

Public Finance Institutions & the Low-Carbon Transition Case Study: UK Green Investment Bank

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Last updated December 2013

This case study has been prepared by CDC Climat Research based on publically-available information and data shared by the institution studied. It was prepared as a working document as part of the joint OECD-CDC Climat study on the role of public financial institutions (PFI) and the low-carbon transition. The study analyses the role of five PFIs in fostering the low-carbon energy transition through domestic climate finance activities.³ It the key tools and instruments currently used by these institutions to mobilise private sector investment, principally in OECD countries.

Public financial institutions (PFIs) are well-positioned to act as a key leverage point for governments' efforts to mobilise private investment in low-carbon projects and infrastructure. Between 2010-2012, these five institutions have provided over 100 billion euros of equity investment and financing for energy efficiency, renewable energy and sustainable transport projects. They use both traditional and innovative approaches to link low-carbon projects with finance through enhancing access to capital; facilitating risk reduction and sharing; improving the capacity of market actors; and shaping broader market practices and conditions.

The final report of the study is available at: <http://www.cdcclimat.com/Public-financial-institutions-OECD.html?lang=en>

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This publication is fully-funded by “Caisse des Dépôts”, a public institution. CDC Climat does not contribute to the financing of this research.

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Executive Summary

Country	United Kingdom
Created	2012
Rating	<ul style="list-style-type: none">• Information unavailable as of early 2014
Assets under management	£3.8 billion in capital from the UK government <ul style="list-style-type: none">• £ 3 billion to be invested through 2015• Additional £800 million for the 2015-2016 period
Investment in Low-Carbon Areas	£345 million in 2012 <ul style="list-style-type: none">• Energy efficiency: £ 145 million in 2012• Renewable energy: £ 200 million in 2012• Sustainable transport: no activity

The UK Green Investment Bank's Contribution to the Low-Carbon Energy Transition

Mandate

The UK Green Investment Bank (UKGIB) was created by the UK government in 2012 to assist in achieving national sustainability targets in a cost-effective manner. The UK Green Investment Bank has a mandate to deploy at least 80%⁴ of its capital in four sectors: offshore wind; waste recycling and energy from waste; non-domestic energy efficiency; and support for the Government's Green Deal. The UKGIB's role is to leverage the public and private finance necessary to build the green infrastructure and necessary related projects.

The UKGIB fills a market gap for long-term finance in "green" and low-carbon sectors identified as priority by the UK government. The UKGIB works to identify the "market within the gap." Thus they look to demonstrate that low-carbon projects can be profitable and demonstrate to private actors that substantial returns can be made.

The institution is a "for-profit" institution and aims to demonstrate to private actors that a profitable return can be made out of renewable energy projects/ clean projects, creating a track record for successful projects. Furthermore, they hypothesize that drawing in private financial flows to invest in chosen sectors requires that the involvement of the UKGIB is seen as a clear indicator of the financial health of a project rather than as a signal of its unprofitability without State intervention. As such, the UK Green Investment Bank's governance has been structured in a manner to ensure that investment decisions are made in accordance with market principles and seen to respect market

⁴ The balance of capital can be deployed in the following "non-priority" sectors, these being those authorised by our State Aid approval from the European Commission: biofuels for transport; biomass power; carbon capture & storage; marine energy and renewable heat.

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forces. The current and planned beneficiaries of the UK Green Investment Banks financing tend to be local governments, large-scale utilities and industrial corporations and limited investment with small- and medium-enterprises. The UKGIB is involved with households only through the capital it provides to the UK Green Deal.

The UK Green Investment Bank's investment approach challenges a number of traditional methods of financing "green" and "low-carbon" projects that are typically seen as posing a large number of investment risks. The UKGIB's has the potential to contribute to the financing of the low-carbon transition through a number of characteristics:

- Its principal objective of acting as a "catalyst" to encourage private sector lenders and investors to invest in green and low-carbon projects;
- A focus on sectors that are on the "cusp" of profitability where added "capital, knowledge and reputation can make the difference that enables a project to be financed successfully".
- A focus on demonstrating to institutional investors that low-carbon projects can provide the returns needed for their risk-return profiles and liquidity needs.

Funding

The bank is 100% held by the UK government through a capitalisation of £ 3.8 billion. The UK Green Investment Bank is not currently allowed to borrow capital from the commercial capital markets. As such it expects free up capital from its initial round of investments through returns and the future sale of current investments.

Current Levels of Investment in the Low-Carbon Economy:

Given the mandate of the UK Green Investment Bank, the institution is currently and plans to be involved almost exclusively in project investment activities. Thus, it is not involved in financing technological development nor climate-related service companies (energy service companies, etc.). In its first five months of operations in 2012, the UKGIB has committed funds to 11 transactions for a total value of £2.3bn. Of this amount, the UKGIB directly committed £635m, resulting in a leveraging ratio that sees £1 from UKGIB mobilising almost £3 of private sector money (UKGIB 2013a).

The UK Green Investment Bank's investment philosophy focuses on investment principally in the Construction and Operation phases of projects. Due to the high number of risks associated with the Development and Pre-Construction phases, the UKGIB has expressed reticence to be involved as their role is not to take on risks that other market actors are not ready to bear but rather support projects and technologies on the close to being market market-ready.

- Energy efficiency: £ 145 million in 2012

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The UK Green Investment Bank finances energy efficiency project in two ways. Firstly, it is mandated to provide senior debt funding to the Green Deal Finance Company⁵, which will provide long-term wholesale finance for the aggregation and refinancing of consumer Green Deal Plans. Secondly, the UKGIB has a mandate to invest in non-residential (domestic) energy efficiency projects – ranging from building facilities to industrial processes. The UKGIB plans to partner with lenders and investors who are already serving this sector to draw in additional financing. Typically, the UKGIB's capital will, at least initially, be structured in an "all equity" basis. Once operational, projects may be aggregated and refinance with lower-cost debt in order to recycle capital in new projects. The UKGIB wishes to facilitate the creation of a secondary market to attract capital and to free up utility and bank resources for further project development.

- Renewable energy: £ 200 million in 2012

Given the national objective of reducing GHG emissions by 80% by 2050, the UKGIB has prioritized action in the renewable energy sector focusing on two key areas: off-shore wind and bio-energy. To date, offshore wind is one of the investment areas where the UKGIB has been the most active. The UKGIB see its role in acting as a catalyst to link investors (institutional) who are increasingly searching for scale, long term, "real assets", with inflation-linked cash flows from operational projects. In the case of bioenergy, the UKGIB's role in this sector is to attract capital and demonstrate the profitability of investment. This occurs through direct investment in larger projects and for reasons of scale investment in smaller projects through a number of externally managed funds.

Climate Finance Tools and Instruments supporting project finance

- **The provision of long term capital, through senior debt**

The UK Green Investment Bank currently provides long-term debt to projects, representing close to 50% of all of its activities. In general, this takes the form of Senior debt coherent with current market rates with no concessional offers.

The UKGIB's principal investment strategy, particularly in the case of wind investments and other large-scale capital projects, is that of "Capital Recycling." The approach focuses on bridging the current break the UKGIB has noted between the operational stage of renewable energy and other projects delivering consistent, long-term returns, and the providers of long-term capital. Rather than "pushing" more financing into the construction phase, the UKGIB works to "pull" more capital through the pipeline by fostering the refinancing of completed projects by institutional investors.

- **No dedicated derisking instruments**

The UKGIB works to ensure through a reputation as a rational financial actor that their participation is a mark of a strong project rather than a project requiring public intervention to be profitable. The UKGIB avoids at all costs the semblance of "propping" up the projects within which it are involved,

⁵ The Green Deal Finance Company is a not-for-profit mutual bringing together 50 actors from the public and private sector to facilitate the implementation of the Green Deal. It works closely with the British Department of Energy and Climate Change to support the financing of energy efficiency projects.

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but rather as acting as a catalyst. As such, the UK Green Investment Bank is not willing to accept significant reductions in the risk/return profiles of the projects within which it invests and thus provides no dedicated derisking instruments.

- **Filling the capacity gap: developing market expertise**

The UK Green Investment Bank currently does not have any dedicated programs to provide consultancy services to investors and financial actors. Nevertheless, it is currently playing an indirect role in developing larger market knowledge. The UKGIB is assembling a substantial team of experts to understand how to assure the profitability of the project identified for investment. Removing the informational transaction costs surrounding relatively unknown and un-tested technologies has been identified as an important step to involve institutional investors and other players who do not have the dedicated teams.

Table 1: The UKGIB's roles and financial instruments to finance the low-carbon transition

Detailed functions	Energy Efficiency	Renewable Energy	Transport
I. Facilitate access to capital			
<ul style="list-style-type: none">Long-term capital provider	<ul style="list-style-type: none">Direct equity and debt to large scale projectsMezzanine financing⁶	No activity	
<ul style="list-style-type: none">Facilitate access to private capital	<ul style="list-style-type: none">Debt and equity through fund structures for smaller-scale projectsLeveraging capital through bonds under consideration		
II. De-risking			
	No dedicated instruments or programs identified	No activity	
III. Filling the capacity gap			
<ul style="list-style-type: none">Aid project developmentReducing project risk	No dedicated instruments or programs identified	No activity	

Mainstreaming Climate and Energy across all Activities:

The UK Green Investment Bank has a double bottom line in its accounting practices. Firstly, within the mandates sectors of activity, the UKGIB reports on the pure financial return of projects as other commercial actors. Secondly, it have a “green impact” appraisal reporting which analyses the results

⁶ In the case of the UKGIB these forms of debt are not characterized as derisking mechanisms as the UKGIB provides junior and mezzanine debt in line with typical commercial market rates rather than at a subsidized level.

of their activities on greenhouse gas mitigation (calculated across the portfolio), waste disposal and other environmental criteria related to their 5-point green purpose.

As part of their green bottom line process and indicators, the UKGIB quantifies the emissions avoided through its investment activities. The UK Board of Directors will use this information in its statutory duty to ensure that its activities in making, facilitating or encouraging investments in each year and in any previous financial years would (taken as a whole) be likely to contribute to a reduction in global GHG emissions.

1 The role for the UK Green Investment Bank in the low-carbon transition

The UK Green Investment Bank was created by the UK government in 2012 to assist in achieving national sustainability targets in a cost-effective manner. The model of a “green” public bank was chosen in response to continued financing challenges affecting green infrastructure projects remaining even after government policies to incentivize investment and leverage finance from public and private actors. Thus, the role of the UKGIB is to fill a market gap for long-term finance for infrastructure projects in “green” and low-carbon sectors as approved by the UK government. However, opposed to the idea that their role is to purely fill a “gap in the market,” the UKGIB works to identify the “market within the gap.” Thus they look to demonstrate that low-carbon projects can be profitable and demonstrate to private actors that substantial returns can be made.

1.1 A “for-profit bank” created to support the UK governments climate, energy and environmental policy objectives

The UK Green Investment Bank is unabashedly a “for-profit” institution. Its mandate and investment philosophy requires that it takes into consideration both the financial and environmental profile of sectors and projects. As such, its mission is to demonstrate through strong financial returns from the project within which it invests that “green”, “low-carbon” investment are sustainable and profitable investments for financial institutions. Thus, its objective is to accelerate investment in the transition to a greener economy through the demonstration of its potential for profitability.

Box 1 The UK Green Deal

The Green Deal is a government program launched by the Department of Energy and Climate Change focused on providing loans for energy saving measures for homeowners.

The Green Deal has four main objectives:

- To provide accredited advice and recommendations to improve the energy efficiency of UK homes
- Improve the energy efficiency at no upfront cost to the homeowner
- To provide reassurance that improvements will be executed to the highest standards
- To allow repayments to be made through energy bills, with the opportunity of switching supplier at any time

The loans are repaid through energy bills. The loans contracted for the improvements are transferred with the property rather than the resident of the property. As described below, the UK Green Investment Bank has provided a portion of the capital to the Green Deal Finance Company which is the entity charged with Green Deal-related lending activities.

1.1.1 An institution created to finance UK government policy objectives

The UK Green Investment Bank has been created to leverage the public and private finance necessary to build the green infrastructure and related projects necessary to meet the United Kingdom's national climate, energy and related environmental targets including:

- a reduction in greenhouse gas emissions of 34% by 2020 and at least 80% by 2050 compared to 1990 levels;
- 15% of all energy consumed generated from green sources by 2020 (3% in 2010); and
- Reduce biodegradable waste to landfills by 65% compared to 1995 levels.

The UK Green Investment Bank Equally has role in providing financing for the large UK Green Deal targeting energy efficiency investment in residential and commercial buildings (see Box 1) Presenting a new model for “green” investment: success through profits

The UK Green Investment Bank's investment approach challenges a number of traditional methods of financing “green” and “low-carbon” projects that are typically seen as posing a large number of investment risks. Rather than deploying financial instruments to reduce the price of capital (subsidies, guarantees, concessional loans) or investing in high-risk projects, the UKGIB has expressed their unwillingness to accept high levels of risk for low-levels of return. As such; the UKGIB refutes what it sees as the dominant hypothesis concerning obstacles to these projects: that the principal market failures stem from the “fact” that the market “doesn't understand” and informational asymmetries.

The UKGIB's intervention is influenced by the premise that it is not in and of itself the price of capital that is limiting private sector involvement in low-carbon and other “green” projects, but rather that the risk-return ratio is currently perceived as too high. As such, the UKGIB hypothesizes that market actors do understand the market and see the current risk profile of new technologies – with the conclusions that that there is too much risk for too little return. The UKGIB believes that while market actors make a reasonable decision, that the perceived risks may be higher than actual risks. This is due to a lack of sufficient data on long-term performance history of green technologies and lack of expertise to analyse limited data. Therefore, investors may be missing promising opportunities which have potential for attractive return.

To correct this problem in the market, the UKGIB plans to identify and invest in low-carbon projects that can bring strong returns in order to demonstrate that these sectors can be profitable. Thus, UKGIB will invest in sectors that are seen as being “on the cusp” of being “investible” for mainstream market players, where its own detailed risk and technical analysis gives it confidence that the risks are well mitigated and appropriately priced in the expected return.. While the UKGIB admits that this approach may not solve all market “gaps”, it nevertheless estimates that this will foster the long-term involvement of private capital within the market even after the UKGIB no longer invests in these sectors. Through this approach, the UK government and the UKGIB hopes to foster private investment in low-carbon projects without establishing medium- and long-term market dependences on public subsidies or financial flows to sustain the dynamic.

As such the UK Green Investment Bank has clearly indicated what roles it will not play within the market:

- a "lender of last resort"; nor
- a provider of grants or regional assistance; nor
- a taker of high risk for low reward; nor
- a provider of venture capital or development equity

1.1.2 A publicly-held institution functioning under private investment logic

The bank is 100% held by the UK government through a capitalisation of £ 3.8 billion. The UK government has a role in its governance through the identification of priority sectors however it has little direct influence on individual investment decisions through the board of directors.

The UKGIB hypothesize that drawing in private financial flows to invest in chosen sectors requires that the involvement of the UKGIB is seen as a clear indicator of the financial health of a project rather than as a signal of its unprofitability without State intervention. As such, the UK Green Investment Bank's governance has been structured in a manner to ensure that investment decisions are made in accordance with market principles and seen to respect market forces.

The Board of Directors of the UKGIB is collectively responsible for the long-term success of the Company and in particular to its sole Shareholder to set the strategy to maximize value for the Shareholder. The Constitution provides that the Board is to consist of no fewer than eight Directors and that the Chair and Independent Non-Executive Directors are to constitute a majority of the Board. All of the Directors bring their own independent judgment to the major matters affecting the Company and each of the Non-Executive Directors is considered by the Company to be independent, with the exception of the representative of the UK Government on the Board.

1.1.3 Financing investment through the recycling of an initial injection of public funds

The UK government has provided an initial injection of £ 3 billion to the Green Investment Bank to be invested by 2015 followed by an additional £ 800 million for the 2015-2016 period. The UK Green Investment Bank is not currently allowed to borrow capital from the commercial capital markets. As per the UK government's interpretation of Eurostat accounting principles, any debt engaged by the bank is counted towards the calculation of the larger UK deficit under Maastricht terms.⁷ As such, and as presented in Figure 1, the UKGIB expects free up capital from its initial round of investments through the future sale of investments and then "recycle" this capital into new projects as well as increase their reserves and cover operating costs through financial returns.

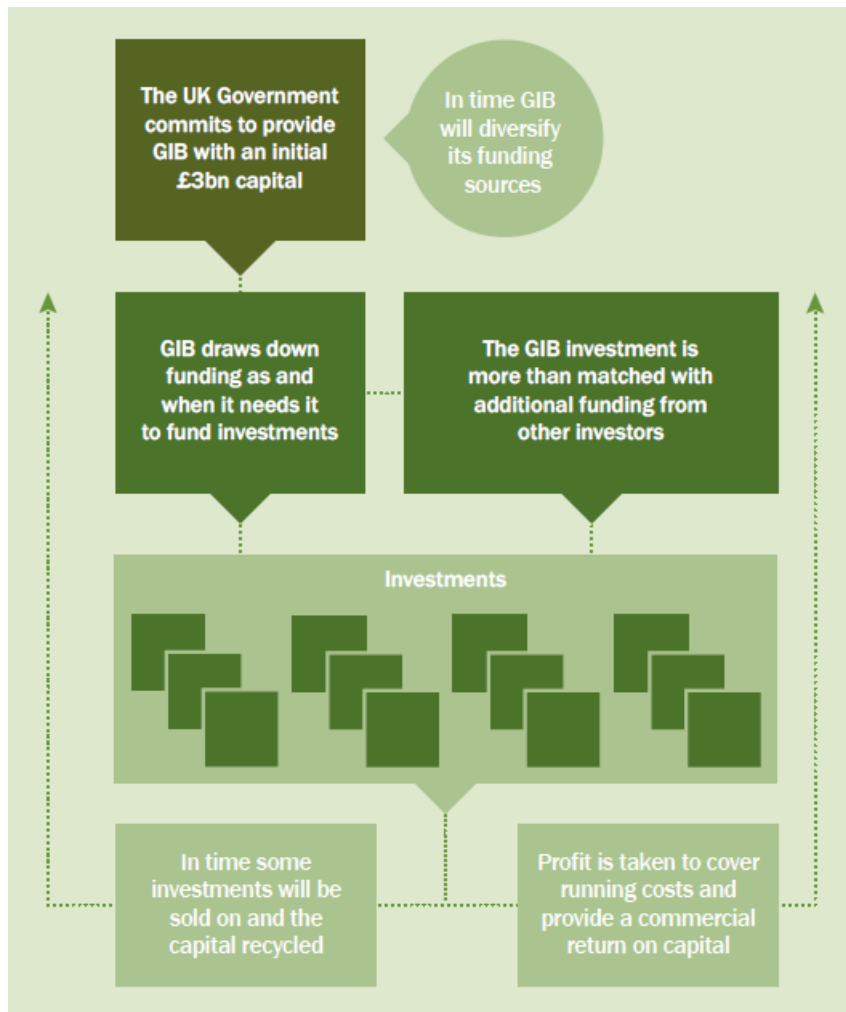
⁷ This is different, for example, than the current interpretation of these accounting these principals by the German government for the activities of KfW.

1.2 Characteristics to support a low-carbon, climate resilient transition

1.2.1 Principal focus: drawing in private finance

The UK Green Investment Bank has the mandate to be a long-term investor in infrastructure and other forms of project finance. The UKGIB's identification as a "for profit" bank stems from the recognition that its initial capitalisation will not be sufficient to achieve the UK green goals, estimated at approximately 200 billion £ (Nolan 2013). As such, the bank sees its role in acting as a "catalyst" to encourage private sector lenders and investors to invest in green and low-carbon projects. The UKGIB is committed to working with those actors already involved in these sectors to get "commercial green projects successfully and profitably funded." A need to ensure strong investment returns has been identified as key in convincing other financial actors to invest in these sectors. Through demonstrating that the UKGIB and existing actors can make profits on their investments, it expects to change the general perception of investment risks in these areas. This should, in turn, reduce the cost of new capital and thus allow for green infrastructure to be built cost effectively and increasingly at the needed scale of deployment.

Figure 1: Financial Flows at the UK Green Investment Bank



Source: (UKGIB 2013a)

1.2.2 Providing “transitional” support for sectors on the cusp of profitability

The UK Green Investment Bank has a mandate to deploy at least 80%⁸ of its capital in four sectors: offshore wind; waste recycling and energy from waste; non-domestic energy efficiency; and support for the Government’s Green Deal (see Box 2). The selection of sectors for investment is either directly tied to Government programs and objectives (i.e. the Green Deal) or an analysis of need for intervention within a given sector. The selected sectors are those where it appears that their added “capital, knowledge and reputation can make the difference that enables a project to be financed successfully”. Chosen technologies should rather be on the “cusp” of investibility from the perspective of a mainstream investor. For the UKGIB this means that these projects require increased expert knowledge – not necessarily risk transfer or lower cost finance – to put into place.

As such, the bank excludes investment in two types of technologies. Firstly, those that are already profitable such as solar and onshore wind energy where the private sector is already active and their participation would crowd out rather than support further private sector involvement. Secondly, there is little interest in investing in those that are too “upstream” such as carbon capture and storage (CCS) and wave & tidal which are both in the demonstration phases and thus pose a large number of technology-related risks.

The selection of individual projects must meet their double bottom line: both green (ie meet its sustainability criteria) and commercially profitable (ie capable of generating a return in excess of an appropriate market cost of the required financing). Key to this process is assembling a team versed in both the financial and technical skills necessary to full evaluate projects.

1.2.3 Ensuring access to long-term capital through the demonstration of profitability to different classes of institutional investors

Furthermore, given what the UKGIB has characterized as a “drying-up of long-term capital” due to the financial crisis and recent changes in financial regulation, the UKGIB is equally responding to a perceived reduction in traditional banks’ interest to hold long-term assets. In general, financing has become shorter-term and expensive, and the “funding mis-match” risk of financing longer-term project debt is increasingly unattractive to many of them. The UKGIB see its role in demonstrating to institutional investors that these projects can provide the returns needed for their risk-return profiles and liquidity needs.

⁸ The balance of capital can be deployed in the following "non-priority" sectors, these being those authorised by our State Aid approval from the European Commission: biofuels for transport; biomass power; carbon capture & storage; marine energy and renewable heat.

2 Current activities related to the low-energy transition in the United Kingdom

Given the mandate of the UK Green Investment Bank, the institution is currently and plans to be involved almost exclusively in project investment activities. Thus, it is not involved in financing technological development nor climate-related service companies (energy service companies, etc.). The UKGIB has access to a number of different financial tools to invest in projects. The strategies identified and the financial instruments used to achieve its investment objectives vary between the different sectors targeted and the phase of development of projects.

2.1 Quantifying the current role of the UK Green Investment Bank

In its first five months of operations in 2012, the UKGIB has committed funds to 11 transactions for a total value of £2.3bn. Of this amount, the UKGIB directly committed £635m, resulting in a funding ratio that sees £1 from UKGIB mobilising almost £3 of private sector money (UKGIB 2013a). All actions were taken on fully commercial terms in line with co-investors. Offshore wind accounted for 16% (~£ 100 million), biomass energy projects equally 16% (~£ 100 million) and non-domestic energy efficiency made up 23% (£ 145 million).

Figure 2: UK UKGIB capital commitments by sector, product and phase



Source: (UKGIB 2013a)

2.2 Scope, range and beneficiaries of low-carbon activities

Within the scope of the sectors studied (see Table 2), the UKGIB's activities are concentrated principally in renewable energy and energy efficiency. The UKGIB currently has no mandate to invest in the transport sector. The UKGIB principally fosters the access to capital within these sectors, split between the provision of debt and equity (see Figure 2). For both renewable energy and energy efficiency, the UKGIB provides direct equity and lending for large-scale projects. For smaller projects,

the UKGIB invests through externally-managed fund of fund structures. In general, the UKGIB is not currently active in providing dedicated derisking services nor capacity building programs.

The UK Green Investment Bank's investment philosophy focuses on investment in the Construction (principal) and Operational phases of projects. Construction phase financing to date is concentrated principally in the waste and bio-energy sectors, focusing only on shovel-ready greenfield projects. Operational phase investment focuses on the fostering of capital recycling (described in Section 3 below). Due to the high number of risks associated with the Development and Pre-Construction phases, the UKGIB has expressed reticence to be involved as their role is not to take on risks that other market actors are not ready to bear but rather support projects and technologies on the cusp of being market-ready.

Table 2: Principal sectors, project types and instruments of intervention of the UKGIB

	Renewable Energy		Energy Efficiency				Transport
	Small Scale	Large-Scale	Small Scale		Large Scale		
			Residential	SMEs	Commercial/ Industrial	Public Buildings	
Access to Capital	- External Fund Structures	- Direct Debt - Equity	- UK Green Deal Funding	- External Fund Structures	- Equity - Direct Debt - External Fund Structures	- External Fund Structure	No Activity / Beyond Mandate
Derisking	No dedicated activities identified						
Capacity/Expertise	Internal expertise						

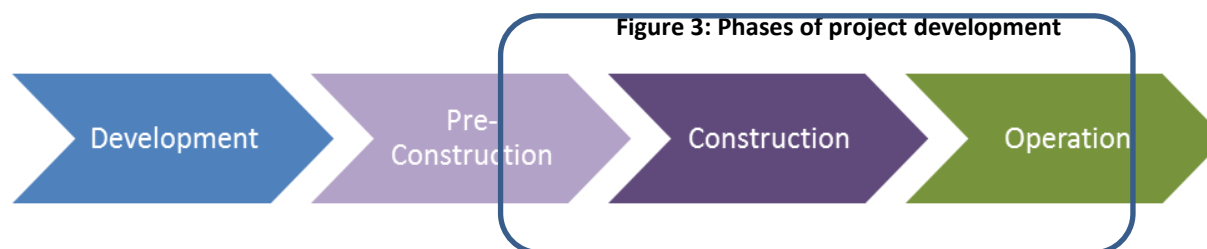


Table 3: Principal phases of involvement of the UKGIB

	Development:	Construction:	Operational:
Renewable Energy	No involvement	<ul style="list-style-type: none"> - Debt financing - Equity - Equity through external fund structures 	- Equity (Capital Recycling)
Energy Efficiency	No involvement	<ul style="list-style-type: none"> - Debt financing - Equity through external fund structures 	- Fund structures
Sustainable Transport	No Activity / Beyond Mandate		

The beneficiaries of the UK Green Investment Banks financing tend to be local governments, large-scale utilities and industrial corporations and limited investment with small- and medium-enterprises. The UKGIB is involved with households only through the capital it provides to the UK Green Deal.

Table 4: Principal beneficiaries of UKGIB financing and investment

	Public	Private		
	Local governments	Utilities /Large Corporations	SMEs	Households
Renewable Energy	X	X	X	
Energy Efficiency	X	X	X	UK Green Deal
Sustainable Transport	Not within current mandate			

2.3 Renewable energy: providing refinancing for off-shore wind and bio-energy

Given the national objective of reducing GHG emissions by 80% by 2050, the UKGIB has prioritized action in the renewable energy sector focusing on two key areas: off-shore wind and bio-energy.

Offshore wind

To date, offshore wind is one of the investment areas where the UKGIB has been the most active. It has identified a significant funding need of approximately 3 million £ per MW up to 2020, – thus £ 20 to 45 billion to construct the anticipated increase of capacity of 10-18 GW. The UKGIB has identified the capital needs of utilities and project developers as being principally present in construction phases and in operational phases to free up and recycle capital. The sector will require a significant number of financial investors to achieve the necessary development. The UKGIB see its role in acting as a catalyst to link investors (institutional) who are increasingly searching for scale, long term, “real assets”, with inflation-linked cash flows from operational projects.

Bioenergy

Part of the UKGIB’s investment in the waste section, bioenergy projects have the potential to account for 5-11% of the UK’s electricity generation by 2020. The UKGIB’s role in this sector is to attract capital and demonstrate the profitability of investment. This occurs through direct investment in larger projects and for reasons of scale investment in smaller projects through a number of externally managed funds.

Table 5: UKGIB actions in the renewable energy sector

	Off-shore Wind	Bio-energy
Government engagement	Anticipated increase in offshore wind capacity from the current level of some 3GW to possibly 18GW by 2020 (central case estimate; high case : 28GW; low case : 10GW) – mandated role for the UKGIB	Bioenergy has the potential to account for 5-11% of UK electricity generation by 2020 - Not a mandated program in terms of energy generation, however linked to larger issues of waste treatment
Identified need:	Catalyst and capital recycling: Free up capital from utilities and project developers for the development and construction of new projects by linking pools of long term institutional capital debt and equity with projects in the operational phase	Need to attract more capital into the sector / reduce the cost of capital, as risk perceptions are charged as a result of the success of those investors who operated at the “leading edge”
Phases of involvement	<p>Primary target (90% of total wind financing): Investment in operational phases of completed projects</p> <p>Secondary target (10% of total wind financing): construction phase - from “late permitting” onwards, principally through equity participation (project developers prefer this as project development debt is too expensive)</p>	<ul style="list-style-type: none"> Construction (shovel ready) and Operational phases
Financial Instruments	<ul style="list-style-type: none"> Senior debt, Bonds, Mezzanine Financing Equity Fund of funds (Greencoat UK Wind PLC) 	<ul style="list-style-type: none"> Financing for smaller scale ‘merchant’ projects (through appointed fund managers – Foresight and Greensphere) Direct investment into larger merchant projects (senior debt)
Risk sharing	None	None
Capacity support	Through demonstration	Through demonstration
Current levels of Investment	<p>2012 investment: £ 100 million, including:</p> <ul style="list-style-type: none"> Whaley Wind Farm: refinancing contribution of £45m (debt) Rhyl Flats: £57.5m direct equity investment 	<p>2012 investment: £ 100 million, including:</p> <ul style="list-style-type: none"> £50m to the Aviva Investors REaLM Energy Centres Fund (the Fund), a new fund managed by Aviva Investors which specialises in investments in energy centres.

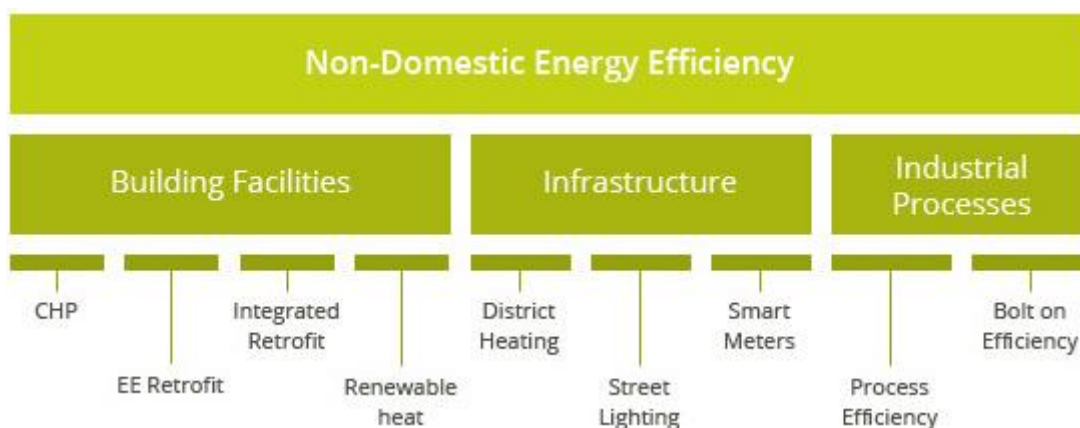
2.4 Energy efficiency: funding of the Green Deal and non-residential projects

The UK Green Investment Bank finances energy efficiency project in two ways. Firstly, it is mandated to provide senior debt funding to the Green Deal Finance Company, which will provide long-term wholesale finance for the aggregation and refinancing of consumer Green Deal Plans. The UKGIB is also working with Green Deal Finance Company and the Department for Energy & Climate Change to develop additional long term financing solution, enabling GDFC to access long term institutional finance and to keep the financial cost to consumers as low as possible.

Secondly, the UKGIB has a mandate to invest in non-residential (domestic) energy efficiency projects – ranging from building facilities to industrial processes. Studies suggest that the UK has the potential to be saving 196TWh in 2020 (equivalent to 22 power stations) through cost effective investment in energy efficiency. This is a reduction of about 11% compared to business as usual and could reduce the UK's carbon emissions by 41MtCO₂ (UKGIB 2013a). The UKGIB plans to partner with lenders and investors who already serving this sector to draw in additional financing. The UKGIB strategy is to participate in:

- Direct lending: larger deals (generally, those of larger than £30 million in total transaction size)
- Indirect lending: access the market for smaller (less than £30 million transaction size) deals indirectly (fund of fund vehicles). This use of fund of funds model is a pure issue of transaction costs and scale given their need to deploy of all their funds by 2015.⁹

Figure 4: Areas of investment in non-domestic energy efficiency



Source: UKGIB 2013a

At term, the objective in this sector is to target and finance projects that have an "infrastructure equity" risk profile. Typically, the UKGIB's capital will, at least initially, be structured in an "all equity" basis. Once operational, projects may be aggregated and

⁹ The UKGIB has contracted with two fund managers who assist deploying their capital in smaller NDEE deals and have committed £50million to each of: UK Energy Efficiency Investments Fund; Energy saving investments (ESI).

refinance with lower-cost debt in order to recycle capital engagements and to allow investment in new projects. The UKGIB wishes to facilitate the creation of a secondary market to attract capital and to free up utility and bank resources for further project development.

Table 6: UK Green Investment Bank actions in *Energy efficiency*

	Non-domestic energy efficiency
Government Engagement	Target sector for involvement: potential energy savings of 196TWh in 2020 equivalent to 22 power stations through cost effective investment in energy efficiency. A reduction of about 11% compared to business as usual and could reduce the UK's carbon emissions by 41MtCO ₂ .
Identified need:	<ul style="list-style-type: none"> - Long-term debt financing needed – the market remains thinly served and lacking in liquidity - High fragmentation of market (technology and scale of projects) and thus difficult to finance without aggregation into portfolios under common ownership - Full and confident knowledge of the available savings and an agreed way of managing and sharing the project risks in order to create a financeable investment
Phases of involvement	<ul style="list-style-type: none"> - Construction: greenfield projects - Operational: brownfield
Financial Instruments	<ul style="list-style-type: none"> - Direct investment in large-scale project: typically an all-equity bases with refinancing for operational projects lower-cost debt - Small scale: fund of funds assist deploying capital in smaller deals
Risk sharing	None
Capacity support	<ul style="list-style-type: none"> - Through demonstration of profitability to market actors - Partnering with active market players
Current levels of Investment	<ul style="list-style-type: none"> - Committed £50million to each of: UK Energy Efficiency Investments Fund; Energy saving investments (ESI)

2.5 Sustainable Transport

The UK Green Investment Bank does not have a mandate and does not, thus, invest in this area.

3 Climate financial tools and instruments supporting project finance

As described in Section 1, the UK Green Investment Bank's strategy is to draw in private finance and institutional investors into the various markets in which it is active through setting an example in terms of profitability. The UKGIB's purpose is not to crowd out existing actors, and thus it invests in sectors that are struggling to attract the necessary capital but are still producing investible projects. Their philosophy not only seeks to avoid crowding out, but equally distorting markets as well as conferring unfair advantages to particular market participants.

In practice, this equates to investing at the side of other actors – participating in consortiums, funds and providing debt and equity jointly with private sector actors to both foster and leverage their participation. The UKGIB works to ensure through a reputation as a rational financial actor that their participation is a mark of a strong project rather than a project requiring public intervention to be profitable. The UKGIB avoids at all costs the semblance of “propping” up the projects within which it are involved, but rather as acting as a catalyst. As such, the UK Green Investment Bank is not willing to accept significant reductions in the risk/return profiles of the projects within which it invests and thus provides no dedicated derisking instruments.

Table 7: The UK Green Investment Bank's Range of Tools to Support Low-Carbon Project Investment

Detailed functions	Energy Efficiency	Renewable Energy	Transport
I. Facilitate access to capital			
• Long-term capital provider	• Direct equity and debt to large scale projects Mezzanine financing ¹⁰	No activity	
• Facilitate access to private capital	• Debt and equity through fund structures for smaller-scale projects • Leveraging capital through bonds under consideration		
II. De-risking			
	No dedicated instruments or programs identified	No activity	
III. Filling the capacity gap			
• Aid project development • Reducing project risk	No dedicated instruments or programs identified	No activity	

¹⁰ In the case of the UKGIB these forms of debt are not characterized as derisking mechanisms as the UKGIB provides junior and mezzanine debt in line with typical commercial market rates rather than at a subsidized level.

3.1.1 Provision and Facilitating access to long-term financing

The UKGIB has a number of financial instruments at its disposition to provide long-term capital to projects. These include different forms of debt, equity investments, and bonds. The UKGIB has stated that they only instrument that involved equity risk for debt return.

3.1.2 Provision of senior and mezzanine debt coherent with market rates

The UK Green Investment Bank currently provides long-term debt to projects, representing close to 50% of all of its activities. In general, this takes the form of Senior debt coherent with current market rates with no concessional offers. The UKGIB equally uses other forms of Junior and Mezzanine debt. However, this typically occurs at a level of commercial return in line with level of risk. As such, the UKGIB is not willing to assume a disproportionate level risk in providing mezzanine and junior debt at rates significantly below those that other commercial actors would apply.

3.1.3 “Pulling capital through the pipeline” through equity and capital recycling

The UKGIB’s principal investment strategy, particularly in the case of wind investments and other large-scale capital projects, is that of “Capital Recycling.” The approach focuses on bridging the current break the UKGIB has noted between the operational stage of renewable energy and other projects delivering consistent, long-term returns, and the providers of long-term capital. Rather than “pushing” more financing into the construction phase, the UKGIB works to “pull” more capital through the pipeline by fostering the refinancing of completed projects by institutional investors.

As such, the objective of the UKGIB is to attract equity participation and other forms of refinancing during the “Operational” phase of projects. During this phase when the majority of project-based risks have been resolved and the project is producing consistent returns, the investment of institutional investors can freeing up capital for project developers to invest in new projects. It does this by providing equity and debt refinancing coherent with the risk-return and liquidity expectations of different classes of institutional investors. Recipients of “capital recycling” investments are expected to re-commit the money liberated through refinancing into to new projects.

3.1.4 Consideration of raising further capital through bond issuance

The UKGIB is currently exploring the emission of green or climate bonds as a means of raising further capital and aggregating smaller projects together. This would equally allow the UKGIB to move assets off balance sheet in order to both expand activity and respect statutory capital ratios. For the Green Investment Bank however the key issue is bond performance – it cannot just be green, but it must equally be commercial and liquid to assure private sector participation.

3.2 Risk transfer & sharing

The UK Green Investment Bank does not have a role in providing risk transfer and sharing products and instruments that would lead to them assuming more risk than other market actors.

3.3 Filling the capacity gap: provision of expertise and consultancy services

The UK Green Investment Bank currently does not have any dedicated programs to provide consultancy services to investors and financial actors. Nevertheless, it is currently playing an indirect role in developing larger market knowledge. The UKGIB is assembling a substantial team of experts to understand how to assure the profitability of the project identified for investment. Their current OECD / CDC Climate: Public Finance Institutions and the Low-Carbon Transition

team of 70 experts overcome the informational issues related to these projects and fully understanding the financial risk and return. Removing the informational transaction costs surrounding relatively unknown and un-tested technologies has been identified as an important step to involve institutional investors and other players who do not have the dedicated teams. This “educational strategy” has allowed in the case of anaerobic digestion to identify the characteristics that make projects profitable (their physical local) which in turn has allowed them to demonstrate to the market that this is a profitable investment opportunity.

4 Mainstreaming and integration across activities

The mandate and thus the majority of the activities of the UK Green Investment Bank address sectors that are intrinsically linked to the low-energy transition and the fight against climate change. Nevertheless, the UKGIB has developed seven principles to determine, assess and manage the green impact of the transactions it is involved with. These principles focus on the steps necessary to ensure that the institution’s activities allow it to contribute towards its “green purpose,” including the reduction of greenhouse gas emissions. However, these documents do not set out quantified targets or thresholds in terms of total contribution to the different “Green Purposes.”

4.1 A double bottom line

The UK Green Investment Bank has a double bottom line in its accounting practices. Firstly, within the mandates sectors of activity, the UKGIB reports on the pure financial return of projects as other commercial actors. Secondly, it have a “green impact” appraisal reporting which analyses the results of their activities on greenhouse gas mitigation (calculated across the portfolio), waste disposal and other environmental criteria related to their 5-point “Green Purpose”:

- The reduction of greenhouse gas emissions;
- The advancement of efficiency in the use of natural resources;
- The protection or enhancement of the natural environment;
- The protection or enhancement of biodiversity; and
- The promotion of environmental sustainability.

In general, the activities of the UKGIB are not restricted by other sustainable development mandates.

Figure 5: UKGIB Green Purpose Metrics

GIB Green Purpose	Metric
The reduction of GHG emissions	<ul style="list-style-type: none"> • GHG emissions avoided (t CO₂e) • Renewable electricity generated (TWh)
The advancement of efficiency in the use of natural resources	<ul style="list-style-type: none"> • Materials consumption avoided through materials recycling (t)
The protection or enhancement of the natural environment	<ul style="list-style-type: none"> • Waste-to-landfill avoided (t)

Source: UKGIB 2013a

4.2 A Green Investment Policy to ensure its Green Investment Principals

The UK Green Investment Bank published its “Green Investment Policy” description in November of 2013 (UKGIB 2013c). This policy is designed to ensure that the institution’s activities are in line with the seven Green Investment Principals (UKGIB 2013d):

1. *Positive contribution to a recognised green purpose*: The UKGIB will make a loan or investment only if it is satisfied that it will make (or is reasonably likely to make) a positive contribution to one or more of the institution’s recognised green purposes;
2. *Reduction of global greenhouse gas emissions*: The UKGIB is committed to ensuring that the effect of all their loans and investments, taken together, is that they will (or are reasonably likely to) contribute to the reduction of greenhouse gas emissions, both in the UK and globally;
3. *Enduring green impact*: The UKGIB will deploy its capital and manage risk based on principles of sound finance and responsible investment, so that it preserves and build their capital base as an institution which can have an enduring green impact;
4. *Clear and firm investment criteria*: The UKGIB will for each industry sector, identify the legal standards and other relevant green attributes that we will always consider when assessing whether any particular investment is likely to have a positive green impact.
5. *Robust green impact evaluation*: Before investing, the UKGIB will carefully consider the likely green impact of all prospective investments, based on a robust and transparent evaluation approach and process.
6. *Effective covenants, monitoring and engagement*: The UKGIB will seek to impose clearly documented requirements for securing the green impacts expected from each of its loans and investments, and it will monitor those impacts on a continuing basis over the life of that loan or investment.
7. *Transparent reporting*: The UKGIB will report at least annually on the implementation of its Green Investment Principles.

The UKGIB's Green Investment Policy has established the qualitative methods evaluating the coherence of its activities with its long-term objectives. These guidelines impact both the type of risks that the institution will take (Principle 3),¹¹ but also sets criteria for assessing whether individual projects contribute to the Green Purpose (Principle 4 and elaborated in detail in UKGIB 2013a). As described below, it equally lays out the broad guidelines for estimating the impacts on greenhouse gas emissions of its projects. Finally, the guidelines address the assessment of market-wide impacts of investments, including: *financial market development, reduced technology costs, wider effects* (capacity building, behavioural change). These guidelines, do not, however, establish quantified targets in terms for each of the individual green objectives.

4.3 Quantifying the avoided “green impact” and the emissions of projects and investments

As part of their green bottom line process and indicators, the UKGIB quantifies the emissions avoided through its investment activities. In November of 2013, the UKGIB released the methods that it uses to calculate the green impacts of its investments (UKGIB 2013b). These methodologies include sector- and technology-specific guidelines that are still under development. Nevertheless results from initial 2012-2013 investments are available and presented in Box 2. The UKGIB estimates the environmental benefit or Green Impact by comparing the project's impact against a “baseline” alternative outcome (scenario) based on estimates of the situation if the project in question had not taken place. The Green Impact is estimated by calculating the difference between the baseline impact and the estimate (or measured) project impact. This is used for GHG savings (tonnes CO₂e), and tonnes additional materials recycled or tonnes waste to landfill avoided from projects with a beneficial Green Impact (saving, reduction, etc.). (UKGIB 2013b)

The green impact of projects is evaluated across multiple time horizons, including (UKGIB 2013c):

- The estimated total green impact over the life of the project;
- The estimated average annual green impact of the project over its life and the average annual rate of green impact achieved per unit of investment (e.g. kg CO₂e/ £ invested); and
- The estimated average annual green impact at key points in the future. For example, the year 2020 is currently chosen for additional materials recycled and waste-to-landfill avoided and the period of the UK's third Carbon Budget (the period 2018-22) is used for greenhouse gas emissions reduction.

¹¹ In considering whether any potential loan or investment transaction will comply with this policy, the UKGIB will: consider the potential green impact of any loan or investment under section 1 (Positive contribution to a recognised green impact) and section 2 (Reduction of global greenhouse gas emissions) above in conjunction with a full risk analysis of that transaction; give more favourable consideration to any transaction which demonstrates both a lower risk profile and a higher green impact; give less favourable consideration to any transaction which demonstrates a higher risk profile and lower green impact; and apply a judgement on a case by case basis on whether each potential loan or investment would, if made, result in an overall portfolio which demonstrates a reasonable and prudent balance of risk and green impact in light of the potentially investible market opportunities available within our sectors. (UKGIB 2013c)

The UK Board of Directors will use this information in its statutory duty to ensure that its activities in making, facilitating or encouraging investments in each year and in any previous financial years would (taken as a whole) be likely to contribute to a reduction in global GHG emissions.

Box 2: The reduction of GHG emissions through investments

In the 2012–13 reporting period only two UKGIB assets – both offshore wind farms – were operational and generating GHG savings and each for only limited periods of time during which UKGIB was an investor, namely Walney (103 days) and Rhyl Flats (three days). These assets generated together ~67,000 MWh of electricity attributable to UKGIB's investments, equivalent to the needs of approximately 15,000 homes. This gives a GHG saving arising from this renewable power generation of 22,498 t CO₂e, equivalent to taking approximately 9,500 cars off the road for a year. This GHG saving has been independently assured by PricewaterhouseCoopers (PwC) (see Independent Assurance Report on p. 57 of this Annual Report). The lifetime savings of UKGIB's portfolio of investment as at the end of the period, including both the cumulative historic Green Impact and the future anticipated lifetime Green Impact, is ~43 Mt CO₂e.

To put this in context, that is equivalent to the target net annual emissions for Scotland in 2020¹. UKGIB anticipates that the future average annual GHG emissions reduction performance of our current portfolio of investments over the period 2018–22, including both committed and deployed capital, will be 1.6 Mt CO₂e. This is equivalent to ~3% of the UK's annual target reduction in GHG emissions during the UK's third Carbon Budget (2018–22)².

This estimated reduction in GHG emissions in 2020 is based on investment of £635m, giving an average return on investment of ~2.4 kg CO₂e /£ UKGIB invested. A significant part of this reduction in GHG emissions will be achieved via the projected production by UKGIB's portfolio of assets of ~12 TWh of electricity per annum in 2020, which is equivalent to approximately 9.5% of the UK's projected renewable electricity production in 2020³.

Source: (UKGIB 2013a)

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