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# GREEN INVESTMENT BANKS

## INNOVATIVE PUBLIC FINANCIAL INSTITUTIONS SCALING-UP PRIVATE, LOW-CARBON INVESTMENT POLICY REFORM

OECD ENVIRONMENT POLICY PAPER
January 2017 n°06

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BETTER POLICIES FOR BETTER LIVES

# Green Investment Banks

## Innovative Public Financial Institutions Scaling up Private, Low-carbon Investment

OECD ENVIRONMENT POLICY PAPER NO. 6
JANUARY 2017

THE **NEW** CLIMATE **ECONOMY**

The Global Commission on the Economy and Climate

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This Policy Paper was provided by the OECD as a contribution to the 2016 NCE report "The Sustainable Infrastructure Imperative: Financing for Better Growth and Development". It draws on the OECD report *Green Investment Banks: Scaling up Private Investment in Low-carbon, Climate-resilient Infrastructure* (June 2016). The OECD would like to thank Bloomberg Philanthropies for generous support for and substantive contributions to this project. A separate "Policy Perspectives" brochure on green investment banks, which distils key messages from this report, was produced jointly with Bloomberg Philanthropies and benefitted from the input and advice of Daniel Firger, who also co-hosted a joint OECD-Bloomberg Philanthropies side event at the OECD Pavilion at COP21.

## Disclaimers



This New Climate Economy Working Paper was written as a supporting document for the 2016 report of the Global Commission on the Economy and Climate, The Sustainable Infrastructure Imperative: Financing for Better Growth and Development. It is part of a series of 6 Working Papers that reflect research conducted for the full report.

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**ISSN 2309-7841**
Authorised for publication by Simon Upton
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# 1 Current state-of-play

Following the successful climate change agreement reached in Paris at COP21, attention has shifted to how countries will achieve their planned climate mitigation "contributions" in the short and medium-term, as well as how countries will transition in the longer-term to a low-emissions pathway. Governments will need to take actions to accelerate a shift away from investments in carbon-intensive infrastructure and toward low-carbon, climate-resilient infrastructure. Investment is growing in renewable energy and energy efficiency, but not quickly enough to get the world on track to achieve zero net greenhouse gas emissions globally in the second half of this century. "Decarbonising" the global economy is required to hold the increase in the global average temperature to well below 2°C above preindustrial levels, as agreed in Paris. To achieve these goals, governments need to make full use of their capacity to leverage and unlock much larger flows of private investment in low-carbon infrastructure.

To overcome investment barriers and leverage the impact of available public resources, over a dozen national and sub-national governments have created public green investment banks (GIBs) and GIB-like entities in recent years. A GIB is a publicly capitalised entity established specifically to facilitate private investment into domestic low-carbon, climate-resilient (LCR) infrastructure and other green sectors such as water and waste management. These dedicated green investment entities have been established at national level (Australia, Japan, Malaysia, Switzerland, United Kingdom), state level (California, Connecticut, Hawaii, New Jersey, New York and Rhode Island in the United States), county level (Montgomery County, Maryland, United States) and city level (Masdar, United Arab Emirates).

Table 1 lists the GIBs and "GIB-like entities" discussed in this report.[1] While GIBs differ in name, scope and approach, they generally share the following core characteristics: a mandate focusing mainly on mobilising private LCR investment using interventions to mitigate risks and enable transactions; innovative transaction structures and market expertise; independent authority and a degree of latitude to design and implement interventions; and a focus on cost-effectiveness and performance. "GIB-like entities" refers to organisations that have a mandate to leverage private finance for domestic LCR infrastructure investment but which may not possess all of the core characteristics of GIBs and may pursue other activities or use other approaches (e.g. grants).

1. The Montgomery County Green Bank (Maryland, United States) is not included in the table as its funding was still under consideration as of December 2016.

Table 1 | **Green investment banks or green investment bank-like entities in operation**

| Operational green investment banks (GIBs) and GIB-like entities | Location | Year of formation |
|---|---|---|
| California CLEEN Center | California, United States | 2014 |
| Clean Energy Finance Corporation (CEFC) | Australia | 2012 |
| Connecticut Green Bank | Connecticut, United States | 2011 |
| Green Energy Market Securitization (GEMS) (Hawaii Green Infrastructure Authority) | Hawaii, United States | 2014 |
| Green Fund | Japan | 2013 |
| Malaysian Green Technology Corporation (GreenTech Malaysia) | Malaysia | 2010 |
| Masdar | United Arab Emirates | 2006 |
| New Jersey Energy Resilience Bank (ERB) | New Jersey, United States | 2014 |
| NY Green Bank | New York, United States | 2014 |
| Rhode Island Infrastructure Bank (RIIB) | Rhode Island, United States | 2015 |
| Technology Fund | Switzerland | 2014 |
| UK Green Investment Bank | United Kingdom | 2012 |

Based on their unique national and local contexts, governments tailor their GIBs and GIB-like entities, which have diverse rationales and goals:

- In the United Kingdom, the Green Investment Bank was conceived as a means to meet ambitious emissions targets.
- In Japan, The Green Finance Organisation aims to support local community development to address the impacts of slow economic growth and an ageing society.
- The Connecticut Green Bank prioritises reducing carbon emissions and lowering energy costs while creating local jobs through clean energy investment.
- Switzerland's Technology Fund focuses on scaling up innovative environmental and low-carbon technologies that face a deployment gap.
- The Malaysia Green Technology Corporation's (GreenTech Malaysia) objective is to develop sustainable and widespread green technology markets and strengthen the local green technology industry.
- The goals of the Rhode Island Infrastructure Bank's clean energy programmes are to reduce consumers' and businesses' energy prices and stimulate employment opportunities.
- Other goals pursued by GIBs include improving capital market efficiency, lowering the cost of capital and meeting other (non-climate-related) environmental objectives.

These goals are reflected in the range of metrics GIBs use to measure and track their performance and demonstrate accountability: emissions saved, job creation, leverage ratios (i.e. private investment mobilised per unit of GIB public spending) and, in some cases, rate of return (see discussion on "latest data").

Governments are using GIBs to channel private investment, including from institutional investors, into low-carbon projects such as commercial and residential energy efficiency retrofits, large-scale onshore and offshore wind, rooftop solar photovoltaic systems and municipal-level, energy-efficient street lighting. Unlike grant-making public institutions, GIBs focus on financial sustainability and some are required to be profitable. For example, the UK Green Investment Bank must invest on commercial terms and has to meet a minimum 3.5% annual nominal return on total investments, after operating costs but before tax. Through their interventions and investments, GIBs are demonstrating to private investors that commercially successful investments are possible and happening now.

Governments have capitalised GIBs using a variety of funding sources:

- Appropriations (Australia)
- Carbon tax revenue (Japan)
- Reallocation of funds from existing programmes (New York)
- Emissions trading schemes revenue (Connecticut, New York)
- Utility bill surcharges, Renewable Portfolio Standards, Energy Efficiency Resource Standards (Connecticut, New York)
- Loans (Connecticut)
- Bond issuance (Hawaii)
- National government funding (UK, New Jersey)

Despite being smaller than other public financial institutions, some GIBs like the UK Green Investment Bank, Australia's Clean Energy Finance Corporation and the Connecticut Green Bank are successfully targeting institutional investors – notably pension funds, insurance companies, sovereign wealth funds and mutual funds – for co-investment in funds and other transactions. These investors represent a large pool of capital and an increasingly important alternative source of financing for LCR infrastructure investment, as examined in other OECD reports.

Green investment banks are not the only institutional option available to governments seeking to accelerate investment into domestic, low-carbon, climate-resilient infrastructure (see Section 4). Some National Development Banks have been providing financing for low-carbon projects for many years, as examined in previous OECD work on the role of public financial institutions in the low-carbon transition (see discussion on "greening existing institutions versus establishing new ones").

Institutions like GIBs can be understood as a tool to mobilise private investment which can complement climate policies but cannot substitute for them. If enabling policies for low-carbon investment are in place – including a robust and credible carbon price, fossil fuel subsidy reform, well-designed renewable energy incentive policies and clear, long-term climate policy goals – GIBs and other institutions can play a supportive role in overcoming remaining investment barriers. To get on a path toward zero net emissions by the end of this century, governments need to consider how institutions like green investment banks can help them pick up the pace.

# 2 Latest data

GIBs measure their performance using a range of metrics, which generally focus on investment and economic results or climate-related outcomes.[2] Self-reported achievements of GIBs and GIB-like entities include:

## Leverage / mobilisation

- For every GBP 1 of public investment it has made since its inception, the UK Green Investment Bank has mobilised an estimated GBP 3 of private capital (UK GIB, 2015a).
- The Connecticut Green Bank attracted USD 10 in private investment for every USD 1 of public capital spent in 2013 (Connecticut Green Bank, 2013). In 2014 the ratio was USD 3 of private investment for every USD 1 of public capital spent (Connecticut Green Bank, 2015a).
- In 2014-15, CEFC reported AUD 1.8 private dollars mobilised for each AUD 1 in CEFC investment (CEFC, 2015b, 2015c). CEFC reported a leverage ratio (i.e. private investment mobilised per unit of public spending) of 2.2:1 in 2013-14 (CEFC, 2014a).

## Co-investors

- Since inception, the UK Green Investment Bank has worked with over 70 co-investors (UK GIB, 2015a).

## Rate of return

- The UK Green Investment Bank has a minimum target return of 3.5% (annual nominal return on total investments, after operating costs but before tax). The UK GIB turned profitable in the second half of the 2014-15 year, and projects that once its current portfolio of investments is fully operational, it will generate an overall return of 9% (UK GIB, 2015a).
- In 2014, CEFC achieved a 4.15% return (net of operating costs) on an expected deployed capital of AUD 931 million, exceeding the portfolio benchmark return of 3.14% (CEFC, 2014a). The portfolio of investments in 2015 is projected to generate an annual yield of 6.1% once fully deployed (CEFC, 2015c).[3]

2. Figures in this section derive from green investment banks. Metrics are not harmonised across GIBs and methodologies for calculating performance metrics may differ. Only a sample of GIB results is provided.
3. In 2015 CEFC had a mid-year change in both its statutory benchmark rate and the method of calculation (see [CEFC, 2015c] for more information).

## Emissions saved

- Once constructed and in operation, the projects in which Australia's CEFC is investing are estimated to achieve annual emissions abatement of 4.2 million tonnes $CO_2$-equivalent ($tCO_2e$), with a net financial return to the CEFC (inclusive of government borrowing costs and operating costs) of approximately AUD 10 million (i.e. emission reductions are achieved at a "cost" of negative AUD 2.40 per tonne[4]) (CEFC, 2014a, 2015b).
- Since 2010, the Green Technology Financing Scheme operated by GreenTech Malaysia has funded 165 projects which have avoided close to 2.4 million $tCO_2e$ (GreenTech Malaysia, 2015).
- Since its inception, the Connecticut Green Bank has enabled the reduction of an estimated 1.4 million tonnes of $CO_2$ emissions over the life of these projects (Connecticut Green Bank, 2015b).
- In 2014-15, the UK Green Investment Bank's estimated average annual GHG emission reduction reached 4.2 million tonnes of $CO_2$ emitted, equivalent to taking 1.9 million cars of the road for the year (UK GIB, 2015a). The UK GIB's estimate of the average annual renewable power generation associated with the projects it funds reached 16.3 TWh, enough to power 3.9 million homes (UK GIB, 2015a).

## Job creation

- As of June 2015, Connecticut Green Bank made investments that generated 3 094 direct jobs and over 5 200 indirect and induced jobs (Connecticut Green Bank, 2015b).
- The CEFC has financed projects for businesses that employ over 35 000 Australians (CEFC, 2015b).
- Since 2010, the 165 projects funded by the Green Technology Financing Scheme have created 2 491 jobs (GreenTech Malaysia, 2015).

4. The CEFC does not claim that the emissions benefit occurs exclusive of other Australian government policy such as the Renewable Energy Target.

# 3 Recent examples of innovative experience and good practice

## Investment funds

GIBs can set up their own debt or equity investment funds. One prominent example is the UK Green Investment Bank's Operating Offshore Wind Fund. In April 2015 a first close of GBP 463 million was achieved for this fund, to which the UK Green Investment Bank intends to provide 20% of capital when it reaches its full size of GBP 1 billion. The fund 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).

## Investing in clean cities

Many of the investments GIBs mobilise are undertaken in urban areas, where 54% of the world's population lived in 2014 and where 66% is projected to live by 2050.[5] For example, the Clean Energy Finance Corporation is providing finance to help the City of Melbourne undertake an AUD 30 million programme of clean energy initiatives to help it reach its goal of zero net emissions by 2020.[6]

## Energy efficiency partnerships with financial institutions

- In February, 2014 the UK Green Investment Bank formed a GBP 50 million energy efficiency partnership with Société Générale Equipment Finance, with each party committing GBP 25 million. The partnership will provide loans for CHP plants, boilers, building retrofits, lighting or energy reduction technologies for production processes. Loans will be structured so that repayments are less than the value of energy savings, meaning borrowers can save money on day one of the loan (UK Green Investment Bank, 2014a).

- Australia's CEFC formed an energy efficiency fund with Commonwealth Bank, with each party investing AUD 50 million. The fund will make individual loans in the range of AUD 500 000 5 million, aimed at reducing energy costs (CEFC, 2015a).

5. UN DESA (2014), (UN Department of Economic and Social Affairs), Population Division, World Urbanization Prospects: The 2014 Revision, Highlights (ST/ESA/SER.A/352), http://esa.un.org/unpd/wup/Highlights/WUP2014-Highlights.pdf.
6. CEFC (2015), "Factsheet: CEFC and the City of Melbourne accelerate sustainability initiatives", October 2015, www.cleanenergyfinancecorp.com.au/media/107528/cefcfactsheet_cityofmelb_lr.pdf.

- Australia's CEFC also has financed National Australia Bank via a corporate bond purchase in exchange for offering a concessional loan product for financing equipment and vehicles that meet CEFC standards of efficiency. The 'Energy Efficient Bonus' is offered to the end user as a 70 basis point (0.7%) discount from the prevailing equipment finance rate. This provides equipment sales persons with a talking point about energy efficiency and entices the purchaser to compare the costs of a more efficient product with the costs of less efficient products that do not qualify for the Bonus (CEFC, 2015b).

## Property-assessed Clean Energy (PACE) program

The Connecticut Green Bank has implemented one of the most successful commercial building energy efficiency programmes in the United States, using the property-assessed clean energy (PACE) structure. Through this structure, building owners can receive long-term financing (up to 20 years) to perform energy upgrades on buildings and pay the loan back as a new tax lien on the property. Linking the lien to the property increases lending security and enables a much longer payback term; default rates on tax payments are typically lower than for debt repayments. The lien structure also makes it easier to buy and sell property with an outstanding efficiency loan (Connecticut Green Bank, 2015).

Connecticut is one of 29 US states to pass PACE-enabling legislation, but it is the only one to have created a state-wide programme with centralised administration through a GIB. This structure was created to avoid the pitfalls of relying on individual jurisdictions to each create distinct programmes, guidelines and financing strategies. The Connecticut Green Bank provides a standardised approach for all commercial PACE deals in the state, allowing for greater scale. Its "C-PACE" programme co-ordinates all commercial PACE activity in the state, originating loans with public capital and then selling the portfolio of loans to private investors (PACE Now, n.d.; Lombardi, 2014).

The programme was launched in early 2013 and in less than two years the Green Bank financed nearly USD 54 million in energy upgrades for 89 buildings. This accounts for about one-third of the commercial PACE market in the United States. More recently, the Green Bank has established a programme to facilitate private platforms to provide PACE financing, with the Green Bank retaining its central administration role. Other US states such as Rhode Island are exploring the use of a green investment bank (GIB) to facilitate similar commercial PACE programmes (PACE Now, 2015).

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.[7]

## Warehousing energy efficiency loans

The Warehouse for Energy Efficiency Loans (WHEEL) is a cross-state energy efficiency financing platform launched in the United States to attract institutional investors by achieving scale through aggregation of projects and consistency through project standardisation. Based on a programme started in Pennsylvania, WHEEL provides a credit enhancement to a centralised, privately-funded, national warehouse, which, in exchange, provides capital to fund energy efficiency loans in that state. This structure allows each state to design its own deployment and retail lending strategy while taking advantage of low-cost institutional capital drawn from the national warehouse. In June 2015, the initial investors Citi and Renew Financial issued the first WHEEL securitisation of USD 12.58 million backed by pools of residential energy efficiency loans. Pennsylvania and Kentucky were charter members of WHEEL, and in October 2014 WHEEL expanded into New York through a NY Green Bank investment. As per the requirements of WHEEL, NY Green Bank offered a credit enhancement to the central loan fund, allowing New York borrowers to access the warehouse.

## Bond issuance by development authorities for energy efficiency

Sub-national governments may have associated development authorities which have the power to issue bonds to support infrastructure projects. These authorities can directly access low-cost debt in public markets based on the backing of sub-national government credit. GIBs can work with development authorities to identify private investment partners, help structure deals, identify energy project opportunities and create sustained energy finance programmes. For example, the Port of Greater Cincinnati Development Authority in the state of Ohio issued bonds to finance the local PACE programme (Port of Greater Cincinnati Development Authority, 2015).

## Municipal street-lighting loans[8]

There are over 7 million street lights in the United Kingdom which generate over GBP 300 million in electricity costs. The electricity needed to power street lights produces 1.3 million tonnes of $CO_2$ annually, equivalent to the emissions of 330 000 cars on

7. Personal communication with Bert Hunter, Connecticut Green Bank, 1 February 2016.

8. UK Green Investment Bank (2014b), "Low energy streetlighting: Making the switch", Market Report, UK Green Investment Bank, February, available at: www.greeninvestmentbank.com/media/5243/gib-market-report-low-energy-streetlighting-feb-2014-final.pdf

the road or 674 000 households. Despite the financial and environmental case for improved energy efficiency, fewer than 1 million street lamps are energy efficient.

To encourage municipalities to make the switch to low-energy lighting, the UK Green Investment Bank created an innovative "Green Loan" product in 2014 for municipalities which is specifically tailored to help cities upgrade their street lighting to more energy-efficient light emitting diodes (LEDs). The efficient lighting technology produces energy savings that exceed the cost of the loan payment, allowing borrowers to be cash-flow positive throughout the period of the loan. The product's fixed rates and terms designed to match the payback period allow cities and towns to enjoy net savings on their street lighting from day one of the project and municipalities save 80% of their lighting costs. By using this product, participating municipalities reduce their operating budgets and take advantage of investment opportunities that otherwise would be left untapped because of competing investment needs deemed to be of higher priority.

## Promoting innovation in early-stage companies and projects

In March 2016 the Australian government announced the creation of a new AUD 1 billion Clean Energy Innovation Fund. The Fund will be jointly managed by the CEFC and the Australian Renewable Energy Agency and will provide both debt and equity for clean energy projects. It will focus on early-stage companies, business and projects seeking growth capital or early stage capital (CEFC, 2016).

## Overcoming financing barriers for residential solar project developers

In 2015, NY Green Bank provided a USD 25 million warehouse credit facility to a New York-based solar provider that designs and installs systems for residential homes at no cost to the consumer. The project will demonstrate the commercial viability of solar developers which have had early market success but have had more difficulty accessing financing than larger, better known developers.

## Public lending to facilitate commercial financing for biogas

Australia's Clean Energy Finance Corporation (CEFC) provided an AUD 15 million market-rate loan to an Australian beef processor in order to build a biodigester on top of the processing facility. The loan helped the borrower receive commercial financing from its own private bank for the AUD 40 million project. The biodigester replaced a coal-fired power plant, and covers half of the facility's energy needs.

## Financing waste-to-energy[9]

A consortium comprising the UK Green Investment Bank and other partners[10] invested GBP 47.8 million in a plant that will convert recovered wood into electricity using gasification technology. Over its expected 20-year lifetime, the plant is forecast to supply enough renewable energy to power 17 000 homes each year and is expected to deliver emissions reductions of around 2.1 million tonnes of $CO_2$ equivalent, and to save around 1.3 million tonnes of wood from landfill. The UK Green Investment Bank directly invested GBP 12 million through preferred loan stock[11] and a further GBP 6.2 million in indirect investment through its cornerstone stake in a co-investor for the project - the UK Waste Resources and Energy Investments (UKWREI) Fund.

## Extending the green bank model to international activities

All GIBs and GIB-like entities focus on domestic infrastructure, with the exception of the pilot joint venture announced in March 2015 by the UK Green Investment Bank and the UK Department of Energy and Climate Change (DECC). The joint venture—UK Climate Investments LLP (UKCI)—will target East Africa, South Africa and India and will focus on renewable energy and energy efficiency. The investment approach will follow the UK Green Investment Bank business model and will focus on investing in green projects on commercial terms and mobilising private sector investment. The fund has been allocated up to GBP 200 million from the UK Government's International Climate Fund, and has a dedicated team supported by the UK Green Investment Bank (UK Green Investment Bank, 2015; UK House of Commons, 2015).

9. UK Green Investment Bank (2013b), "Annual report 2013", Green Investment Bank, Edinburgh, available at: www.gov.uk/government/uploads/system/uploads/attachment_data/file/336552/green-investment-bank-annual-report-2013.pdf

10. Balfour Beatty plc, Eternity Capital Management Limited, Foresight's UK Waste Resources and Energy Investments (UKWREI) Fund, in which the Green Investment Bank is a cornerstone investor, and the GCP Infrastructure Fund with the developer, Carbonarius.

11. Preferred loan stock refers to stock shares used as collateral to secure a loan from another party. Preferred stocks have priority over common shares.

# 4 Greening existing institutions versus establishing green banks

To mobilise private investment in domestic green infrastructure, "greening" existing institutions may be preferable to creating new institutions when the necessary institutional and political support exists. For example, many countries have national development banks (NDBs) (or public investment, infrastructure or industrial development banks) which focus on domestic investment. These banks are typically much larger than even the largest GIB. Many NDBs are less focused on mobilising green investment than GIBs and have broader agendas than mobilising green infrastructure investment. To achieve the objectives of the Paris Agreement and the SDGs, countries will need to seize opportunities to "green" infrastructure lending by NDBs. On the other hand, some NDBs have been providing financing for low-carbon projects for many years. For example, Germany's KfW has been investing in environmental protection domestically and internationally since the 1980s, and invested approximately USD 56 billion in 2015 in "domestic promotion", including but not limited to "special programmes to foster the use of renewable energy, to increase energy efficiency and to promote innovative technology companies" (KfW, 2016). Given the resources and longer track records of some NDBs in leveraging private climate finance and investment, they can provide important lessons for GIBs.

GIBs may also not be suitable for all countries. Establishing a GIB presumes a domestic context in which relatively limited interventions are sufficient to facilitate domestic private investment. Some domestic policy environments and local markets may be insufficiently developed to be appropriate for a GIB which uses commercial interventions. In these cases, market development and capacity building, and therefore grant models and significant subsidisation (e.g. from MDBs), are often required. However, the global spread of renewable-energy markets may make GIBs (or GIB-like entities) potentially relevant for a large number of countries. One study estimates that "[a]s of early 2015, at least 164 countries had renewable energy targets, and an estimated 145 countries had renewable energy support policies in place" (REN21, 2015).

Some factors to consider when evaluating the relative benefits of creating a GIB or greening existing institutions include:

- **Costs:** Establishing a new institution likely involves more time and costs than greening an existing institution, and may be viewed as expanding bureaucracy or creating duplicative government services.
- **Independence and authority**: Creating a new GIB with an independent status can provide flexibility to experiment, innovate and adapt to market developments. It can also shield the institution from day-to-day political interference. In the case of the UK Green Investment Bank this was deemed essential to attract long-term capital from institutional investors (UK House of Commons, 2011). Institutional barriers and political context could make it difficult for GIBs to address certain issues (Climate Policy Initiative, 2015). Those barriers could apply equally to NDBs, however.
- **Mandate and culture**: Many NDBs lack a clear mandate to promote national climate change mitigation (Smallridge et al., 2013). NDBs may support renewable energy projects while also financing fossil fuel projects in parallel. In contrast, GIBs are exclusively focused on green investment and face fewer competing agendas.
- **Financing approaches and instruments**: The types of preferred financing approaches vary across GIBs, NDBs and MDBs. The International Development Finance Club (IDFC), which brings together over 20 NDBs and sub-regional development banks from around the world, estimates that members made new commitments representing USD 99 billion in green finance in 2013 alone. Among the IDFC's members, 78% of financing in 2013 was in the form of concessional loans, followed by non-concessional loans (17%) and grants (3%). Other financial instruments such as equity and guarantees accounted for only 1% of investment (IDFC, 2014). GIBs tend to be more oriented toward accelerating risk-taking by

investors, through demonstration, co investment and sharing risks with investors using guarantees and other risk mitigants. However, there are exceptions to these characterisations of NDBs and GIBs. Some NDBs, such as KfW, as well as multilateral development banks like the European Investment Bank and others, also increasingly develop and use innovative tools to scale-up private finance from multiple investor classes. Some GIB-like entities (e.g. GreenTech Malaysia) make extensive use of concessional loans while GIBs like Australia's CEFC and Connecticut Green Bank use them only on a limited, targeted basis.

- **Scale**: The low-carbon investment portfolios of some NDBs are larger than those of even the largest GIB. If NDBs mainstream green investment throughout their portfolios, they may be able to mobilise LCR infrastructure at much greater scale than GIBs. However, if GIBs were able to significantly augment their current capitalisation by securing funds from other sources (e.g. the Green Climate Fund), the scale advantage held by NDBs could diminish.
- **A third option - strengthening domestic green investment programmes**: In addition to "greening" a single institution such as an NDB or creating a new GIB, governments may consider strengthening and expanding green investment programmes that are already housed in different government agencies and institutions. Interventions undertaken by some programmes and institutions, such as transaction structuring and co-investing, require different skills than providing subsidies and concessional lending. Efficiency gains could result from bringing together transactional expertise in similar technologies, projects and business models, particularly if staff have the financial and sector knowledge to undertake a range of interventions. Consolidation of programmes and related outreach would also facilitate information sharing with retail and commercial customers and other investors (Climate Policy Initiative, 2015).

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OECD ENVIRONMENT POLICY PAPER, NO. 6, JANUARY 2017

# Green Investment Banks

## Innovative Public Financial Institutions Scaling up Private, Low-carbon Investment

This Policy Paper describes the relatively new phenomenon of publicly-capitalised green investment banks and examines why they are being created and how they are mobilising private investment. It draws on the OECD report "Green Investment Banks: Scaling up Private Investment in Low-carbon, Climate-resilient Infrastructure".

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**ISSN 2309-7841**

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