



05

EVALUATION OF
IDB GROUP'S WORK
THROUGH
FINANCIAL
INTERMEDIARIES

GREEN LENDING

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ABBREVIATIONS AND ACRONYMS

CC	Climate change
CTF	Clean Technology Fund
DEG	German Investment Corporation
DEM	Development Effectiveness Matrix
EE	Energy efficiency
ESG	Environmental Safeguards Unit
ESMS	Environmental and Social Management System
FI	Financial intermediary
FMO	Netherlands Development Finance Company
GHG	Greenhouse gas
GL	Green lending
IDB	Inter-American Development Bank
IIC	Inter-American Investment Corporation
IFC	International Finance Corporation
MDB	Multilateral development bank
OECD	Organization for Economic Co-operation and Development
RE	Renewable energy
SCF	Structure and Corporate Financing department
SECCI	Sustainable Energy and Climate Change Initiative
SECO	State Secretariat for Economic Affairs, Swiss Government
TA	Technical assistance
UNEP-FI	United Nations Environment Programme-Finance Initiative



EXECUTIVE SUMMARY

Climate change (CC) is one of the most important global development challenges of our times, with significant present and future costs. Since 1901, the world's average temperature has risen at an average rate of 0.15°F per decade, a change that is already affecting infrastructure and people's livelihoods. Multilateral development banks (MDBs) and the private sector have recently been called on to join forces to play a greater role in scaling up the financing of climate change mitigation activities.

In recent years the Inter-American Development Bank (IDB) has given increasing priority to the financing of CC mitigation and adaptation, a priority emphasized in the Ninth General Capital Increase (IDB-9) in 2010. As part of this effort, the Bank has supported credit lines through financial intermediaries (FIs) to promote green lending (GL). Since 2008 and through the *PlanetBanking* initiative, the IDB has approved 17 operations (of which 12 have now closed) and disbursed US\$475 million for mitigation activities, mostly small renewable energy (RE) generation and energy efficiency (EE) projects.

Constraints facing both firms and financial institutions, as well as “externalities” affecting third parties, justify potential IDB engagement. Theoretically, firms face many incentives and constraints to investing in green projects. Firms would like to invest in green projects for a number of reasons: to increase productivity and seize co-benefits, to preempt regulation and obtain a competitive edge, to differentiate from other firms and access high-value-added markets, or to limit exposure to CC in the future. However, they face many challenges in effectively prioritizing green projects. For example, these projects typically involve new technologies whose costs and benefits are difficult to estimate. Also, funding tends to be associated with the firm's assets, so at any given time the firm's funding is fixed. Thus a green project may have a difficult time competing for scarce resources against other projects that correspond to the core business of the firm.

While FIs may have reputational and business incentives for lending to green projects, they also face significant constraints. For small and medium projects, banks tend to finance not projects, but clients, which are easier to assess. Banks are also not experts in evaluating green projects, especially because it can be challenging to measure costs, benefits, and risks in green projects. Thus FIs base their lending decisions on a client's characteristics, particularly its collateral. Small and medium green projects tend to have low-value collateral and thus are difficult to finance on the balance sheet. All this, combined with firms' prioritization constraints, means that GL projects are typically difficult to finance. To complicate matters further, projects that have significant externalities have private returns that are too low, so they are unattractive for investors. Many green projects fall into this category.

MDBs have a role to play in this context through both financial and nonfinancial instruments. With financial instruments, MDBs can subsidize activities that provide positive externalities through concessional lending, or they can reduce information asymmetries by supporting projects with demonstration effects through nonconcessional lending and guarantees. MDBs can also address knowledge-related market failures through technical assistance (TA), particularly if used to trigger financial innovation that may have a catalyzing effect on the green lending market.

This evaluation reviewed the general portfolio of green lending operations and looked in detail at 3 specific projects to understand (i) the role of credit lines as an instrument for CC mitigation and adaptation and (ii) IDB's impact in the three cases. From the 12 closed GL projects, OVE chose case studies in three countries in South and Central America. The cases were chosen so as to cover different instruments (loans vs. guarantees), different market sizes and different sustainability and energy policies and incentives. In these three countries, OVE visited client FIs and held discussions with staff in the treasury, sustainability, and credit departments. In addition, OVE visited 6 of the 19 unique subprojects of these three operations and held discussions with the beneficiaries.

The green lines reviewed did not contain a clear definition of objectives at either the project or the program level. The indicators tended to focus on financial aspects, and only one operation—which had benefited from concessional CTF funding—had a sector diagnosis. Similarly, there was no definition of objectives for the overall *BeyondBanking* initiative or for the facilities within which two of the three projects were approved.

The conceptual link between the intervention and any expansion of the green portfolio was weak in all three cases, and it is unlikely that the FIs' portfolios changed as a consequence of the IDB intervention. The loan operations specified that the FI would use the proceeds only to fund green projects. This approach not only ignored the fact that FI resources are fungible, but it was also complicated by the breadth of the eligibility rules (which were adhered to in all 3 cases) and the fact that the justification for the use of the proceeds occurred only after the disbursement was made. In the guarantee, while a risk-sharing scheme might be justified to correct biased perceptions of risk in the FI, in practice the FI that received the guarantee did not behave as if it had a misperception of risk. Indeed, it originated and assumed full risk for similar green projects. Moreover, in the few instances when the FI used the risk-sharing facility, it did so to guarantee the safest clients, presumably to minimize the financial costs associated with the use of the guarantee.

All three projects were implemented rapidly, with very few disbursements. Supervision costs were in line with those of other green lines and FI operations, which are generally less expensive to prepare and disburse than sovereign-guaranteed investment operations.

The FIs increased their engagement and green portfolio after the IDB operation. However, the increased engagement seems to have been a cause—rather than a consequence—of the IDB operation; it seems that FIs that were going to engage in sustainable projects sought IDB loans to secure other financial benefits. While this is not necessarily a bad outcome, it makes difficult to gauge the causal impact of the IDB intervention.

For the IDB, there seem to be two main sources of value-added, one financial and one related to safeguards. The financial support of the IDB in a moment of turmoil in the international markets seems to partly explain the FIs' preference for working with the Bank. In addition, FIs seem to value the IDB's support to upgrade their environmental and social management systems (ESMSs), including their ability to classify and evaluate green loans. The relatively high value placed on IDB support seems to derive, at least in

part, from the three FIs' interest in developing environment-friendly market niches. The ESMS reporting mechanism was in general perceived as adding little value.

The experience of the three FIs illustrates a few key elements of successful environmental finance that the IDB could use for future operations. In all cases, FIs succeeded when they identified a well-defined niche in the energy sector (RE and EE). They further developed a successful strategy to finance environmental projects (if possible, off balance sheet) so that they did not have to compete with projects in the client's core business. Champions within the FIs were instrumental in shaping the organizational change. Finally, the starting point was always an opportunity in the energy sector, which was driven by high energy prices.

Funding *per se* was not a constraint to FIs' investments in the GL market; the greatest potential was to be found in interventions that corrected information asymmetries or that promoted financial innovation. Given the novel, untested nature of many green projects, TA to bridge knowledge gaps is relevant. The development of new instruments and products that reduce the transaction costs of evaluating green projects, standardize green products, or grant access to other financial agents (e.g., capital markets) seem to be key to expanding the market for small and medium green projects.

If IDB is to use credit lines through the private sector to increase the number of green operations, it should consider redefining its intervention strategy. Specifically, since funding is typically not the main barrier to the expansion of green lending, OVE suggests moving from a model centered on the loan—and the conditions attached to it—to a model that is centered on the FI and places the emphasis on knowledge. Such a model would be more consistent with the market failures identified. In this framework, the loan becomes a means of developing a relationship, financing TA, and in some cases providing liquidity. However, the development goal is mostly secured by TA that bridges information gaps, develops a green lending market from the supply and demand side, and, ultimately, tackles the main market failures that hinder such investments.

To implement this intervention strategy, Management could move in the direction of establishing partnerships with FIs that are interested in pursuing green lending. In that partnership, the role of the loan and the technical assistance could be unbundled as follows.

- **Loan.** Use lending to establish and maintain a relationship with the client, and make it possible for the IDB to finance TA. Since marginal changes in funding are not linked with the origination of new projects, Management could reduce and simplify reporting—for example, by focusing safeguards review on the ESMS systems of FIs rather than specific sub-loans, consolidating reports when working with other multilaterals, limiting reporting to the main FI policies (financial, ESG), and, whenever possible, accepting the use of information that has already been prepared for other agents (regulators, etc.). In seeking novel ways to finance TA and knowledge transfer, the IDB may want to explore strategies other than a simple spread over a loan. Also, the IDB could boost innovation and obtain revenue from structuring fees of new products.
- **Technical assistance.** Knowledge transfer is key to bridging informational asymmetries. TA can take many forms, ranging from the provision of direct support

by IDB staff to hiring specialized consultants. It could be financed by the IDB on a non-reimbursable or fee-for-service basis, depending on the specific FI, the potential for market development, and the cost of the TA required. Four specific areas are examples of important areas to be supported through TA:

- **Alignment of incentives:** Helping the FI design adequate internal incentives to encourage credit officers to originate green loans. Aside from a specific financial incentive (an interest rate discount), FIs will need training and support to identify and assess green loans.
- **Reduction of transaction costs:** Helping FIs move from funding based on collateral to funding based on project income flows. To reduce information costs, project standardization through well-defined credit lines (e.g., boiler replacement, residential solar panels) could reduce the costs of project assessment, reduce the perception of project risk, and make it possible to securitize EE/RE small projects—allowing banks to tap into long-term finance from capital markets, including institutional investors. IDB could support the process of developing, piloting, standardizing, and securitizing products.
- **Measurement of environmental impacts and sustainability seal:** Helping FIs strengthen their ESMS. The IDB could work with other multilateral and bilateral partners to develop a sustainability seal that, ideally, could be used to grant access to multilateral and bilateral sources of green funding. Through TA the IDB could support banks in achieving certification. Gaining access to broader and presumably cheaper funding could work as an incentive for banks to adhere to the sustainability seal.
- **Knowledge dissemination and cross-fertilization:** Taking a leading role in ensuring the dissemination of best practices and other public goods (such as new financial products) across the region. There are potential gains from better integrating existing initiatives of the IDB Group and boosting cooperation across the private sector windows.

I. INTRODUCTION

- 1.1 **Climate change (CC) is one of the most important global development challenges of our times, with significant present and future costs.** Since 1901, the world's average temperature has risen at an average rate of 0.15°F per decade, a change that is already affecting infrastructure and people's livelihoods.¹ An unequivocal causal link between temperature increase and the accumulation of certain greenhouse gases (GHGs) has been established in the scientific literature.² This process has been proved to be anthropogenic, as GHG emissions are a typical byproduct of such activities as electricity generation, transport, and agricultural production. Multilateral development banks (MDBs) and the private sector, have recently been called on to join forces to play a greater role in scaling up the financing of climate change mitigation activities.³
- 1.2 **Since 2008 the Inter-American Development Bank (IDB) has increased its engagement on CC⁴** with the creation of the Sustainable Energy and Climate Change Initiative (SECCI), the prioritization of CC in the recent capital increase (IDB-9), and the creation of an internal CC division. In parallel, in 2010 the Bank's private sector window (the Structured and Corporate Finance Department (SCF)) created a special initiative (*PlanetBanking*) to support lending to financial intermediaries (FIs) for onlending to environmentally friendly projects.⁵ Through *PlanetBanking* IDB has approved 17 credit lines and guarantees for more than US\$700 million in 10 countries of Latin America and the Caribbean (LAC). The *PlanetBanking* line represents the main source of green lending (GL) in the private sector of the IDB.⁶
- 1.3 **This evaluation of green lending at the IDB is related to the recent evaluation on climate change (RE-359-1) by the Office of Evaluation and Oversight (OVE) and to its ongoing evaluation of the IDB Group's work through FIs (RE-486).** In 2014, OVE carried out an evaluation of CC that looked at the largest subset of the private sector projects, large energy efficiency (EE) and renewable energy (RE) projects in LAC. In that report, the typical private sector

¹ Melillo, J.M., T.C. Richmond, and G.W. Yohe (eds.). 2014. Climate change impacts in the United States: The third National Climate Assessment, U.S. Global Change Research Program.

² See IPCC, 2014: Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. IPCC, Geneva.

³ See UN, Report of the Secretary-General's High-level Advisory Group on Climate Change Financing, November 5, 2010. The literature on climate change distinguishes between *mitigation*—reducing emissions—and *adaptation*—building resilience and reducing the impact of climate change.

⁴ Ever since the creation of the Sustainable Energy and Climate Change Initiative (SECCI) in 2007, the IDB has committed more attention and resources to CC.

⁵ *PlanetBanking* was one of the special lines proposed within the broader *BeyondBanking* initiative, which “promotes sustainable social, environmental and corporate governance practices by financial intermediaries (FIs) in LAC.” See [Link](#).

⁶ In addition to the initiatives carried out by the private sector windows of the IDB, the rest of the IDB group has had significant engagement with lending to FIs for environmentally friendly projects. In terms of funding, the main lines are those approved by the public sector windows (in particular, CMF) with sovereign guarantees to different national second- and third-tier development banks. Because of the difference in incentives and structure, the treatment of these SG credit lines is deferred to OVE's companion evaluation of the IDB Group's Work through Financial Intermediaries (Approach paper, RE-486).

project reviewed involved senior debt under a project finance structure. The present evaluation complements the CC evaluation by looking at the market for financing smaller sustainable or green projects, where the IDB intervenes indirectly through FIs. In addition, by looking at the credit line instrument and its functioning in three specific cases, this evaluation also serves as an input to the upcoming evaluation of IDB Group work through FIs.

- 1.4 **This comparative project evaluation looks at three case studies, with the dual purpose of (i) understanding the role of credit lines as an instrument for CC mitigation and adaptation, and (ii) understanding the impact of the IDB operation on the three FIs.** In conducting the evaluation, OVE reviewed all 17 private sector green lending operations and carried out an in-depth comparative case study of three operations in different countries in Central and South America. Together, all the disbursed operations funded 74 subprojects. The three case studies contained 19 (unique) subprojects, of which OVE visited 6 as part of the evaluation.⁷
- 1.5 **The evaluation is organized in five chapters.** Chapter 2 discusses the theoretical framework of the evaluation: What are the main incentives and constraints for firms and banks to invest in green projects? And what is the role of multilaterals in helping overcoming those barriers? Chapter 3 presents the methodology of the study, and provides more detailed evaluation questions. Chapter 4 presents the main findings, and Chapter 5 concludes.

II. CONCEPTUAL FRAMEWORK

A. Firms' barriers to and incentives for investing in green projects

- 2.1 **The demand for green loans stems mostly from firms in the private sector.** The private sector's relationship with CC has several sides: the private sector is at the same time the main emitter of GHG⁸ and the main developer and adopter of mitigation and adaptation technologies,⁹ and it is exposed to great environmental, regulatory, and even reputational risks associated with CC.¹⁰ As a result, there are many motivations—other than purely altruistic ones—for the private sector to invest in mitigation.

⁷ We refer to "unique" subprojects as in some instances one subproject received several loans.

⁸ In fact, it has been shown that nearly two-thirds of historic carbon dioxide and methane emissions can be attributed to 90 companies, most of them private firms in the oil, gas, and coal sectors. See Heede, Richard, 2013, "Tracing anthropogenic carbon dioxide and methane emissions to fossil fuel and cement producers, 1854–2010," *Climatic Change* 122 (1-2): 229-241.

⁹ The issues of technology development and transfer in relation to mitigation and adaptation have been an important part of the CC debate. See, for example, UN, 2008, "Climate Change: Technology Development and Technology Transfer," mimeo. However, measuring mitigation and adaptation R&D expenditures in the private sector is difficult, given the problems of disentangling different R&D activities. See A.D. Sagar and J.P. Holdren, 2002, "Assessing the Global Energy Innovation System: Some Key Issues," *Energy Policy* 30: 465-469.

¹⁰ Many sectors are experiencing growing financial losses because of CC and thus are starting to measure the risks associated with it. See Ceres and Calvert, 2007, "Climate Risk Disclosure by the S&P 500," mimeo, www.ceres.org.

- **Increasing productivity and efficiency with mitigation co-benefits.** These investments are done with a purely profit-maximizing logic, independent of environmental considerations. A typical example is technological upgrading and EE interventions, including switching incandescent for LED lights at home, replacing energy-inefficient appliances, and retrofitting HVACs. These rank among the most highly profitable interventions in McKinsey's GHG Abatement curves.¹¹
- **Anticipating future regulation.** Anticipating regulation could help firms attain a competitive edge against other—more backward—competitors or simply smooth out the shocks of new regulation. In a world of constantly evolving environmental regulations (e.g., on water use and discharge), firms can see preempting the regulator as an opportunity or simply as a sustainability strategy.¹²
- **Attaining market differentiation, strengthening market positioning, or simply opening new high-value-added markets.** Consumers and regulators—typically in developed economies—are already requiring higher environmental and sustainability standards for access to their markets.¹³ This is true for many LAC exports, such as coffee and flowers. Thus firms may be interested in investing in green projects that could enable them to be certified as “green,” thereby increasing product differentiation, granting access to high-value-added markets, or both.¹⁴
- **Limiting future weather-related losses.**¹⁵ Especially if the worst future scenarios occur, CC will affect firms' bottom line directly through natural disasters (e.g., infrastructure losses) and productivity reduction (e.g., through droughts and floods). To manage these potential losses, firms may want to invest in specific adaptation technologies (e.g., drip irrigation, reinforced

¹¹ Marginal abatement curves are a useful tool to visualize the marginal cost of reducing one unit of pollution. In McKinsey's original abatement curve, actions are ranked according to the marginal cost per ton of CO₂ equivalent. Actions with negative abatement costs are actually privately profitable, even without pricing carbon. See McKinsey and Company, 2010, “Impact of the Financial Crisis on Carbon Economics. V.2.1. of the Global Greenhouse Gas Abatement Curve,” mimeo, p.8.

¹² Of all immediate climate risks, regulatory risks are the most important as they are associated with sudden short-term impacts. Although there has been difficulty in reaching national or global consensus on CC solutions, eventual regulation of GHGs is fairly certain, and companies are starting to act on this expectation. See Chapter 4 in A. Calvello, 2009, “Environmental Alpha: Institutional Investors and Climate Change,” Hoboken, NJ: Wiley.

¹³ For example, all bilateral trade agreements recently concluded by the European Union (including those with Central America, Colombia, and Peru) contain provisions on “Trade and Sustainable Development.” They include adherence to key international labor and environment standards and agreements, the prudent use of natural resources such as timber and fish, and the promotion of practices favoring sustainable development, such as corporate social responsibility. There are also specific requirements in the energy sector, such as the Renewable Energy Directive of the European Union, which imposes sustainability requirements on biofuels.

¹⁴ The last decade has seen a rapid rise in voluntary certification and labeling initiatives addressing environmental standards in a wide range of sectors, including agriculture, apparel, and footwear. See, for instance, Laura T. Reynolds, Douglas Murray, and Andrew Heller, 2007, “Regulating sustainability in the coffee sector: A comparative analysis of third-party environmental and social certification initiatives,” *Agriculture and Human Values* 24 (2): 147-163.

¹⁵ In fact, the UN Environment Programme Financial Initiative Report (the Freshfields report), states that there is an established link between ESG consideration and firm investment value. Because of this, monitoring CC risks is currently considered a fiduciary responsibility among institutional investors. See also Calvello, *op. cit.*

infrastructure).¹⁶ Partly because of such concerns, in recent years an increasing number of institutional investors have urged publicly traded corporations to assess, disclose, and manage climate risks.¹⁷

- **Seizing new business opportunities (and accessing new sources of financing) resulting from technological developments.**¹⁸ Technological developments have allowed by-products of agricultural activities (e.g., sugar cane bagasse, sawdust from forestry, cow manure from the dairy industry) to be used for energy generation. In all these activities, firms can exploit a formerly discarded by-product to generate heat or power and, in some cases, to mitigate an environmental liability (e.g., water discharges). In addition, “green” initiatives often allow access to new sources of funding from bilateral and multilateral donors.

2.2 **Although firms have these incentives to invest in green projects, identifying and prioritizing such projects can be challenging because of informational asymmetries and behavioral biases.**¹⁹ There is a solid amount of evidence on high-return investments that are not carried out. A famous example is the failure to replace incandescent lightbulbs, which the literature has called “the light-bulb paradox.”²⁰ Many potential reasons have been identified for this paradox, all involving some sort of asymmetric information—ignorance about the potential benefit of using the technology—or such consumer biases as biased preconceptions, myopic (time-inconsistent) consumers, shrouded energy costs, costly cognition, and biases for concentration (focus on large amounts as opposed to a small future stream of energy savings).²¹ Similar reasons may keep firms from investing even in projects with private return that exceeds the cost of

¹⁶ Physical risks associated with CC—drought, flooding, sea level rise, wildfires, and severe weather events—have the potential to affect every company, not just those subject to climate regulations (drought, for example, affects both thermal and hydroelectric power plants). See Calvello, *op. cit.*, Chapter 4.

¹⁷ See Calvello, *op. cit.*, especially chapter 4.

¹⁸ The OECD and the World Bank have been promoting resource efficiency as a way to foster economic growth with environmental sustainability. This includes, among other things, the treatment of waste and the use of by-products to generate electricity. See World Bank, 2012, “Inclusive Green Growth: The Pathway to Sustainable Development.”

¹⁹ A large number of studies have identified many potential EE investments that appear to be cost-effective but that remain unexploited, even though they would have significant impact on energy use and GHG emissions. See, for example, Jaffe, Adam, 1994, “The energy-efficiency gap: What does it mean?”, *Energy Policy*, Elsevier, vol. 22(10), pages 804-810, October; Brown, Marilyn, 2001, “Market failures and barriers as a basis for clean energy policies”, *Energy Policy*, Elsevier, vol. 29(14), pages 1197-1207, November; or Blumstein, Carl, and Margaret Taylor, 2013, “Rethinking the Energy-Efficiency Gap: Producers, Intermediaries, and Innovation.”, Energy Institute at Haas Working Paper 243, May.

²⁰ See Hunt Allcott and Dmitry Taubinsky, 2013, “The Light Bulb Paradox: Evidence from Two Randomized Experiments,” NBER Working Paper No. 19713, NBER: Cambridge, MA, and Jaffe, *Op. Cit.*

²¹ There are many factors that can lead to wrong consumer decisions. First, acquiring knowledge of a new technological process may be too costly. Consumers may then deciding based on rules of thumb (costly cognition). Second, the purchase of goods usually comes with a future stream of energy consumption associated. If consumers underestimate these shrouded energy costs (or do not value them properly), then they may end up making the wrong decision today. Third, the literature has also found a bias in favor of concentration. That is, people tend to focus on large one-off savings rather than in a stream of future savings. As EE typically works as a stream of small future savings, consumers may have biases against EE. For more details see Allcott, *Op. Cit.*

funds. Many green projects, partly because they are novel or untested, are affected by uncertainty and information asymmetries that result in underinvestment.

- 2.3 **Within firms, internal prioritization is related to both availability of funds and competition among projects.** In traditional financing, the amount of credit available to a firm is directly related to its balance sheet. This means that at a given point in time, the funds available to a firm are proportional to its assets and independent of its pipeline of investment projects. Thus projects need to compete internally for the limited funds. In this competition, “sustainable” and “green” projects seem to be at a particular disadvantage. First, especially in times of economic boom, firms tend to be biased in favor of investments that increase production and productivity against projects with similar effect on the bottom line that reduce costs. Most sustainable projects are about reducing the consumption of electricity and water and, ultimately, about reducing costs. Second, firms tend to prioritize projects that pertain to the company’s core business over projects that are related to other areas.²² For example, a coffee producer is more likely to invest in a new coffee variety than in introducing a new irrigation technology (e.g., drip irrigation). One way to break the internal competition for funds is to decouple project financing from the firm’s balance sheet.

B. Banks’ barriers to and incentives for funding green projects

- 2.4 **The supply of funding is served mostly by FIs, particularly banks, which also have their own incentives to support environment-friendly projects.** Banks have incentives to engage in green lending for reputational reasons and to develop new business opportunities. In addition, they may be enticed to invest in green lending if that allows them to tap into new concessional resources (e.g., bilateral and multilateral green funds).
- 2.5 **Banks tend to treat green loans like any other business line, basing their credit decisions on the risk profile of each client rather than on the specific project a client is investing in.** In a typical firm-bank relationship, the FI just looks at the assets of the firm and pays little, if any, attention to the individual projects the firm is investing in. This strategy simplifies operations and reduces costs to the bank. Thus many FIs do not have the in-house expertise to identify green projects and evaluate their profitability and risks. Their operation officers have limited incentives to originate the more complex green loans. Finally, from the financial standpoint it is not obvious that green projects, with their typically longer maturities, are optimally funded by deposit-taking institutions. Instead, these projects seem more appropriate for funding by other investors (e.g., capital market).

²²

Limited information about unfamiliar assets or opportunities has been proven to lead to a bias in favor of familiar investments. See Baker, Kent and John R. Nofsinger, 2010, “Psychological Biases of Investors,” *Financial Services Review*, Vol. 11, pp. 97-116; and Foad, H., 2010, “Familiarity Bias” in K. Baker and J. Nofsinger (eds.), *Behavioral Finance: Investors, Corporations, and Markets*, Wiley. Note that aside from the familiarity bias, investing in the firm’s core business may also be (at least partly) an optimal strategy if the firm has a better understanding of costs, benefits, and risks in projects related to its core business.

2.6 **FIs tend to base their credit decisions on specific project characteristics only in larger projects.** A key difference when funding a project is whether or not it is financed against the investor's balance sheet. Financing a project against its expected flow of income—a specific type of off-balance-sheet financing—has the advantage of not increasing the firm's debt burden and eliminating prioritization trade-offs. Thus this form of financing expands the market for green projects. Indeed, this type of financing (project finance) is the main way of funding medium and large infrastructure projects—including large EE and RE projects—that might otherwise be too expensive or speculative to be carried on a corporate balance sheet.²³ However, funding a project against its income flows requires a more sophisticated structure as it involves (i) a more thorough due diligence that analyzes all the actors and risks (e.g., off-taker, construction, operation), and (ii) a more detailed risk allocation structure among the participants. Given the relatively fixed transaction costs associated with structuring projects around their income flows, this form of financing is typically viable only for larger projects.

2.7 **As a result, financing constraints tend to be more severe in intermediate projects—precisely the range of most green projects (particularly EE and small RE projects).** Relatively small projects (under US\$100,000) are typically easily financed by the firms either directly or through their existing corporate credit lines. Large projects (US\$20-50 million and above) are typically financed with a highly leveraged structure that is organized around the project income flows. However, the intermediate projects—those that are targeted through FIs—are the ones that face the greatest difficulties. Though most green projects—certainly EE and small RE projects—have clear and measurable income flows, the high transaction costs of traditional project finance precludes using that form of financing for them. Thus it is more difficult to find financing for these intermediate projects, particularly if they must be financed against a firm's balance sheet.

C. Externalities as an additional constraint for green projects

2.8 The analysis of the demand and supply of green projects identified several constraints stemming from market failures—most related to information issues. In addition, **the presence of externalities poses an additional constraint to all but high-profitability green projects.** Green projects have environmental benefits (particularly reduction in CO₂ emissions) that markets do not price correctly (see Box 2.1). Until a scheme is set up in which externalities are fully priced, green projects will continue to generate benefits that investors will not be able to capture. This means lower private profitability, which may reduce the likelihood that projects will be prioritized and financed. In projects with high private profitability, the gap generated by the unpriced carbon is unlikely to be a deterrent. For instance, even without specific credit lines, firms typically undertake a number of EE actions (change in lightbulbs, retrofitting HVACs) only on the basis of their (high) private returns. But for some actions, private profits alone may not be enough to ensure investments (e.g., new renewables).

²³ For an introduction to project finance in the context of renewable energy projects, see Chris Groobey, John Pierce, Michael Faber, and Greg Broome, "Project Finance Primer for Renewable Energy and Clean Tech Projects," mimeo, n.d.

Box 2.1. The challenges of addressing the carbon market externality

GHG emissions are what economists call a negative externality—that is, an activity that imposes costs on others who do not have a say in its production. Burning fossil fuels to produce electricity or raising cattle releases GHG emissions into the atmosphere. The agent responsible for these emissions does not bear any cost and thus produces too much of them, causing GHG to accumulate in the atmosphere and temperatures to rise. The extent of this externality—a form of market failure—is such that one observer described CC as the result of the “greatest market failure the world has ever seen.”^a

There are essentially three strategies for correcting an externality: (i) establishing clearly delimited property rights and letting agents bargain among themselves^b; (ii) adding a “pigouvian” tax to the production of carbon to discourage the production of carbon^c; and (iii) a fully *dirigiste* command-and-control strategy of telling each economic agent exactly how much to emit. In practice, only the first two options are implementable^d the first under a scheme of carbon markets and the second under a carbon tax.

An added level of complexity is the transnational nature of the externality. Both carbon taxes and carbon prices have been devised under the assumption of a single authority capable of setting the rules in a single market. In the absence of a world government that can uniformly tax all economic agents or create a world market for emissions, implementing either solution gives rise to a number of additional challenges, ranging from coordination failures to race-to-the-bottom between different jurisdictions. These challenges explain why it has been so difficult to arrive at an internationally binding agreement curtailing emissions.^e To date, attempts to set carbon markets have been generally unsuccessful, yielding carbon prices well below the theoretical cost of carbon.^f

Although these solutions require the state to set the rules of the game, they are both ultimately based on providing the right incentives to private agents. In that regard, it is ultimately the private sector that invests in “clean technologies.”

^a Nicholas Stern, 2007, “Stern Review: The Economics of Climate Change”, Cambridge: Cambridge University Press, p. viii. The argument is that externalities apply exclusively to mitigation; adaptation CC (in principle) consists mostly of private actions with no externalities.

^b Ronald Coase first described this strategy in his seminal 1960 paper “The Problem of Social Cost,” *Journal of Law and Economics* 3 (1): 1-44.

^c This idea was first proposed by economist Arthur Pigou in “The Economics of Welfare” (1920).

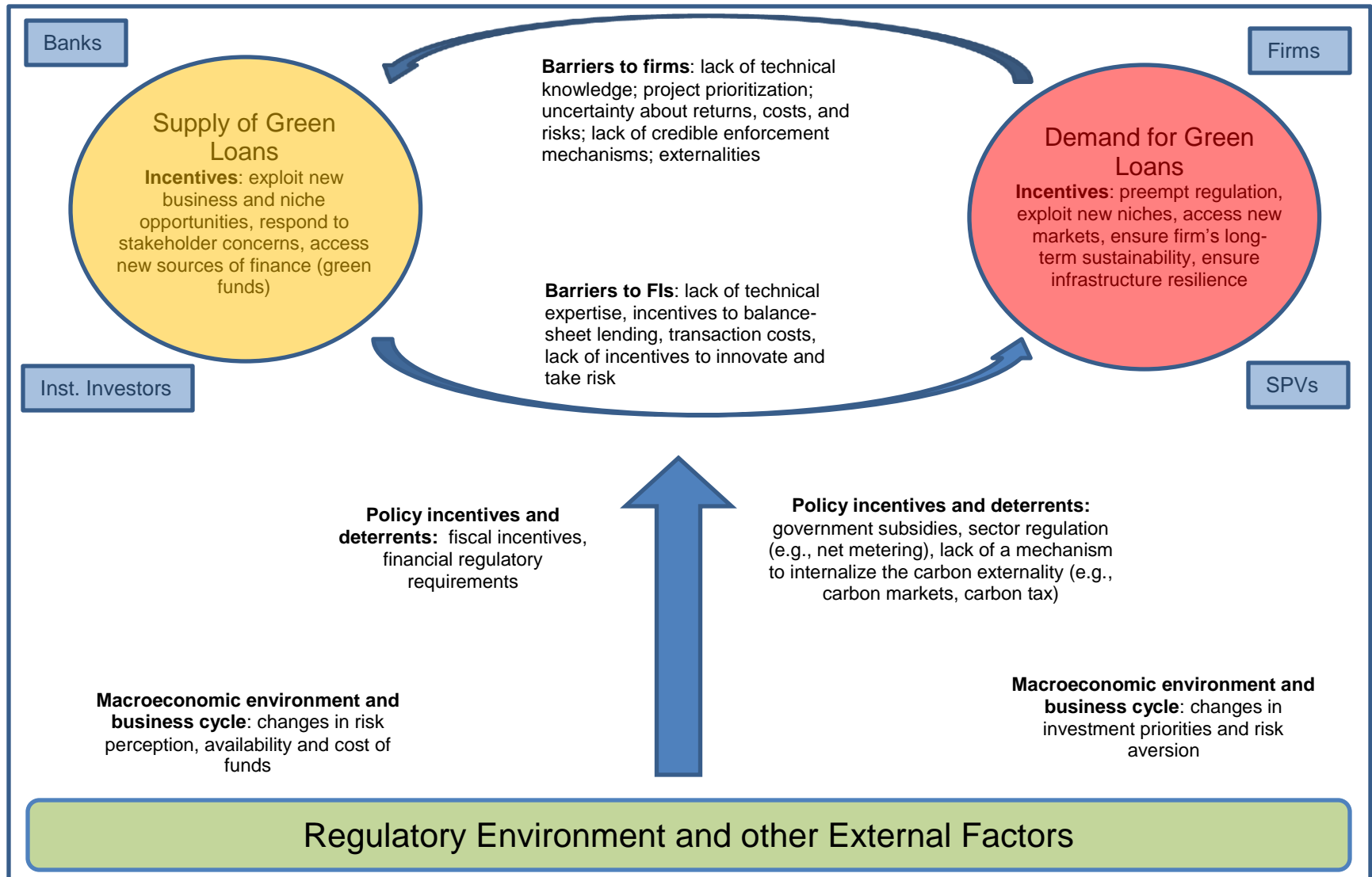
^d Full command and control would require unreasonably large amount of information about firms’ technologies and consumer preferences.

^e For a theoretical perspective on CC negotiations, particularly in relationship to other externalities and the difficulties of collective action, see Bartlett, Scott, 2013, “Why Cooperate?: The Incentive to Supply Global Public Goods,” Oxford: OUP.

^f The High-Level Advisory Group on Climate Change “emphasized the importance of a carbon price in the range of US\$20-US\$25 per ton of CO₂ equivalent in 2020 as a key element of reaching the US\$100 billion per year [investment target].” In 2014, the carbon price in the European market was around €5-7 per ton of CO₂, and carbon prices in California ranged around US\$11-12—both prices that are well below those assumed by the High-Level Advisory Group and also well below the social cost of carbon estimated by Stern (2007), US\$85 per ton of CO₂. A proper estimation of the social cost of carbon is theoretically and methodologically challenging, so these estimates should be taken with a grain of salt.

2.9 **Figure 2.1 summarizes the previous discussion, showing the specific opportunities and challenges facing participants in the green project market as well as the added challenges stemming from the carbon emission externality, regulation issues, and so on.**

Figure 2.1. The green project financing market



D. How MDBs can address market failures affecting the market for green projects

- 2.10 The existence of market failures is the only reason for an MDB to intervene with direct funding to private sector institutions.** If markets worked efficiently, every project with a rate of return that exceeds the cost of funds would be funded by the private sector. In such circumstances, the involvement of a multilateral would be not only superfluous, but actually deleterious.²⁴ In practice, however, many projects that have high returns end up not being financed because of market failures such as those discussed in the previous paragraphs: externalities (e.g., carbon emissions), missing markets (e.g., lack of a market for long term-financing), or information asymmetries (e.g., lack of knowledge/certainty about the project technology, costs, and benefits/risks; behavioral biases).
- 2.11 Working with FIs, MDBs may use a battery of instruments, including financial instruments (non-concessional lending, concessional lending, guarantees, and equity) or nonfinancial instruments (technical assistance).** In general, the design and use of each instrument depends on the market failure MDBs are trying to correct.
- 2.12 There is a role for a concessional lending instrument to subsidize investments in the case of externalities (e.g., a carbon emission externality).** At least theoretically, an MDB could use concessional funds to increase private returns on a socially optimal mitigation project to induce investment (see Annex I).²⁵ This type of intervention would call for a loan that was concessional in terms of interest rate, grace period, or maturity.²⁶ Though concessional lending is appropriate for a case of carbon market externalities, its use is subject to great limitations, given the amount of mitigation needed worldwide and the limited availability of concessional resources.
- 2.13 Non concessional lending has a very limited role in correcting some market failures either by credibly revealing information or compensating for missing markets. It does not have a role in mitigating the carbon emission externality as it cannot help close the gap between private and social profitability. The role of non-concessional lending is much more limited, and less clear, than that of concessional lending.**
- A first rationale for non-concessional lending occurs when there is a need to reveal investment profitability information to the market, particularly when other ways of revealing information (e.g., dissemination, technical assistance)

²⁴ If an MDB lends where no market failure exists, it provides an artificial advantage to a specific market participant in detriment to the rest, thereby reducing competition. Paradoxically, this can create a market failure.

²⁵ In correcting externalities, subsidies are more effective if they are applied to the action causing the externality (e.g., energy production/consumption) rather than subsidizing capital investments.

²⁶ We do not use the restricted definition of concessionality that refers only to the interest rate of the loan. We use the IMF definition, which is based on the difference between the net present value and the face value of a loan. In that sense, interest rates, grace periods, and maturities all affect the net present value of the loan—given a discount factor—and concessionality can be achieved by altering any of the three.

are not credible. More specifically, by funding a profitable green investment, MDBs may provide a demonstration effect, showing that these types of projects are viable and catalyzing new investments. A crucial assumption regarding demonstration effects is that the MDB has more information than the market, and thus can better identify risks and benefits. Guarantees can also be used, at least theoretically, to directly correct the risk perception of the project.

- A second rationale for non-concessional lending occurs when no investor is willing to finance the project at any interest rate. Arguably, MDBs can step up and “create” this missing market. However, missing markets tend to be the exception rather than the norm. Most of the times it is not that there is a missing market but rather that given project characteristics (returns, risk) the cost of funds so high that the project becomes financially unviable. Though both in the case of the missing market and the one in which the project is optimally priced-out the result is the same (i.e. the project is not funded), there is a crucial difference to the relevance of an MDB intervention. In the first, an MDB intervention compensates for a missing market and improves the welfare of the society as a whole. In the second, it results in funding projects that have been optimally unfunded by the market, creating a market distortion. In sum, the relevance of an MDB depends critically on establishing the reasons funding is not available in the first place.

- 2.14 **Equity investments have a role to play in the context of market failures derived from high levels of risk or uncertainty.** Particularly in projects with high initial investments and long-term returns, uncertainty or high levels of risk might make it difficult for investors to attract the desired capital. This situation is typical of high-tech, innovative ventures, particularly as there is uncertainty about future income flows. Through equity investments MDBs can address market failures while diversifying their own portfolios.
- 2.15 **Even when solving market failures, providing capital or lending to specific market participants raises equity considerations.** Even in the presence of market failures, direct interventions that provide funding or capital to specific firms raise the question of the selection of the specific partners. Market-enabling interventions have the advantage of not choosing specific winners and, instead, promoting the environment in which the market failure can be resolved.
- 2.16 **A related difficulty with market failures is that sometimes they result from government regulation and policies.** For instance, the lack of markets for long-term debt (including the lack of a mortgage market) denominated in domestic currency often has to do with previous monetary, fiscal, and exchange rate policies. The policy implication is that market failures caused by the government are effectively addressed through the public sector, correcting the necessary policies, rather than supporting specific agents in the private sector.
- 2.17 **Many market failures, particularly those related to knowledge and information can be better addressed through technical assistance (TA).** When information asymmetries and biases affect the supply and demand of green loans, TA can bridge informational gaps, correct behavioral biases, or contribute to aligning the internal incentives of either firms or FIs. This type of intervention would be provided internally (by the staff of the multilateral



organization) or through external consultants in either a reimbursable or non-reimbursable way.

- 2.18 **As recent experience illustrates, key to expanding green lending is financial innovation that reduces transaction costs.** A number of developed countries have recently boosted green project investment by resorting to innovations, mostly financial (see Annex III). Successful strategies have involved designing products that took an off-balance-sheet approach. In order to overcome the problem of fixed transaction costs in smaller projects, the key was innovation. For instance, there are experiences involving reduction in transaction costs through standardizing EE products. Aside from reducing assessment costs, standardization introduces the possibility of securitization and the development of a green derivatives market—expanding the pool of funding available to finance green projects and introducing capital markets to green project finance (see the discussion of SolarCity and IDB’s own experience using TA to develop green bonds in Annex III).
- 2.19 **Additionally, organizational innovations have recently been used to reduce the costs of green loan origination.** As discussed above, FIs typically are not specialized in the origination, funding, and supervision of green loans. This lack could be overcome through structural changes to increase an FI’s ability to deal with green loans, reducing FI operational costs—for example, improving the incentives for credit officers to originate credit loans, developing technical knowledge and expertise on green projects, or upgrading environmental safeguards systems both to identify green operations and to avoid reputational risks. Policy options might be to provide TA for funding structural changes case by case, or to support the creation of a dedicated FI with the purpose of originating green loans (this approach proved successful in the United States see, e.g., Connecticut Green Bank, Annex III).

III. METHODOLOGY

- 3.1 **This comparative project evaluation has the dual purpose of (i) understanding the role of credit lines as an instrument for CC mitigation and adaptation, and (ii) understanding the impact of the IDB operation in the three chosen FIs.**²⁷ Following the approach paper for the evaluation (RE-487), the first evaluation question asks what conditions make GL credit lines a suitable instrument to achieve the CC mitigation and adaptation development goal. The second question refers to the three cases studied and explores the degree to which IDB intervention altered the strategic portfolio decisions of the FI with respect to green loans. Are FIs doing more green loans? If so, can that change be attributed to the IDB?
- 3.2 **To answer both questions, OVE conducted an in-depth comparative analysis of three green lending projects.** OVE chose cases in three countries that allowed the team to understand the IDB’s impact on the FI: the FI’s origination and supervision of new green loans, the financial considerations

²⁷ This evaluation supports OVE’s recent assessment of CC at the IDB (RE-459) and the ongoing evaluation of all the credit lines to FIs approved between 2005 and 2014 (RE-486).



associated with working with the IDB, and the strategic development of green products. The criteria for choosing the three case studies—a 25% sample of the projects that reached financial closing—weighed three key elements: variation in the type of instrument (loan, guarantee), variation in financial market size and complexity (large and sophisticated vs. small and highly regulated), and variation in the extent to which incentives for sustainable investments existed (e.g. high sustainability commitment vs. few explicit incentives). The case studies inform the specific projects and support deductive generalizations that are then validated with the additional portfolio review (see Annex II for more on methodological issues). OVE also reviewed all the subprojects financed with the GL portfolio, and visited 6 of the 19 unique subprojects supported through the case studies.

- 3.3 **A main theoretical difficulty in evaluating GL is causally linking IDB funding to a development outcome.** Establishing the link between funding and the subprojects is empirically intractable as resources are fungible. An FI's investment allocation decisions are made on the basis of the aggregate structure of its liabilities (e.g., maturities, currencies); they are not based on a particular source of finance. This is particularly true for sources like an IDB loan, which is small relative to the FI's overall liabilities. Unless other constraints are added, FIs would typically invest IDB funds exactly as they would invest their own funds. Therefore, OVE's review focuses on the eligibility and disbursement conditions built into the projects, and particularly on the extent that these constraints have been binding for the FI.
- 3.4 **In the following section we discuss the comparative findings of the three case studies. For the individual details of each case study, refer to the Case Study Annex.**

IV. FINDINGS

A. Relevance and design

- 4.1 **The objectives of the *PlanetBanking* initiative were broad, and no results framework or indicators to track progress were provided.** All three programs claim to be consistent with the *BeyondBanking* initiative in general, and two of them explicitly state congruency with *PlanetBanking*. However, only one project states the objectives of the initiative: "*to respond to climate change by reducing the direct and indirect footprint of FIs.*"²⁸ In general, the objectives of *PlanetBanking* are found only on SCF's dedicated webpage.²⁹ However, there is limited information about how the objectives will be achieved and, in particular, how the instruments at the Bank's disposal match the objectives of the program.
- 4.2 **When the loan was part of a broader program/facility, the program's objectives and goals were not clearly established.** Two operations were

²⁸ Loan Proposal, p. 15.

²⁹ These are to (i) promote environmental initiatives in FIs in LAC, (ii) strengthen awareness about the environment, (iii) support the opportunity to finance environmentally friendly projects, and (iv) support FIs in creating and developing green products and financial services. [SCF webpage](#) accessed on October 15, 2015; own translation.

approved as part of a broader private sector program. Neither the rationale for approving these operations within a program nor the objectives of the program were clear in either operation. The documentation for one operation mentioned that the program was a “pilot,” but OVE concluded that its relevance as a pilot was limited because it did not identify the hypothesis to be tested or an evaluation strategy to enable learning from the pilot experience.³⁰

- 4.3 **Either the diagnosis and justification for the IDB intervention were missing or the vertical logic was weak.** Only one project that had specific concessional funding (CTF) attempted to provide a link with the CC externality (Table 4.1). One operation did not explain the constraint affecting the client FI or the rationale for using the chosen instrument. The other two provided alternative explanations for intervening: lack of long-term finance and lack of knowledge of FIs and potential clients. However, only one of them attempted to link the IDB intervention to the solution, proposing to target lack of GL experience with a guarantee to provide “demonstration effects” to the market. This operation is also the only one that had some analysis of the market for green loans and constraints—though it was contained in the documents of other partners (CTF). Finally, except in the Bank 2 case there was no attempt to link the operation with a discussion of the CC externality. Notwithstanding these findings, it should be noted that the case-study projects were approved earlier in the period. Since 2014 management has incorporated some new toolkits to improve diagnosis and M&E in their projects.

Table 4.1. Diagnosis analysis

Operation	Implicit rationale for the intervention	Instrument chosen discussed?	CC externality discussed?
Country X	Lack of long-term finance; lack of knowledge of FIs.	None provided	No
Country Y	Lack of knowledge of FIs and firms.	Yes (for both the technical cooperation and the guarantee)	Yes
Country Z	None provided	None provided	No

- 4.4 **In two of the three operations OVE could not find clear ex-ante evidence of a link between the IDB intervention and a market failure.** In none of the three case studies could OVE clearly identify how the intervention addressed a market failure. In one case, OVE verified the existence of markets for the maturities/currencies of the IDB operation. For the guarantee, the implicit assumptions of the intervention—that all the FIs in the country have an incorrect perception of the risk of EE projects, and that the IDB has the correct perception of that risk—was not explained or justified in the text and seems to contradict FIs’ revealed behavior. The third case, a mid-size bank in a small market, seems to

³⁰ OVE, 2011, “2011 Evaluability Review of Bank Projects,” Box 4.



be the only one in which there is some evidence of market failures (missing market for funding at the needed maturities/currencies).³¹

- 4.5 **From the FIs' side, in all three cases there was a clear motivation for seeking a green line from the IDB. Aside from purely financial motivations, the main driver in every case was the existence of an FI strategy to develop an energy-related business niche (EE or RE).** Indeed, all three FIs already had significant engagement with EE/RE projects before the IDB operation. In every case, this engagement was motivated by high electricity prices and, to a lesser extent, regulatory arbitrage opportunities in both the energy and financial sectors. Aside from projects in EE and RE, no other “sustainable” investment was supported.
- 4.6 **Before the IDB intervention, all three FIs had a strategy that typically identified a business niche (e.g., small hydropower, standardized industrial EE, or residential self-generation) and a product (typically off-balance sheet) to serve it (e.g., project finance, leasing).** One of the institutions deepened its expertise in small and mid-size RE projects under project finance structures. Another specialized in distributed generation at the large residential and small commercial level—taking advantage of regulatory opportunities (net metering pilot) and sharp discontinuities in the residential-industrial tariff. A third developed a specific leasing model to finance industrial EE, particularly boilers, taking advantage of fiscal benefits and operational convenience.
- 4.7 **Projects seem to be driven more by the FI strategies than by an IDB business strategy.** The three FIs were very heterogeneous in terms of size (assets) and sector expertise; they ranged from one of the largest local groups in LAC to a medium-sized bank in a small economy. This seems to point at no explicit IDB strategy. In addition, the reasons behind the choice of partner are discussed in only one IDB project document. Instead, the three FIs seem to share their previous (i) interest in green/energy sectors, and (ii) experience working with multilaterals/bilateral in green projects.
- 4.8 **Though the indicators provided in the DEM are virtually the only way of eliciting IDB intentionality, they were often poorly defined and tracked.** None of the three projects were required (or had) a results framework. However, the IDB's intentionality can be deduced from the indicators provided in the DEM. Unfortunately, the vast majority of the weight in the DEM is placed on subjective judgments on alignment with strategic IDB objectives and private sector development. All projects do contain four common indicators that focus on the financial aspects.³² Projects contained another two to four indicators that aimed

³¹ Medium and large banks in the country regularly issue debt in local currency to satisfy short-term requirements, but long-term financing is generally uncommon. As a result of the high level of financial dollarization in the country, off-shore emissions are a feasible source of financing, but are also restricted to the largest intermediaries. Note that, though a case could be made to justify direct lending, this operation can hope to provide only temporary relief to a single market participant. This raises other efficiency and equity concerns about providing relief to a single market participant in a context of a market failure that is caused by regulatory issues and that affects all market participants.

³² All projects reported on return on equity (ROE), return on assets (ROA), Non-performing loans as a share of the portfolio (NPLs) and economic rate of return (EROE). EROE is measure that tries to capture the economic benefits of the private project by making an adjustment on the pure financial profitability measures.

at measuring the extent of the facility use (e.g., number of new loans, additional amounts in the sector). Aside from that, only one project contained a single development outcome indicator (percentage reduction in electricity consumption), and it was not tracked during execution.

- 4.9 **In the loans, the choice of instruments does not seem to be related to the attainment of a development outcome.** Both loans have a very weak link between the actual disbursement and the use of proceeds. The disbursement occurs first under a commitment to apply the funds according to eligibility criteria that are only broadly defined. Moreover, even the loan that anticipated more than one disbursement did not contain provisions conditioning successive disbursements on fully justifying the use of the proceeds of earlier disbursements. Subprojects reported are allowed to change, and do change, between different reporting dates. As a consequence, it is not possible to link disbursements and the existence of a green portfolio.
- 4.10 **In the partial credit guarantee, the rationale for the operation is plainly contradictory with the way the facility was structured.** The logic was that the existence of information asymmetries led FIs to have an incorrect (higher) perception of risk. By reducing the amount of risk borne by the FI, the argument goes, the operation encourages the FI to invest in these projects; and the loop closes when the FI learns about the true risk from its experience. In actuality, the facility structure and use responded to a financial logic. According to the client, the choice of instrument (guarantee) was exclusively driven by pricing considerations. This is consistent with the use of the instrument that minimized financial costs by guaranteeing the safest loans. Finally, as the loan document makes clear, concessional funding was added not for any development reasons but to make the facility financially viable.

B. Implementation

- 4.11 **All three operations were relatively simple to prepare and disburse.** The two loans had quick disbursements upon signature, and the guarantee had virtually no transactions upon becoming effective.
- 4.12 **Costs were typically low and income high.** On average, the preparation and execution costs of these three projects were in line with the broader GL and FI portfolios: compared with the Bank's public sector operations, they cost roughly one-fifth as much to prepare, and one-tenth as much to supervise. Two projects cost US\$60,000 to prepare, with a relatively higher share of the costs in preparation than in supervision. The preparation and supervision costs of the third project were double those of the other projects, because it required more attention and the institution was the weakest and smallest of the three. Two operations generated significant income to the IDB (total cost-to-income ratios of 1% to 5%); for the third, as has been noted, the income was very low because the facility was underused.
- 4.13 **The three loans had similar eligibility conditions for the subloans though conditions seem to become more specific in newer operations** (see Box 4.1). Indeed, the oldest operation simply enumerated a number of eligible sectors. The two later operations benefitted from the development of SCF's

Generic Eligibility Guidelines (see Box 4.1). While there seems to be some advance in terms of specificity of eligibility conditions and indicators, the Guidelines continue to allow a broad array of projects to be eligible.

Box 4.1. IDB Private Sector Eligibility Conditions for Subloans

The GL operations that reached financial closing had eligibility criteria that broadly correspond to the standard guidelines for sustainable finance developed by SCF in 2009. These guidelines group potential activities that fulfill financing requirements in four broad categories: renewable energy, energy efficiency, cleaner production, and sustainable buildings. In some cases, with IDB approval, the client was allowed to apply and modify these eligibility criteria (typically 6 months after the effective date).

According to the loan agreements, minimum criteria identify potential green loans in 13 areas: EE, RE, sustainable biofuels, sustainable biomass, sustainable transport, sustainable tourism, sustainable buildings, sustainable agriculture, forestry, water and waste management, materials savings, environmental certifications and other green projects (projects that may be submitted to the IDB on a case-by-case basis to determine inclusion).

In all, even though the guidelines set forth specific criteria in each of the eligible categories, the very number of these categories and the possibility of reporting projects on a case-by-case basis hamper the adoption of portfolio changes at the bank level. Moreover, no process of verification of many of the conditions is required as part of the eligibility requirements.

- 4.14 **In practice it is difficult to link the IDB operation and the subprojects.** In both loans the mechanism to “ensure” that the proceeds went to the intended sectors was a promise made at the moment of disbursement that the proceeds were going to be used according to the use-of-proceeds clause. In the oldest contract, this clause merely listed nine sectors (RE, EE, cleaner production, and so on); the newer contract includes a more detailed list. In practice, both loans disbursed shortly after achieving eligibility. The oldest loan justified the whole A-loan amount, while the newest loan—although it has been fully disbursed for over two years—has yet to justify part of the funds. Even for the justified part, the loans reported changed over time, and some of the projects to which they were related predated the credit line. Thus, linking the disbursement and the project is difficult. The case of the guarantee is different, as a guarantee is by definition linked to a specific project.
- 4.15 **Two of the three operations underused the facility.** The only operation that fully used the facility was the oldest operation, which had weaker eligibility requirements. The other loan used only 78% of the facility and, of that, 50% was devoted to a single RE project. For the guarantee, there is limited demand for the facility because of the availability of competing products (some of them supported by the IDB through other windows), changes in the macro and regulatory environment, and changes in the business strategy of the FI. As a consequence, only 6% of the facility is being used.
- 4.16 **There seems to be evidence of strategic reporting behavior.** At least one of the FIs has a much broader portfolio in eligible green loans that it has chosen not to report to the IDB facility—even when it has funds yet to justify.
- 4.17 **Safeguards were implemented thoroughly, and mostly without major difficulties.** Here again the three institutions had very different levels of capacity. One of them had sophisticated ESMS in place as part of its business and investors strategy; for this institution, environmental information was rather

comprehensive, even at the subproject level. One institution was deemed to have an acceptable ESMS and was required to take some actions on the mortgage tranche, but not on the green loan side. These two institutions implemented safeguards satisfactorily and with few difficulties. The situation was slightly different in the third case. In execution, it was noted that the FI had significant difficulties complying with the IFC standards that it had contractually accepted. IDB reacted by providing partial financial support for hiring a specialized consultant. Following the report, ESG communicated to the client gaps in environmental aspects related to the windfarm subproject, and the client is working with the final beneficiary to solve them.

- 4.18 **The Project Supervision Reports mostly focus on the financial and fiduciary (covenants) aspects of the operation.** They contain very limited information on development outcomes.

C. Results

1. Outputs

- 4.19 **In terms of outputs, the three projects supported a combined portfolio of US\$50 million in 19 unique projects.**³³ The largest subproject—a windfarm—took about 40% of the resources. On the whole, 73% went to fund RE projects (windfarm, micro-hydros), 24% financed EE projects (industrial, construction), and the remainder (3 projects) financed sustainable agriculture and wastewater treatment. As for the environmental impacts of the subprojects, GHG emission mitigation is quantifiable only for the large RE projects. In that regard, the windfarm mitigates about 51,000 tn CO₂ eq. annually (roughly equivalent to what is generated by 1300 households in Washington, DC, 0.4% of the total households).³⁴
- 4.20 **Subloans tended to concentrate on actions that were privately profitable, even with the carbon emission externality.** OVE classified the subprojects according to the actions listed in McKinsey’s abatement curve, which includes the marginal abatement cost by type of intervention. From this exercise, it emerged that 73% of the subprojects corresponded to actions that have “negative” abatement cost. This implies that they are privately profitable even when the externality is not priced. The fact that the majority of the subloans were independently profitable is consistent with the idea that the GHG emission externality was not a major obstacle for investing. It is also consistent with the fact that FIs used non-concessional loans to fund them.
- 4.21 **None of the three loans had subprojects in transport, though this is one of the most relevant sectors for GHG emissions.** Given the importance of transport in LAC emissions (see IDB CC evaluation), the absence of transport subprojects in the IDB’s private sector windows is notable.

³³ Some subprojects had more than one loan/guarantee. There were a total of 26 loans/guarantees.

³⁴ Based on the estimation of GHG emissions mitigated by the project (2014 Project Supervision Report), the estimation of household emissions for the District of Columbia from Berkeley University, and the number of households from the 2010 US census.



- 4.22 **All the subprojects visited by OVE correspond to the guidelines, can genuinely be considered green loans, and typically have achieved their objectives.** The reported loans corresponded to what the guidelines intended to finance. To the extent that objectives were reported and OVE could verify, the subprojects generally achieved their objectives (see Annex V).

2. Outcomes

- 4.23 **Whether changes in funding can alter FIs' investment decisions is difficult to gauge.** One element that seems conceptually to be important is the “strength” of the eligibility condition. Though the IDB intervention model is never explicitly stated, the implicit model seems to be centered on a disbursement that is then justified with a portfolio of loans. Given a nonbinding condition, additional funding simply expands the Bank portfolio in the same direction it would have been expanded if no condition were added (see para. 3.3). A crucial element in determining whether this intervention strategy (a credit to expand a certain type of portfolio) causes a development impact is to have a well-defined and binding constraint.
- 4.24 **For the three green lines reviewed, it seems unlikely that the IDB intervention imposed a binding condition or otherwise changed FI behavior.** As has been noted, all three FIs already had green business niches and were working with a well-defined business strategy by the time the facilities were approved. In addition, as discussed above, the eligibility conditions were particularly broad and the projects that had more stringent conditions either could not justify the full use of proceeds or used the guarantee only to a limited extent. Also, the fact that the facilities were relatively small (in relation to the Bank's assets), combined with the pre-existence of a green portfolio, implies that the facilities could easily have been filled up with existing projects. In the two operations that underused the facility, the reason was not the lack of eligible subprojects but rather financial or safeguard concerns. Finally, in visiting the subprojects, OVE found that several (including the largest projects) predated the approval of the facility or consisted of loans to refinance already built projects.
- 4.25 **For the guarantee, there is conclusive evidence that the facility did not have any impact on the market for green loans.** The facility was barely used, so, *de facto*, it did not generate any change in the FI perception of risk. Moreover, the assumptions behind the facility did not verify in actuality: first, the FI used other lines of funding to originate green loans and had no difficulties assuming their risk; and second, when it actually used the IDB guarantee, it chose to guarantee the safest (rather than the riskiest) clients.
- 4.26 **Even if it is unlikely that IDB operations had a market impact, it remains true that all three institutions increased their engagement in green lending around the time the IDB operation was approved.** In all three cases, OVE could trace the commitment to a specific strategic internal decision that translated into organizational changes to expand the GL portfolio. In that regard, the approaches of the three FIs were similar: one institution created a sustainability division to cover both CSR and project origination, and increased its strategic profile by putting it directly under the Board of Directors. At the time of approval of the IDB-IFC guarantee, the institution already had two lines that

were jointly supporting 224 green projects for a combined US\$40 million.³⁵ By 2014, the institution claimed to have “developed a green business strategy [...] disbursing more than [US\$100 million].”³⁶ Another institution created a business unit that trained loan officers in the origination of “green” loans, and it doubled its green portfolio between 2011 and 2015. The third institution created and strengthened a project finance unit specializing in RE financing. By the time of the approval of the facility, it had already financed small and mini hydropower plants for US\$80 million; since then it has deepened its involvement in financing RE—particularly run-of-the-river hydropower stations and windfarms.³⁷

- 4.27 **The common thread in FIs’ approach to financing GL operations was financial innovation, particularly off-balance-sheet financing strategies.** The expansion strategies of all three FIs studied was centered on the development of new financial products. In particular, all three put in place innovative schemes to finance green projects, including leasing and traditional project finance. The different instruments depended largely on the niches chosen and the size of the projects. The bank that implemented project finance schemes targeted intermediate loans (US\$10-30 million). Its strategy focused on reducing transaction costs, and it included standardizing projects, setting adequate risk structures—mimicking stable contracts with the electricity distribution company—and, crucially, reducing lawyer fees by structuring the project finance under local law. A second institution took advantage of the tax incentives associated with leasing and combined them with a relatively easy framework to seize assets in case of default to generate a product of EE for industrial clients. The third identified two electricity sector regulatory opportunities: a pilot net metering rule under favorable conditions and a sharp discontinuity in the residential-industrial electricity tariff that generated strong incentives for self-generation in intermediate consumers (more than 3000 kWh a month). Given the smaller sizes of the investments (US\$20,000-US\$100,000), the bank opted to partner with trusted technology providers that “pre-certified” the savings.
- 4.28 **In all three cases, the strategy to deepen the involvement in green loans was related to specific individuals.** Having “champions” within the organization that understand the opportunities behind green lending and see the potential is useful, particularly in early stages. Each of the projects had at least one such champion.

D. IDB value added

- 4.29 **The main contribution of the IDB was providing funding in an uncertain environment.** All three cases under study reached financial closing between mid-2011 and mid-2012. Indeed, eight projects in the GL portfolio (more than half) reached financial closing in the same period, though some of them had been approved for some time. The timing of these operations correlates with turmoil in the world economy; at that time there were concerns about low growth in developed countries and about the potential impact on developing economies that

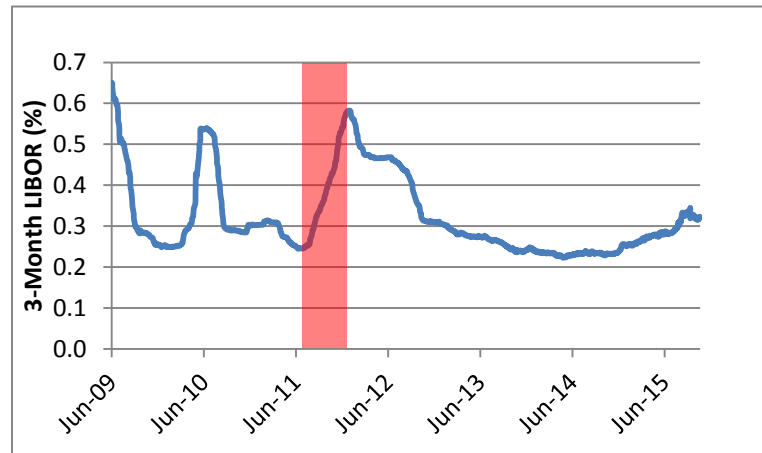
³⁵ Banco 2, Informe Anual, 2014.

³⁶ *Ibid.*

³⁷ Banco 1, Memoria Anual 2012 y 2014.

had until then been unaffected.³⁸ In securing financial operations with the IDB, FIs seem to have been reacting to concerns over potential future lack of access to financial markets (see Figure 4.1). This is unsurprising, since IDB operations are typically negotiated mainly with FIs' treasury areas.

Figure 4.1. Market access and timing of the operations (red)



- 4.30 **In addition, in all three in-depth case studies, clients sought other financial benefits.** In one, the key was the access to funding in US dollars, which dominated the alternative of funding in local currency and resorting to the local derivatives market. In another, the client FI—a mid-size institution—had difficulties obtaining long-term debt in US dollars in the local markets as a result of the small market size and regulatory restrictions.
- 4.31 **Aside from financial considerations, clients recognized significant value-added of the IDB in terms of support to their environmental and social safeguards.** Clients consistently noted the important role the IDB had played in the upgrade of their ESMS systems, providing support through ESG specialists or specialized consultants. It is likely that the three chosen FIs valued this support in the context of their own increased engagement with environment-friendly projects. It is also possible that they saw safeguards not only as a requirement but also an opportunity to develop a business niche.
- 4.32 **FIs perceive reporting requirements—including individual project reporting—as a significant burden.** Clients perceived IDB reporting conditions as tedious, excessive, and inefficient. Lack of flexibility to harmonize reporting between the different MDBs has also been perceived as a difficulty. In general, clients demanded a more parsimonious approach to reporting. Given that each bank's sustainability areas are relatively small, the added burden (estimated by one client as up to 0.5 staff-year) was considered excessive in relationship to the returns of working with multilaterals.

³⁸ WEO, September 2011. In the January 2012 update there was an equal warning of a slowdown in growth in developing economies, including a concern about a possible “hard landing” of key developing economies due to the possibility of a loss of confidence in markets with previously buoyant credit and asset prices growth. The April 2012 update was already more positive, noting that capital flows were returning.

4.33 **TA was an additional source of value added, particularly for providing aggregate support at the facility level and for helping to develop new and innovative financial products (e.g. Green Bonds).** Though the case studies did not include significant amounts of TA, whenever TA was available it supported the mitigation of market failures—particularly through resolving information asymmetry and developing new financial products.³⁹ Two main TAs were approved in relation to green lending in the private sector, and both seem to have targeted developmentally significant goals. One supported the *BeyondBanking* initiative; through that operation, the Bank supported several studies, including RE/EE niche market studies for two FIs (in Argentina and Panama), the development of an online learning tool,⁴⁰ the development of innovative financial instruments, and other activities related to the organization and management of the initiative. The other (ME-T1212, US\$1.4 million) was a CTF-financed TA initially designed for fostering green projects in commercial banks, and eventually used in the preparation for the green bonds operation (ME-L1150).

³⁹ Other operations also anticipated the possibility of approving a related SECCI-financed technical cooperation (HO-L1077). However, the proposed operation was never approved.

⁴⁰ <http://www.iadb.org/en/indes/green-credit-lines-eligibility-criteria.6990.html>

V. CONCLUSIONS AND SUGGESTIONS

- 5.1 **This evaluation looks in detail at three projects supporting green credit lines in three countries in LAC.** The projects did not contain a clear definition of objectives at either the project or the program level. The indicators tended to focus on financial aspects, and only one operation—which had benefited from concessional CTF funding—had a sector diagnosis. Similarly, there was no definition of objectives for the overall *BeyondBanking* initiative or for the facilities within which two of the three projects were approved.
- 5.2 **All three projects were implemented rapidly, with very few disbursements.** Supervision costs were in line with those of other green lines and FI operations, which are generally less expensive to prepare and disburse than sovereign-guaranteed investment operations.
- 5.3 **The conceptual link between the intervention and any expansion of the green portfolio was weak in all three cases, however, and it is unlikely that the FIs' portfolios changed as a consequence of the IDB intervention.** While the FIs did increase their engagement and green portfolio after the IDB operation, the increased engagement seems to have been a cause—rather than a consequence—of the IDB operation. It appears that FIs that were going to engage in sustainable projects sought IDB loans to secure other financial benefits.
- 5.4 **The IDB offered two main sources of value-added, one financial and one related to safeguards.** The financial support of the IDB in a moment of turmoil in the international markets seems to partly explain the FIs' preference for working with the Bank. In addition, FIs seem to value the IDB's support to upgrade their environmental and social management systems (ESMSs), including their ability to classify and evaluate green loans. The relatively high value placed on IDB support seems to derive, at least in part, from the three FIs' interest in developing environment-friendly market niches. The ESMS reporting mechanism was in general perceived as adding little value.
- 5.5 **Funding per se was not a constraint to FIs' investments in the GL market; the greatest potential was to be found in interventions that corrected information asymmetries or that promoted financial innovation.** Given the novel, untested nature of many green projects, TA to bridge knowledge gaps is relevant. The development of new instruments and products that reduce the transaction costs of evaluating green projects, standardize green products, or grant access to other financial agents (e.g., capital markets) seem to be key to expanding the market for small and medium green projects.
- 5.6 **If IDB is to use credit lines through the private sector to increase the number of green operations, it should consider redefining its intervention strategy.** Specifically, since funding is typically not the main barrier to the expansion of green lending, OVE suggests moving from a model centered on the loan—and the conditions attached to it—to a model that is centered on the FI and places the emphasis on knowledge. Such a model would be more consistent with the market failures identified. In this framework, the loan becomes a means of

developing a relationship, financing TA, and in some cases providing liquidity. However, the development goal is mostly secured by TA that bridges information gaps, develops a green lending market from the supply and demand side, and, ultimately, tackles the main market failures that hinder such investments.

5.7 **To implement this intervention strategy, Management could move in the direction of establishing partnerships with FIs that are interested in pursuing green lending.** In that partnership, the role of the loan and the technical assistance could be unbundled as follows.

- **Loan.** Use lending to establish and maintain a relationship with the client, and make it possible for the IDB to finance TA. Since marginal changes in funding are not linked with the origination of new projects, Management could reduce and simplify reporting—for example, by focusing safeguards review on the ESMS systems of FIs rather than specific sub-loans, consolidating reports when working with other multilaterals, limiting reporting to the main FI policies (financial, ESG), and, whenever possible, accepting the use of information that has already been prepared for other agents (regulators, etc.). In seeking novel ways to finance TA and knowledge transfer, the IDB may want to explore strategies other than a simple spread over a loan. Also, the IDB could boost innovation and obtain revenue from structuring fees of new products.
- **Technical assistance.** Knowledge transfer is key to bridging informational asymmetries. TA can take many forms, ranging from the provision of direct support by IDB staff to hiring specialized consultants. It could be financed by the IDB on a non-reimbursable or fee-for-service basis, depending on the specific FI, the potential for market development, and the cost of the TA required. Four specific areas are examples of important areas to be supported through TA:
 - **Alignment of incentives:** Helping the FI design adequate internal incentives to encourage credit officers to originate green loans. Aside from a specific financial incentive (an interest rate discount), FIs will need training and support to identify and assess green loans.
 - **Reduction of transaction costs:** Helping FIs move from funding based on collateral to funding based on project income flows. To reduce information costs, project standardization through well-defined credit lines (e.g., boiler replacement, residential solar panels) could reduce the costs of project assessment, reduce the perception of project risk, and make it possible to securitize EE/RE small projects—allowing banks to tap into long-term finance from capital markets, including institutional investors. IDB could support the process of developing, piloting, standardizing, and securitizing products.
 - **Measurement of environmental impacts and sustainability seal:** Helping FIs strengthen their ESMS. The IDB could work with other multilateral and bilateral partners to develop a sustainability seal that, ideally, could be used to grant access to multilateral and bilateral sources of green funding. Through TA the IDB could support banks in achieving certification. Gaining access to broader and presumably cheaper funding could work as an incentive for banks to adhere to the sustainability seal.
 - **Knowledge dissemination and cross-fertilization:** Taking a leading role in ensuring the dissemination of best practices and other public



goods (such as new financial products) across the region. There are potential gains from better integrating existing initiatives of the IDB Group and boosting cooperation across the private sector windows.



