Difference-in-Difference—Countries with Financial Development: World Bank Lending on Wind and Solar Investments



Source: Independent Evaluation Group analysis.

Regarding the impact of World Bank ASA on the enabling environment for private sector participation in the renewable energy sector, the evidence suggests that World Bank ASA had positive effects in the years that followed the intervention (figure C.4).

Figure C.4. Staggered Difference-in-Difference—World Bank Advisory Services and Analytics on Renewable Energy Regulatory Framework

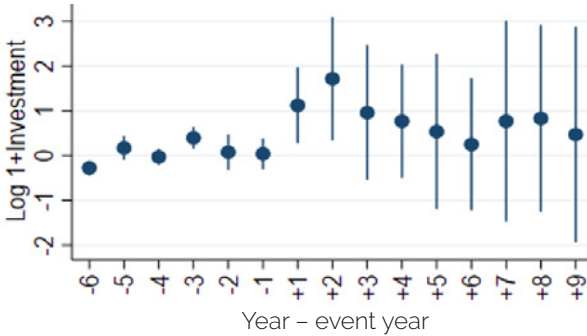


Source: Independent Evaluation Group analysis.

Note: F&R = financial and regulatory.

Regarding the impact of World Bank ASA, a combination of tests suggests a nonsignificant effect on private sector participation. The first test, which considers the impact on private sector investments in wind and solar energy, suggests mixed effects of the interventions. Although parameters are positive and significant in the two years after the intervention (something unplausible from the empirical perspective), the rest of the parameters for the lead years are insignificant (figure C.5). This test offers unconvincing results, especially considering that most common World Bank ASA are upstream interventions, which in the best of the scenarios imply a materialization of private investments a few years after and not in the first two years. The robustness tests of the impact of World Bank ASA on renewable energy generation and installed capacity confirm the nonsignificance of the impact of World Bank ASA on private sector participation in renewable energy. For countries with more financial development, the impact of the interventions was equally nonsignificant.

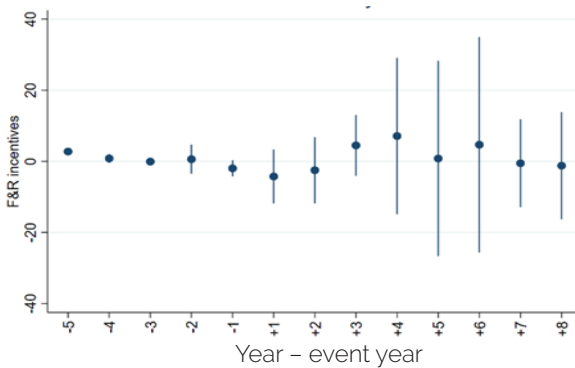
Figure C.5. Staggered Difference-in-Difference—World Bank Advisory Services and Analytics on Wind and Solar Investments



Source: Independent Evaluation Group analysis.

The test of the impact of IFC AS on improvements in the enabling environment for private sector participation in the renewable energy sector suggests a nonsignificant impact (figure C.6). This result was largely expected because most interventions are transaction AS, whose impact is more on the “last mile” for materializing investment rather than improving the regulatory framework.

Figure C.6. Staggered Difference-in-Difference—International Finance Corporation Advisory Services on Renewable Energy Regulatory Framework

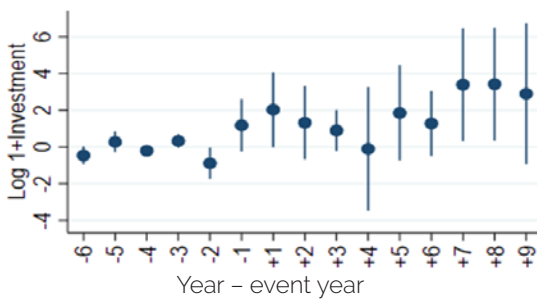


Note: F&R = financial and regulatory.

The test of the impact of IFC AS on wind and solar investments suggests positive and statistically significant effects. As shown in figure C.7, IFC AS interventions had some positive and significant effects on investments

through financial closure in the year that followed the interventions, probably as a consequence of the “last mile” effect. The impact on lead years 2 and 3 is weakly significant at a 90 percent confidence interval. The robustness analysis, using renewable energy generation and installed capacity, confirms the statistically positive effects of the IFC AS on attracting private sector participation in the energy sector in later stages. The effects of these interventions are also significant on private investments in wind and solar energy for the group of countries with more financial development.

Figure C.7. Staggered Difference-in-Difference—International Finance Corporation Advisory Services on Wind and Solar Investments



Source: Independent Evaluation Group analysis.

Main Results—Principal Component Analysis

The first step was the creation of the Bank Group treatment intensity index. Tables C.1 and C.2 present eigenvalues and eigenvectors for constructing an index based on PCA factors. Following Kaiser-Guttman criterion of retaining components with eigenvalues above 1, only the first principal component was selected, as shown in table C.1. The first principal component explains approximately 40 percent of the variation in the number of different World Bank interventions that countries experience over time. The first component also shows positive loadings on all treated variables. Table C.2 presents the corresponding eigenvectors.

Table C.1. Principal Components Analysis of Cumulative World Bank Interventions: Eigenvalues of the Correlation Matrix

Component	Eigenvalue	Difference	Proportion	Cumulative
Comp1	1.8	0.8	0.4	0.4
Comp2	0.9	0.2	0.2	0.7
Comp3	0.7	0.2	0.2	0.9
Comp4	0.6	n.a.	0.1	1.0

Source: Independent Evaluation Group.

Note: Comp = component; n.a. = not applicable.

Table C.2. Principal Components Analysis of Cumulative World Bank Interventions: Corresponding Eigenvectors

Intervention	Comp1	Comp2	Comp3	Comp4
IFC AS	0.5	-0.4	0.5	0.6
World Bank ASA	0.5	0.1	-0.8	0.2
World Bank lending	0.3	0.9	0.3	0.0

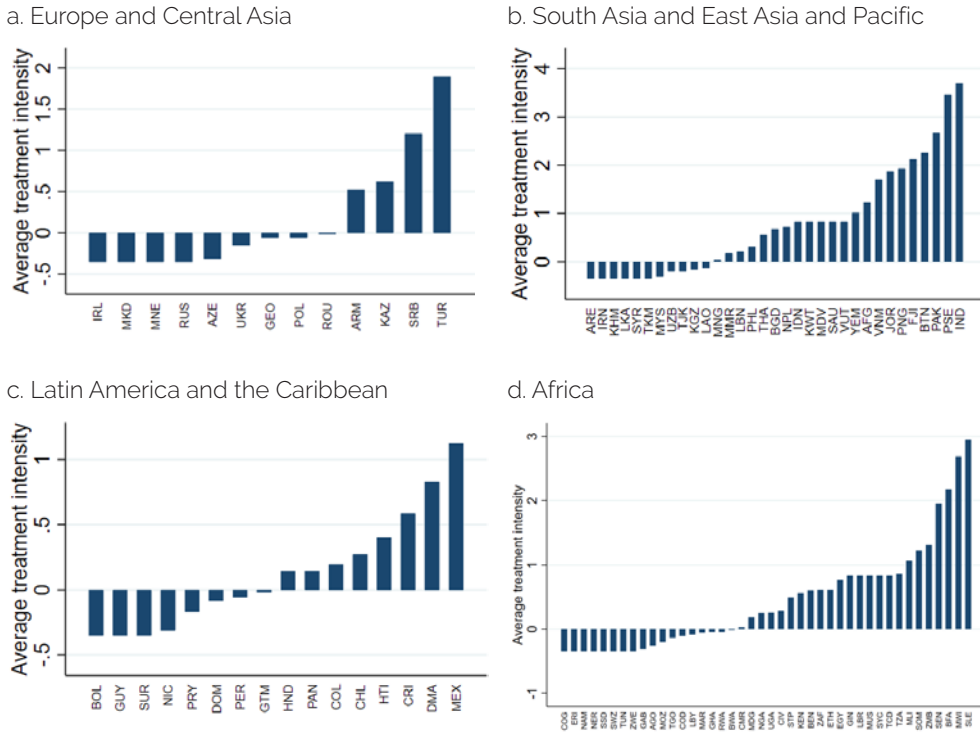
Source: Independent Evaluation Group.

Note: AS = advisory services; ASA = advisory services and analytics; Comp = component; IFC = International Finance Corporation.

The intensity of interventions varies across countries and regions. On the basis of the information from tables C.1 and C.2, we calculate the Bank Group treatment intensity index by country. Figure C.8 documents the average values of the index by country and Region. In Europe, Türkiye and Serbia have received intense support from Bank Group interventions in the area of enabling environment for private sector participation in renewable energy. In the Middle East and North Africa, South Asia, and East Asia and Pacific Regions, the most treated countries are Indonesia, West Bank and Gaza, Pakistan, Bhutan, Fiji, Papua New Guinea, Jordan, Vietnam, and Afghanistan. Finally, in the Latin America and the Caribbean Region, the most intensely treated countries are Mexico, Dominica, and Costa Rica. In the Africa Region, the index finds that the most treated countries are Sierra Leone, Malawi,

and Burkina Faso, and the least treated countries are the Republic of Congo, Eritrea, and Namibia.

Figure C.8. World Bank Group Treatment Intensity Index by Region



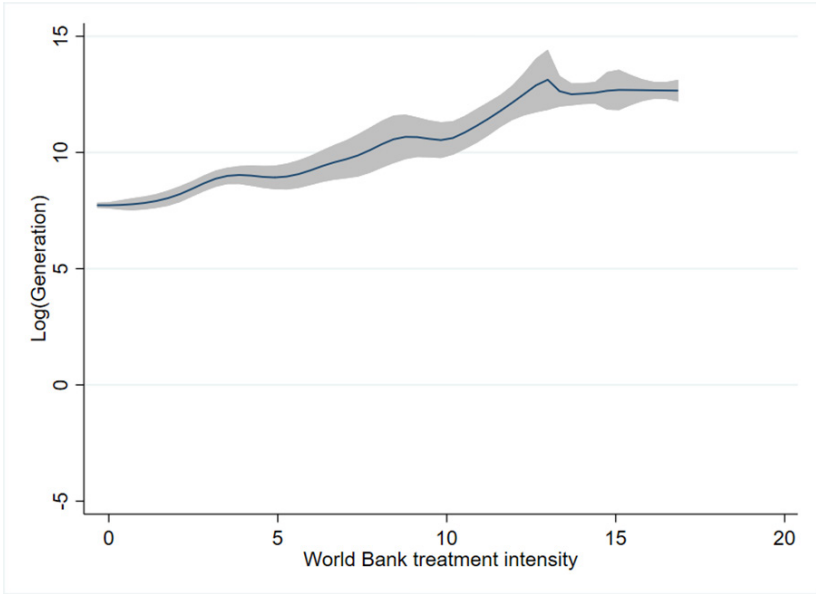
Source: Independent Evaluation Group.

Note: AFG = Afghanistan; AGO = Angola; ARE = United Arab Emirates; ARM = Armenia; AZE = Azerbaijan; BEN = Benin; BFA = Burkina Faso; BGD = Bangladesh; BOL = Bolivia; BTN = Bhutan; BWA = Botswana; CHL = Chile; CIV = Côte d'Ivoire; CMR = Cameroon; COD = Congo, Dem. Rep.; COG = Congo, Rep.; COL = Colombia; CRI = Costa Rica; DMA = Dominica; DOM = Dominican Republic; EGY = Egypt, Arab Rep.; ERI = Eritrea; ETH = Ethiopia; FJI = Fiji; GAB = Gabon; GEO = Georgia; GHA = Ghana; GIN = Guinea; GTM = Guatemala; GUY = Guyana; HND = Honduras; HTI = Haiti; IDN = Indonesia; IND = India; IRL = Ireland; IRN = Iran, Islamic Rep.; JOR = Jordan; KAZ = Kazakhstan; KEN = Kenya; KGZ = Kyrgyz Republic; KHM = Cambodia; KWT = Kuwait; LAO = Lao PDR; LBN = Lebanon; LBR = Liberia; LBY = Libya; LKA = Sri Lanka; MAR = Morocco; MDG = Madagascar; MDV = Maldives; MEX = Mexico; MKD = North Macedonia; MLI = Mali; MMR = Myanmar; MNE = Montenegro; MNG = Mongolia; MOZ = Mozambique; MUS = Mauritius; MWI = Malawi; MYS = Malaysia; NAM = Namibia; NER = Niger; NGA = Nigeria; NIC = Nicaragua; NPL = Nepal; PAK = Pakistan; PAN = Panama; PER = Peru; PHL = Philippines; PNG = Papua New Guinea; POL = Poland; PRY = Paraguay; PSE = West Bank and Gaza; ROU = Romania; RUS = Russian Federation; RWA = Rwanda; SAU = Saudi Arabia; SEN = Senegal; SLE = Sierra Leone; SOM = Somalia; SRB = Serbia; SSD = South Sudan; STP = São Tomé and Príncipe; SUR = Suriname; SWZ = Eswatini; SYC = the Seychelles; SYR = Syrian Arab Republic; TCD = Chad; TGO = Togo; THA = Thailand; TJK = Tajikistan; TKM = Turkmenistan; TUN = Tunisia; TUR = Türkiye; TZA = Tanzania; UGA = Uganda; UKR = Ukraine; UZB = Uzbekistan; VNM = Vietnam; VUT = Vanuatu; YEM = the Republic of Yemen; ZAF = South Africa; ZMB = Zambia; ZWE = Zimbabwe.

The results of the PCA nonparametric estimation suggest a positive and significant relationship between Bank Group treatments and the size of renewable energy generation, as shown in figure C.9. The country selection for

the estimates includes only countries that were used either in the treatment or comparison or treatment groups in the previous section. The evidence for the whole sample suggests that countries that have received more intensive Bank Group treatment have also benefited from more private sector participation through the renewable energy generation.

Figure C.9. Nonparametric Regression Effects on Renewable Energy Generation by World Bank Treatment Intensity Index



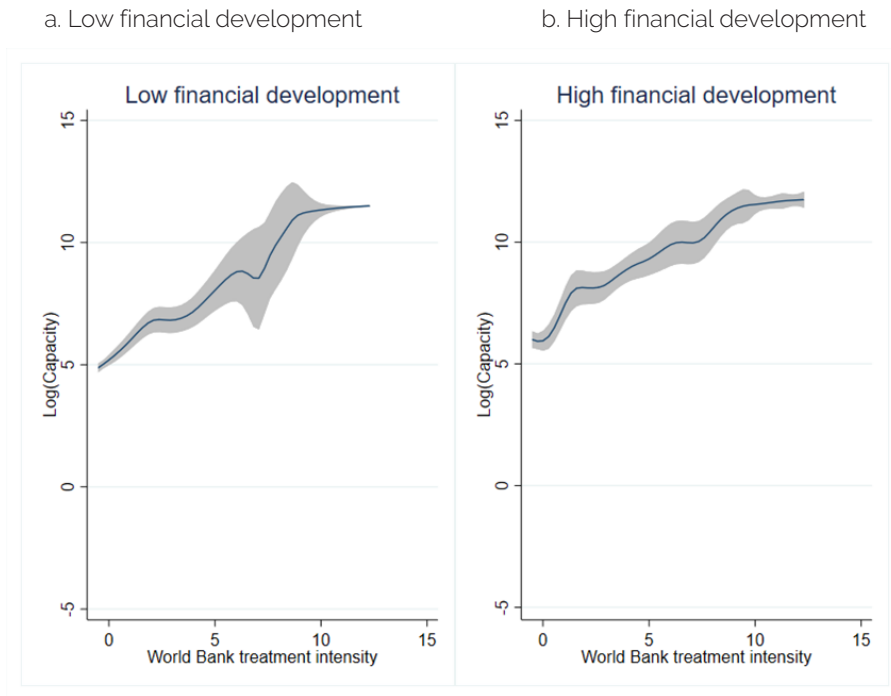
Source: Independent Evaluation Group.

To address a potential selection bias, we divided the sample by level of financial development. Although the analysis for the whole sample suggests that countries that have received more intensive Bank Group enabling environment for private sector climate action treatment have also been able to attract more private capital, this evidence is potentially weak due to possible selection biases. For example, it could be plausible to argue that countries that have received more intensive treatment are also those that are more willing to facilitate private sector participation. To mitigate the selection bias, we divide the sample between countries with higher and lower financial development.

The findings suggest that countries that have received more intense treatment have also benefited from high private investment, but the effect is stronger in countries with more financial development (figure C.10). The findings suggest that (i) countries with less financial development received

fewer Bank Group renewable energy interventions (the range of the index is relatively lower), and (ii) countries with more Bank Group renewable energy interventions benefit the most in attracting private investments when financial development is higher (steeper slope, lower standard deviation, and monotonic trend).

Figure C.10. Nonparametric Regression Effects on Renewable Energy Generation by World Bank Treatment Intensity Index, for Countries with Different Financial Development



Source: Independent Evaluation Group.

References

Ang, James B., and Per G. Fredriksson. 2018. “Culture, Legal Heritage and the Regulation of Labor.” *Journal of Comparative Economics* 46 (2): 616–33.

Baker, Andrew C., David F. Larcker, and Charles C. Y. Wang. 2022. “How Much Should We Trust Staggered Difference-in-Differences Estimates?” *Journal of Financial Economics* 144 (2): 370–95.

- Gardner, John. 2022. “Two-Stage Differences in Differences.” Preprint, arXiv:2207.05943. <https://arxiv.org/abs/2207.05943>.
- Goodman-Bacon, Andrew. 2021. “Difference-in-Differences with Variation in Treatment Timing.” *Journal of Econometrics* 225 (2): 254–77.
- Lin, Shu, and Haichun Ye. 2007. “Does Inflation Targeting Really Make a Difference? Evaluating the Treatment Effect of Inflation Targeting in Seven Industrial Countries.” *Journal of Monetary Economics* 54 (8): 2521–33.
- Lindo, Jason M., Caitlin Knowles Myers, Andrea Schlosser, and Scott Cunningham. 2020. How Far Is too Far? New Evidence on Abortion Clinic Closures, Access, and Abortions. *Journal of Human Resources* 55 (4): 1137–60.
- Robinson, Peter. 1988. “Root-N-Consistent Semiparametric Regression.” *Econometrica* 56 (4): 931–54.

¹ Clustering standard errors at the regional level is standard in countries' panel data analysis (Ang and Fredriksson 2018).

² The score is constructed based on the following questions: Is competition used to ensure large-scale renewable energy generation (projects larger than 10 megawatts) is cost-competitive (for example, through auctions for power purchase agreement)? If so, is there a schedule for future bids and auctions available for investors? Is there a prequalification process to select bidders? Are tariffs indexed (in part or in whole) to an international currency or to inflation? Are there provisions to ensure full and timely project completion (for example, bid bonds, project milestones)? Are projects awarded through auctions or bids online on track to be online on the stated date? Have auctions and bids met the stated target for installations? (<https://rise.esmap.org/indicators>)

³ Countries with high financial development are those with a value index above the world average financial development index in 2008.

⁴ In the absence of criteria for addressing potential selection biases, we relied on the nearest-neighbor method, using gross domestic product per capita to select the comparison group in all of our results. We are unable to use standard statistical techniques for correcting biases from nonrandomly selected samples, such as the Heckman correction.

Appendix D. Case Study Summaries

Colombia Transport Sector

Private Sector Climate Action and Key Constraints

The study covers private sector investment in climate-friendly transportation services, including electric mass transport operations, nonmotorized segments of transport networks, green infrastructure roads projects, and other fuel efficiency actions, supported by World Bank Group interventions. The study also covers elements of the enabling regulatory environment that have spurred on the private sector to undertake activities geared toward combating climate change within the transportation sector in Colombia. Aspects of the enabling environment include regulatory incentives and guidance, supplying market usable information and knowledge, and private-public risk-sharing arrangements under contractual arrangements for infrastructure projects—all aimed at promoting private sector action to reduce greenhouse gases.

A key constraint was a lack of a knowledge base regarding alternative investment costs and benefits in the green mass transport sector. For large road and highway infrastructure projects under public-private partnerships, while these initially had environmental rules against local contamination, a key constraint is that they did not fully incorporate policies on green construction methods to address climate impacts.

There was also a lack of information and identification of contractual risks and required burden sharing arrangements between the public and private sectors in both infrastructure projects and mass transit operations. Specifically, there was a need for a better understanding by the private sector of the role of the public sector in covering certain financial risks associated with climate change action that were not manageable by the private sector and building these into contractual and regulatory frameworks to spur green private sector transport investments.

In addition, a significant constraint on private sector investment is the limited depth of domestic capital markets.

World Bank Group Activities and Alignment

The World Bank engaged nationally and subnationally using a full set of instruments, including policy lending, investment operations, and advisory services and analytics (ASA). The World Bank, along with the government of Colombia, developed a series of two programmatic policy loan programs (Green Growth and Infrastructure development policy operations), one stand-alone development policy operation (Equitable and Green Recovery), two investment projects in transportation (Urban Transport Program Project for rapid bus transit and the Metro Line project), and more than 20 ASA reports, involving prefeasibility studies, technical assistance, and research related to implementing clean energy transport solutions and business models. The ASA program, which included substantive technical analysis, was in many cases linked to the achievement of development policy operation prior actions aimed at achieving regulatory incentives and monitorable results on reduced greenhouse gas emissions.

Climate action in Colombia yielded results achieved by the private sector's investment and participation in zero carbon mass transit operations, and this was supported through World Bank technical assistance and operations, including via the development of laws and regulations. Efforts to include domestic private sector investors in green transport roads infrastructure projects were successful.

Effectiveness and Success Factors

ASA analytical and policy support and technical work provided via prefeasibility studies and green regulatory guidelines was highly important in supplying detailed expertise and knowledge.

Risk-burden sharing under the roads and highways public-private partnerships was an up-front issue to bring in private investors, although this work might have pushed the envelope further to avoid buildup of contingent public debt in foreign currency. Some progress in this area is

observed as the latest 5G roads program no longer includes government-provided foreign exchange risk coverage.

Colombia Sustainable Banking

Private Sector Climate Action and Key Constraints

The study addresses actions by the private financial sector in Colombia in contributing (via funding instruments and financial mechanisms) to advance the deployment of green investments in the economy and covers how these were supported by Bank Group climate action initiatives in the sector.

In the absence of regulatory guidance, the financial sector lacked the incentives to prioritize financing or develop financial products to fund projects promoting climate action. A detailed regulatory framework was needed to guide banks, pension funds, insurance companies, and securities firms. In addition, in the absence of regulatory standards, the securities market was unable to differentiate between green and brown projects, thus inhibiting companies' debt financing prospects via green bonds. Finally, there was a lack of information and disclosure for presenting financial scenarios and operational uncertainties of investing in large green infrastructure projects.

World Bank Group Activities and Alignment

The World Bank undertook a wide-ranging ASA program involving regulatory development, research, taxonomy definition, technical assistance, and workshops. A key product as part of the greening the financial system technical assistance, developed jointly by the World Bank and the International Finance Corporation (IFC), was a green taxonomy document that was directed to the financial sector and covered 10 separate sectors in the economy to help financial institutions identify, categorize, and define elements of any financeable project that was green. It set the basis for several subsequent regulatory reforms to guide green investment. Another key area in the greening of the financial system ASA focused on financial sector governance and balance sheet stress testing tools and financial instruments linked to climate risks. In addition, the World Bank supported a separate ASA—sustainable and modern financial sector—that was instrumental in developing debt funds instruments

for mobilizing long-term local currency financing to climate-related infrastructure projects. IFC also took an equity stake in Financiera de Desarrollo Nacional—a domestic infrastructure development bank.

Effectiveness and Success Factors

The ASA interventions were effective in creating a green taxonomy and setting the base for several decrees and regulations to guide the financial sector toward green investments. Five banks used the green taxonomy as a pilot for internal reporting and disclosure purposes. The green banking loan portfolio contributing to climate change action has grown but remains at \$4 billion out of a \$136 billion equivalent loan portfolio. The implementation of methodologies for the financial sector to report and disclose its exposures linked to green assets in its portfolios was an important intermediate institutional step, which will facilitate monitoring the exposure of banks to climate risks. In addition, the World Bank support for the creation of debt funds was instrumental in enabling the participation of pension funds in the financing of large infrastructure projects with local currency financing. Through this facility, pension funds started to invest in infrastructure (although amounts are still modest). Finally, the participation of IFC in Financiera de Desarrollo Nacional was key in bringing high environmental and social standards to the projects where Financiera de Desarrollo Nacional invests, which further enhanced the credibility of Colombian infrastructure projects among potential investors, especially those concerned with environmental, social, and governance (ESG) standards.

The Arab Republic of Egypt Energy Subsidy Reform

Private Sector Climate Action and Key Constraints

This case study covers the Bank Group interventions that supported energy subsidy reduction in the Arab Republic of Egypt in 2014–17. Energy subsidy reductions were aimed at strengthening Egypt’s fiscal position, aligning energy price signals, and supporting investments in cleaner sources of energy, including renewable energy.

The main constraints for these activities were the government's practice of supporting vulnerable populations through the provision of energy subsidies, among others.

World Bank Group Activities and Alignment

In the context of increasing fiscal imbalances, energy subsidies were a significant part of government expenditures. In 2014, the government already accumulated \$6 billion in arrears, with private sector partners in the gas extraction industry, and private investors were reluctant to engage in new projects. The gas business was a significant part of the government revenues, which provided a significant source of financing for these subsidies.

The Bank Group assessed that energy subsidies were a detrimental signal for private sector participants to engage in renewable energy, both from the perspective of price signals (inability of renewable energy investors to compete with fossil fuel-generated activities) and the credit risk of the public sector (government might not have the capacity to honor their contracts).

Through a development policy financing (DPF) series over 2014–17, the World Bank worked with the government in a gradual reduction of energy subsidies, equivalent to approximately 7 percent of GDP. The World Bank worked with the government on the communication campaign and initiatives to mitigate the effect of subsidy reduction on the vulnerable segments of the population. As the diagnostic of the World Bank was solid, based on a strong commitment from the authorities, the first development policy loan was approved before the agreement for an International Monetary Fund program was reached.

Effectiveness and Success Factors

The political support from the top authorities of the country was the main enabler of the subsidy reform. The World Bank played an important role in facilitating the decision by providing information to key counterparts in the government and avoiding internal frictions. The long-term engagement with the government over the years allows the Bank Group to provide valuable technical expertise in terms of reform scenarios and incidence analysis.

Mitigating the impact on the vulnerable segments of the population is a key aspect in the design of any energy subsidy reform. Although prices of most energy types increased on a three-digit scale in the period 2014, the reform was gradual, which helped align expectations. To limit the impact on lower-income families, the price of liquefied petroleum gas (sold to households in cylinders) was kept unchanged until 2016. This type of energy is mostly used by lower-income households. In addition, and although at a limited scale, the World Bank supported activities to support vulnerable groups, through the provision of targeted food subsidies, before the enactment of the energy subsidy reform. During the implementation of the reform, the Bank Group continued working with the government in designing a conditional cash transfer program to better target vulnerable sectors of the population.

Although the reform was effective in reducing fiscal expenditures by approximately 7 percentage points of GDP and there have not been policy reversals, it was not designed to eliminate subsidies. In 2023, Egypt is one of the countries in the world with the lowest energy prices.

Egypt Renewable Energy

Private Sector Climate Action and Key Constraints

The case study covers the impact of the Bank Group interventions in supporting private sector investments in renewable energy in Egypt in the period 2015–21. During this period, the Bank Group conducted a series of interventions, World Bank ASA, World Bank lending, and IFC investment services, which resulted in private sector investments for an amount equivalent to \$2 billion and 1.4 gigawatts generation capacity.

The main constraints for private sector investments were the weak fiscal situation and consequently the high counterparty risk. In addition, energy prices for fossil fuel energy were highly subsidized, which made renewable energy noncompetitive. Finally, the regulatory framework embedded in the power purchase agreements (PPAs) was insufficient for engaging private sector investors, including the absence of agreeable dispute settlement systems.

World Bank Group Activities and Alignment

The support of the World Bank to the government of Egypt in reducing energy subsidies and strengthening the fiscal position through some structural reforms, including tax increases and alignment of the exchange rate, was instrumental in attracting the interest of private sector investors.

IFC, together with other private sector international partners and other mobilizing finance for development, supported the government in creating a large solar park (Benban Solar Park). IFC's role as an honest broker facilitated private sector investments in the renewable sector. IFC's role as a lead arranger was instrumental in bringing investors' perspectives to the government. The project was conducted in two rounds; the second round was successful. The failure of the first round was triggered by the absence of international arbitration clauses, which made projects unbankable. IFC was instrumental in conveying these messages to the government. In its role as a lead arranger (jointly with the European Bank for Reconstruction and Development), IFC was able to build a financing structure that brought many new investors to Egypt. The Multilateral Investment Guarantee Agency was also instrumental in providing guarantees to equity holders of independent power producers.

Effectiveness and Success Factors

In 2014, when the macroeconomic situation was still weak, the government presented a bold program for investing in renewable energy, which attracted the interest of multiple investors. It was proposed as a feed-in tariff program for investing in renewable energy. Instead of deciding to build a few mega projects to construct 2.5 gigawatts of solar photovoltaic and 2.0 gigawatts of wind facilities, they split the site into hundreds of medium-size projects. In November 2014, the government enticed 187 companies to submit pre-qualification documents, and by June 2015, the government had signed 55 memorandums of understanding for solar projects equivalent to 2.5 gigawatts. These "big numbers" attracted the interest of investors.

The role of IFC as a lead arranger of these investments was essential for the success of the program. In 2015, IFC signed approximately a dozen mandate

letters to act as a sole arranger. Although the government initiative of having multiple medium-size programs was commendable, it did not count on the transaction cost of dealing with multiple contracts at the same time. The role of IFC and the Multilateral Investment Guarantee Agency in standardizing the documentation was key to ensuring the financial closure of projects. The role of IFC as an honest broker was essential in coming to an agreement with the government on the terms of the regulatory framework for making projects bankable.

Although the feed-in tariff program was instrumental for that moment in Egypt, it is best practice to engage in sizable projects through auctions. In addition, since tariffs were largely indexed in US dollars, the cost of the deal in local currencies increased by 53 percent between October 2017 and April 2023.

Ghana Cocoa Forest Management

Private Sector Climate Action and Key Constraints

This case study covers private sector efforts to reduce forest degradation in the cocoa sector in Ghana through improved land and forest management practices by smallholders.

The main constraints to these practices were (i) low productivity in cocoa production, which promotes land clearing; (ii) limited farmer awareness and knowledge of improved land management practices; (iii) insecure tree tenure, which discourages farmers from retaining other species of trees; (iv) complex land tenure, which does not incentivize farmers to undertake sustainable practices; (v) limited farmer access to credit for buying inputs for improved practices; and (vi) low farmer income limiting their ability to undertake investments.

World Bank Group Activities and Alignment

The World Bank carried out a series of analytical work and policy dialogue starting from 2014. This included several sector notes, policy discussions, and convening of the cocoa parastatal and key stakeholders from the private sector, development partners, and civil society. The World Bank also provided technical assistance to the agriculture ministry to support

a climate-smart agriculture (CSA) investment plan, covering all sectors, including cocoa. Recent analytical work recommended the use of a fee-and-rebate scheme for cocoa, which would tax unsustainably produced cocoa but provide rebates for cocoa that could be shown to have been produced without contributing to deforestation. The World Bank was not able to generate government agreement on an investment project for most of the evaluation period; however, as of March 2023, a project seeking to improve productivity and address climate resilience in selected tree crops, including cocoa, is in the pipeline and is on track for approval. IFC prepared a sector study to assess the scope for private sector participation but concluded that there was limited opportunity for private sector companies to engage in the cocoa sector. The World Bank supported the government through the development of a carbon crediting mechanism under the Reducing Emissions from Deforestation and Degradation program. The Reducing Emissions from Deforestation and Degradation program activities included capacity building and pilot activities through the readiness mechanisms. The World Bank also provided some support for government to strengthen its land administration system. The World Bank analytics engaged on identifying solutions for most of the needed constraints but did little to address access to finance. The analytical products also did not adequately identify the political economy constraints of the cocoa sector.

Effectiveness and Success Factors

Little progress has been made on addressing the identified constraints (in part because of the lack of an investment project to support the necessary changes). Although the Reducing Emissions from Deforestation and Forest Degradation program activities were able to generate carbon finance payments for cocoa farmers adopting sustainable practices, the scale of the activities is modest. There was limited uptake by government of most of the recommended actions. The World Bank helped the government develop a cocoa sector development strategy, but the strategy was not approved by the parliament.

For many years, the World Bank was not able to reach an agreement on a lending project in the sector because (i) the main cocoa parastatal lacked trust in the World Bank (in part because it believed that previous World Bank-recommended policies on privatization of extension services were

unsuccessful); (ii) the World Bank has found difficulty in persuading stakeholders on the need for institutional reform or in addressing sensitive topics, such as land and tree tenure; and (iii) the government has been reluctant to borrow for the cocoa sector on International Development Association and International Bank for Reconstruction and Development blend terms.

The World Bank was not able to find a strategy to address political economy challenges in the sector. Different stakeholders have different (and sometimes competing) set of interests and influence, and their interests depend on the type of reforms that benefit stakeholders differently. Early convening efforts were not sustained through the evaluation period.

Honduras Climate-Smart Agriculture

Private Sector Climate Action and Key Constraints

This case study assesses World Bank efforts to improve the enabling environment for smallholder farmers in Honduras to undertake CSA practices to help farmers increase productivity and build resilience to climate shocks, such as drought, excessive rain, or pests and diseases.

The main barriers to adoption of CSA by smallholders included (i) limited access to finance that impedes ability to adopt technologies or purchase farm inputs; (ii) limited awareness of CSA among farmers, partly driven by limited availability of extension services from scarce public funding; (iii) poor land tenure security, which discourages farmers to invest and restricts access to finance; and (iv) weak public institutional capacity on CSA research and development.

World Bank Group Activities and Alignment

The World Bank has supported the country since 2008 through consecutive projects seeking to improve agricultural productivity and competitiveness for smallholders through matching grants and technical assistance to rural producer organizations. These organizations provide joint business plans that describe capital and service needs and propose investments to allow them to upgrade their production capacity, skills, and linkages with markets. These business plans may be eligible for matching grants of up to 60 percent

if they secure up-front financing of 30 percent from financial institutions. Since 2019, these projects have explicitly aimed to promote CSA practices and technologies. The Bank Group also supported some investments and training for CSA practices through grant programs and has supported capacity building in public institutions for disease surveillance and improving water resource management for climate resilience. A project on land administration supported decentralized national land administration and land titling. The World Bank activities were broadly aligned with the constraints it identified, except that weak research and development capacity in public institutions was not addressed, given lack of client interest.

Effectiveness and Success Factors

The World Bank has provided matching grants and helped improve access to finance for agricultural activities, building strong government and private sector support for the program. However, the program did not focus on building the capacity of financial institutions to finance CSA. Matching grants were not made conditional on support for CSA, although there is increasing priority given to CSA. Technical assistance has been effective in building capacity of rural producer organizations and providing knowledge on CSA. Smallholders have engaged to some extent on CSA activities, but there are only a limited set of practices that have been adopted. The most widely adopted practice was use of organic fertilizer, which might improve farmer income by allowing them to reach specialty coffee buyers with a price premium, but the impact on climate resilience might be limited. Although the program has operated since 2008, the scale is also limited, reaching only 12,878 smallholder farms out of approximately 270,000 smallholder farms. The ability of the program to scale is limited by its reliance on donor concessional finance, and there is only weak evidence that the project is increasing agricultural finance beyond the direct loans subsidized by the program. The World Bank could have done more to build the capacity of banks to develop financial products that would cater to the needs of small farmers. World Bank projects helped improve land tenure security to an extent in the targeted regions, although challenges remain in the rural areas where smallholder farmers are prevalent. The World Bank has also had little success in policy engagements related to CSA.

Indonesia Geothermal Power

Private Sector Climate Action and Key Constraints

The case study assesses World Bank contributions to the enabling environment for private sector investment in geothermal power development in Indonesia. Indonesia's energy sector is the second main contributor to its greenhouse gas emissions, so renewable energy is essential. Geothermal power is a promising option given substantial geothermal resource potential and the ability to provide base load.

The primary constraints to geothermal power were as follows: (i) geothermal power was required to compete with coal, a low-risk-low-cost, influential, subsidized power sector, which had excess supply in major power grids; (ii) geothermal power requires expensive and risky up-front investment in exploration; (iii) PPA prices for geothermal energy have been insufficient to incentivize private sector investment; (iv) the single offtaker state power utility did not have incentives to prioritize geothermal, with consumer power tariffs fixed below supply costs and excess power supply; (v) a lack of predictability and timeliness of PPA contracts was a significant constraint for developers; and (vi) less important constraints included environmental and social issues, challenges in local social acceptance, and capacity constraints.

World Bank Group Activities and Alignment

The World Bank engaged substantively on those areas that were amenable to technical solutions but played less of a role on constraints that involved substantial trade-offs or involved political economy challenges. The World Bank engaged intensively on mitigating exploration risks through investment projects with concessional financing. An initial approach tried to directly finance public exploration; a subsequent approach created a risk mitigation facility for exploration that would reduce the costs to developers of unsuccessful drilling. The World Bank engaged on fossil fuel subsidy reform through diagnostics and policy dialogue when it saw opportunities but sought to take a measured and diplomatic approach on a politically sensitive issue. The World Bank used DPF to engage on PPA predictability, with a prior

action on standardizing contracts. The World Bank engaged on pricing and other issues through knowledge products and policy dialogue. The World Bank used knowledge work to convene stakeholders around managing risks of geothermal energy in forest areas. World Bank diagnostic work and technical assistance helped government address some capacity constraints, such as by centralizing issue of geothermal licenses to the national government. Issues around social acceptance of geothermal power were not addressed, but this was not a principal constraint.

Effectiveness and Success Factors

Although World Bank activities have contributed to improvements in the enabling environment in some cases, these changes have not been sufficient to catalyze private sector investment. The case study could not determine if the World Bank had made a significant contribution on government fossil fuel reform, where several efforts are in progress. The World Bank had only partial success in addressing exploration risk, primarily because price levels were not sufficient to incentivize investment. The public sector exploration model has not performed well; after 5 years, the project has struggled to disburse, and the exploration conducted has been modest. The risk mitigation facility has been operationalized, but as of February 2023, it has not been used, with only one state-owned enterprise undertaking preapplication processes and with no private sector applications. PPA prices have seen some improvement with a new regulation in 2022, but uncertainties and difficulties in negotiating PPAs remain. It is too soon to tell if prices under the new regulation will spur investment. PPA unpredictability remains a challenge to developers.

Although the lack of progress on geothermal power results in part from little progress on key constraints, it is not obvious that the World Bank could have successfully engaged more on the areas on these issues. The World Bank engaged on sensitive issues where it saw opportunities to do so and client receptivity. However, when these were lacking, the World Bank had little ability to influence the overall sector governance.

Indonesia Sustainable Banking

Private Sector Climate Action and Key Constraints

This case study covers efforts to encourage the financial sector in Indonesia to follow sustainable finance practices by adapting their operation and strategies to ESG frameworks, better measuring environmental and social risks through environmental and social risk management initiatives, and developing innovative financial instruments that channel climate-interested investors toward green projects.

The main constraints were (i) the lack of regulatory frameworks to rule and set expectations around sustainable finance, (ii) poor enforcement of climate-related regulations, (iii) low perceived value of ESG by financial institutions, (iv) lack of company level ESG strategies, and (v) lack of capacity to collect and process risk data.

World Bank Group Activities and Alignment

IFC initiated the Bank Group engagement on sustainable finance through advisory services (AS) to the financial sector regulator. This AS project was framed in terms of ESG, focusing on corporate governance, but adjusted its focus to support development of a sustainable finance road map and other frameworks and documents. IFC also convened the regulator and the central bank through the Sustainable Banking and Finance Network and provided training to a select set of banks and financial institutions to help them build their own monitoring systems. More recently, the World Bank engaged on sustainable finance through its financial sector DPF, with prior actions supporting the approval and implementation of sustainable finance regulations.

The Bank Group activities were aligned to constraints, although the Bank Group was not able to engage directly on enforcement.

Effectiveness and Success Factors

Indonesia has achieved significant progress in the enabling environment for sustainable finance, and the Bank Group has made important contributions to this work. The sustainable finance road map laid out a timeline for the

development of sustainable finance regulation, sustainable finance products, incentives for financial institutions, and coordination among government agencies. A core regulation laid out the foundation and national principles, defining guidelines for sustainability reports and outlining criteria and categories of sustainable business activities. These provided a reference for a green taxonomy, which has been approved as guidance rather than a mandatory document. However, progress on reporting by banks has been slower than was initially hoped. The World Bank DPF series changed its planned triggers and indicators to require reporting by only the largest commercial banks, and its indicators tracked reporting rather than compliance. There is little evidence yet on the extent to which reporting requirements are having an impact on behavior by the financial sector or real economy investments.

Nepal Renewable Energy

Private Sector Climate Action and Key Constraints

This case study covers Bank Group efforts to improve the enabling environment in Nepal for private sector investments in renewable energy. Although Nepal's power sector is dominated by renewable energy with low emissions, exports to India could substitute for fossil fuel power there.

Political instability has been the main reason for the underdevelopment of hydropower because it resulted in poor governance of the sector and prevented sector reform. The absence of a sound legal, regulatory, and institutional framework prevents private sector investments in renewable energy. Specific constraints included the following: (i) the law did not allow electricity trade or for private companies to export power; (ii) all risk was shifted to power plants through PPAs; (iii) consumer tariffs did not reflect the cost of electricity; (iv) system planning was insufficient; (v) hydrological, meteorological, and solar data were insufficient; (vi) river basin planning was lacking; (vii) road map for regional power integration was lacking; and (viii) environmental and social risk management capacity was weak. The weak financial viability of the national power utility was also perceived as a major risk in terms of the ability to honor terms of PPAs. Large hydropower was also constrained by availability of financing.

World Bank Group Activities and Alignment

The World Bank has conducted analytical diagnostics on sector barriers since 2009. The World Bank provided a technical assistance program to support generation capacity and to build consensus around the development of hydropower, which was a necessary precondition for reform. After the new constitution in 2018 and the elimination of power shortages, the World Bank moved to support electricity sector reforms and regional power integration using DPF. This work was well aligned to the main constraints.

Effectiveness and Success Factors

Bank Group efforts to improve the enabling environment for hydropower have been only partially successful because of turnover of decision makers and complex political economy. The DPF series supported the drafting of a new electricity act, which would liberalize the market and allow independent power producers to sell electricity to a wholesale market or to consumers without signing a PPA with the national utility. However, the key regulation for this reform has not been issued, and the electricity act has not been adopted by parliament. Other barriers remain, such as environmental and social bottlenecks to transmission grid development, slow approval and implementation processes for energy sector projects, and insufficient institutional capacity for reform. There was no private investment in large hydropower, and foreign direct investment in small-to-medium hydropower dropped to almost zero between 2019 and 2021 in part because of investor concerns on currency risk. Support for mapping solar resources was insufficient to increase solar photovoltaic investments as other sector-related barriers were not addressed, such as high capital costs, insufficient financing, absence of grid connection, and lack of skilled workforce.

A close policy dialogue with Nepalese governments and bureaucrats and close cooperation with multilateral and bilateral development partners helped ensure that the engagement was well aligned with constraints. The use of DPF to make progress on issues of pricing and PPA terms helped generate investor interest, even though investments were not made. However, DPF was not able to overcome strong political economy barriers, where key stakeholders preferred a public sector rather than private sector approach.

Guidelines on foreign currency–denominated PPAs were expected to attract more interest from foreign investors in large hydropower as these guidelines provided a new hedging instrument, but the instrument was not effective because of a lack of agreement on hedging premiums. The lack of World Bank success in completing downstream investment projects may have damaged relationships and credibility with government authorities. The risk allocation model that requires independent power producers to hold all risk (such as hydrological risk) also deters investment.

Nepal Sustainable Banking

Private Sector Climate Action and Key Constraints

This case study covers Bank Group efforts to introduce environmental and social risk management practices in the financial sector in Nepal, including requirements for businesses to disclose information on how they would mitigate adverse environmental effects (including greenhouse gas emissions) and adapt to climate change.

Initially, there were no requirements or incentives for businesses to apply environmental and social risk management when they applied for bank loans, and banks and financial institutions did not have skills to identify and manage environmental and social risks in their portfolio. There was also a negative perception of environmental and social risk management by banks.

World Bank Group Activities and Alignment

IFC engaged the central bank through the Sustainable Banking and Finance Network and conducted an AS operation to help the central bank develop and implement guidelines on environmental and social risk management. This included a capacity-building program to raise awareness, learning events, training, and developing technical resources. IFC provided additional technical assistance to the central bank to revise guidance. In close cooperation with IFC, the World Bank supported the agenda through a programmatic DPF series, with specific prior actions for revising guidelines to include climate risk and collecting reports from banks. These activities addressed the main constraints identified by IFC analytical work. The absence of a green

taxonomy remains a barrier for further greening of the financial sector, but this is being addressed by other development partners. However, the absence of green insurance policies is seen as a gap for catalyzing green investments by the private sector.

Effectiveness and Success Factors

The Bank Group engagement was successful in terms of improving the enabling environment because of the development and partial implementation of the environmental and social risk management guidelines. The guidelines were announced in 2018, but mandates were not applied for two years to allow banks time to build their internal capacity and raise awareness among clients. The guidelines became mandatory for the largest banks and financial institutions under a central bank decree in 2020 requiring banks and financial institutions to report on environmental and social risk management practices. In March 2023, the central bank published data on implementation progress on the guidelines, including loan values subject to environmental, climate, and social risk due diligence. However, no impact on private sector investments is yet apparent because of delays in banks in mainstreaming the requirements into their lending operations and insufficient enforcement of the guidelines. The central bank was not willing to fully implement the penalties and sanctions defined in the guidelines (in part because of the prolonged economic effects of the major 2015 earthquake), and consequently, as of December 2022, banks and financial institutions do not fully comply with the guidelines. Some banks feel that the lack of enforcement means that adopting the guidelines puts them at a competitive disadvantage because clients prefer to do business with a bank that does not impose onerous reporting requirements.

Rwanda Renewable Energy

Private Sector Climate Action and Key Constraints

This case study covers World Bank efforts to encourage private sector investment in grid renewable energy projects and off-grid solar systems.

Key constraints to renewable energy included the lack of a long-term strategy for power generation investment and grid extension planning. This resulted in a supply-driven approach where projects were closed via bilateral noncompetitive agreement, which deterred investment. For off-grid solar, constraints included uncertainty about the timing of grid expansion, lack of awareness for off-grid solutions, poor access to financing, low consumer affordability, and limited capacity for intermediaries to support off-grid financing.

World Bank Group Activities and Alignment

The World Bank supported a diagnostic on the potential for renewable energy and built technical, legal, and financial capacity of the public sector. The World Bank used a programmatic series of DPF to institutionalize least-cost principles, promote transition to low-carbon energy, and reform the government's electricity access program to include the private sector and off-grid solar. The World Bank used investment project financing to create a renewable energy fund, which sought to facilitate private sector investment in off-grid technologies, and life access to finance constraints through subsidized credit. These activities were well aligned with key constraints.

Effectiveness and Success Factors

The World Bank was effective in improving the enabling environment for private sector investment in renewable energy, and this contributed to new investment. The least-cost power development plan incorporated the private sector, and the safe institutional framework provided confidence to investors and helped attract new PPAs from private sector independent power producers. New generation contributed to a 31 percent decline in the cost of power over six years, and 10 new PPAs were signed.

The off-grid solar program was successful after addressing a significant constraint. The World Bank's technical analysis suggested that the renewable energy fund was most likely to be successful if funds could be channeled directly to medium-size companies, but the government preferred to work through state-controlled credit cooperatives, even though these lacked the technical capacity to manage a pipeline of off-grid lending. The World Bank approached this by approving the project containing funding windows for

both approaches but postponing the opening of the private sector window. After two years of operation, and the facility reaching only 1 percent of its target for new connections, the government allowed the use of the private sector window. The new window was highly successful, helping the project to achieve 265,067 off-grid solar connections.

Several factors played a key role in success. Upstream activities establishing a policy environment were greatly complemented by midstream activities, such as support to build institutional capacity, establish appropriate procedures, design clear standards for the off-grid industry, and provide financial solutions. The grid support was able to be conducted without the use of public guarantees.

Concessional finance played a key role in addressing household affordability constraints, allowing solar companies to provide services to lower-income households. This relied on donor finance, but for a fixed duration, working toward Rwanda's goal of universal access by 2024.

Türkiye New Renewable Energy

Private Sector Climate Action and Key Constraints

Although the case study considered Bank Group support for private sector enabling environment for rooftop solar photovoltaic, geothermal, offshore wind and establishing an emissions trading system, for brevity, this summary concentrates on the rooftop solar interventions. Key constraints for rooftop solar included (i) short duration of feed-in tariffs (10 years as compared with the 25-year life span of a rooftop solar system), (ii) lack of incentives for the residential sector, (iii) complex licensing and permitting procedures, (iv) lack of consistent technical standards, (v) insufficient consumer awareness, (vi) lack of financing instruments from commercial banks, and (vii) absence of third-party business models.

World Bank Group Activities and Alignment

The World Bank conducted gap analyses and sectorwide studies to identify priorities for improving the enabling environment. The World Bank approved a broad recipient-executed technical assistance program to develop a road

map for renewable energy in 2014, conducted a market assessment and road map development for rooftop solar in 2017, and delivered a more specific study on rooftop solar in 2019. The World Bank and government worked well together in an iterative engagement of diagnostics and follow-up, where analytical work was conducted alongside planning of government interventions to address the identified constraints. The Bank Group engagement was well aligned with most of the constraints, but there were some higher-order enabling environment barriers, such as volatile energy prices and macroeconomic uncertainties, that were not feasible to address because they would require economy and energy sector wide structural reforms.

Effectiveness and Success Factors

World Bank activities contributed to the removal of important barriers to the development of rooftop solar, especially the adopting of net metering, which substantially improved incentives for residential customers to install rooftop solar. Despite some increase in the rooftop solar installed capacity from 2020, these have led to a significant increase in rooftop solar. Most of the solar installed capacity has been from ground-based solar for self-consumption by industrial and commercial users (some, though, rooftop), and grid-connected solar parks. A planned World Bank investment project that would address barriers, such as complex approval procedures and the lack of uniform standards, in addition to providing financing to rooftop solar projects, was developed but is on hold.

Several factors supported progress. The World Bank was able to influence government actions using only nonlending activities because of trust and respect gained from prior engagement and lending projects in the energy sector, where the World Bank played a major role in supporting sector liberalization. The World Bank was perceived as a trusted partner and honest broker and conducted a long-term engagement while being attentive to government priorities and demand. The recommended approaches combined both upstream policy mechanisms (such as net metering) with midstream issues (such as awareness raising, procedure simplification, and financing mechanisms). The supported business models also do not rely on government guarantees or similar mechanisms (which increases the likelihood of

replicability). A major constraint has been the effect of macroeconomic conditions on financing. Financing for renewable energy is sourced mostly from domestic commercial banks, which borrow from international markets and lend to developers in foreign exchange. A very high inflation rate and rapidly depreciating currency have increased the foreign exchange risk, constraining financing.

Türkiye Energy Efficiency

Private Sector Climate Action and Key Constraints

This case study covers efforts to encourage private sector energy efficiency (EE) investments by industry through energy service companies (ESCOs), in green residential buildings and green organized industrial zones.

For general EE investments, the main barriers were (i) insufficient institutional capacity for managing the regulatory framework for EE, (ii) inadequate awareness of EE and perceived high technical and financial risks, (iii) lack of data and high costs in identifying EE investments, (iv) limited financier interest in EE, (v) volatile energy prices and macroeconomic uncertainties, and (vi) absence of a specialized agency for EE. For ESCOs, additional barriers were an incomplete legal and regulatory framework and the financial weaknesses of ESCO companies under the promoted shared savings and guaranteed savings ESCO models. Green buildings faced challenges of low awareness, limited demand for green mortgages, and a cumbersome system for energy performance certification. For green industrial zones, the main barrier was the lack of a national regulatory framework.

World Bank Group Activities and Alignment

The World Bank provided technical assistance support to the energy ministry through an investment project and a stand-alone technical assistance project to improve the enabling environment for ESCOs. Analytical work provided detailed analysis of the EE sector and paved the way for a productive policy dialogue. A programmatic ASA program supported a national energy action plan for increasing industrial EE. IFC used AS to develop a green buildings market and green industrial zones, with further World

Bank support on green industrial zones through investment lending. The World Bank activities were well aligned with the identified constraints and engaged with most of the constraints, except those higher-order issues, such as macroeconomic challenges and volatile energy prices, which were not easy to address. However, an important gap was the lack of support for ESCO-specific private insurance policies, which inhibited banks' willingness to finance ESCO companies. IFC work on green buildings was only partly aligned because the main barriers in the energy performance certification process were low technical capacity of auditors and insufficient data collection, monitoring, and verification, which were not identified in IFC's green building project Concept Note. IFC work on green buildings prioritized trying to gain market share for IFC's Excellence in Design for Greater Efficiencies certification.

Effectiveness and Success Factors

Improvements in the main legal framework for EE were driven by efforts to harmonize legislation with the European Union, with only modest Bank Group contributions. World Bank efforts to promote the ESCO market have been only modestly successful because financing barriers remain substantial. Banks require large corporate guarantees from ESCOs close to the amount of the project cost; bank loan interest rates are high, loan tenors are short, and ESCO balance sheets are not strong enough to meet banks' loan conditions. However, technical assistance has been successful in raising EE awareness, and World Bank engagement on institutional limitations started a productive policy debate that led to a partial institutional reform. World Bank-financed projects were successful in achieving their direct EE investments, but these achievements have not led to sustainable scale-up of EE investments beyond project closure. Although there is no overall data on private sector EE investments, the energy intensity of the economy has been relatively flat since 2013. The main constraints to EE investment are general macroeconomic issues, outside the EE sector. IFC work on developing a framework for green industrial zones has been successful, but it is too soon to tell if it will generate private sector action or not. IFC's efforts to introduce Excellence in Design for Greater Efficiencies certification for green buildings was not successful because other certifications had market dominance.



WORLD BANK GROUP
World Bank • IFC • MIGA

The World Bank
1818 H Street NW
Washington, DC 20433