Chapter 3.

Types of green investment bank interventions and co-investors

This chapter reviews the types of investments that green investment banks undertake, the types of instruments and funds they use to invest and the co-investors they attract. It examines the range of de-risking approaches used by green investment banks and their innovative approaches to reduce the high transaction costs often associated with low-carbon and climate-resilient infrastructure investments. The chapter closes with a discussion of the types of private investors green investment banks collaborate with or seek to attract.

Key takeaways

- Green investment banks directly finance investment in low-carbon and climate-resilient infrastructure using a range of instruments and funds, including senior and subordinate loans, bond-based financing and equity.
- Green investment banks also provide risk-mitigating credit enhancements such as loan loss reserves and guarantees to reduce risks for private sector lenders.
- Green investment banks can encourage the adoption of repayment mechanisms such as on-bill finance, which facilitates repayment through existing utility bills and reduces default risk for lenders.
- Transaction enablers such as warehousing and securitisation increase the flow of institutional capital by bundling small-scale projects to achieve scale and reduce transaction costs.
- Many types of private investors have co-invested with green investment banks, including local lenders, investment banks, institutional investors and retail investors. Green investment banks that are mandated to promote smaller scale investment are likely to collaborate with local lenders and energy service companies while entities that seek to support large-scale projects often target institutional investors and investment banks.

Green investment bank interventions

In order to attract private investment for low-carbon and climate-resilient (LCR) infrastructure, a green investment bank (GIB) identifies the primary obstacles perceived by investors and adapts its interventions accordingly. Generally these interventions aim to reduce the risks and transaction costs for such investments, improve returns and better align the risk-return profile of LCR projects with the requirements of different types of investors. The precise intervention will depend on the flexibility a GIB has been given in its mandate. For example, NY Green Bank has broad authority to use a range of investment instruments, funds and structures, although it is required to update its business plan and strategic direction annually based on lessons learnt and market conditions. This broad authority presumes a high level of expertise and gives the institution flexibility to pursue a wider range of projects and attract additional types of co-investors. Malaysia's Green Technology Financing Scheme (GTFS), in contrast, is chartered to provide a single form of financing. This "standard-offer" approach simplifies deal consideration and structuring expertise in a given area, but it may limit the range of projects to which GreenTech Malaysia can attract private investment.

Given that GIBs invest using public capital, their involvement in a commercial transaction can provide private investors with additional certainty. GIB investments may take several forms. For example, a GIB may take an equity ownership stake in a company or it may lend money to a project through a loan with a specified repayment structure. This financial investment is often paired with a transaction-enabling component to mitigate risks and reduce transaction costs. Risk mitigants that support private investors require a financial commitment by the GIB (such as a loan guarantee or loan loss reserve). Other transaction enablers, like on-bill financing or warehousing, facilitate investment but do not in themselves require additional GIB capital commitment.

The following sections describe GIB instruments and funds, along with types of transaction enablers and risk mitigants. The OECD publication *Mapping Channels to Mobilise Institutional Investment in Sustainable Energy* defines the full range of instruments, funds, risk mitigants and transaction enablers that comprise the key elements of renewable energy deals, and provides examples from a database of nearly 70 transactions (OECD, 2015).

Instruments and funds

Investment instruments and funds used by GIBs include the following:

- **Loans:** Loans may be provided for projects or companies and can include both senior and junior debt. Loans are the most common GIB investment instrument and are provided by every operational GIB with the exception of Masdar, the Swiss Technology Fund and the Japanese Green Fund. Since project-specific financing typically requires a bank loan in addition to the project owner's equity investment, projects that fail to secure private loan financing often do not reach the construction phase. GIB loans can fill this financing gap, as GIBs can set loan terms to match the revenue or energy savings stream of a given project, improving the likelihood of repayment.
- **Equity:** GIBs also make equity investments in both projects and companies. In order to draw in private sector equity, GIBs generally do not take majority stakes. In addition to providing a source of capital, GIB equity investments may also indirectly act as a risk mitigant for private investors. Equity investments carry a lower priority for repayment if a project or company faces a default or bankruptcy. GIB equity investments thereby give private debt investors participating in a project greater confidence that they will recoup their investments, as they have a higher priority for repayment and can also assume that the GIB seeks to recover its equity investment. The UK Green Investment Bank, the Connecticut Green Bank, the Japanese Green Fund and Masdar make equity investments.
- **Mezzanine capital:** Mezzanine capital is a type of hybrid financing that begins as debt and gives the lender the right to convert it to an ownership or equity interest in the company if the loan is not paid back in time or in full. Some GIBs such as those in Australia, Japan, the United Kingdom, and in Connecticut and New York in the United States specifically mention mezzanine capital as a permitted investment instrument. In 2014, the UK Green Investment Bank made a GBP 16.9 million mezzanine debt investment in a GBP 110 million waste wood (renewable) combined heat and power (CHP) plant, alongside multiple private investors making senior, mezzanine and equity investments (UK Green Investment Bank, 2014a).
- **Investment funds:** Investing in existing funds can be attractive for GIBs that wish to support smaller projects, such as individual energy efficiency projects. For example, the Connecticut Green Bank made equity investments in a solar lease fund, which is used to finance many small distributed solar generation projects. GIBs can also set up their own debt or equity investment funds. In April 2015, the UK Green Investment Bank reached a first close of GBP 463 million for a fund to support offshore wind development (the Operating Offshore Wind Fund), for which it intends to provide 20% of capital when it

reaches its full size of GBP 1 billion. It reached a second close of GBP 818 million in October 2015, securing investment from UK-based pension funds and international institutional investors, including a large sovereign wealth fund. New investments allow project developers to sell their stakes and finance new projects (UK Green Investment Bank, 2015). Other examples of fund investment include Masdar Capital, a division of Masdar, which has established funds that have attracted private investors as limited partners.[1]

- **Bonds:** Some GIBs can issue bonds through a public or private sale in order to capitalise the GIB itself or to recapitalise a loan warehouse. By issuing bonds, GIBs can draw large amounts of private institutional capital to LCR infrastructure investment, and depending on legal authority, a GIB may be able to issue government-backed bonds. This facilitates lower interest rates, enabling the GIB to lend the funds at a lower cost of capital.

  In addition to using bond issuances as a tool for initial capitalisation, the UK Green Investment Bank has expressed interest in issuing bonds to refinance its investments in green infrastructure and other green investments. The Connecticut Green Bank securitised its commercial and industrial energy efficiency and renewable energy loans (secured by a lien on the property as explained later in Chapter 4), resulting in a sale of senior bonds to an institutional investor with the GIB retaining the junior bonds. This transaction is discussed further in Chapter 5.

- **Structured notes:** Some GIBs, notably the Connecticut Green Bank, have issued "structured notes" backed by pools of collateral. A structured note is a debt obligation that is structured to deliver the risk-return performance of another type of investment by means of investing in a derivative for that type of investment. In Connecticut's case, a "bankruptcy remote" special purpose entity was established to hold a pool of solar loans against which structured notes were issued and sold to accredited investors via two crowdfunding platforms, which allowed a range of investors to invest against a pool of assets or even in individual projects.

- **Grants:** The Connecticut Green Bank was tasked in its authorising statute to manage and wind-down over time the state's residential roof-top solar grant programme (State of Connecticut, 2011).

Transaction enablers and risk mitigants

To attract private investment, GIBs can make private sector lending less costly, reduce liquidity risk, make new markets more accessible, or reduce the risk of repayment or default. GIBs often pair their investment instruments and funds with transaction-enabling structures or risk mitigants to attract private investment.

These enabling and risk-mitigating approaches presume that private investors are willing to invest in GIB target markets on near-commercial terms, provided they receive a nudge from the public sector to facilitate an investment. In cases where a project is particularly risky, or where the risk is difficult to calculate due to the innovative nature of the project or where local markets are insufficiently developed, a GIB may conclude that grants or grant-like methods are needed to facilitate greater private investment.

Structuring and product-design methods used by GIBs to enable transactions include:

- **Warehousing:** Warehousing is an aggregation technique used to reduce transaction costs and facilitate investment. Small projects are bundled together to reach a scale where they become attractive for on-sale to large investors or for securitisation through bond issuances. Aggregation techniques such as loan warehousing can reduce transaction costs and facilitate investment in bundled small-scale projects, thereby helping them reach commercial scale. For example, in addition to bundling and securitising commercial and industrial loans, the Connecticut Green Bank has combined solar leases from a large number of small residential projects to attract private companies and new investors through its Solar Lease II programme. By reducing transaction costs and increasing scale, the Connecticut Green Bank's warehousing attracted new investors as well as providers of insurance that can facilitate investments. For example, Mosaic, a solar finance "crowdsourcing" company, will "crowdsource" USD 5 million for a pool of loans (Business Wire, 2014) and a private insurance company created a new product to provide insurance and warranties for solar leases. Aggregation techniques and bundling of small-scale projects could be instrumental to increasing potential projects to a commercially attractive size.
- **Securitisation:** Securitisation is a technique whereby non-traded or small-scale assets, such as cash flows from solar leases or power-purchase agreements, are transformed into a standardised, tradable asset. By warehousing or aggregating smaller transactions, GIBs can take a pool of loans or leases and securitise it by issuing bonds to be repaid from the proceeds of the loan pool, or by providing bond-like returns or dividends on capital investments in the securitised pool of loans. NY Green Bank has participated in a national energy efficiency warehousing and securitisation platform (WHEEL, described in Chapter 4) that provides institutional investors access to residential energy efficiency project investments (NY Green Bank, 2015).
- **On-bill financing:** On-bill financing allows borrowers to repay renewable energy or energy efficiency loans through an additional charge on their existing utility bill. This facilitates customer repayment and reduces the risk of default for an investor. Customers place a high priority on maintaining electricity service and will pay their electricity bill at a high rate. Early data indicate that default rates on on-bill financing are low, ranging between 0% and 3% (LBNL, 2014). Australia's CEFC partnered with an Australian energy retailer to provide on-bill financing for businesses that undertake energy efficiency upgrades or install solar photovoltaic (PV) panels; financing is available for up to seven years for projects between AUD 50 000 and AUD 1 million. Hawaii's Green Energy Market Securitization (GEMS) programme, which will provide financing for residential roof-top solar, also included on-bill repayment in its structure as a strategy to induce repayment and reduce potential default rates (Strand and Seligman, 2013). The Connecticut Green Bank is developing an "open source" on-bill repayment programme whereby a diverse group of lenders and capital providers (such as banks, credit unions and solar leasing companies) can provide financing for solar PV loans and leases, and will be able to collect loan and lease payments through a utility bill charge.
- **Financing through tax payments:** The Commercial Property-Assessed Clean Energy (C-PACE) programme supported by the Connecticut Green Bank provides upfront financing for energy efficiency and renewable energy upgrades that are

repaid through property taxes over time. By using a tax lien, C-PACE provides a long-term and secure product for private investors as these loans are repaid in a steady stream alongside tax payments. Repayment obligations are also transferred to the next owner if the property is sold. As discussed further in Chapter 4, the Connecticut Green Bank has sold these loans to private capital providers, offering stable returns and freeing up the bank's capital to make additional loans. Australia's CEFC uses a similar technique in its environmental upgrade agreements by funding building energy efficiency improvements that are repaid through a local council charge on the land. Borrowers face far greater consequences if the repayment is part of their tax liability and typically have lower default rates compared to other forms of debt. Loans tied to property taxes are more secure than other loans because the property acts as collateral, and so loans are perceived as less risky by creditors and, as a result, may be awarded better terms, such as 15-20-year repayment periods.

- **Leasing:** Leasing can provide an attractive alternative to purchasing residential, commercial or industrial renewable energy or energy efficiency technologies. For example, leasing solar PV panels for rooftop applications is the leading entrance point to the residential solar sector in the United States (Munsell, 2014). Customers enjoy the benefits of self-generated renewable energy, at a lower cost than the utility, but without the burdens of ownership, like maintenance. However, many leasing options have strict credit limits, which reduce the pool of eligible individuals to zero in some regions. In this context, GIBs can support solar PV leasing by co-investing in lease funds with private debt or equity partners.

Credit-enhancing risk mitigants reduce the risk that a project or investment will not deliver its expected level of return and can take the form of loan loss reserve funds or loan guarantees. Subordinate debt or equity can also indirectly serve as a credit enhancement. GIBs provide the following:

- **Loan loss reserve funds:** Loan loss reserves set aside capital to cover potential losses and help to reduce repayment risk. If a borrower (such as a purchaser of a solar PV installation) defaults, the lender (such as an institutional investor) is repaid using the reserve fund. GIBs may provide a percentage of loan loss coverage for lenders. As part of its Smart-E Loan Program, the Connecticut Green Bank offers distinct residential energy efficiency and renewable energy financing products with corresponding loan loss reserve levels. Every time a lender underwrites a loan, the Connecticut Green Bank reserves a percentage of the loan principal (7.5-15%) for the lender in the event of a default (Energize CT, 2013). In the Connecticut model, to promote sound lending practices and share risks, the lender assumes the "first loss" (1.5%) on its portfolio before it can access the reserve. NY Green Bank has also listed loan loss reserves as a viable credit enhancement structure to be used to support investments (NY Green Bank, n.d.).
- **Guarantees:** Guarantees are a credit enhancement tool used to mitigate perceived or actual risks to improve the attractiveness of investments, often debt instruments. By providing a loan guarantee, a guarantor (such as a GIB) agrees to pay a lender a portion of the loan if a borrower cannot repay. For example, GreenTech Malaysia provides guarantees to encourage private banks to finance green projects. Its Green Technology Financing Scheme (GTFS) assesses applications for "green project certificates" and provides certificates to eligible

companies. These certified companies can then seek loans from participating private lenders. In order to improve lending approval rates and reduce risk, the GTFS guarantees repayment of 60% of the financing provided by private lenders to certified companies in the event of loan default. Australia's CEFC is authorised to provide loan guarantees, but it seeks to avoid providing them and limits guarantees to 5% of the total CEFC portfolio (CEFC, n.d.).

- **Subordination:** A GIB can increase the likelihood of repayment for private investors by making subordinate debt or equity investments in a project alongside private investors. In the event of default, any remaining value or cash from the project is paid out to investors in the order of seniority, with senior investors repaid before subordinate investors. In addition to taking an equity position, the UK Green Investment Bank made a commercial GBP 16.9 million mezzanine debt investment in a CHP plant in 2014. This subordinate debt position supported GBP 42.5 million in senior private debt investment (UK Green Investment Bank, 2014a). In 2013, the Connecticut Green Bank took both an equity and subordinated debt position in a residential solar lease fund it established with private lenders (Connecticut Green Bank, 2013).

Green investment bank co-investors

A GIB's mandate and strategy will determine the targeted type of private investment. These strategies can be characterised as "wholesale" or "retail". A wholesale strategy seeks to attract relatively large amounts of private capital to combine with public capital to use to on-lend or invest in funds. A retail approach, in contrast, involves delivery of funds to the project developer or individual. Wholesale lending can move large volumes of investment while retail lending can be useful for jump-starting activity in new markets. Under either scenario, a GIB may help bring projects to a broader set of potential investors through bond issuances, securitisation or private placement.

Local banks

Local banks can play a valuable role in issuing individual loans to residential or commercial borrowers. An individual home or business owner interested in improving the efficiency of their building or in installing distributed renewable energy generation might seek a specialised financing firm (e.g. SolarCity in the case of solar PV) or directly approach their local lending institution. Drawing local banks into the LCR space can help GIBs to grow their target markets, as many potential borrowers have already established banking relationships with their lenders. GIBs can support and provide capital through on-lending to local banks to ensure they are able to offer attractive loans.

Some local banks already offer financing products specifically designed to serve renewable energy and efficiency borrowers. However, the majority of lenders are unaware of, or averse to, investing in this growing market due to perceived repayment risk or limits on unsecured lending. Much of this perception is due to short technology track records or uncertainty regarding technology performance, especially for energy efficiency investment. In addition, local lenders often do not account for the expected financial savings of an energy investment during the underwriting process and instead focus on the pure credit rating of the borrower. Based on this approach, banks overestimate the repayment risk and as a result limit the pool of acceptable borrowers, require high interest rates or provide short loan tenors.

These financial drawbacks are often compounded by limited marketing and consumer engagement by local banks. The most common way for a potential borrower to learn about an available lending product is through a contractor or service provider that assesses or installs the renewable or efficient technology. If the local lender has not informed contractors about available financing, the information may never reach customers. Even in cases where contractors are able to direct customers to a local bank, it is often the customer's responsibility to co-ordinate the activity of the bank and the contractor. This may prove to be a significant barrier to adoption for customers that are unsure of the merits of such an investment.

GIBs can crowd in more private investment from local banks either by directly partnering on retail lending or by purchasing lenders' loans to provide liquidity. Direct partnership with local lenders could involve co-lending to borrowers or offering lenders a credit enhancement to incentivise more lending activity. Connecticut's Smart-E Loan Program takes the latter approach, offering a loan loss reserve to local banks that provide energy efficiency or renewable loans to residential customers. Connecticut also has co-lended to several projects, including a 15 MW grid-tied fuel cell, a 5 MW grid-tied wind facility and a 2 MW anaerobic digestion facility, in each case using subordinated debt at interest rates ranging from concessional to market rate. Malaysia's experience with Islamic banks is discussed in Box 3.1.

Box 3.1. **Islamic finance and Malaysia's Green Technology Financing Scheme**

Malaysia is considered a pioneer in Islamic finance with a strong and growing Islamic banking sector. Islamic banking, also known as *sharia*-compliant banking, is consistent with principals of the *Sharia* (Islamic rulings). The *Sharia* prohibits payment or acceptance of interest charges for lending and also prohibits supporting activities that are considered to be sinful, such as alcohol consumption or gambling.

Malaysia's Green Technology Financing Scheme (GTFS) believes the principles of Islamic finance are well aligned with green and socially responsible investing and is actively working with Islamic banks to attract private capital. GreenTech Malaysia's CEO, Ahmad Hadri Haris, said, "We have identified Islamic banking as a platform, as it is based on the promotion of value and good practices." All Islamic banks are eligible to become participating financing institutions under the GTFS' loan guarantee programme and Islamic financing accounts for 40% of all funds granted under the GTFS (Bank Negara Malaysia, 2014).

Sources: Bank Negara Malaysia (2014), "Islamic finance: Ready to finance a greener world", www.mifc.com/?ch=28&pg=72&ac=88&bb=uploadpdf; Bernama (2014), "Greentech Malaysia to approve more funds", 4 February, www.ibfim.com/img/media-centre/media-coverage/media-coverage-20140204.pdf.

GIBs could also directly on-lend to local banks. Multilateral development banks have significant experience with this strategy. For example, the European Investment Bank lends to local banks which in turn on-lend to smaller borrowers. Sub-national GIBs are particularly well suited for this kind of activity due to their knowledge of local banks and market conditions. An alternative strategy would be for a GIB to launch a fund that purchases renewable energy loans from a local lender to remove the origination burden from the GIB and to encourage local banks to become familiar with renewable energy loans. This addresses a concern held by local banks that renewable energy loans are illiquid assets that will remain on the bank's balance sheets with no way to recapitalise the pool of loans.

Investment banks

Investment banks are increasingly active in LCR investment and can be valuable private investment partners for GIBs. For example, the investment banking and financial services corporation Citi announced a ten-year, USD 100 billion commitment to finance sustainable growth in 2015 (Citi, 2015). In 2014, Bank of America launched the Catalytic Finance Initiative, with a goal to stimulate at least USD 10 billion in renewable energy projects (Bank of America, 2014). Since then, the Initiative has evolved into a consortium that includes other financial organisations with their own capital commitments. In April 2016, the consortium committed USD 8 billion towards "high-impact sustainable investments" (IFC, 2016). Investment banks are capable of channelling large amounts of invested capital. GIBs can work with investment banks to identify investment opportunities that are attractive for both parties.

In addition to direct investment, investment banks can help GIBs mobilise large pools of capital through securitisation, especially as securitisations increase in scale and when expertise in asset-backed debt securitisation is required. For an investment bank to underwrite a security issuance, it must be comfortable taking on the debt and risk associated with the underlying investment. Investment banks can be hesitant to be the first mover on a new type of transaction, and GIBs can support securitisations by standardising the underlying loans and credit requirements and by warehousing smaller loans into a large portfolio.

Institutional investors

Institutional investors are an important potential source of alternative capital for domestic LCR infrastructure investment. They include insurance companies, pension funds, investment funds, public pension reserve funds, foundations, endowments and other forms of institutional savings. In OECD countries alone, these investors held USD 93 trillion[2] of assets in 2013 (OECD, 2014a; 2014b). Despite their significant size, institutional investors' asset allocation to direct infrastructure investments in general remains small, less than 1% for large OECD pension funds, and the "green" investment component remains even more limited. This investment is constrained for a variety of reasons, including regulatory and policy uncertainty, a lack of suitable financing vehicles, investor inexperience with direct investing in new technologies and asset classes, as well as market and government failures (OECD, 2015). Institutional investors often seek long-term and low-risk investments, and allocate significant amounts of capital domestically. Institutional investors are also generally uncomfortable taking on construction risks or being the first movers into a new market.

Some GIBs are looking to engage institutional investors as the deepest and most accessible pool of global capital. In an initial study on the prospect of creating a green investment bank in the United Kingdom, Ernst & Young (2010) emphasised the importance of creating investment opportunities attractive to institutional investors as well as actively interacting with these investors during the design phase of the institution. Ernst & Young (2010) recommended that the UK Green Investment Bank "act as a bridge between institutional capital and ultimate investments" and "should be strategically structured to appeal to the widest and deepest sources of capital as possible". The Chairman of the Board of the UK Green Investment Bank also highlighted the importance of engaging institutional investors in an address at a National Association of Pension Funds Conference (UK Green Investment Bank, 2014b). The initial concept for NY Green Bank also envisioned direct engagement with institutional investors. The

original petition to provide the bank's initial capitalisation proposed that "the Bank could execute a debt securitisation, through which investors interested in holding long-term debt, such as pension funds, could invest in longer term securities, while those banks preferring shorter loan terms would be able to exit their investments earlier" (New York Public Service Commission, 2013). To date, GIBs have attracted institutional investment using a variety of instruments and funds, risk mitigants and transaction enablers, which are outlined below.

- Cornerstone stake: A cornerstone investment refers to a large investment in a company or fund that occurs early in the investment process so as to play a demonstration role and attract other investors. GIBs have taken cornerstone stakes to attract pension and insurance capital.
- Co-investing: GIBs can co-invest by providing debt or equity for a project or company. This investment can support new investment or help to recycle capital through refinancing. For example, the UK Green Investment Bank participated in a loan consortium to refinance a stake in the Walney Offshore wind farm owned by Ampere Equity Fund and Dutch pension fund PGGM.
- Issuing green bonds: Bonds are an asset class favoured by institutional investors. NYSERDA, the parent agency of NY Green Bank, issued a USD 26 million bond in 2013 to securitise a portfolio of residential and small commercial sector energy efficiency loans. The bond used an innovative structure and federal tax benefits to secure an AAA rating (CE+BFI, 2013).
- Developing funds: The UK Green Investment Bank created a fund that will invest in multiple offshore wind projects. The fund is designed to appeal to institutional investors that may seek exposure to assets such as offshore wind but would be unlikely to risk investing in a single project (Shankleman, 2014).
- Selling loan portfolios: The Connecticut Green Bank secured USD 100 million from a Real Estate Investment Trust (REIT) in December 2015 for its C-PACE programme. The REIT has committed to fund a portfolio of PACE financings being originated by the bank for energy updates in commercial buildings. The REIT can be considered institutional money as it is publicly traded and as investment in REITs tends to be dominated by institutional investors (personal communication with Bert Hunter, Connecticut Green Bank, 1 February 2016).
- Loan warehousing to facilitate securitisation: GIBs can structure prospective investment opportunities to have long-term cash flows that will be attractive to institutional investors. The Connecticut Green Bank and NY Green Bank have designed loan-bundling programmes to facilitate securitisation or sell-offs to larger investors. For example, the Connecticut Green Bank warehoused and securitised its commercial energy efficiency PACE loans and sold them through a private placement to Clean Fund, an institutional investor specialised in PACE investments (Lombardi, 2014).

Individual retail investors

In many financial markets, LCR infrastructure investment opportunities for individuals are limited. Renewable energy and energy efficiency projects face barriers to raising capital through public capital markets, and due to limited offerings it is difficult for individuals to buy stock in a project or group of projects, or to purchase shares in LCR-specific funds.

GIBs can directly or indirectly facilitate individual retail investment in LCR infrastructure through partnering with "crowdfunding" investment platforms to pool individual projects. GIBs have already demonstrated the use of these types of partnerships: in 2014, the Connecticut Green Bank sold a portion of a solar loan fund to Solar Mosaic, a solar-specific crowdfunding platform, which in turn has funded those loans through individual, crowdsourced investments (Business Wire, 2014).

GIBs can indirectly facilitate individual retail investment by building the structures needed to link renewable energy investment with public capital markets and create needed scale and consistency. For example, GIBs can pool small loans involving similar technologies and underlying credit risks and can set credit parameters so that only borrowers above a certain credit score are eligible.

Specialised service and financing firms

GIBs can work with specialised renewable energy and energy efficiency financing firms, such as energy service companies (ESCOs)[3] or solar PV lease or power purchase agreement (PPA) providers, to offer customers an integrated energy service and financing solution, subject to these providers' constraints. For instance, ESCOs prefer to serve large commercial or industrial customers that have large facilities and high credit ratings, while solar PV leasing and PPA firms often may only offer financing to residential customers with high credit scores.

A GIB can also provide a credit enhancement to a specialised firm to extend its market reach. In 2014, NY Green Bank announced that it had reached an agreement in principle to provide a credit facility (corporate loan or collection of loans) to Ameresco, a large national ESCO, to be used in partnership with private third-party financing to address underserved segments of commercial and industrial energy efficiency markets (NY Green Bank, 2014).

Notes

1. The Masdar Clean Tech Fund was launched in 2006 and is co-managed by Masdar Capital, Consensus Business Group and Credit Suisse (Masdar, 2012b). This USD 250 million venture capital fund invests in early-stage clean technologies. Masdar's second fund (USD 290 million), the DB Masdar Clean Technology Fund, was developed in conjunction with Deutsche Bank and invests in renewable energy, environmental resources, and energy and material efficiency (Masdar, 2012a).
2. This figure includes assets of pension funds and insurance companies which may be also counted in investment funds.
3. An ESCO acts as a third-party installer and financier for building efficiency upgrades. ESCOs are able to offer building owners energy savings through efficiency with no upfront cost, with financing paid back over time by the ESCO sharing a portion of the energy savings over time. ESCOs may offer equipment financing as part of their services and typically only serve large and credit-rated industrial customers.

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