



Mayor of London Energy Efficiency Fund (MEEF)

Ex-Ante Assessment

Annexes

- 1. Fund Summary**
- 2. Ex-Ante Assessment Completeness Checklist**
- 3. Stage One Report – Market Analysis**
- 4. Stage Two Report – Investment Strategy**
- 5. Delivery Arrangements**



Mayor of London Energy Efficiency Fund (MEEF) Summary

Applicant	Amber Infrastructure Limited
Investment Priorities	<p>4A - promoting the production and distribution of energy derived from renewable sources.</p> <p>4B - promoting energy efficiency and renewable energy use in enterprises.</p> <p>4C - supporting energy efficiency, smart energy management and renewable energy use in public infrastructure, including in public buildings, and in the housing sector</p>
Total Project Costs	<p>£86,000,000 comprising:</p> <ul style="list-style-type: none"> - £43,000,000 ERDF - £43,000,000 Match funding from Private Sources <p>While the ERDF project costs are £86 million, the actual size of fund is greater. The fund will initially consist of £43 million ERDF and £100m from the European Investment Bank (EIB). In addition, the Fund Manager will be required to secure/generate additional funding of at least £260 million at Fund and/or project level to complete the funding package. From this amount, £43 million will be use as match funding for ERDF as the EIB funding is ineligible match since it is from the European Fund for Strategic Investments.</p> <p>As such, the £43 million ERDF will leverage at least £314 million (excluding match funding).</p>
LEP Areas covered	London
Description	Building on the legacy of the London Green Fund (LGF), the project will involve the establishment of a urban development fund to provide support for low carbon infrastructure. MEEF will invest, by way of loans and equity investments, projects that will help to achieve London’s own carbon strategic ambition of 60% reduction in CO2 emissions by 2025. The fund will support projects that involve:

	<ul style="list-style-type: none"> ▪ Building retrofit and energy efficiency measures in public, commercial and multi-unit residential properties, including social housing. ▪ production and distribution of low carbon energy, including combined heat and power, tri-generation and communal / district heating generation and/or their associated networks; and small scale renewable energy generation. <p>The fund manager, Amber Infrastructure Limited, was selected following a competitive procurement process that was published in the Official Journal of the EU (OJEU).</p>
Key Milestones	<p>Start Date: 1 January 2018 Possible Fund Launch: February/March 2018 ERDF Financial Completion Date: 31 December 2022 ERDF Practical Completion Date: 31 December 2022 End of Investment Period: 31 December 2022 (with possibility of extension to 31 December 2023) Fund End Date: 31 December 2038 (20 years from start date)</p>
Key Outputs	<p>C1 - Number of enterprises receiving support: 30 C7 - Private investment matching public support to enterprises (non-grants): £260m (at least 60% from private sources) C30 - Additional capacity of renewable energy: 17 MW C31 - Number of households with improved energy consumption: 774 C32 - Decrease of annual primary energy consumption of public: 747,190 kWh/year C34 - Estimated annual decrease of GHG: 36,746 Tonnes of CO₂eq</p>

Ex-Ante Assessment Completeness Checklist

Financial Instrument: Mayor of London's Energy Efficiency Fund (MEEF)

The Ex-Ante Assessment Has Been Considered And Adequately Covers the following:		
Key checklist points	CPR Ref	Yes/No
Identification of market problems existing in the country or region in which the FI is to be established	Article 37 (2) (a)	Yes – see stage one report
Analysis of the gap between supply and demand of financing and the identification of suboptimal investment situation	Article 37 (2) (a)	Yes – see stage one report
Quantification of the investment (to the extent possible).	Article 37 (2) (a)	Yes – see stage one report
Identification of the quantitative and qualitative dimensions of the value added of the envisaged FI.	Article 37 (2) (b)	Yes – see stage one report
Comparison to the added value of alternative approaches.	Article 37 (2) (b)	Yes – see stage one report
Consistency of the envisaged FI with other forms of public intervention.	Article 37 (2) (b)	Yes – see stage one report
State Aid implications of the envisaged FI.	Article 37 (2) (b)	Yes – see stage one report
Identification of additional public and private resources to be potentially raised by the envisaged FI and assessment of indicative timing of national co-financing and of additionally contributions (mainly private).	Article 37 (2) (c)	Yes – see stage one & two reports
Estimation of the leverage for the envisaged FI.	Article 37 (2) (c)	Yes – see stage two report
Assessment of the need for, and level of, preferential remuneration based on experience in relevant markets.	Article 37 (2) (c)	Yes – Delivery Arrangement Document
Collation of relevant available information on past experiences, particularly those that have been set up in the same country or regions as the envisaged FI.	Article 37 (2) (d)	Yes – see stage one report

Identification of main success factors and/or pitfalls of these past experiences.	Article 37 (2) (d)	Yes – see stage one report	
Using the collated information to enhance the performance of the envisaged FI (e.g. risk mitigation).	Article 37 (2) (d)	Yes – see stage one report	
Definition of the level of detail for the proposed investment strategy (maintaining a certain degree of flexibility).	Article 37 (2) (e)	Yes – see stage two report and Delivery Arrangement Document	
Definition of the scale and focus if the FI in line with the results of the market assessments and value added assessment.	Article 37 (2) (e)	Yes – see stage two report and Delivery Arrangement Document	
Selection of the financial product to be offered and the target final recipients.	Article 37 (2) (e)	Yes – Delivery Arrangement Document	
Definition of the governance structure of the FI.	Article 37 (2) (e)	Yes – Delivery Arrangement Document	
Selection of the most appropriate implementation arrangement and definition of co-financing structure (including any envisaged combination with grant support).	Article 37 (2) (e)	Yes – Delivery Arrangement Document	
Set up and quantification of the expected results of the envisaged FI be means of output indicators, result indicators and FI-performance indicators as appropriate.	Article 37 (2) (f)	Yes – Delivery Arrangement Document	
Specification of how the envisaged FI will contribute to deliver the desired strategic objectives.	Article 37 (2) (f)	Yes – Delivery Arrangement Document	
Definition of the monitoring system in order to efficiently monitor the FI, facilitate reporting requirements and identify any improvements areas.	Article 37 (2) (f)	Yes – Delivery Arrangement Document	
Definition of the conditions and/or the timing in which a revision or an update of the ex-ante assessment is needed.	Article 37 (2) (g)	Yes – Delivery Arrangement Document	
Ensure that the flexibility, and trigger points, is reflected in the monitoring and reporting provisions.	Article 37 (2) g)	Yes – Delivery Arrangement Document	
Following Issue of Funding Agreement:		Target Date:	Actual Date:
The Ex-Ante Assessment is submitted to the monitoring committee (GPB) for information purposes and in accordance with Fund specific rules.	Article 37 (3)	October 2017	
Publication of summary findings and conclusions of the Ex-Ante Assessment within three months of their date of finalisation (Publication on MA Website)	Article 37 (3)	November 2017	

Comments: N/A

The Documents submitted as the Ex-ante Assessment (attached), together with the Project Application, have been checked and are accepted by the Managing Authority (MA) as meeting the requirements of an Ex-ante Assessment as set out in the Common Provisions Regulation (CPR) – Regulation 1303/2013 - Title IV - Article 37.

Intermediate Body Assessor Name: Kenroy Quellenec-Reid

Signature:



Date: 2 October 2017

Transitioning the London Green Fund

Stage One Report

A report for The European Investment Bank



November 2014

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Glossary of terms

Term/Acronym	Definition
CfD	Contract for Difference
DCLG	The Department for Communities and Local Government
DECC	The Department of Energy & Climate Change
EIB	European Investment Bank
EIF	European Investment Fund
ELENA	European Local Energy Assistance
EMR	Electricity Market Reform
ERDF	European Regional Development Fund
ESIF	European Structural and Investment Fund
FEF	Foresight Environmental Fund
GLA	Greater London Authority
GSH	THFC Greener Social Housing Fund
HMT	Her Majesty's Treasury
IIGCC	Institutional Investors Group on Climate Change
IRR	Internal Rate of Return
JESSICA	Joint European Support for Sustainable Investment in City Areas
LEEF	Amber London Energy Efficiency Fund
LGF	London Green Fund
LWARB	London Waste and Recycling Board
MW	Megawatt
MWh	Megawatt Hour
OLR	Offtaker of Last Resort
PPA	Power Purchase Agreement
PPP	Public Private Partnership
PV	Photovoltaic
SPV	Special Purpose Vehicle
THFC	The Housing Finance Corporation
UDF	Urban Development Fund
VIU	Vertically Integrated Utility

Executive summary

Introduction

The European Investment Bank (“EIB”) has commissioned Deloitte to undertake a strategic review of the London Green Fund (“LGF”). Based on the information made available through the steering group and stakeholders, the review seeks to:

- Determine the future market demand for funding, taking into account potential recycling of existing UDF funding and potential alternative and supplementary financing and co-investment sources.
- Determine the nature of the required funding, in terms of sector (such as energy from waste, renewable heat, energy efficiency etc.), geography (within London) and product type (such as debt, equity, mezzanine or guarantee).
- Identify potential delivery structures, taking into account lessons learned from the 2007 – 2013 JESSICA programme.

The London Green Fund was established during the 2007-13 ERDF programming period. The investment period is now drawing to a close and attention is increasingly being given to the development of plans for the 2014-2020 programming period. It is understood that this report will be utilised to inform the development of these plans. The regulations for the 2014-2020 period require that Managing Authorities carrying out "ex ante" assessments of so-called financial instruments which intend to use EU funds. We understand that the findings of the study may be used by the Greater London Authority to fulfil the requirements for the ex-ante assessment under Article 37 of the ESIF regulations.

This report outlines our findings in respect of Stage One of a two stage review.

Structure of this report

In particular, we draw your attention to the following sections of this report.

1. **Approach** - Outlining the approach, assumptions and limitations of this analysis.
2. **Strategic case** - Providing an update to the strategic case for the LGF, and its alignment with similar funding programmes.
3. **Market failures** - Testing the market failure hypotheses based on feedback from UDFs and project sponsors / developers.
4. **Demand** - Providing an analysis of the total potential project pipeline and market demand.
5. **Funding gap** - providing an analysis of the potential funding gap to be met through the 2014-2020 programme, taking into account demand, recycling of UDFs and potential EIB investment.
6. **Lessons learned** – outlining lessons learned and best practice among the UDFs, sponsors and developers.
7. **Value added** – assessment of value added by LGF in meeting the strategic objectives of the London ERDF programme.
8. **Next steps** – preliminary views on the Stage Two study tasks and identification of any further steps that EIB should consider to aid development of the LGF.

Appendix A – List of stakeholders who participated in our market soundings

Appendix B – Minutes of stakeholder meetings

Approach

Our approach combines desktop reviews and stakeholder meetings in order to consider the lessons learned from the performance of the current funding arrangements and to consider how future arrangements should be structured. Section 1.2 shows this approach diagrammatically.

Strategic case

The development of the new London Plan and the new ESIF Strategy for London have seen the new priorities for London mapping closely to the strategic landscape as described at the inception of the LGF in 2008; these priorities also directly target the areas central to the LGF's investment strategy. As a result, there is still a strong alignment of the LGF to the strategic priorities for London.

Market failures

Market failures have been identified across three broad areas: financial, structural, and informational. The specific market being addressed by LGF presents some factors that make it more difficult for these barriers to be assuaged – the market of London exhibits some challenging characteristics in terms of available space, planning permission restrictions and the other opportunities available to financiers.

Demand

The potential demand for financial instruments is indicated by the value of the pipeline in the relevant sectors as well as the potential addressable market. The value of the addressable markets for the key sectors in which LGF is involved is estimated in the range of £2.8bn to £7.1bn of projects across the energy efficiency, waste and decentralised energy sectors.

Funding gap

Whilst it is recognised that the LGF funding may be used in other sectors, the key sectors identified above are expected to provide the key pipeline for the LGF in the 2014-2020 programming period. The funding gap is calculated as the value of this pipeline less the expected additional funding sourced from the ERDF for the next programming period. The funding gap identified is £2.7bn to £7.0bn (there is £0.1bn of UDF recycling expected). Whilst there are certainly other sources of finance available for projects such as this, the degree to which other current schemes are deployed outside London is a significant factor in determining the available financing within London. Even where schemes have identified budgets and investment guidelines which are focussed on London or on environmental factors, in many cases these schemes will have started a number of years ago and as a result the remaining available finance is indeterminable without further primary research. Also, various investment schemes specifically target small business or specific sectors which do not directly align with LGF's strategic objectives. Ultimately, each scheme will have a specific mandate which will restrict their suitability/ability to meet the funding gap in a manner appropriate for LGF's purposes with regard to addressing the strategic policy aims (in Section 2) and the market failures (in Section 3).

Lessons learned and best practice

Stakeholders have identified lessons learned and best practices from the 2007-2013 programming period. Stakeholders have highlighted potential changes to mandates that will improve the provision of green infrastructure such as ability to provide development stage and "follow-on" funding and relaxation of geographical limits. There may be the opportunity to address some of these suggestions for the next programming period.

Value added

Having identified the presence of market failure or suboptimal investment situations that justify public intervention and quantified the amount of support needed, in accordance with Article 37 (2) (b) Common Provisions Regulation (CPR), the analysis considers the value added of the financial instruments delivered by LGF. The most important of

the value added by the LGF includes the crowding in of over £708m to date from sources of finance (other than ERDF funding, based on data from EIB); and the leverage of London's expertise in green infrastructure financing.

Next Steps

In order to deliver insight into the strategy for the LGF going into the next round of funding, as part of Stage Two, Deloitte will hold workshops with the Green Investment Bank, lenders, and equity investors to test a variety of notions such as the potential alternative sources of matched funding; achievable leverage at LGF and UDF levels; and remuneration requirements of investors.

1 Approach

1.1 Introduction

The European Investment Bank (“EIB”) has commissioned Deloitte to undertake a strategic review of the London Green Fund (“LGF”). Based on the information made available through the steering group and stakeholders, the review seeks to:

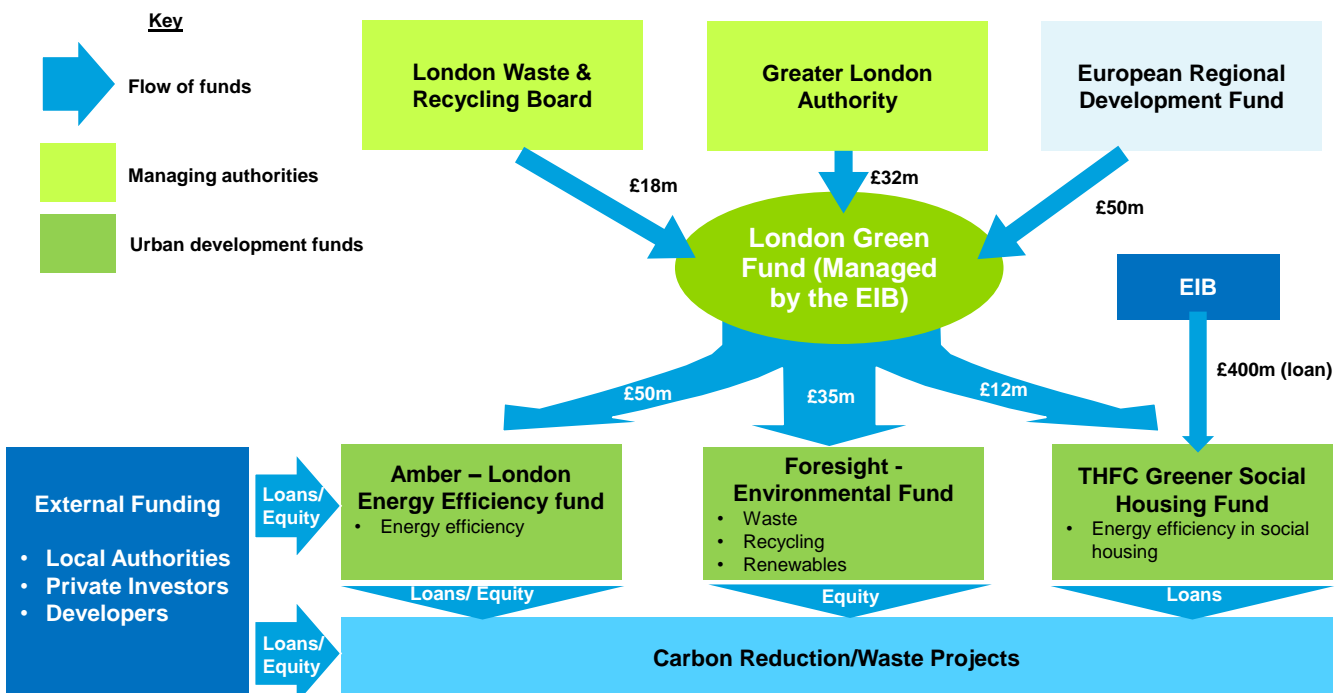
- Determine the future market demand for funding, taking into account potential recycling of existing UDF funding and potential alternative and supplementary financing and co-investment sources.
- Determine the nature of the required funding, in terms of sector (such as energy from waste, renewable heat, energy efficiency etc.), geography (within London) and product type (such as debt, equity, mezzanine or guarantee).
- Identify potential delivery structures, taking into account lessons learned from the 2007 – 2013 JESSICA programme.

This report outlines our findings in respect of Stage One of a two stage review.

1.2 Background

The LGF was established by the London Development Agency and the London Waste and Recycling Board in 2009 as a JESSICA Holding Fund and is managed by EIB. The LGF was allocated with £100m as part of the 2007 – 2013 JESSICA investment programme. The LGF procured and contracted three UDFs to operate in the Greater London region: Foresight Environmental Fund (FEF), Amber London Energy Efficiency Fund (LEEF) and THFC Greener Social Housing Fund (GSH). The three UDFs are fully operational and approaching full deployment of their current funding commitments. The structure of the LGF is shown below:

Figure 1 - London Green Fund structure



Foresight Environmental Fund (FEF)

FEF was established in 2011 and was allocated £35m from LGF. It provides equity to projects that involve construction or extension of waste to energy facilities, re-use, recycling or reprocessing facilities or any other facility that will displace fossil fuel.

Amber London Energy Efficiency Fund (LEEF)

LEEF was established in 2011 and was allocated £50m from LGF. It provides debt financing to projects involving energy retrofit in public or private buildings and decentralised energy systems.

THFC Greener Social Housing Fund (GSH)

GSH was established in 2013 and was allocated £12m from LGF. It provides debt financing to registered providers of social housing for energy retrofitting.

1.3 Approach

This report outlines our findings in respect of Stage One of a two stage review, shown diagrammatically below.

Figure 2 – Stage One approach (Stage Two will be the subject of a separate report)



1.4 Limitations

In developing this report, Deloitte has relied on the views of the Steering Group (including the EIB, LWARB and the GLA) and the stakeholders involved in our market soundings (as set out in Appendix A). We have not independently corroborated any of the information provided to us.

We have not considered accounting, tax or legal issues.

2 Strategic case

2.1 Original strategic case for the LGF

The LGF was initially created in the context of the strategic alignment of several key London strategies to EU structural funding. These key strategies were drawn together within the London Plan (the “2008 Plan”, which was consolidated with alterations since 2004)¹, which presents the overarching economic development route map for ERDF intervention in London. This sets out the spatial and economic development priorities for London. The Plan also notes that in February 2007 the Mayor produced his Climate Change Action Plan (CCAP) to deliver decisive action in London. The CCAP set a target of a 60% reduction in carbon dioxide emissions by 2025. The Energy Strategy also included objectives of “improving energy efficiency and increasing the proportion of energy used generated from renewable sources”.

The 2008 Plan’s identified priority areas for development in London, on the basis of both need and potential to accommodate growth, were the Areas of Regeneration, Opportunity and Intensification. Areas of Regeneration are the areas of most socioeconomic need and the Areas of Opportunity and Intensification are identified on the basis that they are capable of accommodating substantial new jobs and/or homes and their potential should be maximised. These areas generally include major brownfield sites with capacity for new development and places with potential for significant increases in density.

The LGF was established to target the investment opportunities within these areas as this was thought to be where the main regeneration activity in London would occur and this is where the opportunity existed to ensure the regeneration would be truly sustainable exists. The LGF was created to help deliver key objectives of the 2008 Plan, with sustainable and environmental development key project investment requirements.

In early 2008, the most recent revisions to the 2008 plan related to policies on mitigation and adaptation to climate change. As a result, the 2008 Plan specifically supported aligned projects eligible for investment; such as developing the capacity of decentralised co-generated and renewable energy, provision of heating and cooling networks, creation of green/brown roofs, sustainable drainage and steps to mitigate flood risk².

Additionally, the London ERDF Operational Programme: 2007 – 2013³ stipulates the priority axes for the programme. These are:

- Business innovation and research & promoting eco-efficiency;
- Access to new markets and access to finance;
- Sustainable places for businesses; and
- Technical Assistance.

Having been established due to the strategic case of the priorities outlined in the London Plan and the London ERDF Operational Programme (amongst others), the LGF has attempted to deliver the objectives through its three UDFs that could invest directly in waste, energy efficiency, decentralised energy and social housing projects.

2.2 Updates to the strategic case for the LGF

London Plan

¹ Greater London Authority. The London Plan, Spatial Development Strategy for Greater London, Consolidated with Alterations since 2004. February 2008.

² Deloitte MCS Ltd. Scoping the use of JESSICA in London. September 2008.

³ Mayor of London. London ERDF Operational Programme: 2007 – 2013. December 2007; updated November 2012.

In July 2011, a new London Plan was published detailing an updated “Spatial Development Strategy for Greater London”⁴. In this plan, the Mayor reiterated the commitment to making London a world leader in tackling climate change. The strategies are centred around making London “a city that becomes a world leader in improving the environment locally and globally, taking the lead in tackling climate change, reducing pollution, developing a low carbon economy and consuming fewer resources and using them more effectively”. The Mayor still seeks to achieve an overall reduction in London’s carbon dioxide emissions of 60% by 2025 and 25 per cent of the heat and power used in London to be generated through the use of localised decentralised energy systems by 2025⁴. The London Plan strategies more closely map to the existing investment strategy of the LGF, strengthening the strategic alignment of the LGF with the London Plan.

ESIF

Furthermore, in January 2014, the 2014-2020 European Structural & Investment Funds Strategy for London⁵ was issued ahead of a consultation period. This document lists the ESIF priorities as:

- Skills and employment to ensure Londoners have the skills to gain sustainable jobs;
- Enhancing the competitiveness of London small and medium sized enterprises (SMEs) to support SMEs to innovate and grow;
- Strengthening science & technological development and fostering innovation in London enterprises to help realise the potential of the capital’s world class business sectors that drive innovation and growth;
- Investing in London’s infrastructure to help ensure the capital has the underpinning technological, business and low carbon infrastructure to generate growth.

These priorities map closely to the strategic landscape as described at the inception of the LGF in 2008.

It also develops “key themes where ERDF investment will be targeted” including “*Investing in London’s Infrastructure Theme 5 – Low carbon, environmental and green infrastructure*”. Theme 5 will specifically “support activities that will address the impact and realise the economic opportunities of mitigating and adapting to climate change”. It also states that “financial instruments will be utilised... where the potential for leveraging private investment or making cost savings is significant”. Indicative activities for ERDF investment include:

- Develop “whole place” low carbon initiatives;
- Support the development of energy and water efficiency retrofit activity;
- Invest in the development of high-efficiency, low carbon co-generation district heat and power networks”
- Support the establishment of sustainable infrastructure for waste management;
- Provide project development funding; and
- Develop green infrastructure and other climate change adaptation activities.

Clearly, these activities generally map well to the areas central to the LGF’s investment strategy though there may be the possibility for the LGF to expand its scope in light of “water efficiency retrofit activity”, “district heat and power networks” and “project development funding”.

The report specifically mentions the London Green Fund stating that the use of public sector funding streams to attract and unlock private sector investment has been “successfully pioneered under the 2007-13 ERDF programme through London Green Fund (JESSICA initiative)”⁵.

The process for agreeing and managing the 2014-2020 EU programming period, has involved the transfer of responsibility to the London Enterprise Panel, who have worked with partners to establish the priorities for ESIF funding in London and developed the London ESIF strategy, submitted to Government in January 2014. On the basis of the London Enterprise Panel and other Local Enterprise Partnership ESIF strategies, UK Government has agreed a Partnership Agreement⁶ with the European Commission and developed a draft national ERDF

⁴ Greater London Authority. The London Plan, Spatial Development Strategy for Greater London. July 2011.

⁵ EU ERDF; Mayor of London; EU ESF. 2014-2020 European Structural & Investment Funds Strategy for London. January 2014








⁶ www.gov.uk/government/publications/european-structural-and-investment-funds-uk-proposals






Operational Programme for 2014-2020⁷. The activity of the London Green Fund is foreseen/encouraged by all three of these documents.

As a result of the above, it is clear that there is a strong strategic alignment of the LGF with the ESIF Strategy for London.

2.3 Similar funding programmes

There are a number of funding or technical assistance programmes available to enterprises/projects in the space in which the LGF focusses. Many of these focus on Small and Medium Enterprises (SMEs) rather than specifically on supporting SMEs investing in green infrastructure; as a result this offers only partial strategic alignment to the LGF.

Key		
Strategic alignment with LGF	ERDF Priorities Axes	
Close strategic alignment with LGF	 Business innovation & research & promoting eco-efficiency	
Moderate strategic alignment with LGF	 Access to new markets & access to finance	
Limited or No strategic alignment with LGF	 Sustainable green infrastructure	
	Technical assistance	

Funding programme	Description	
European Investment Bank (EIB)	EIB delivers both equity and debt financing through a variety of measures including European Investment Fund, Global Energy Efficiency and Renewable Energy Fund, and NER300 (noted separately below). EIB also lend to individual projects for which total investment cost exceeds EUR 25m. See also ELENA. ⁸	
ELENA	ELENA, European Local ENergy Assistance, helps local and regional authorities to prepare energy efficiency or renewable energy projects. It plans to have mobilised more than EUR 1.6bn in investments over the next few years. It will cover up to 90% of the technical support cost needed to prepare, implement and finance the investment programme including feasibility and market studies, programme structuring, energy audits and tendering procedure preparation. ⁹	
LWARB	In addition to the LGF, LWARB has the Targeted Waste Infrastructure Fund (TWIF) which aims to deliver London's waste infrastructure requirements ahead of the economic curve, providing funding to enable the development of projects that meet the strategic requirements of LWARB (geographically and technologically) to the extent that funding is not available from the private sector. LWARB will prioritise those projects that can make a significant contribution to filling the strategic capacity gap. ¹⁰	
Green Investment Bank (GIB)	GIB invests in projects which are green and commercial, where their capital is "extra" to available private sector finance. GIB's mandate from Government is to deploy at least 80% of its capital in the priority sectors of offshore wind; waste recycling and energy from waste; and energy efficiency, including support for the Government's Green Deal. ¹¹	
DEPDU	The Decentralised Energy Project Delivery Unit (DEPDU) is a three-year programme set up in August 2011 with €3.3m funding, 90% of which was secured from the European Investment Bank's ELENA facility. Rebranded as Energy for London and extended until next year (per the GLA) ¹²	

⁷ www.gov.uk/government/consultations/european-regional-development-fund-operational-programme-2014-to-2020








⁸ <http://www.eib.org/>






⁹ <http://www.eib.org/products/elena/index.htm>; please note that ELENA is technical assistance only.

¹⁰ <http://www.lwarb.gov.uk/>

¹¹ <http://www.greeninvestmentbank.com/>

¹² <http://www.london.gov.uk/sites/default/files/energy-20110906-07-Peter%20North.pdf>

Key		
Strategic alignment with LGF	ERDF Priorities Axes	
Close strategic alignment with LGF	 Business innovation & research & promoting eco-efficiency	
Moderate strategic alignment with LGF	 Access to new markets & access to finance	
Limited or No strategic alignment with LGF	 Sustainable green infrastructure	
	Technical assistance	








Funding programme	Description	
Greater London Authority – RE:FIT and RE:NEW	RE:FIT is a scheme that provides a commercial model for public bodies wishing to achieve substantial financial cost savings, improve the energy performance of their buildings and reduce their CO2 footprint. 'The role of the Programme Delivery Unit (PDU) is to support public sector organisations (from small to large) throughout the RE:FIT process - from design to implementation and monitoring and verification stages at no cost of the organisation. The role of the RE:NEW Support Team is to support housing providers to enable domestic retrofit projects to be delivered faster and with better value for money. ¹³	
DECC - Electricity Demand Reduction (EDR)	The EDR pilot will be launched June 2014 and will be backed with at least £20m of funding. Under the pilot, businesses which install measures that deliver verifiable reductions in electricity demand will be able to bid for a financial incentive. ¹⁴	
DECC – Salix Energy Efficiency Loan Scheme	Loans are offered on an Interest free basis, specifically to public sector organisations in England to enable them to install energy efficient technologies. To secure funding, the project must result in energy efficiency and will be self-financing within 5 years. The cost of CO ₂ has to be less than 100 per tonne during the period of the project. All projects must require funding in order to go ahead. Loans are offered to meet all the costs of the project i.e. 100% funding and as a result, no match funding is required. There is no maximum limit for funding, but all projects need to be complete within 9 months of the loan agreement being signed. ¹⁵	
JEREMIE	JEREMIE, Joint European Resources for Micro to Medium Enterprises, is an initiative of the Commission together with the EIB and the EIF in order to promote increased access to finance for the development of micro, small and medium-sized enterprises in the regions of the EU. There are three JEREMIEs in the UK: <ul style="list-style-type: none"> • North West - £155m programme providing debt and equity finance to SMEs based in, or relocating to, the North West of England to start, develop and grow. • Yorkshire - £90m programme offering seedcorn finance, business loans and equity-linked finance for businesses in or relocating to Yorkshire or the Humber region. • North East - £125m programme providing debt and equity finance to SMEs based in, or relocating to, the north east of England, with the aim of helping them to start up, develop or grow.¹⁶ 	
Technology and Strategy Board (TSB)	TSB aims to help UK business bring new ideas and technologies to market through the provision of grants. The businesses supported range from pre start-up, start-up and early stage micro businesses, to large multi-nationals (however more than 60% of companies worked with are SMEs). TSB also provides academic-business knowledge transfer opportunities, open innovation networking platforms; as well as access to investors, supply chain partners and customers, including Government contracts. ¹⁷	









¹³ <http://www.refit.org.uk/news/>; <http://www.london.gov.uk/mayor-assembly/gla>

¹⁴ <https://www.gov.uk/government/policies/reducing-demand-for-energy-from-industry-businesses-and-the-public-sector--2/supporting-pages/electricity-demand-reduction-project>

¹⁵ <http://salixfinance.co.uk/>

¹⁶ NW Jeremie: <http://www.thenorthwestfund.co.uk/news/20110718-4isecurity>; Yorkshire Jeremie: <http://www.finance-yorkshire.com/about/>;

Key		
Strategic alignment with LGF	ERDF Priorities Axes	
Close strategic alignment with LGF	 Business innovation & research & promoting eco-efficiency	
Moderate strategic alignment with LGF	 Access to new markets & access to finance	
Limited or No strategic alignment with LGF	 Sustainable green infrastructure	
	Technical assistance	

Funding programme	Description	
Business Finance Partnership (BFP)	BFP aims to increase the supply of capital through non-bank lending channels and, in the longer term, to help to diversify the sources of finance available to businesses. BFP will co-invest a total of £1.2bn through relatively new sources of finance (e.g. peer-to-peer, asset finance, funds etc.), matched by at least equal private sector capital. HMT makes decisions about which loan funds to invest in, however the managers of those loan funds then make individual lending decisions. ¹⁸	
Enterprise Finance Guarantee (EFG)	EFG provides a 75% guarantee of c. £2bn loans, with claims capped at 20% of the portfolio value. The programme is delivered by accredited lenders (including main High Street banks) who are responsible for the lending decisions. The loan guarantees are provided to SMES via originators. ¹⁹	
National Loan Guarantee Scheme (NLGS)	NLGS is offered through HMT. The programme provides government guarantees on unsecured borrowing by banks, enabling them to borrow at a cheaper rate, by up to one percentage point. Participating banks pass on the entire benefit that they receive from the guarantees to businesses across the UK through cheaper loans. ²⁰	
Community Development Finance (CDF)	The CDF will provide £30m in loans via the CDFI fund. The £30m grant to the CDFIs was awarded by the Regional Growth Fund and will be matched by finance from Unity Trust Bank and Cooperative Bank. Funding can include loans to start-up companies, individuals and established enterprises from within an area or community who are unable to access finance from more traditional sources (for example banks). ²¹	
Start-Up Loans (SUL)	The Start Up Loans Company has been established to deliver the scheme via delivery partners. The scheme aims to open up finance to those who would not normally be able to access traditional forms of finance for a lack of track record or assets. ²²	
Business Angel Co-Investment Fund (BACIF)	BACIF has been designed and established by a consortium of private and public bodies with expertise in business angel investment. The fund has been created with a grant from the Regional Growth Fund and is able to make initial equity investments of between £100k and £1m in to SMEs alongside syndicates of business angels. ²³	
UK Innovation Investment Fund (UKIIF)	UKIIF operates as two funds of funds investing UK government funds with other private investors into selected underlying specialist VC funds in the UK and Europe. UKIIF consists of 2 funds: Hermes Environmental Innovation Fund and the Future Technologies Fund. UKIIF is administered by a government-appointed fund management company, CfEL. ²⁴	
Enterprise Capital Funds (ECF)	ECFs use government funding alongside private sector investment. Government's contribution to any single ECF is capped at £25m or two-thirds of total fund size. ECFs can invest up to £2m in an SME. ECFs are managed by commercial fund managers and administered by a government-appointed fund manager CfEL. ²⁵	

¹⁷ <http://www.innovateuk.org/deliveringinnovation/working-with-smes.ashx>

¹⁸ <http://www.bis.gov.uk/business-finance-partnership>

¹⁹ <http://www.bis.gov.uk/efg>

²⁰ <http://www.smallbusiness.co.uk/channels/small-business-finance/news/2093883/new-scheme-offers-funding-hope-for-smes.shtml>








²¹ <http://www.cdfa.org.uk/>

























²² <http://www.bis.gov.uk/startup-loans>

²³ <http://www.angelcofund.co.uk/>

²⁴ <http://highpotentialstartup.co.uk/wp-content/uploads/2013/10/UK-Innovation-and-Investment-Fund-UKIIF.pdf>

²⁵ <http://www.capitalforenterprise.gov.uk/ecfp>

Key		
Strategic alignment with LGF	ERDF Priorities Axes	
Close strategic alignment with LGF	 Business innovation & research & promoting eco-efficiency	
Moderate strategic alignment with LGF	 Access to new markets & access to finance	
Limited or No strategic alignment with LGF	 Sustainable green infrastructure	
	Technical assistance	

Funding programme	Description	
SME Wholesale Finance Limited (SMEWFL)	SMEWFL was established in 2004 with the approval from the Mayor for the purpose of administering venture capital and loan funds to London based SMEs which found it difficult to access traditional sources of finance. ²⁶	 
Capital for Enterprise (CfEL)	CfEL is a fund management company which designs, delivers and manages venture capital and debt guarantee schemes on behalf of the public and private sectors. £1bn has been committed to venture and loan funds - the largest single investor in UK venture capital funds. £2bn has been committed in loans to small businesses arranged through the guarantee programmes. ²⁷	  
Regional Growth Fund (RGF)	RGF is a £2.6bn fund operating across England from 2011 to 2016. It supports projects and programmes that lever private sector investment to create economic growth and sustainable employment. ²⁸	 
Growing Places Fund (GPF)	GPF will provide £500m to enable the development of local funds to address infrastructure constraints, promoting economic growth and the delivery of jobs and houses. The Fund is managed locally by Local Enterprise Partnerships (LEPs). ²⁹	  
GrowthAccelerator (GA)	GrowthAccelerator offers technical support in Access to Finance, Business Development and Growth through Innovation. ³⁰	 
NER300 Programme	The EU's NER300 programme (implemented by the EIB) sets aside 300m allowances (rights to emit one tonne of carbon dioxide) for subsidising installations of innovative renewable energy technology and carbon capture and storage. The allowances were sold on the carbon market and the money raised — currently over EUR2bn — is then made available to projects as they operate. ³¹	   
Horizon 2020	Horizon 2020, created by the EU in order to support and encourage research in the European Research Area, provides an estimated EUR80bn of funding. A part of one of the research pillars looks to fund work on the environment including climate change adaptation and raw materials - funding up to EUR3.1bn for this area. ²⁹	   
LIFE	LIFE is the EU's financial instrument supporting environmental, nature conservation and climate action projects throughout the EU. The general objective of LIFE is to contribute to the implementation, updating and development of EU environmental policy and legislation by co-financing pilot or demonstration projects with European added value. Since 1992, LIFE has co-financed projects contributing over EUR3.4bn to the protection of the environment. ²⁹	   

2.4 Key findings

Since the inception of the LGF, despite new plans for London being drafted and released, it is clear that the overall messages regarding requirement for investment in green infrastructure are still present and that there is a strong strategic alignment of the LGF with the ESIF Strategy for London. The activities inherent in the plans for London generally map well to the areas central to the LGF's investment strategy though there may be the possibility for the

²⁶ <http://www.london.gov.uk/sites/default/files/DD1056%20SMEWFL%20PDF.pdf>

²⁷ <http://www.capitalforenterprise.gov.uk/>

²⁸ <https://www.gov.uk/understanding-the-regional-growth-fund>

²⁹ <https://www.london.gov.uk/priorities/business-economy/working-in-partnership/london-enterprise-panel/news-and-publications/growing-places-fund-update-on-allocations>

³⁰ <https://www.gov.uk/government/publications/the-growing-places-fund-investing-in-infrastructure>

³¹ <http://ec.europa.eu/programmes/>

LGF to expand its scope in light of “water efficiency retrofit activity”, “district heat and power networks” and “project development funding”.

The Mayor’s stated expectations are for 25% of heat and power in London to be generated from decentralised energy and a 60% reduction in London’s CO₂ emissions. These expectations are also well aligned with the objectives of the London Green Fund.

There are a variety of schemes which align with the LGF’s environmental investment objectives though none of which we have been made aware during the course of this review cover multiple environmental sectors whilst also being focussed on London. Also, various investment schemes specifically target small business or specific sectors which do not directly align with LGF’s strategic objectives. As a result, these schemes are restricted in the extent that they can help LGF in addressing the strategic policy aims and market failures.

3 Market Failures

3.1 Market failures

According to the Common Provision Regulation, financial instruments should be implemented to support investments that are expected to be financially viable but are unable to raise sufficient funding on the market. This may be due to insufficient availability of funding (e.g. due to high risk of the sector or low profitability expectations) or due to the high costs associated with the available funding sources. Financial instruments can provide additional liquidity at terms, e.g. interest rates or collateral requirements, more favourable than offered by the market thus allowing the realisation of these investments.

The regulations also require the analysis of market failures, suboptimal investment situations and investment. Each financial instrument should contribute to the strategy and the results of the Programmes through which ESIF resources are allocated and in doing so help address the market failures such as the ones identified below under the headings: financial barriers, structural barriers and informational barriers.

Deloitte reviewed the effectiveness of UK policy for carbon reduction and energy efficiency in the commercial property sector as part of a separate report for the GPA³². More specifically, in the context of market failures, the study looked at the opportunities for and barriers to energy efficiency and carbon reduction to understand the technological, market and behavioural barriers that the policies seek to address. In essence, the reviewed policies seek to encourage the uptake of and investment in energy efficiency measures to limit the environmental costs associated with climate change. The market failures, aside from funding gaps, exist in large part due to technological, market and behavioural barriers but also limitations in the efficacy of the policy framework itself which seeks to address these failures.

Below is a summary of key barriers with a focus on energy efficiency within the UK property sector including public and private property owners. In this regard the issues discussed should serve as examples of the actual market challenges faced by this specific sector to inform the approach the EIB might take in the context of this strategic review.

3.1.1 Financial barriers

There are a number of factors at play in terms of the financial barriers to energy efficiency and low carbon investment. The most significant within the commercial property sector (and across the non-domestic stock more broadly) are:

Availability of capital

Recent analysis carried out by Deloitte, on behalf of BIS, quoted in an NAO report³³ highlights that capital constraints are found to be a particular barrier for SME organisations, although less so for larger corporates. However, whilst this might be the overriding issue for organisations of certain sizes it is not necessarily access to capital itself which is the primary barrier. For example, raising capital and allocating funds for the purposes of acquiring property is a core function of commercial property owners. Projects cannot credibly signal their overall economic value to potential financiers, who then cannot identify suitable projects. This could be due to lack of data regarding environmental or socio-economic benefits.

³² http://www.deloitte.com/view/en_XB/xb/news/08bc4d22d2ea6410VgnVCM2000003356f70aRCRD.htm

³³ National Audit Office. Improving access to finance for small and medium-sized enterprises. November 2013.

Generally, larger corporate organisations are adept at ‘structuring financing to match the project-specific risks related to their property portfolios’. The BBP study found that in many instances capital for retrofit projects could be accessed so long as a demonstrable business case could be made to justify the project costs to occupiers. The research “revealed that a more significant barrier is the lack of a defined process for justifying expenditure and accessing capital”³⁴. This would suggest that the institutional leasing model, particularly in existing leases, still presents a significant barrier to creating the right financial and organisational incentives to improved carbon and energy efficiency.

In the public sector, there have also been significant financial constraints but on budgets in recent years and this has exacerbating the availability of capital issue for them as well.

Sub-optimal pricing

Projects in the green infrastructure space are often seen as riskier due to the undefined carbon payoffs or uncertainty over technology. Where this is the case, developers will try to downplay inherent risks by exaggerating the degree to which project technology is proven, for example. Financiers in the green infrastructure space, knowing this, are put in a situation of adverse selection, and will increase project hurdle rates to account for this. The act of doing this may make projects unviable from a financing perspective, and projects may not happen as a result.

From initial building development, and through ongoing refurbishment cycles, there is a reluctance to incorporate design and technological solutions which could deliver additional energy or carbon savings below an industry-standard baseline. There has historically been limited, if any, impact on the rental or capital value of the completed or refurbished asset due to such measures being implemented. This means that the market is failing to “price in” the energy and carbon performance of real estate.

This particular challenge can relate to the chosen metrics for how a return is assessed. If the expenditure of an intervention only compares (or concentrates on) the capital cost and does not consider the anticipated operational costs then the business case of a more energy efficient intervention may be undermined. This also relates to knowledge barriers in terms of organisational perceptions versus the true cost of delivering improved energy efficiency.

From a purely financial perspective, one of the most significant barriers is the continuing lack of evidence to support a clear correlation between sustainable property characteristics with real estate value. This serves to exclude energy and carbon factors from the basket of ‘property fundamentals’ which in turn has a limiting effect on the market demand for green products, especially amongst investors and the custodians of their capital. Whilst some recent studies have begun to assert evidence of a correlation between sustainable property characteristics with real estate value, it could be argued that energy performance and environmental ratings are emerging as an additional differentiator of prime product from the rest of the commercial real estate market. Research by Chegut et al. (2011) notes a substantial rental and sale price differential for BREEAM-rated buildings in London compared to un-rated control buildings. However, the research self-identifies a number of quality control limitations in the methodology. More recently, research published reinforces the notion of a strengthening association between energy performance, occupier satisfaction and quality, but did not find any form of rental value differentiation related to EPC ratings³⁵. Most recently, the latest IPD EcoPAS data provides an insufficient sample from which robust conclusions can be drawn.

A related point to the above is the misaligned fiscal policy and its lack of support for correcting price signals. The recent research carried out by Deloitte for the Green Property Alliance³⁶ found that instruments within the current UK policy framework are not distributed evenly across the commercial buildings’ lifecycle. There are a greater number of obligations, incentives and penalties that apply to occupation and use phase but relatively few which

³⁴ Better Buildings Partnership. Low Carbon Retrofit Toolkit: A Roadmap to Success. May 2010.

³⁵ Urban Land Institute. Green Premium or Grey Discount? The value of green workplaces for commercial building occupiers in the UK. July 2013.

³⁶ Deloitte Real Estate, Green Property Alliance. Carbon Penalties & Incentives: A review of policy effectiveness for carbon reduction and energy efficiency in the commercial buildings sector. March 2014.

focus specifically on the transactional or financing stages of the lifecycle. This arguably suppresses the potential impact of the policy framework on market demand for energy and carbon efficient buildings, especially amongst investors and lenders.

Further, for Housing Association projects, with rents controlled, there is limited evidence that investing in green infrastructure (beyond the normal refit policies) leads to a sustainable commercial investment proposition. The London social housing market does not allow for rent to be increased to reflect green investment by social landlords. A UDF manager noted that other markets such as the Netherlands do have a framework for this, so there are examples of where this can be made to work, but London, at the moment, does not present a particularly attractive market for this type of project.

Some UDF managers have stated that innovative/ integrated energy efficiency projects are unviable due to the market failures noted in this section and therefore such projects have been put on hold or cancelled. We note that other investment funds such as GIB and EEEF have a very limited number of deals in London.

For example, the LGF funding for the Tate Foundation has facilitated retrofit and installation of energy saving measures to support development at the Art Gallery, including waste heat recovery from a sub-station. The Tate project is one of the largest JESSICA investments made to date, representing a £20m LEEF loan co-financed by LEEF and RBS, alongside an additional £35m RBS standalone debt facility. The total project cost was c£260m, with the remainder funded from a combination of public grants and private donations. Given the significant amount of public grant and private donations made, this demonstrates the market failure and funding gap that the LGF can address.

Whilst the Tate Foundation project is a good example of a large energy efficiency project, many energy efficiency projects are significantly smaller and can fall below the target deal size of commercial financiers.

3.1.2 Structural barriers

Structural failures

One of the most significant challenges to improved energy efficiency in the commercial property sector relates to the institutional leasing model which forms the legal relationship between owners and occupiers. This model has historically had the effect of separating the costs and benefits of improved energy efficiency between the two parties – known most commonly as the ‘split incentive’. The Investment Property Forum (IPF) estimates that as much as 56% of all UK commercial properties are rented³⁷ and the crux of the cost / benefit disconnection is that the payback period of many energy saving measures can often extend beyond the lease term, which are themselves shortening as a general trend. IPD have found that more than 80% of leases granted in 2012 were between one and five years and that for the first time the average lease length is now just 5.8 years³⁸. In the case of single-let properties, an occupier on a full repairing lease occupies self-contained premises and is typically responsible for paying the energy bill (and therefore benefits from any energy saving) for the term of the lease, with owners generally responsible for the cost of building fabric, plant and services upgrades. In a multi-let property, occupiers ultimately pay for energy consumption, but indirectly via a service charge to the owner. It can be difficult for the owner to recover improvement costs from occupiers via the service charge where the benefit of future reductions in operational costs may be transferred to future occupiers. It can therefore be difficult for either owner or occupier to justify improvements. The disincentive to implement improvements in leased premises is exacerbated by the typical lease requirement for occupiers to return premises to their pre-let condition at the end of the lease term, which would involve the decommissioning and removal of any occupier installed plant or fabric efficiency measures.

Recent debates over different financing options have attempted to overcome the issue of split incentives but even these underestimate the strictures of the leasing model. For example, the approach of delivering energy efficiency through on-bill financing and Energy Services Agreements – a bi-lateral agreement between the building owner or

³⁷ Investment Property Forum. The Size and Structure of the UK Property Market 2013: A Decade of Change. March 2014.

³⁸ IPD. Lease Events Report. November 2013.

occupier and a third party – attempts to overcome split incentives by taking the expenditure off-balance sheet of either the owner or occupier. The idea is that because no capital expenditure is required by the owners or the occupiers (depending on which is contracting the energy / carbon reduction service) that financial liability and risk is reduced. However, this does not overcome the issue of the reduced scope for investments to pay back within lease lengths, which means that the costs of a project may need to be carried across several occupier leases and which can impact negatively on lease negotiations. As the Better Buildings Partnership notes: financing options need to be agreed between the building owner and the occupier, typically through a mechanism in the service charge which should be in line with the guidance in the 2007 RICS Code of Practice: Service Charges in Commercial Property. The code stipulates that owners must engage directly with occupiers to justify any additional expenditure. Even though this would be required to be repaid within the lease term via a particular clause, transparency and cooperation between the parties is essential³⁹.

Contextual to all of this is a prevailing culture of distrust between owners and occupiers, the implications of which for the energy efficiency and carbon reduction agenda should not be underestimated. One of the most important conclusions from research carried out by the IPF was that fostering greater trust between owners and occupiers is a pre-requisite to improving building carbon efficiency and sustainability improvements more broadly⁴⁰. The research indicated the general consensus that the lease itself was not the overriding issue but how they are interpreted and which depended on the readiness for cooperation. Not only does this necessitate deeper engagement between owner and occupier on sustainability at the lease negotiation stage but for increased recognition of the role of the managing agent in facilitating this dialogue. This is something the BBP also recommended; both managing and transactional agents are ideally placed, as the conduit between the parties, to ensure that what owners should be providing and occupiers should be demanding correspond⁴¹.

Moreover, in the waste sector, UDF managers highlight significant difficulty in the identification, selection and acquisition of appropriate locations for waste projects in London.

Resource constraints

For many owners and occupiers of commercial property, energy costs continue to be a small proportion of overall business costs. As such, other cost reduction and profit improvement initiatives, such as those relating to staff and estates, tend to be prioritised for management resources within businesses. Whilst this might be the case for a significant proportion of the owned and occupied commercial property it is also worth noting that the proportion that energy costs form in relation to a company's total cost of occupation can vary depending on a number of factors. In markets or geographies where rents and rates are comparatively lower, energy costs as a proportion of overall occupation can be greater in relative terms. This means that the opportunities and perceived priority for energy efficiency may differ by building, portfolio or organisation and sector.

London is a particularly densely populated city and as a result, space for projects and pricing of property, amongst other things have meant that doing deals in London is seen as more difficult. Some of the UDFs articulated that these specific attributes of the London market leads them to focus their constrained resources on easier markets.

3.1.3 Informational barriers

Asymmetric information

It is common for investments on internal operations to demand a payback period that is much shorter than energy efficiency and renewable energy interventions can deliver (without substantial fiscal intervention). This is often a function of the long established behavioural precedents of developers and investors focusing on short-term profit maximisation, rather than lifecycle cost.

³⁹ Better Buildings Partnership. Transactional Agents Sustainability Toolkit. April 2012.

⁴⁰ Investment Property Forum. Greening Leases: The Landlord and Tenant Relationship as a Driver for Sustainability. August 2009.

⁴¹ Better Buildings Partnership. Transactional Agents Sustainability Toolkit. April 2012.

Even when significant energy use has been identified within a particular business function, sales-driven business performance in some sectors can lead to a de-prioritisation of investment in energy efficiency measures. The World Business Council for Sustainable Development (WBCSD)⁴² highlights, for example, that in retail, lighting is generally responsible for a significant share of final energy use but is typically considered a “sales force” which drives customer attraction. As a result lighting levels (and energy consumption) are increasing in many retail formats, despite the fact that advances in lighting technology mean that energy consumption can be reduced significantly without detriment to lighting levels.

Perceived cost of delivering green infrastructure is significantly divergent from the true cost. Many organisations lack appropriate systems and protocols to ensure corporate level commitments to sustainability are translated in practice when it comes to investment and operational decision-making. Issues can be attributed to a lack of dedicated resource, misalignment of objectives and/or lack of awareness of which low carbon technologies will actually work.

World GBC⁴³ found in its report on the Business Case for Green Buildings that perceptions of the cost of delivering green buildings were significantly divergent from the true cost. While there can be additional costs associated with building green compared to conventional buildings, the cost premium is typically not as high as is perceived by the development industry. Studies show that the actual cost premium for green building is found to be between -0.4% to 12.5%, but estimated cost premium by survey respondents is materially higher at 0.9% to 29%.

The findings of such research may stem from the persistent and often underestimated lack of awareness within both the private and public sectors on the commercial and operational risks of energy and carbon intensity of buildings. Despite high-level corporate policy rhetoric on sustainability and environmental responsibility, many fund and asset managers remain highly reticent about the need to improve investment performance from a sustainability perspective. Many organisations lack the appropriate systems and protocols to ensure that corporate level commitments to sustainability are translated in practice when it comes to investment and operational decision-making, for example, in the acquisition and management of commercial property.

The knowledge barriers highlighted above are characteristic of a misalignment of objectives; effectively improved energy efficiency is made more difficult to achieve in certain parts of the business due to objectives set in other areas of the firm. Other related challenges can be attributed to the size or structure of the company resulting in there being unsuitable or a simple lack of dedicated resource, as the British Council of Shopping Centres (BCSC) found in their research. The BCSC also found that one of the key barriers to accelerating carbon reduction in retail properties, for both owners and occupiers, was the general lack of awareness of which low carbon technologies will actually work. Commonly quoted problems included a lack of awareness of the technologies available, inconsistent professional advice and lack of clarity on how appropriate technologies were for the manifold operational circumstances of retail properties⁴⁴.

Regarding demand-side awareness, sponsors and developers may not be fully aware of the offering available to them from schemes such as the LGF and other SME schemes. Further, whilst developers may be aware of them, they may not be aware of the full scope that the LGF can provide as well as the technical assistance that schemes such as ELENA, RE:FIT and RE:NEW programmes offer support to organisations. The PDU proactively recruits building owners into the programmes and supports organisations throughout the process through benchmarking optimum financial and CO₂ savings, as well as helping organisations through the procurement, implementation and verification phases. The UDFs state that in the Housing Association and waste sectors, the finance is potentially available but the development of viable business plans does not happen without technical assistance.

Indeed, innovative start-ups in particular may find it difficult to access funding since finance providers are not familiar with their product and have difficulties in assessing the capability and future profitability of the company. Where developers are relatively unsophisticated as business owners and do not speak the same language as

⁴² <http://www.wbcSD.org/home.aspx>

⁴³ Drivers Jonas. *Toward a Sustainable Commercial Property Sector Vol. 1: A Vision and Routemap for Manchester*. 2010.

⁴⁴ British Council of Shopping Centres. *Accelerating Change Towards Low Carbon Shopping Centres*. 2011.

financiers, there is a potential market failure in that good projects may not be taken forward. UDF managers highlighted this as a particular issue when asked about why good projects do not get progressed.

Some UDF managers have stated the view that since the environmental financing market is “still immature” relative to other sectors such as mainstream infrastructure, significant latent demand will build in both public and private sectors over the coming period as prioritisation of environmental projects could develop ahead of the supporting financial markets – this latent demand may contribute to further resource constraints noted elsewhere. In the waste sector, LGF have facilitated the development and build of the UK’s first post-consumer plastic film recycling plant (through investment in PlasRecycle Ltd). In addition to the provision of equity and senior loans, the waste UDF provided £1m of shareholder loans which alongside £2.4m of mezzanine debt from LWARB and Waste and Resources Action Plan (WRAP)⁴⁵.

Skills deficiencies

The delivery of a low carbon built environment makes demands of the construction industry that it is under-equipped to meet throughout all layers of the supply chain.

Skills deficiencies in the construction sector are cited as a key issue. The Final Report of the Low Carbon Construction innovation & Growth Team, for example, asserts that the delivery of a low carbon built environment makes demands of the construction industry that it is under-equipped to meet, throughout all layers of the supply chain.

The UDF managers state that there is significant evidence that developers (particularly in the waste sector) can struggle with preparation of business plans that will present well to potential investors. This has led to the UDF managers performing a significant amount of work in development of the propositions.

Limited non-financial performance data

Relatively little data is collected by property owners or occupiers on energy consumption in relation to in-use performance, whilst that which has, is often subject to disparate reporting frameworks and metrics. Policy is vital in mandating greater reporting of energy and carbon performance but is something that has not been fully addressed. However, pending implementation of Minimum Energy Performance Standards is a significantly anticipated driver which, with its focus on lease transactions, will likely act as a compliance trigger.

Limited non-financial performance data collection and the resulting lack of transparency in the market are widely understood to be key issues within the commercial buildings sector. Historically, issues with data collection and disclosure have been two-fold. On the one hand, there has been relatively little data collected by property owners or occupiers on energy consumption in relation to in-use performance, whilst that which has is often subject to disparate reporting frameworks and metrics. As a result, there are multiple energy performance benchmarks which are active in the UK market. Whilst this been addressed for a proportion of the market by policy instruments such as the CRC Energy Efficiency Scheme (which captures larger organisations above an energy consumption threshold), policy instruments which require some form of reporting on energy and carbon performance are found to be premised on different boundaries and metrics.

The role of policy is vital in mandating greater reporting of energy and carbon performance and, as mentioned above, is something that has not been fully addressed. For example, the introduction of Energy Performance Certificates (EPCs), which are a mandatory requirement on the sale and letting of commercial property, are designed to highlight energy performance. EPCs, because of their mandating, should present an opportunity to highlight energy performance in commercial transactions. However, the market (vendors, prospective lease holders and agents) attaches little credence or value to the certificates. There are a number of reasons for this lack of credibility including historical issues of high levels of inaccuracy. However, the main shortcoming of EPCs are that they are based on theoretical energy efficiency or ‘design intent’ and therefore in isolation are not sufficient to inform decisions on energy consumption in relation to in-use performance. Despite the lack of confidence in EPCs

⁴⁵ LWARB also provided £2.1m of senior loans.

to date, the prospect of the forthcoming legislative changes is already causing a significant shift in this dynamic. The pending implementation of Minimum Energy Performance Standards will prevent the sale or letting of property which have EPCs below a certain threshold. Although this threshold is yet to be finalised, the anticipated driver will likely be its focus on lease transactions as a compliance trigger.

Furthermore, historically, such data has not been a central part of all investors' requirements. However, with the market becoming more focussed on green metrics, and financial statements of listed companies now requiring carbon reporting, information such as this may become more readily available.

Additionally, the UDFs also state that incentivising based on carbon can lead to inducement for players to focus on short term "carbon wins" with near term environmental gains rather than projects that deliver long term benefits to the environment. Clearly this is to the detriment to long term priorities of the London Plan and ESIF Strategy for London and as a result, consideration of better financial incentives may need to be carried out.

We note that the project for Salters Company, in which the LGF financing was provided for energy efficiency measures across two sites, is expected to result in an energy saving of 39%. If the project is successful in delivering energy savings, it could potentially be used as an example for others who are considering investing in energy efficiency projects and hence could help to unlock some latent demand for finance.

Furthermore, LGF's TEG project comprises London's first anaerobic digestion plant. In facilitating "first of a kind" projects, there is the potential for LGF helping facilitate further permutations of similar projects through demonstrating that such projects with relatively new or specific technology can be delivered. Additional leverage in terms of second and third of-a-kind projects which may proceed without LGF funding cannot be measured for the purposes of this report.

3.2 Key findings

Market failures have been identified across three broad areas: financial; structural and market barriers; and information. The specific market being addressed by LGF presents some factors that make it more difficult for these barriers to be assuaged – the market of London exhibits some challenging characteristics in terms of available space, planning permission restrictions and the other opportunities available to financiers.

4 Demand

4.1 Key findings

Identifying the demand for financial instruments requires the consideration of the overall addressable market as well as specific, identified pipelines for relevant sectors in green infrastructure. Through our consultation with stakeholders and experience in the market we have established a methodology to establish the extent of the requirement for finance in the sector. We have considered in detail the private and public sector energy efficiency sectors, the waste sector and the decentralised energy sector given these sectors' importance in the London Plan and ESIF. Further steps would need to be taken to analyse the potential other sectors that may also benefit from LGF funding as highlighted in Section 5.

Sector	Value of demand over the period from 2014-2020 (£bn)
Private sector energy efficiency	£0.8bn - £1.7bn
Waste	£1.1bn - £1.8bn
Decentralised energy	£0.5bn - £3.0bn
Public sector energy efficiency	£0.4bn - £0.6bn ⁴⁶
Total	£2.8bn - £7.1bn

4.2 Demand expectations

This section considers the demand expectations of the sectors that, from consultations with stakeholders, are seen as central to the LGF for the 2014-2020 programming period. Other sectors warrant consideration including those highlighted in Section 5.

4.2.1 Private sector energy efficiency projects

To illustrate the demand expectations within the private sector below are two scenarios based on the commercial property sector within London. These examples look at the scale of existing commercial stock in Greater London, estimated to be around 70m square metres, and provide some possible scenarios of what proportions of the commercial stock might represent in terms of an opportunity to reduce carbon. It is recognised that a proportion of the measures needed to improve carbon performance in commercial property require capital expenditure. Therefore, the main area of interest should be around the financial stimuli required to improve the economic conditions and organisational capacity for low-carbon investment at key capital investment points. For example, the opportunities presented by development, refurbishment and retrofitting of existing buildings.

By taking into consideration the possible impact of fiscal policy changes (as alluded to in Section 3) over the coming years, we can look at the extent to which policy might act as a driver to accelerate the requirement for capital expenditure and therefore perhaps demand for funding. In addition to the policy requirements and drivers it is important to consider the traditional cycle of changes to existing stock such as replacement and refurbishment of buildings that generally occur within the commercial property life cycle.

It is important to highlight at the outset, and as explained in Market Failures, that availability of capital may present a barrier to investment in improved carbon efficiency for organisations of certain sizes, i.e. SMEs. However, for organisations such as commercial property owners for which accessing capital is a core function, the most significant barrier is the institutional leasing model which may cause misalignment of financial incentives. There are potential implications for the interpretation of these scenarios. Whilst a proportion of commercial stock can be

⁴⁶ This expectation is based on the view from the existing fund managers that there will be a similar level of public sector projects in the second programming period as was achieved in the first programming period. During the first programming period £504m of projects were financed through LEEF (including the £47.3m of investment from LGF).

viewed as requiring capital expenditure to improve carbon performance, and therefore representing possible demand, it is important to consider the context of the commercial market in terms of the types of organisations which comprise the commercial property sector and their likely requirements for funding.

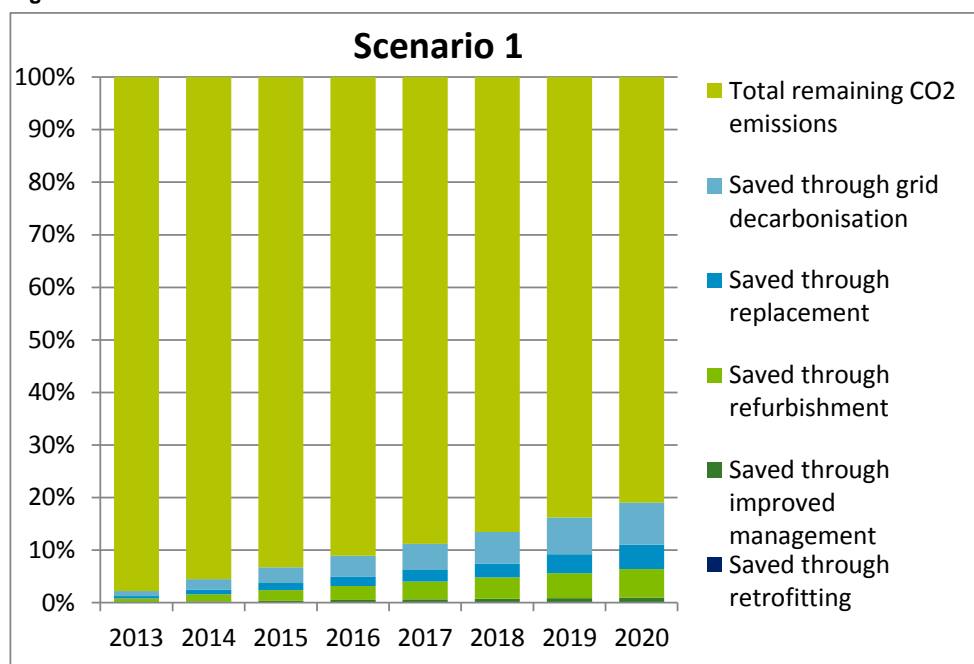
Scenario 1

Scenario 1 could be seen as baseline case in that carbon efficiency improvements are, for the most part, delivered through works carried out within the traditional annual cycles of stock replacement, development and refurbishment. In this regard, a natural improvement in performance should be seen through compliance with building regulations. For example, particular improvements to building services and fabric are required under Part L of the Building Regulations when certain types of building work are carried out. Under this Scenario, due to uncertainty around the pending implementation, there is no improvement to stock in direct response to the minimum energy performance standards proposed for 2018.

Scenario 1 assumes that:

- Based on current experience, around 4.5% of all commercial buildings are refurbished each year through the typical cycle of asset management;
- The refurbishment brings about an average of 15% improvement in the carbon performance of those buildings which is achieved at the point of refurbishment; and
- The average carbon intensity of business property is 100kg of CO₂ per square meter per annum.

Figure 3 – Scenario 1 for carbon emissions saved



Data from the Valuation Office Agency⁴⁷ notes that there are approximately 69,476,000 square metres of business property floor space in the Greater London area. If the refurbishment of 4.5% of this business floor space results in a reduction in CO₂ of 15% (as assumed above), this would equate to approximately 47,000 tonnes of CO₂ based on the carbon intensity assumption.

Under a standard unit cost of energy equivalent to £0.16 per kg of carbon (2013 DECC estimate), the 47,000 tonnes of CO₂ could represent as much £7.7m in energy spend⁴⁸. If the equivalent energy costs were to include a

⁴⁷ http://www.voa.gov.uk/corporate/statisticalReleases/120517_CRLFloorspace.html

⁴⁸ Aggregated carbon emissions are derived from a typical carbon intensity of commercial buildings based on average annual energy use. Average annual energy use is calculated as £16.44 per square metre. This is based on estimations taken from the BBP/JLL Real Estate Environmental Benchmark to calculate the average energy use of a typical commercial building.

price per tonne through schemes such as the CRC Energy Efficiency Scheme this could increase the cost to £0.18 per kg of carbon overall (7% higher)⁴⁹ and therefore a higher cost per square metre.

Under this scenario, the equivalent cost of energy that could be avoided through to 2020 will be between £80m and £86m (if the additional CRC scheme pricing is included)^{50 51}. Taking an assumed rate of return required by management of 10% on projects such as these gives a potential addressable market investment total of around £78m across the period to 2020.

Scenario 2

In Scenario 2, there are the same assumptions as Scenario 1 in terms of the traditional annual cycle of stock refurbishment. Scenario 2 is intended to represent a greater uptake of refurbishment and retrofit works on existing stock in response to compliance with the pending minimum energy performance standards. It should be noted that operational improvements such as improved management practices and grid decarbonisation will also impact on carbon emissions from property.

As explained in Market Failures (section 3, above), the proposed policy measure will prevent the letting of property which have EPCs below a certain threshold beyond 2018 (based on the date for the minimum energy performance standards coming in). It is widely reported that approximately 18% of all commercial stock could be at risk of being beyond this threshold. If we apply this to Greater London this would, in theory, mean approximately 12.5m square metres of commercial property could be at risk. This policy instrument could act as a driver to accelerate the demand for investment in improved carbon efficiency.

The assumptions are as per Scenario 1 with the addition of the following:

The 2018 deadline of the pending minimum energy performance standards, as a compliance trigger, requires on average 2.5% of total existing stock (in floor area terms) to be retrofitted each year to a standard where carbon emissions are reduced by an average of 30%. By 2020, the additional impact of the policy on retrofitting is expected to have increased the carbon emissions abatement by nearly two-fold compared to natural cycles of refurbishment to an equivalent of 1.1m tonnes of CO₂. Based on standard unit prices of energy as explained and taking into account DECC's energy price forecasts (17% increase between 2014 and 2020)⁵² this carbon saving could represent an equivalent of nearly £241m in energy costs by 2020 (or £258m with the CRC scheme pricing included). Since this is a compliance issue, return required by management is not included in these calculations since we assume that investment is made in order to comply with regulations rather than in order to improve business efficiency.

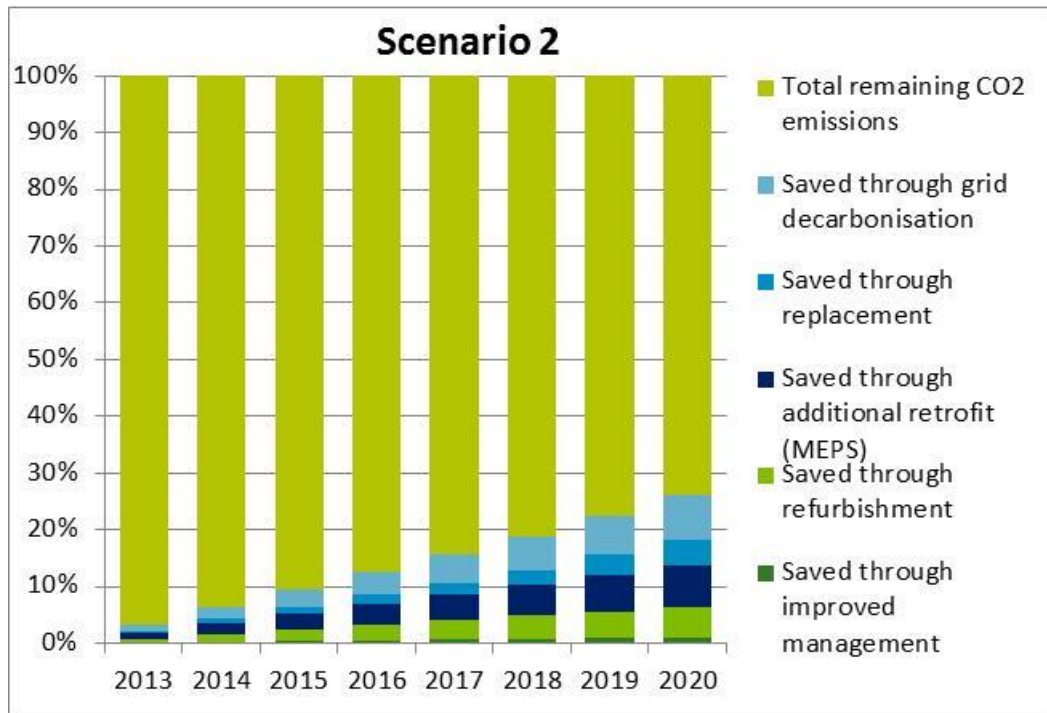
⁴⁹ This is at the current carbon price of £12 per tonne. In 2014/15 this is increasing to £16 per tonne. We note that this will likely not apply to all companies as there is specific qualification criteria for the CRC Energy Efficiency Scheme.

⁵⁰ Price growth assumptions here take account of inflation but not discounting.

⁵¹ Department for Energy and Climate Change. Energy & Emissions Projections. October 2012.

⁵² Figures taken from DECC Updated Energy & Emissions Projections (Sept 2013). Projects a 36% and 18% respective increase in retail prices for electricity and gas. Calculated from an average of the Residential and Services retail prices.

Figure 4 - Scenario 2 for carbon emissions saved



Synthesis

Given that Scenario 1 could be seen as 'business as usual' there might be an argument to suggest that because capital is invested as part of the natural annual cycle, there may be limited opportunities to increase demand beyond Scenario 1 estimates where a business case can be proven. By contrast, Scenario 2, with the energy performance standards policy coming in 2018, should have a positive impact on investment driven by compliance with new regulation. Similarly, demand could exceed the regulatory minimum provided business cases can be proven.

It is difficult to say with any certainty the extent of London stock that could require improvement to comply with the pending legislation. Two aspects to consider are, firstly that some organisations may need to commission and re-commission EPCs in the run up to 2018 to understand the extent of the shortcomings of the energy performance of their commercial property portfolio. Secondly, the varying size and type of organisations within the commercial property sector, as well as the diverse subsector building types, could mean access to capital will not be the overriding issue – some large property owning groups will have access to capital through their own balance sheet and existing financing facilities. Nonetheless, if, based on the UK-wide estimate, it can be assumed that approximately 18%⁵³ of London's commercial stock by floor space (12.5m square metres) will need to be improved to some degree over the next four or so years.

An alternative view to consider, rather than the equivalent financial value of carbon saved based on the cost of energy, is the total cost of refurbishment works and the potential addressable market this might represent. This might be most appropriately applied to the proportion of total stock potentially at risk of non-compliance in 2018 (which as noted above could present an opportunity to increase the demand for capital expenditure over the next four to five years).

Data from Building Cost Information Service puts the cost of refurbishment to an existing building at £1,141 per square metre. This figure multiplied by 3% of Greater London building stock (based on the Retrofit programme driven by MEPS being 18% over 5 years, giving approximately 2.1m square metres per annum) to arrive at an indicative annual refurbishment cost of nearly £2.4bn per year. This represents the total cost of refurbishment and clearly covers more than just energy-related aspects of a refurbishment. Assuming that between 5% and 10% of

⁵³ Applying the UK estimate of commercial stock that has F and G rated EPCs

the project costs can be attributed to energy related measures⁵⁴, this gives a cumulative investment requirement of £1.2bn as shown in the table below. It is important to note that this calculation is based on various averages, estimates and assumptions. In reality, refurbishment costs and energy-related costs are very varied and depend on a multitude of different issues related to the individual project.

Refurbishment cost estimates for Greater London (using the mid-case 7.5% of total project costs for energy-related costs)

£m	2014	2015	2016	2017	2018	2019	2020
Total refurbishment cost per year	£2,378	£2,378	£2,378	£2,378	£2,378	£2,378	£2,378
Cumulative total refurbishment cost	£2,378	£4,755	£7,133	£9,510	£11,888	£14,265	£16,643
Cumulative energy efficiency related refurbishment costs	£178	£357	£535	£713	£892	£1,070	£1,248

Ultimately across the period from 2014 to 2020, using the 5% to 10% range noted above, demand would be in the range of £0.8bn and £1.7bn in this sector with a midpoint of £1.2bn.

To add context, a recent study by CO₂ Estates⁵⁵ estimates that for England and Wales to refurbish the 200,000 UK's EPC-rated F and G commercial properties up to at least an E standard could cost as much as £29bn over the next four years. The potential additional refurbishment activity in response to new regulatory requirements was estimated at providing annual energy cost savings of £3.9bn across the UK during the next four years.

4.2.2 Waste

The EU landfill directive requires the UK to:

- reduce landfill municipal waste by 65% of 1995 levels by 2020
- recycle compost or reuse 50% of household waste

DECC estimates that the UK requires £8bn of investment to meet the 2020 landfill diversion targets (from 2014) and recycling targets⁵⁶. Again, to develop a range for degree to which this investment takes place in London, we can take the lower and higher bounds of share of population and share of GDP. This gives total investment over the period 2014-2020 in the range of between £1.1bn and £1.8bn.

4.2.3 Decentralised energy projects

The Decentralised Energy Project Delivery Unit (DEPDU) is currently supporting the development of 18 projects with a combined value of £218.6m (including only projects that are sufficiently defined).

Of these identified projects, £32.8m of investments have already been made to date and three projects are in advanced stages of development (identified as in "Advanced Stages"), and are expected to be brought to market by 31 July 2014. These represent an additional £11.6m investment. Since these two values are assumed to be outside the investment window of the next programming period for LGF, these values are removed leaving an identified pipeline of £174.2m⁵⁷.

In this relatively new market, the valuation of unidentified projects is particularly difficult. GLA are seeking to establish standardised guidance for the delivery of projects and for their operational phase by producing the London Heat Network Manual for developers, network designers and energy producers⁵⁸.

In 2011, GLA produced a report⁵⁹ which considered deployment potential for decentralised energy in London. The approach is based on a standardised methodology developed by DECC which has been modified to reflect Greater London's urban nature.

⁵⁴ Indicative energy-related project cost ranges based on assumptions provided by in-house cost consultancy practitioners. Since a range of 5 to 10% was provided, an average of 7.5% was assumed for calculations here.

⁵⁵ <http://www.egi.co.uk/news/article.aspx?id=781566>

⁵⁶ <https://www.gov.uk/government/publications/waste-management-in-the-uk-investment-opportunities/waste-management-in-the-uk-investment-opportunities>

⁵⁷ Greater London Authority. Decentralised Energy for London. March 2014.

⁵⁸ <https://www.london.gov.uk/priorities/environment/tackling-climate-change/energy-supply>

The calculations consider the lifecycle unit cost of heat generation for each technology, as well as the lifecycle unit cost of heat distribution by area. Decentralised energy is considered viable in areas where the sum of the cost of heat generation and cost of heat distribution is less than a baseline cost of heat from gas boilers. DE deployment is constrained by the build out rate of heat networks.

Five scenarios are modelled including business as usual policy and energy price; ambitious policies and scarcity of natural gas; and co-ordinated action across all sectors. These scenarios are indicative and used to highlight the impact of different economic conditions and policy levers. Under the “Coordinated Scenario” £8.3bn was the implied investment value from 2011 to 2031. Assuming that over the period to 2031 the investment is straight line, for the 2014-2020 period, this implies an investment need of £2.8bn under the Coordinated Scenario. The range calculated is £0.5bn to £3.0bn based on a varying degree of policy incentives and the extent to which energy prices increase over the period.

	Business as Usual	National	Regional	Ambitious	Coordinated
Decentralised energy (GWh)	3,680	3,874	4,604	20,374	19,048
Percentage of Coordinated Plan (%)	19%	20%	24%	107%	100%
Implied investment value to 2031 (£m)	1,604	1,688	2,006	8,878	8,300
Investment in 2014-2020 (£m)	535	563	669	2,959	2,767

⁵⁹ Greater London Authority. Decentralised energy capacity study; Phase 2: Deployment potential. October 2011.

5 Funding Gap

5.1 Summary

In Section 4, the value of the addressable market was identified as much as £7.1bn including the already identified pipeline. This analysis attempts to provide a value to the potential gap in financing the addressable market and discusses the key financial instruments that look to address the market failures that were discussed in Section 3.

5.2 UDF recycling

London was allocated €182m from the European Regional Development Fund (“ERDF”) during the 2007-13 programme period with £50m of this allocated through the London Green Fund.

Due to the fact that the investments made under the LGF programme are to be commercially sustainable, there will be returns, through dividends, interest payments and loan principal repayments accruing to the fund over the projects lives. It is expected that for the 2014-2020 programme period, recycling of funds will provide £123m⁶⁰.

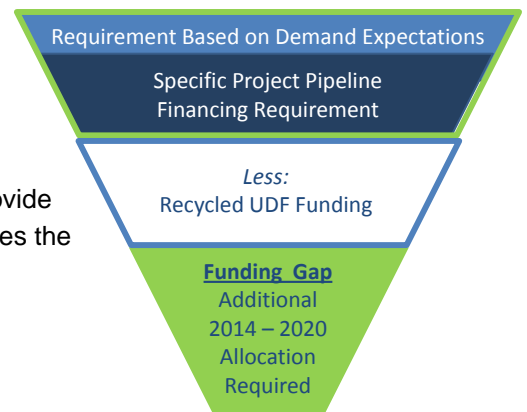
5.3 Expected funding gap

The demand expectation less UDF recycling leaves a gap in the range of £2.7bn and £7.0bn (£0.1bn of UDF recycling). The funding gap will also be reduced by other sources of finance available in this space such as the initiatives noted in Section 2. However, it is difficult to quantify how far other initiatives can go to address the finance gaps in green infrastructure in London. The availability of finance in the future will also be highly dependent on the performance of funds through the recycling effect as discussed above.

It is clear that there are a number of identified well-aligned schemes including

- Green Investment Bank
- LWARB’s Targeted Waste Infrastructure Fund
- Salix Energy Efficiency Loan Scheme
- DECC Electricity Demand Reduction
- Other EIB schemes such as NER300 and Horizon 2020
- ELENA (though this only provides technical assistance)

LWARB’s Targeted Waste Infrastructure Fund (TWIF) is focussed on waste in London and so is well aligned with the LGF but the level of funding available from this fund going forward is not known. The degree to which other current schemes are deployed outside London is a significant factor in determining the available financing within London – aside from LGF itself and LWARB’s TWIF, there are no schemes which have come to our attention during stakeholder sounding which target investment specifically in London. Even where schemes have identified budgets and investment guidelines which align particularly well, in many cases these schemes will have started a number of years ago and as a result the remaining available finance is indeterminable without additional primary research. Each scheme will also have a specific investment mandate which may restrict their ability to meet the funding gap in a manner appropriate for LGF’s purposes, e.g. LWARB focuses on waste and therefore would not invest in meeting energy efficiency financing gaps whereas GIB can invest across sectors but has a limited capital allocation for each sector.



⁶⁰ Per current EIB expectations.

Effective demand is also a key factor: it is difficult to predict how much of the available SME finance will be successfully bid for and taken up by London SMEs. Economic conditions, expected to be reasonably buoyant, will largely determine the scale of demand, and the extent to which the requests are “investment appropriate”, also needs to be factored in⁶¹. Consultations with stakeholders have to some degree reinforced findings that finance gaps exist for green infrastructure in London both in terms of debt and equity finance. The wide variety of different types of finance available reflects the diversity of green infrastructure project characteristics and their specific finance needs.

5.3.1 Debt

Research has indicated that gaps in debt finance have been in relation to start up and for working capital during the development phase. From review of similar initiatives including those for SMEs in Section 2, it would appear that there are several major Government-supported initiatives that will be addressing some of these debt finance gaps, but perhaps less so from a green infrastructure focussed point of view. The implication is that whilst there is still the need for additional funding for green infrastructure projects, there is also a role for better information dissemination and coordination of the funding already being made available as discussed in Section 7.

The data on debt finance clearly shows the reduction in supply in London over the last two to three years. When supply is assessed as a proportion of the business base, London is slightly below the UK average in terms of bank finance (although for equity finance it is 50% higher). Feedback in some studies highlighted that it has become more difficult for London SMEs to secure bank finance owing to more stringent terms and conditions⁶².

Whilst literature on SME finance maps well to new start-up projects, public sector bodies looking to finance energy efficiency projects requires a different perspective since the projects do not generally require structuring in the same way as for more traditional project finance models.

The budgetary rules governing capital expenditure vary across public sector organisations. Most public sector organisations will need to develop a business case to secure investment through models such as HM Treasury’s “5 Case Model” which sets out the framework for developing public sector business cases.

The Public Works Loans Board (PWLB) is naturally a key source of funding which considers loan applications from local authorities and other prescribed bodies. As a result, for such projects in the energy efficiency space in the public sector, PWLB funding represents a close alternative to LGF funding in this space indicating that financing for public sector projects is not a key barrier.

UDF managers for the public sector energy efficiency highlighted the relative cost of financing as a major impact on whether LGF or PWLB funding was sourced by projects. Over the 2007-2013 programming period the PWLB rates varied from being cheaper than LGF funding to being more expensive. When the PWLB loans were cheaper LGF funding was not readily sourced by the public sector. It was not until LGF funding was more competitive than PWLB, that the funding was taken up by public sector bodies looking to finance energy efficiency projects.

This experience suggests that there is little financing gap in this space since financing is available from sources other than the LGF. Most stakeholders have communicated that the ability to provide development phase funding would be of particular interest since it would likely open the market further and attract new projects. Where others sources are unavailable to provide such development funding, LGF development stage financing could be particularly useful at this stage – this is discussed further in Section 6.

The particular expertise of the UDF managers in their respective sectors, that the PWLB is not able to provide, is a key differentiating factor for the LGF funding. Indeed, for the Willen waste project, FEF financing was not the cheapest option but the developer recognised that development expertise for these projects is particularly important – this is tangible evidence of the LGF funding leveraging the talent in London’s finance community to good effect. The informational and organisational market failures require such technical assistance.

⁶¹ SQW and Middlesex University London. SME finance in London: Final report to the Greater London Authority. November 2013.

⁶² Department of Energy & Climate Change. A guide to financing energy efficiency in the public sector. November 2012.

In the Housing Association sector, energy efficiency programmes take place as Housing Association stock is replaced (i.e. when boilers are replaced, they are done so with more energy efficient models). As a result, Housing Associations already do such energy efficiency projects as part of their “business as usual” activities. This suggests that market failures are limited for this type of organisation.

It has been discussed that experience in many sectors has been that the funding gap is in project preparation and development. However, UDFs recognise that the Housing Associations are typically very good at developing propositions for funding and as a result, there does not appear to be development issues, as in other sectors.

For projects looking to secure bank or other private sources of finance, London is seen by the UDF managers as a harder market in which to implement energy efficiency and renewables projects. With project costs being higher due to London’s specific issues on space and planning permission as explained previously, the innovative/ integrated energy efficiency projects cannot always deliver appropriate returns and thus the projects are put on hold or cancelled. We note that other investment funds such as GIB and EEEF have a very limited amount of deals in London.

UDF managers note that banks have made limited progress in this market – RBS launched an EE debt fund supported by government’s ‘Funding for Lending’ initiative but this struggled to find any deals. This could be for a number of reasons, including some of the market failures which suppress latent demand as described above, or the credit appetite of the bank restricting the potential market for this fund.

Furthermore, the asset finance market is growing in energy efficiency (particularly with Investec, Lombard, and Rabobank) but these focus on single technology / capital intensive assets – largely Combined Heat and Power projects. This may be a key competitive source of financing against the LGF should it choose to expand into Combined Heat and Power.

5.3.2 Equity

On the equity finance side, there are also funding gaps in London and that these are particularly evident at the early stages of project development; the gap has specific features, which have been exacerbated by a number of factors.

The equity gap for innovative green infrastructure projects which struggle to obtain finance because of information asymmetries, lack of track record and the comparatively high cost of funding for such perceived high risk ventures.

It is generally understood that business angels and High Net Worth Individuals have entered the early stage investment market, but that they are limited individually to investments of up to £50k and collectively in business angel networks (BANs) to collective investments of up to £250k. Whilst London has been well served by angels and network groups, there are difficulties in obtaining angel investment because existing investments have been locked-in. Angels have been forced to keep existing investments for longer, especially in development stage projects in complex sectors such as waste, and this has limited follow-on funding and severely restricted the amount of fresh new early stage angel investment available.

Since the onset of the global financial crisis in 2007/08 there has been a considerable decline in the overall amount of private equity investment in the UK, which whilst focussed particularly on London and South East, is well below where it was previously (BVCA figures). There is also a perception that the UK does not have the appetite for equity investment exhibited in the US, and that this conservatism has been exacerbated by recent economic conditions. The result is that London appears to be undersupplied for early stage green infrastructure equity funding. Despite the introduction of some public backed equity schemes, there is still greater demand in London than supply for private equity investment⁶³.

⁶³ SQW and Middlesex University London. SME finance in London: Final report to the Greater London Authority. November 2013.

Particularly, we note that listed renewables and unlisted Venture Capital Trusts and Enterprise Investment Scheme funds mainly have a focus on solar, wind or renewable heat which represents a limited market in London given the premium on space.

To date, only the waste UDF (FEF) has invested equity into green infrastructure projects. For example, in the TEG Biogas project, the UKWREI fund has worked with FEF whereby the parties made £2m and £9m investments respectively (split between equity and shareholder loans). LWARB and other financial investors were “crowded in” to provide the rest of the debt funding for the project.

We note that all the UDFs are allowed (under their mandates) to provide equity products, but as noted above, only the waste UDF has invested equity to date. This stems from their typical investment project type: the energy efficiency sector UDF has generally invested in the public sector (LA and HA) projects which do not tend to be structured via Special Purpose Vehicles (“SPVs”) which would require equity finance; rather, the equity risk of the project is absorbed into the balance sheet of the LA or HA. The opportunity to invest equity may arise in future if projects are structured through SPVs; this would be most likely, where projects are of a sufficient size, in the areas of private sector energy efficiency investments, decentralised energy and waste.

Other financial instruments can support projects by providing different financial products, such as guarantees and mezzanine debt. The case for each are highlighted below, however, each product has specific characteristics, responds to different needs and its suitability also depends on each particular case being considered.

5.3.3 Mezzanine debt

Mezzanine debt can assist in bridging the equity gap in the development phase or where the need arises for leveraging additional loans and offer a reduced exposure to loss in case of insolvency (compared to equity). LGF schemes (though only in the waste sector) have used mezzanine debt in some cases, particularly in the waste sector whereby it fills the gap left where commercial debt has been unavailable from banks. Such projects have been successful including the TEG Biogas project described above.

5.3.4 Guarantees

Guarantees can be used to address specific risk capacity constraints in given market segments and can cover the financing structure of a large number of projects with relatively few resources. The UDFs report limited usage of this type of instrument since they find that there is a lack of discipline for non-recourse financing in terms of risk allocation and due diligence and that they might not fill a need. Where guarantees have been suggested in order to get commercial banks involved in projects, state aid approvals have often been deemed too large a barrier to hurdle and other opportunities have been pursued.

There is the potential for LGF to team with the Infrastructure UK Guarantee (IUK) team, since the IUK team has significant experience of the guarantee product. This may allow the LGF to leverage the IUK £40bn scheme as well. The worry might be that IUK would not be keen to administrate smaller projects. That said, SDCL has worked with IUK on £10m and £12m schemes in the past. Further evidence comes from The Singapore Economic Development Board whereby it offers guarantees on debt and finds this can bring in more private sector leverage.

5.3.5 Other sectors

The opportunity to leverage LGF money in different sectors is one that was considered at the outset of the LGF. In re-evaluating the fund for the next round of funding, the question around appropriate sector should again be asked.

Such projects include:

- Combined Heat and Power (CHP) projects – such as the programme at Barking Power Station for the provision to extract heat in the form of low pressure steam so that any new Combined Cycle Gas Turbine (CCGT) block could operate as a CHP plant.

- Other Energy Efficiency – The commission of an energy-efficiency study at the Greenway Pollution Control Plant, which led to the introduction of a new system to remove excess water from the waste stream. This was through the Union Gas EnerSmart program offers incentives to municipal, commercial and industrial customers to implement projects that will use natural gas more efficiently, reducing energy costs and emissions. There is the potential for this to sit alongside financing from the LGF⁶⁴.
- Water source heat – A project in Kingston is capturing energy from the sun and storing this energy in the river. The water passes through a high-efficiency heat exchanger, which transfers the low grade heat in the river water to an internal ‘closed’ water system before the river water is immediately returned, untreated in any way, to the river⁶⁵.
- Street lighting - Light-emitting diode (LED) lamps, combined with smart controls, can cut CO₂ emissions 50–70%. GIB is now offering local authorities a low, fixed rate loan over a period of up to 20 years. The Green Loan has been specifically designed to finance public sector energy efficiency projects, ensuring that repayments are made from within savings. The product can also include a development loan to help Local Authorities with the costs of progressing their plans⁶⁶. Street lighting is not currently eligible for the LGF, but this is an area where LEEF have received enquiries and they state that it would be beneficial to include this in the next round.
- Rooftop solar – such as the Sudbury Primary School programme in Wembley which had solar PV panels fitted as part of a £3m extension and refurbishment scheme. Estimates state that the solar array will produce in excess of 18,000kWh per year, offsetting 9.7 tonnes of carbon every year⁶⁷.

5.4 Key findings

In Section 4, the value of the addressable market was identified as much as £7.1bn including the already identified pipeline. This analysis attempts to provide a value to the potential gap in financing the addressable market and discusses the key financial instruments that look to address the market failures that were discussed in Section 3.

The degree to which other current schemes are deployed outside London is also a significant factor in determining the available financing within London. Even where schemes have identified budgets and investment guidelines which align particularly well, in many cases these schemes will have started a number of years ago and as a result the remaining available finance is indeterminable. Ultimately, each scheme will have a specific mandate which will restrict their ability to meet the funding gap in a manner appropriate for LGF’s purposes. Whilst the other sources of finance cannot be accurately determined, given the extent of the demand, the market failures noted in this report and the profile of spend in the first Programming Period, it may be expected the demand for finance outstrips the current available finance.

Consultations with UDF managers highlight a gap for both debt and equity. Most stakeholders have communicated the view that the ability to provide development phase finance would be of particular interest since it would likely open the market further and attract new projects.

⁶⁴ <https://www.uniongas.com/newsroom/2014/May-7-2014-2>

⁶⁵ <http://pinpoint.ukgbc.org/resource/8300-kingston-heights-open-water-source-heat-pump-case-study-from-cibse.php>

⁶⁶ <http://www.greeninvestmentbank.com/media-centre/gib-news/uk-green-investment-bank-launches-new-loan-product-to-finance-the-uk-switch-to.html>

⁶⁷ http://www.solarpowerportal.co.uk/case_studies/wembley_school_given_environmental_makeover_2356

6 Lessons learned and best practice

6.1 Lessons learned and best practice

Having discussed the experience of the 2007-2013 EDRF Operation Programme with various stakeholders, lessons learned and best practices have come to the fore with suggestions for potential improvements to the LGF being offered; such suggestions are summarised below.

6.1.1 Development stage finance

Consultations with UDFs gave rise to suggestions that there is a financing gap for development stage projects in some sectors. Public support in development finance has traditionally funded projects through grants, but UDF managers have suggested the possibility of providing early stage equity or debt, which would provide a return were the project successful.

Where there have been financing gaps at the development stage in the waste sector, LWARB has stepped in for some projects to help finance projects. In May 2014, financial close was reached on a new £15m anaerobic digestion and green waste composting plant in Enfield in which LWARB had initially provided a development loan. Subsequently, the project finance is being provided on a 50:50 basis by UK Waste Resources and Energy Investments (UKWREI) and Foresight Environmental Fund (FEF) – both funds are managed by Foresight, with FEF being the LGF's waste UDF.

The GLA has also provided some degree of development funding for district heating projects.

All UDF managers have communicated that the ability to provide development phase funding would be of particular interest since it would likely open the market further and attract new projects. Where LWARB or GLA are unable to provide such development funding, LGF development stage financing could be particularly useful at this stage.

For the energy efficiency sector however, since most of the projects are currently completed through public sector bodies, early development debt or equity may not be appropriate.

Regarding broader pan-European schemes, Intelligent Energy Europe⁶⁸ is phasing out and being replaced by Horizon 2020 which focuses on developing the market and project pipeline rather than simply grant funding for individual projects (funding for dialogue, capacity building, benchmarking investments, awareness raising for investors). This scheme is also now open to private entities too who can receive cash for project development costs. The Horizon 2020 scheme has a budget of up to EUR70bn.

It is possible that the Horizon 2020 scheme will provide funding for the replacement to ELENA. In London, the Energy for London scheme is being established; the current business plan would provide technical assistance for appropriate projects in London through to 2020, doing similar work to ELENA, but is looking to be self-funding. This would be more involved in upstream planning but continue financial, accounting and tax advice.

6.1.2 Delivery role

The findings from the consultations point to a complex environment, in which there is a role in facilitation of development and operation of green infrastructure financing markets. The Institutional Investors Group on Climate Change (IIGCC) note that there is no single solution but there are similar cross-cutting issues across different

⁶⁸ Intelligent Energy Europe offered a helping hand to organisations willing to improve energy sustainability. Launched in 2003 by the European Commission, the programme was part of a broad push to create an energy-intelligent future for us all. It supports EU energy efficiency and renewable energy policies, with a view to reaching the EU 2020 targets (20% cut in greenhouse gas emissions, 20% improvement in energy efficiency and 20% of renewables in EU energy consumption). ELENA funding came from the IEE.

property classes and industry segments. Some form of enhanced delivery unit might involve a series of complementary actions, of different types and at different levels:

- information provision and networking, notably with regard to mezzanine funding, angel finance, and government backed support schemes;
- working with experienced fund managers to manage the risks and transaction costs involved in relatively small equity propositions, and in early stage businesses where there are longer lead-in times co-funding start-up activity,
- working with SME lending schemes to improve the supply of debt finance for SMEs considering green infrastructure.

The IIGCC notes that finance tends to focus on supply, that is, the provision of funding through soft finance schemes and programmes of that nature. Speakers at the IIGCC note that whilst this soft finance is clearly helpful in enacting these projects, the finance community can sometimes forget the demand drivers and supporting the development of demand for finance should also be addressed.

UDF fund managers all report that a strong project implementation unit whose remit is the complementary actions noted above would be beneficial in building a viable project pipeline.

Both the GLA and a commissioned EU report⁶⁹ acknowledge there is a need for dialogue and knowledge exchange between public and private sector parties. It was thought that collaboration over the objectives of financial instruments funded partly or wholly through public sector sources (including those administered under the LGF) could increase visibility, encourage understanding and increase knowledge of the requirements of both sets of parties. This was also seen as having potential benefits in terms of explicitly addressing the potential conflict between the commercial approach inherent in many financial instruments, and the wider cohesion-related objectives of the ESIF plan for London which may require non-financial returns. Indeed, it emerged that objectives of project implementation units within the GLA and those of the LGF are not necessarily perfectly aligned. Aligning objectives may lead to better pipeline production of viable projects for investment including appropriately aligned carbon metrics as well as financial hurdle rates.

It is also possible that the LGF could provide some assistance in accessing finance from for the Horizon 2020 (see Section 6.1.2) given the acknowledgement of the requirement for expertise in green infrastructure for the development phase of projects. Indeed, these programmes could work together with the proposed Energy for London programme being a useful pipeline for the LGF, when the Energy for London projects reach a stage where they are viable for finance.

6.1.3 Follow-on funding

Additionally, however, with ERDF funding needing to be allocated for existing rounds by 31 March 2015, LGF financing may suffer from not being able to “follow its money”. Under the 2007-2013 programming period rules, where projects warrant additional funding to pursue further growth opportunities, the UDFs have not been allowed to participate in potential upside prospects despite taking the project through riskier parts such as development and construction. UDF managers stated that expansion of mandates to allow follow-on funding projects may allow LGF to optimise the results of its early stage support. We understand from EIB that the LGF mandate has been updated during the programming period to allow for follow-on funding.

6.1.4 Concentration limits

Some of the UDFs have suggested that concentration limits to the fund regarding the size of projects relative to the size of the fund are more appropriate for private equity type funds rather than infrastructure funds. For example, Waste projects can typically be very large and as a result restrictions to concentration limits form unnecessarily boundaries to the work that the UDFs do.

⁶⁹ EU, EIB, Mazaars, ECORYS, EPRC. Financial instruments: A Stock-taking Exercise in Preparation for the 2014-2020 Programming Period. March 2014.

6.1.5 Geographical limits

Given the issues with both finding and funding the land for waste projects in London, a fund manager suggested that adjustments to geographical restrictions for the LGF could be made.

Whilst there is the recognition that LGF money should be for the benefit of London, projects which may not necessarily be within the border of the GLA boroughs may be required to serve London's needs.

For example, where waste projects take a significant percentage of their stock from London, the location of the site should be considered in the light of the projects' potential impact on London's waste management (as well as the carbon footprint and cost impact of transporting waste significant distances). GLA has indicated that, with projects being outside of the London boroughs, it may be politically challenging, though the needs of London being met will be a key factor in the decision made on geographical limits, for example waste management facilities which process London's waste or decentralised energy projects which provide energy to offtakers within London.

6.1.6 Aggregator

As noted in the market failures section, whilst the Tate Foundation project is a good example of a large energy efficiency project, many energy efficiency projects are significantly smaller and can fall below the target deal size of commercial financiers. It could be argued that there is a role for the LGF in aggregating several smaller projects and bringing in commercial money at a later date for the "bundle of projects". This also gives an exit route for the LGF from projects; any money can then be recycled earlier in a similar manner to that discussed in Section 7.

6.1.7 Lessons from other JESSICA funds

A stocktaking study⁷⁰ was performed on the various financial instruments used in the EU; it aimed to understand more about current experience and future intentions in relation to establishing them. The following sets out relevant findings from the study which may apply to the LGF.

Regarding the implementation experience of the financial instruments to date, the study concluded that many delays in establishing financial instruments can be attributed to the 'newness' of them and how the current EU regulatory framework is more suited to grant funding than more market orientated repayable investments, requiring time and substantial clarification to be sought to design financial instruments appropriately in accordance with required regulations. Furthermore issues of State Aid were frequently raised as requiring clarification, as well as the need to understand the legal and commercial complexity of financial instruments. The need for greater clarity and agreement on interpretation of the eligibility rules, and greater certainty on the regulatory framework, are felt to be key areas for improvement for the next programming period.

Revolving instruments for urban development, in many areas of the EU, are felt to be relatively novel and more complex in that the integrated nature of urban development requires many different parties, and it can be challenging for projects to develop enough of a return on investment to be suitable for repayable investment. The stocktaking study makes it clear that the lack of experience with any revolving instruments in the public sector has required a steep learning curve and cultural change, and it has taken substantial time to reconcile the interests and views of numerous stakeholders in order to reach agreement on establishing financial instrument investment strategies.

Other implementation issues identified in the Study related to the difficulties many financial instruments have had in attracting the desired private sector co-investment, felt by many to be one of the primary reasons for, and benefits of, establishing financial instruments. Further, the study highlighted that Technical Assistance was critical to the establishment of financial instruments in this programming period. Reflecting the early stage of the establishment and implementation of Financial instruments, most Technical Assistance requirements have been in this early phase to date, in particular through the market assessments under JEREMIE and JESSICA, and other assistance in relation to legal, financial, and management issues.

⁷⁰ EU, EIB, Mazaars, ECORYS, EPRC. Financial instruments: A Stock-taking Exercise in Preparation for the 2014-2020 Programming Period. March 2014.

As with the UDF managers, when study respondents were questioned about the need for Technical Assistance in the next programming period, they were strongly of the view that both specific Technical Assistance and broader capacity building was valuable across all parties involved in financial instrument implementation.

The study findings may also indicate that greater levels of assistance are needed in sectors where there is an entrenched culture of grant funding, or that where there is a weak pipeline of eligible projects that are able to repay 100% of investment provided, that consideration may need to be given to the opportunities to combine grant and repayable investment financing for areas where there is an opportunity to repay some, but perhaps not all of investment financing due to particular issues of market failure.

Relevance to LGF

This last point regarding pipeline development is relevant for the early stage development funding in London which has historically been provided for through grant funding via project implementation units. The repayable investment financing for areas where there is an opportunity to repay some proportion may offer a route to commercial sustainability for this demand side issue. As noted elsewhere, it may be appropriate for the LGF to offer part or all of this financing.

Following the success of first programming period, it could be argued that the LGF has assuaged many of the other concerns when it comes to implementation of financing instruments in place of grant funding.

6.1.8 Alternative programmes around the world

There are many schemes looking to encourage the provision of green infrastructure around the world. LGF should ensure that it is trying to learn best practices from around the world so that further funding rounds are as effective as possible in the stimulation of green infrastructure and the subsequent reduction in carbon dioxide. Some alternative models include:

- California's \$104m Properly Assessed Clean Energy (PACE) scheme is a means of financing energy efficiency upgrades or renewable energy installations for buildings. Examples of upgrades range from adding more attic insulation to installing rooftop solar panels. In areas with PACE legislation in place municipal governments offer a specific bond to investors and then turn around and loan the money to consumers and businesses to put towards an energy retrofit. The loans are repaid over the assigned term (typically 15 or 20 years) via an annual assessment on their property tax bill. PACE bonds can be issued by municipal financing districts or finance companies and the proceeds can be used to retrofit both commercial and residential properties. One of the most notable characteristics of PACE programs is that the loan is attached to the property rather than an individual. PACE can also be used to finance leases and power purchase agreements (PPAs). In this structure, the PACE property tax assessment is used to collect a lease payment of services fee. The primary benefit of this approach is that project costs may be lower due to the provider retaining the tax incentives and passing the benefit on to the property owner as a lower lease or services payment. This programme works in the building performance, renewable energy and transportation sectors^{71, 72, 73}. This could be similar to the Tax Incremental Finance, which is now possible in the Local Authority sector; however it may be difficult to achieve coupon below PWLB rates.
- The NY Green Bank invites private sector capital providers and other clean energy industry participants to propose partnership arrangements that would facilitate the financing of credit worthy clean energy projects (including energy generation and energy savings projects) in New York State. The scheme, worth \$165.6m, encourages capital providers to offer projects which offer green benefits – it is not technology or sector specific⁷⁴. This can allow for additional flexibility in the investment portfolio.
- As noted in Section 5, there is the potential for LGF to team with the Infrastructure UK Guarantee (IUK) team, since the IUK team has significant experience of the guarantee product. This may allow the LGF to

⁷¹ <http://pacenow.org/>

⁷² http://votesolar.org/wp-content/uploads/2009/06/PACE_FAQGeneral1.pdf

⁷³ https://renewfund.com/finance_overview

⁷⁴ <http://greenbank.ny.gov/>

leverage the IUK £40bn scheme as well. SDCL reported that it had worked with IUK on £10m and £12m schemes in the past.

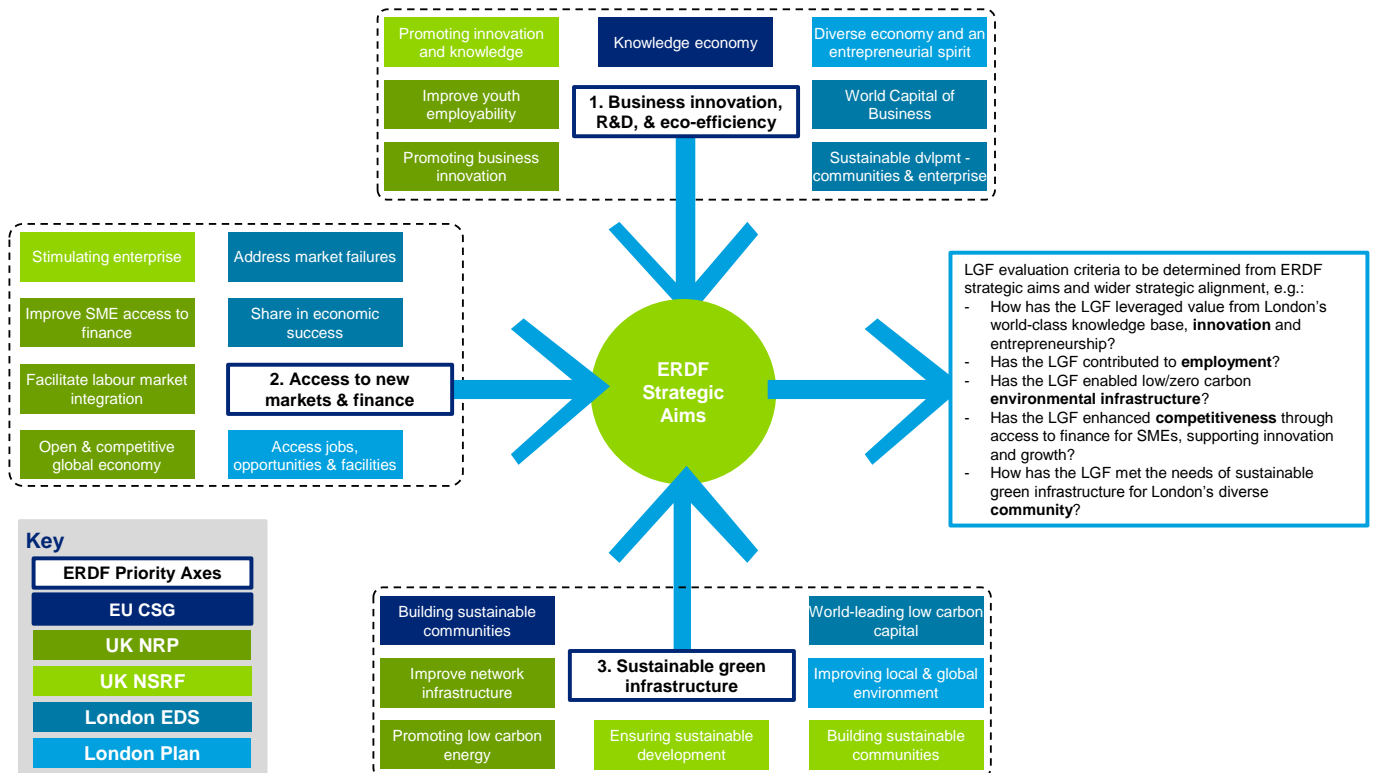
- The Singapore Economic Development Board (SEDB) offers guarantees on debt in order to achieve bring higher private sector leverage for green infrastructure⁷⁵.

⁷⁵ <http://www.edb.gov.sg/content/edb/en.html>

7 Value added

7.1 Strategic objectives

The strategic aims of the ERDF are articulated through its priority axes of: business innovation & research & promoting eco-efficiency; access to new markets & access to finance; sustainable green infrastructure; and technical assistance.



The London ERDF Operational Programme vision is to “promote sustainable, environmentally efficient growth, capitalising on London’s innovation and knowledge resources with a focus on promoting social inclusion through extending economic opportunities to communities, in areas where this is most needed”.

7.2 Analysis of value added

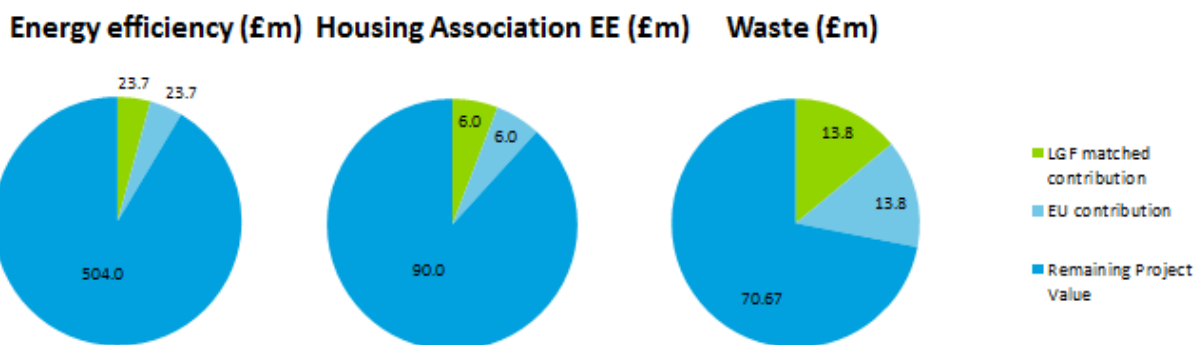
Having identified the presence of market failure or suboptimal investment situations that justify public intervention and quantified the amount of support needed, in accordance with Article 37 (2) (b) Common Provisions Regulation (CPR), the below analyses the value added of the financial instruments delivered by LGF.

7.2.1 Leverage of the LGF contribution

The policy of leveraging other investment is a significant factor in ensuring that value is added by the LGF. This is particularly relevant in times of budgetary constraints and funding concentration, as leveraging external funds will increase financial instruments added value in the delivery of ESIF Policies objectives.

Implementation of ERDF funding through the LGF requires a degree of matched-funding. This leverages additional financing and results in investments from other sources as well. The charts below show the proportion of funding that the LGF contribution has leveraged in the first funding round to date.

Figure 5 – Leverage to date in energy efficiency, housing association energy efficiency and waste sectors⁷⁶



Data from the Greater London Authority and the European Investment Bank on the LGF shows that Local Authority energy efficiency, housing association energy efficiency and waste projects have leveraged significant amounts of finance from other sources. Energy efficiency projects have delivered funding from other sources 19.3 times the value of the EU contribution; housing association energy efficiency projects have delivered 15.0 times the value; and waste projects have delivered 3.1 times the value (perhaps reflecting the broader financing that the waste UDF has been required to provide in terms of equity and mezzanine debt funding). Across the sectors, from the EU contribution invested to date of £43.5m, £708m of project value from other sources of finance have been invested; an average multiple of approximately 17 times.

EIB also expects that the housing association energy efficiency sector will provide around £200m in additional leverage as the projects progress and funds are drawn down; in total this would bring the leverage in the social housing sector to 33.3 times the value of the EU contribution (of £6m).

LGF's TEG project comprises London's first anaerobic digestion plant. In facilitating "first of a kind" projects, there is the potential for LGF helping facilitate further permutations of similar projects through demonstrating that such projects with relatively new or specific technology can be delivered. Additional leverage in terms of second and third of-a-kind projects which may proceed without LGF funding cannot be measured for the purposes of this report.

While significant leverage of local funding has been achieved by the LGF to date, it should be noted that the question of additionality remains. It is possible that some of this funding would have been available and investments would have been made without LGF participation. This should be considered in the context of the Market Failures analysis above.

7.2.2 Revolving effect for recycling of funds

Investments made under the LGF programme are expected to provide returns, through dividends and interest payments as well as returning loan principals and potential equity sale proceeds or return of equity over the projects' lives. There is the potential for these monies to be recycled into the fund and invested in new projects. This is a major positive in terms of value added for a programme such as the LGF (relative to grants which have no expectation of any return of financing support) since the leverage achieved can potentially be repeated.

This recycling of funding could add to the funding that will be provided by the EU through the ERDF funding scheme for 2014-2020 and whatever matched funding is found by LGF and the UDFs.

⁷⁶ Data from Greater London Authority and EIB.

7.2.3 Consistency with other programmes in the market

London Green Fund funding has been successfully placed alongside financing from similar financing schemes in various projects. The finance equation must be addressed comprehensively by assessing all possible tools and instruments collectively.

EIB delivers both equity and debt financing through a variety of measures including European Investment Fund (EIF), Global Energy Efficiency and Renewable Energy Fund (GEEREF), and NER300 (for carbon capture and storage projects), none of which are London specific. EIB also lend to individual projects for which total investment cost exceeds EUR 25m. See also ELENA (another EIB programme).

Additionally, LGF funding has also worked alongside technical assistance programmes such as ELENA, which help local and regional authorities to prepare energy efficiency or renewable energy projects. Section 2, on the strategic case for the LGF, highlights similar programmes which target similar types of investment to the LGF and alternative funding sources. In general, these are not specifically targeting London – with the exception of LWARB’s Targeted Waste Infrastructure Fund (TWIF).

TWIF aims to deliver London’s waste infrastructure requirements ahead of the economic curve. It provides funding to enable the development of projects that meet the strategic requirements of LWARB (geographically and technologically) to the extent that funding is not available from the private sector. LWARB will prioritise those projects that can make a significant contribution to filling the strategic capacity gap; and are not located in East London.

There is a potential role to play for the LGF where others are incentivised to perform other activities with their capital. For example, UDF managers highlighted the fact that Housing Associations are incentivised to build new homes rather than refit existing stock through energy efficiency schemes. This serves to remedy another market failure through the provision of additional housing and it does not necessarily address low carbon requirements. Indeed LGF money for Housing Associations cannot offer financing for such new builds and there may be an opportunity to provide further value by financing increased energy efficiency performance, above minimum standards, in that sector.

Regarding other policies on carbon, our report for the Green Property Alliance⁷⁷ on carbon penalties and incentives notes that “generally speaking, those instruments⁷⁸ which have a broad impact by amplifying the price of energy consumed are found to be ineffective in driving energy and/or carbon efficient behaviours and decisions, mainly due to their lack of visibility and the inelasticity of energy demand within the sector.” “Building Codes, positive financial incentives and choice editing instruments are found to be generally more effective”. The LGF investment model incorporates positive financial incentives (as opposed to energy price amplification) and, as previously discussed, can also deliver the benefits of recycling finance that grants cannot offer.

7.2.4 Skills and employment

A paper looking at the financial services in the UK reports that London's largest industry remains finance, and its financial exports make it a large contributor to the UK's balance of payments. It provides 8% of Britain’s output and contributes around 14% of the tax collected, which funds much-needed public services. It employs over a million people, more than half outside London and the South East of England – and they add economic value per head that is more than double the UK average. Further, the industry is one of the key sectors where the UK is a global leader, and it supplies financial services to other high-value industries such as information technology, media, pharmaceuticals, aerospace and sophisticated manufacturing⁷⁹.

⁷⁷ Deloitte Real Estate, Green Property Alliance. Carbon Penalties & Incentives: A review of policy effectiveness for carbon reduction and energy efficiency in the commercial buildings sector. March 2014. <http://www.deloitterealestate.co.uk/getattachment/News/Deloitte-Real-Estate/Commercial-Building-Energy-Efficiency-Policies-Hav/GPA-Carbon-Penalties-Incentives-executive-summary.pdf.aspx>

⁷⁸ Financial or otherwise

⁷⁹ John Willman. How financial services make our world go round: The industry's role in supporting the UK economy and meeting global challenges. September 2009.

Moreover, London’s financial and professional services community has significant expertise in the provision of green infrastructure projects. The London Green Fund has leveraged this expertise through its programme and structuring which employs the capability of three specialist UDF managers:

- the **Foresight Environmental Fund**, established in 2011 with £35m of LGF funding and up to £25m from UK pension funds is providing equity finance to waste-to-energy and recycling projects;
- the **Amber London Energy Efficiency Fund**, established in 2011 with £50m of LGF funding and £50m from the Royal Bank of Scotland, is providing debt finance for the energy retrofit of public and private buildings and decentralised energy systems;
- the **THFC Greener Social Housing Fund** has provided £12m of debt finance for the energy retrofit of social housing.

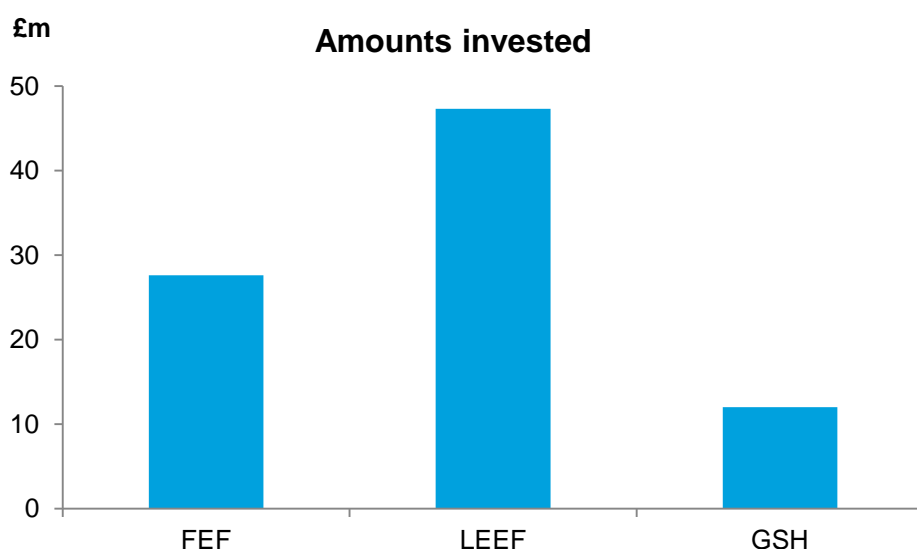
As noted elsewhere, it is often this expertise that is essential in development of projects and in bringing projects, particularly in more complex sectors, forward for financing.

Furthermore, where the LGF financing is leveraging other private sector money (mainly in the waste sector) there is potential for up-skilling in the relevant green infrastructure sectors which can be positive for the city as a whole and may lead to more competition for both finance and financial services making access to advice more readily available resulting in the provision of more green infrastructure.

Regarding employment stemming directly from the LGF scheme, there is little data on whether LGF projects have contributed significantly to new jobs in London. Generally, where projects are stimulated by the LGF, jobs are supported within London, the degree to which this occurs will, however, vary. For Housing Associations, there is a pressure to deliver jobs for tenants and some of the refit energy efficiency work that is carried out does require relatively lower-skilled labour and some jobs can be created as part of this.

7.2.5 Matching the market gap

Matching the gap of the financing gap is a key measure of the success of the intervention. The LGF has invested amounts in each of its target markets of waste, energy efficiency and housing associations. The total investment to date is £86.9m which has helped bridged the financing gap.



The financing gap shown in Section 5 notes the continued existence of the requirement for finance.

At a minimum, the aim for policy makers should be to minimise the distortions to markets, subject to achieving the desired policy objective. That is, where Government has a reason for intervening in markets, it should try to do so

in a way that avoids unintended consequences as far as possible⁸⁰. This will be considered further in the Stage Two report.

7.3 Key findings

As previously discussed, LGF is looking to provide some measure of solution to the market failures noted in Section 3, leading to justification of the public intervention. There is also value added stemming from the financial instruments delivered by LGF which enable investment of funds from other sources. There is potentially additional intangible value added such as the leveraging of London's green infrastructure expertise.

⁸⁰ Office of Fair Trading. Government in Markets: Why competition matters – a guide for policy makers. September 2009.

8 Next Steps

8.1 Preliminary views on the Stage Two tasks

Government announced the individual ERDF and ESF allocations for the 2014-2020 period at the end of June 2013, through which London secured an allocation of EUR 748m. Since then, and as the UDFs begin to move towards full deployment of their current funding commitments, consideration is now being given as to how the London Green Fund could transition into 2014, building upon the structures developed, experienced gained, market requirements and lessons learnt during its implementation.

In this context it is considered an appropriate time to carry out an evaluation to determine the future market demand for funding in the future and establish optimum delivery structures. This evaluation should consider the extent to which the market requirements could be addressed by recycled UDF funds, potential EIB investment and likely quantum and nature of any further allocation of additional ERDF funding from the 2014-2020 Programme needed.

This Stage One report has considered:

- The strategic case for the LGF;
- The market failures that the market exhibits;
- The demand for low carbon financing;
- The funding gap that results from this demand;
- The lessons learned and best practices prevalent from the first round of the funding; and
- The value added by the LGF.

In order to deliver insight into the strategy for the LGF going into the next round of funding, as part of its Stage Two report, Deloitte will hold workshops with the Green Investment Bank, lenders, and equity investors to test:

- The potential alternative sources of funding aside from the LGF;
- The achievable leverage at LGF and UDF levels;
- The remuneration requirements of investors;
- The best practice management and governance arrangements; and
- The best practice remuneration arrangements for fund managers.

From the lessons and best practices ascertained from our work to date, we will develop recommendations for the LGF in the future, including:

- The focus, scale and timing of financing need, thus informing the outline investment strategies for UDFs and/or intermediaries;
- The financial instruments that are required to address market failures and demand (e.g. loans, equity, guarantees, grants, technical assistance);
- Appropriate delivery routes for such financial instruments; and
- The management and governance arrangements including the role of fund managers, most suitable remuneration arrangements, and most appropriate alignment of incentives.

As part of this assessment, we will:

- Consider the value added of any proposed funds, including how they address policy needs and tackle market failures;
- Estimate expected outputs and outcomes for LGF;
- Identify potential state aid issues; and

- Estimate any potential preferential remuneration of investors operating under Market Economy Investor Principle (MEIP) if required to address market failure.

Appendix A: Stakeholders

Stakeholder Participants
Amber
CBRE
Equitix
Foresight
Greater London Authority
London Waste and Recycling Board
Institutional Investors Group on Climate Change – Deloitte attended this event along with many different green infrastructure institutional investors.
Sustainable Development Capital LLP
The Housing Finance Corporation

Appendix B: Workshop minutes

Amber – London Energy Efficiency Fund (LEEF)

6 June 2014

Attendees: Leo Bedford, Jenny Curtis, Tim Dean

General

- Energy efficiency (EE) projects face some different problems to the waste sector
 - Project size is generally much smaller
 - Getting EE projects into individual buildings like schools is difficult since they are not of sufficient scale; it would need an overarching local authority to bundle them together.
- Amber generally invests LEEF as a debt investor but its mandate does cover equity finance if required.
- For the first funding round, it has provided finance almost exclusively to the public sector, in line with the mandate for the fund set by the GLA and EIB
- Where projects are structured for Project Finance, Amber through LEEF has provided up to 80% of the capital requirements for projects.
- However, generally, they will provide 100%⁸¹ of finance for schemes where they are too small (in £ terms) to warrant splitting the finance between debt and equity (as long as credit/ security etc. appropriate).
- Amber stated that they wanted the maximum amount of flexibility in their mandate in terms of financial instruments (at the same time recognising EC rules).
 - They highlighted the other schemes with narrow scope that were trying to offer products in which investors/ projects are not interested (for example JESSICA East Midlands)
 - As a result, these schemes have struggled to invest their money.
- The LEEF structure, whilst complex, does what it needs to do and the same structure has been used for Scottish Partnership for Regeneration in Urban Centres (SPRUCE) indicating the belief in the model.
- Working with the EIB is essential in terms of dealing with EC money
 - They bring an understanding of the EC and ability to negotiate with them.
 - They also bring a deep understanding of finance.

Where is the funding gap? – Stages/Sectors/Instruments

- Many of the project developers with whom Amber work are unsophisticated in the financial world and before a credible case can be put forward to lenders and investors, significant amounts of development must be done.
- The problem is not generally the finance for development, since this may be available elsewhere for viable well-structured projects.
 - However, grants to projects developers (or development stage debt/equity) are not seen as sufficient to make projects happen – as grants tend to focus on the technical solutions/ feasibility and do not support the financial/ commercial structuring needed to attract external investment
 - The expertise of the fund manager, combined with the opportunity for cheap finance is vital for getting the project into an investable state.
- Development finance is not essential for these projects to happen but the ability to offer it would open the market to others and would be helpful for the fund managers.
- It is helpful to be able to offer longer term finance than banks generally can for these types of schemes – e.g. 20 year investment periods as opposed to 7-10 years.

⁸¹ This is the view expressed by the fund manager, which refers to 100% of the external finance for the project (i.e. excluding the costs met / finance provided by the sponsor). Please refer to Section 6 of this report for data provided by the EIB on investment of non-LGF funds alongside LGF funds.

- LEEF did achieve matched funding of £50m of funding from RBS – though making this matched funding viable through an appropriate instrument has found difficulties. For example, a blended interest rate with RBS appropriate rate and LGF lower rate can lead to state aid issues. Furthermore, given RBS’s return requirement can mean the blended rate is uncompetitive relative to PWLB (leaving the fund struggling to get the money into public sector projects).
- Amber believe that the LGF funding could be used in district heating projects where the projects are large, need money and can sustain project finance; generally these projects also struggle to get off the ground without development support.
- Amber has also had several enquiries about street lighting and new build retrofit that may be pursuable if their mandate allowed.
- Restrictions on £/tonne CO₂ targets have meant that in some cases they have not been able to invest in energy efficiency schemes on old heritage buildings (although the Tate is a listed building and others are in the pipeline) The opportunity to pursue these would be welcomed.

Other

- Amber state that some of the non-financial investment criteria and output targets for LEEF leads to a short term focus on CO₂ gains as opposed to incentivising projects that will deliver larger CO₂ benefits over a longer period.
- There are suggestions that LEEF could also step into the housing space, but this would also need EIB approval (due to restrictions on the amount of ERDF Social Housing investment in each programme)

CBRE

18 June 2014

Attendees: Rebecca Pearce, Caroline McGill, Tim Dean

General

- Why don't projects happen?
 - Economy is still in a period of recovery and there is still an unwillingness to spend money on projects outside the necessity of “Business as Usual”.
 - Until recently, the impetus of the Energy Act was not biting. Many companies only now really understand the requirements of the Energy Act and what it means for them – i.e. they are still at the information gathering stage rather than being ready for project implementation.
 - Expectations of the funder in terms of environmental and cash savings – difficult to quantify with any certainty. They also look for more definitive payback periods.
- It varies from company to company but many larger players are still looking at energy efficiency projects from a risk perspective (i.e. not meeting Energy Act standards) rather than a cost-benefit analysis in terms of what these projects can bring from a cost perspective.
- There is an understanding that these corporates will do these projects, IF they WANT TO i.e. finance is not the determining factor.

Where is the funding gap? – Stages/Sectors/Instruments

- Barriers generally occur right at the front end:
 - Resources do not allow for the generation and early development of energy efficiency ideas and business cases.
 - There is a market making role here. Generally this would come from advisors but not at such an early stage. There is a case for education materials to give clients ideas on projects and how they might be financed. E.g. real life examples of successful projects in this space.
- Potential for the Urban Development Fund managers of the LGF to perform this more early stage market making role as well as the later development stage technical assistance?
- Energy generation, CHP and EfW present go options in this space as alternatives to energy efficiency, especially where these present technology risks and higher complexity.
- Insurances/Guarantees

- Guarantees on “Energy Performance Contracts” are a possibility but there are generally issues around whether these help given that it is not clear how the call on the guarantees would play out. As a result there is little activity using these instruments.

Other

- PACE in USA is an alternative model.

Equitix

23 June 2014

Attendees: Geoff Jackson, Hugh Crossley, Caroline McGill, James Mellish

General

- Equitix commented that being able to identify potential projects has been an issue with developers typically approaching organisations directly and acting as the catalyst to projects;
- Equitix added that developers face a significant risk that organisations take their proposals/ideas and develop them independently. Equitix endeavours to reward developers with a success fee at financial close to reimburse developer bid costs and potentially offer developers sweat equity in the project vehicle;
- Equitix commented that if the LGF was able to set aside 5-10% of its future funding for venture capital/development (“VCD”) activities it would mitigate an element of developer risk and may facilitate further investment in projects. The fund manager would then be responsible for selecting which developers to provide the VCD funding based on certain parameters;
- The returns of the VCD capital would need to be higher than returns sought by other instruments (e.g. project equity/debt) of the fund; and
- Equitix noted a potential conflict of interest between project development activities and investment appraisal.

Where is the funding gap? – Stages/Sectors/Instruments

- Equitix commented that they believed the outcome-driven nature of their ESI fund was an effective means of deploying capital. For example, ESI will not provide funding unless at least one tonne of carbon saving is achieved per £2,000 invested;
- As such, Equitix believed that LGF might want to consider similar use of output based investment hurdles (rather than targets or objectives) so that LGF funds are invested effectively; and
- Equitix commented that the current mix of debt and equity products offered by the LGF and sub-funds may not offer the best value for money. Typically, equity investment and debt investment are handled separately due to potential conflicts of interest between equity and debt holders. Furthermore, remuneration arrangements for equity investors tend to differ from debt arrangement fees (which are typically lower). Where sub-funds are simply providing loans to, for example, housing associations (which are considered a relatively good credit quality borrower), then equity-style management fees would not be appropriate.
- Equitix commented that within London, potential sectors for future investment might include street lighting projects, improvements to energy efficiency in property related to major infrastructure (e.g. the property estate of London Underground) and large public and private sector organisations (e.g. Central Government estates); and

Other

- Equitix voiced the view that there was likely to be little benefit in dividing the fund by sector, rather than product, as this would likely reduce flexibility and could be sub-optimal in terms of maximising carbon reduction.

Foresight

6 June 2014

General

- Waste is seen as a particularly challenging sector to get projects sufficiently developed that they are “financeable”.
- This stems from a variety of factors but first and foremost is that London is densely populated and any land that is available, is very expensive. Just finding suitable sites for waste projects is a major factor in itself.
- Foresight primarily invests as an equity investor as well as some mezzanine debt products, which may be first ranking (but not senior debt).
- Where projects are suitable for “normal” project financing practices, it achieves excellent leverage on the LGF money in terms of crowding-in lending from banks and other financial investors to the projects.
- Arguably where most value lies is in the essential development of the projects that Foresight offers in what remains a disparate industry.

Where is the funding gap? – Stages/Sectors/Instruments

- Many of the project developers with whom Foresight work are unsophisticated in the financial world and before a credible case can be put forward to lenders and investors, significant amounts of development work must be done in conjunction with developers.
- The problem is not the finance for development, since this will generally be available elsewhere.
 - However, grants to projects developers (or development stage debt/equity) are not seen as sufficient to make projects happen.
- Rather the expertise of the fund manager, combined with the availability of funds is vital for getting the project into an investable state and attracting fairly priced capital.
- Development finance is not essential for these projects to happen but the ability to offer it would open the market to others and would be helpful for the fund managers.
- Foresight have not used guarantee instruments since they find that there is a lack of discipline for non-recourse financing in terms of risk allocation and due diligence.
 - There is a feeling that guarantees do not fill a need in the waste market.
- Of particular importance is the option for “follow on” instruments to projects that warrant expansion activities.
 - Under current rules, ERDF money has to be allocated by 31 March 2015.
 - Where projects warrant additional funding to pursue further growth opportunities, the UDFs would not be allowed to participate in potential upside prospects despite taking the project through riskier parts such as development and construction.
- Definitions of waste and other UDF focuses should be reconsidered to ensure that low carbon projects are not “slipping through the gaps” needlessly.
- The question arises whether wind, solar and water opportunities should be included as part of the LGF work. Main issue with water is the regulated environment would make it harder to play a significant part.

Other

- Given the issues with both finding and funding the land for waste projects in London, the fund manager suggested that adjustments to geographical restrictions for the LGF.
 - Whilst there is the recognition that LGF money should be for the benefit of London, it stands to reason that the projects themselves need not necessarily be within the border of the GLA boroughs.
 - Where projects take a significant percentage of their waste from London, the location of the site should not be particularly important (within reason given the carbon footprint and cost impact of transporting waste significant distances).
- Concentration limits to the fund regarding the size of projects relative to the size of the fund are more appropriate for private equity type funds rather than infrastructure funds. Waste projects can typically be very large and as a result restrictions to concentration limits form unnecessarily boundaries to the work that Foresight does.
- Extra scope to invest alongside GIB to obtain better leverage opportunities might be an opportunity. Fund generation on a cross UK basis with the UK’s other city/area green funds (coordinated with the EIB) might

lead to better matched funding. The proviso would be that the LGF funds would still be limited to the London area.

GLA

4 June 2014

Attendees: Kenroy Quellennec-Reid, Debra Levison, Caroline McGill, Tim Dean

General

- GLA do not anticipate a significant further round of matched funding from itself; as a result, identifying and delivering matched funding partners will be essential for the 2014-2020 funding round.
- When the LGF was first set up, priorities were on waste and decentralised energy.
- Decentralised energy has given way largely to energy efficiency projects given project pipelines.
- It is noted that there is no restriction on financing the entire eligible costs of projects ; only a restriction on the percentage of the fund which can be invested in a given project.
- That said, LEEF did achieve matching of £50m of funding from RBS – though making this matched funding viable through an appropriate instrument has found difficulties. For example, a blended interest rate with RBS appropriate rate and LGF lower rate could lead to state aid issues if this is not done on a *pari passu* basis. Furthermore, given RBS's return requirement can mean the blended rate is uncompetitive relative to PWLB (leaving the fund struggling to get the money into projects).
- Furthermore, there is some significant leveraging of capital in some projects whereby the LGF funding is less than 10% of total project capital requirements so clearly there is some value added in the product.
- GLA are keen to see how the LGF can help to deliver the objectives of the next round of funding and to determine the current finance gap for green infrastructure. With other subsidies on offer for many of the these technologies and sectors, the LGF will need to be careful that it does not crowd out these other subsidies, or indeed, inappropriately over incentivise private players into one sector over others.

Where is the funding gap? – Stages/Sectors/Instruments

- Provision of development finance may not be specifically allowed under the EU rules despite discussions on this being where largest funding gap may lie.
- Some form of early equity investment with mandatory buy-out clause at financial close may represent a viable alternative.
- It is accepted that the scheme is trying to invest where there is market failure/funding gaps and that it should be targeted where the greatest need is.
- Recognising the potential to improve the energy performance of a typical public sector building GLA established RE:FIT; a building retrofitting scheme to support public sector organisations to reduce their carbon footprint and subsequent energy bills.
- It was hoped that REFIT would provide the deal flow for LEEF. This did not materialise in any significant manner. This was because REFIT supported projects:
 - were self-funded or funded through PWLB when this was cheaper money.
 - did not go ahead due to public sector bodies prioritising other projects in the face of funding cuts.
- There has been no deal flow on commercial energy efficiency projects to LEEF and GLA would be interested to understand the scale of demand for this. Expectation is that it is not particularly significant given the fact that in general commercial agenda are not skewed sufficiently towards the green programme as yet.
- Decentralised energy remains a key focus for the programme despite little in the way of projects occurring to date.
- It was noted that many other sectors (aside from current focus sectors) are not eligible within the realms of the EU programme.
- Since inception, there have just been debt instruments funding in the energy efficiency projects.
- For waste, equity has been injected and this has helped in terms of leveraging banks' money into the projects. Whilst this lends itself to partnering with the private sector, this took a long time to get off the ground. This gap was sometimes filled by LWARB.

- GLA are keen to investigate other product options if there is a funding gap here at present.
- There is the potential for LGF to team with the Infrastructure UK Guarantee (IUK) team, since the IUK team. This may allow the LGF to piggy back the IUK £40bn scheme.
- With potential for some form of early equity investment with mandatory buy-out clause at financial close does not necessarily represent a commercially

IIGCC

14 May 2014

Policy Context 2020 and 2030 climate and energy efficiency targets, energy security

Property Company, E3G

- Need to consider politics as this informs the policy.
- Energy security became a key topic with Russia's invasion of Ukraine – this has changed the dynamic for energy efficiency.
- EU set targets but the gap is still not being closed.
- Energy efficiency and reductions can be delivered but need political support – need to hit the right 'buttons' – energy security, economic resilience, employment creation, improvement in living conditions, avoided welfare payments.
- Examples of the wider benefits of energy efficiency – Germany saw increase in revenue tax from investment in EE; UK savings on national health bills.
- Need systematic approach and structural reforms – market, institutional, economic, and financial reforms.

Process and Findings of EU EEFIG group phase 1

Climate Strategy representative

- The IIGCC report is being used in Energy Efficiency Directive reform discussions – Energy Ministers have all had an abstract as part of their briefing papers.
- Need to consider the broader benefits of energy efficiency as this aids the investment case.
- Processes and standards for investments (and codes) must all be enforceable by member states.
- Challenge as EE investments are not rising up to the top of decision makers minds even though investment cases had decent IRRs.
- There is a lot of public finance going in to support private finance but the challenge is how to properly combine.
- Finance tends to focus on supply (easier to raise finance) but sometimes forgets the drivers and this should be addressed.
- There is no single solution but there are similar cross-cutting issues across different property classes and industry segments.
- Significant investment is required to deliver EE (estimated €60-€100bn per annum to meet EU targets).

Public led financial instruments: risk sharing facilities, dedicated credit lines, public funds and Horizon 2020 funds

European Commission energy representative)

- There is a gap between finance and projects – projects need money, financiers say they have the money but they don't speak the same language.
- 'Financial products' tend to be a black box – look at IRRs, whereas building projects are 'real' – challenge is how to bridge the gap.
- IEE is phasing out and being replaced by Horizon 2020 which focuses on developing the market and project pipeline rather than simply grant funding for individual projects (funding for dialogue, capacity building, benchmarking investments, awareness raising for investors).
- EC is pushing for member states to use Horizon for revolving funds rather than grants.
- Horizon now open to private entities too – paying for project development costs (trying to create a pipeline of projects – want to help make projects bankable).

- Need to consider options for long term finance which is generally missing for deep renovation.
- Public sector should explore dedicated credit lines to do long term finance where the market won't go (France is planning a loan guarantee fund).

On-bill financing, EPCs and ESAs

Investment Bank

- Deutsche Bank managing the EEED fund.
- Need to consider three risks: asset risk, performance risk, and credit risk – how does environmental performance link to asset value?
- Opportunity to deliver EE through on-bill financing and Energy Services Agreements – a bi-lateral agreement between entities with a defined structure between building owner and investor. This overcomes split incentives as no capex is required by the owners. A 3rd party pays an access fee to enter the building and do the retro-fit – is a contract so can be off balance sheet (as opposed to the ESCO model which is on balance sheet debt).
- California \$104m PACE scheme (similar to Green Deal) – paying for energy efficiency through the tax bill (4.75% coupon, been AA rated for past 11 years).
- 'Global Climate Fund' in Germany – a €30m investment in 2012 from German doctors fund.

Climate bonds standards and Green Buildings Bonds standards

Climate Bonds Initiative representative

- Will be publishing a public consultation soon on the methodology for green buildings bond – proposing categories of verified property (commercial), deemed property (residential), and upgrade finance (catch all for retro-fit).
- CBI considers that 60% of all future green bonds will be green property bonds.
- Bonds market – need clear definitions, for example, what does 'green' mean.
- Consider a verification process, particularly for commercial property (performance over time).
- CBI is targeting top 15% of buildings in a city.
- For commercial properties, global markets are looking at full disclosure with self-certified annual reporting.
- Residential properties – unlikely to be certified or monitored.

EU Investor Confidence Project

EU Investor Confidence Project representative

- There is a need for standardisation – there are many codes and standards, no certainty on savings (different engineering approaches), and lack of data coming out of EE schemes.
- The Investor Confidence Project has been developed in the US – a framework and process of how to invest and measure EE. This is not about defining new standards or codes but brings existing best practice codes along the investment process (baseline, savings projections, design, construction etc.) so investors know which codes to follow.
- Now looking to develop this for Europe – first prototype in Q4 2014 and 2015 will engage in pilots.
- No figures out of the US scheme yet – first projects have been implemented but no results as of yet.

Workshop

General discussion on issues to do with energy efficiency finance:

- Data / Metrics
 - Financial markets are global but building standards differ – should there be a standard measurement of performance? Perhaps consider EPCs across regions? (EPCs used for Europe as UK property market tends to be part of European market?). Should this be extended to sub-region specific indices and metrics?
 - Operational performance of buildings must be measured – important to understand investment return. Therefore use of EPCs is questionable. There are no standards for measuring operational performance (EPC v. BREEAM?) – consider a 'soft landings' approach?

- Data is very important and should be verified.
- Need a balance of detailed and reliable data v. overkill (can you have a small amount and extrapolate?)
- Investor / Financial Markets
 - Need to consider investment products v. investing in buildings – the drivers for investors per se are different from reasons for energy efficiency investment in individual buildings. How do you incentivise investors to want to invest in green property?
 - Green bonds – are modelling potential pipeline of projects and consider climatic events where they would have an impact on building performance. The modelling does not include energy security or supply.
 - Capital and investors are not the problem – the real issue is the deal flow (not understanding it or being able to identify it).
 - Need to ensure the right investments happen at the right time in the investment cycle.
- Approaches to EE
 - On-bill repayment – need tighter controls and processes (particularly with reference to Green Deal). Smart metering can help – data is important but there needs to be some automation for action (i.e. don't just hold information but analyse it to drive decision making and action).
 - Green Leases – if leases are the contract between landlord and tenant, should energy efficiency be in leases?
 - Energy Performance Contracting – need to consider the management chain (facilities manager, building manager, asset manager) – should FMs do the energy performance contracting as they are closer to the building and energy management?
 - Public sector should lead the way in terms of investing in EE and then the private sector would follow.
- Communication / Information
 - Communication is key and should be better – clarity on definitions, measurement, demonstrating impact and investment return etc. Also in terms of providing information to the market on projects.
 - Need to disseminate a clear business case, leadership and awareness – all levels need to improve
 - Industry should next target letting and managing agents in communication of the issues around energy efficiency.

SDCL

3 June 2014

Attendees: Jonathan Maxwell, Caroline McGill, Tim Dean

General

- SDCL, a fund manager not involved in managing the UDFs to date, believe in crowding in rather than crowding out.
- The potential problem with the last round of funding was that where LGF funding presented just cheaper finance than other options. It could be argued that this just crowds out other players in some sectors.
- There should be robust processes for identifying where projects have access to private sector finance or whether there is a distinct funding gap.
- The finance should be given to good green infrastructure propositions that are borderline viable.
- In order to avoid crowding out, public sector money should not give 100% finance. It should insist that there are commercial players that put risk capital in. It will become the commercial incentive.
- A loan funding at concessionary rates is a legitimate proposition as long as it does not offer 100% finance.
- The availability of cheap debt finance within London would bring SDCL's focus back to London where projects might otherwise be unviable.

Where is the funding gap? – Stages/Sectors/Instruments

- The funding gap is in project preparation and development. This is where many of the good projects fail due to lack of development funds.
- The majority of public sector funding goes in at the operational phase – where there is no funding gap.

- SDCL believes LGF intervention could be used effectively in street lighting, waste, water treatment, district heating, rooftop solar, other energy efficiency, and river hydroelectric.
- For particularly innovative sectors such as river hydro, the funding gap at the project preparation and development stage becomes even more pronounced.
- With other subsidies on offer for many of these technologies and sectors, the LGF will need to be careful that it does not crowd out these other subsidies, or indeed, inappropriately over-incentivise private players into one sector over others.
- At the moment, the perception is that LGF is so far down the risk scale that any profit made on the instruments must be paid to the fund managers for fund management.
- The problem is often not the finance – problem is that it is money without expertise. There is no financial structuring or tax/accounting help for unsophisticated players to push the project towards a truly viable investable proposition.
- Guarantees – these can convince commercial lenders to provide 100% of financing, thus allowing the project to take place despite any significant credit risk because of the guarantee.
- Potential for LGF to team with the Infrastructure UK Guarantee (IUK) team, since the IUK team. This may allow the LGF to piggy back the IUK £40bn scheme. The worry might be that IUK would not be keen to administrate smaller projects. That said, SDCL has worked with IUK on £10m and £12m schemes in the past.
- Similar options might also include credit insurances and derivatives.

Other

- There is the option of having just one fund manager for the fund with oversight of all sectors.
- That said, there is the widespread recognition that there are specialisms for each fund manager.
- SDCL would very much like to be involved but believe that the process should be completely commercially sustainable and that there should be rules on pricing and structuring.
- Appropriate remuneration should not only be for invested funds. Remuneration for committed funds is very important so that there is appropriate incentive for fund managers to create the market.
- Non-financial KPI incentives as part of the remuneration package are also a good idea but are contingent on appropriate measurement techniques and the recognition that a whole host of non-financial KPI incentives may discourage private pure-play financial investors from investing.

Other examples

- New York Green Bank
 - This NY Green Bank invites private sector capital providers and other clean energy industry participants to propose partnership arrangements that would facilitate the financing of credit worthy clean energy projects (including energy generation and energy savings projects) in New York State.
 - This encourages capital providers to offer projects which can deliver a wider range of green benefits.
 - SDCL has pursued this opportunity due to the availability of attractive debt financing options.
- Singapore Economic Development Board
 - SEDB offer guarantees on debt and as a result this brings in more leverage.
- Irish Government scheme
 - Offers technical assistance for development of energy efficiency.
 - Can provide 75% of the development funding following a pre-qualification and creation of a viable business plan.
 - The opportunity for LGF would lie in provisions that the development funding provided would have to be recouped at financial close with an appropriate margin.

THFC

4 June 2014

Attendees: Fenella Edge, Gareth Francis, Frank Lee, Emily Smith, Tim Dean

General

- THFC is the foremost aggregating funder to the Housing Association sector.
- THFC also receives funding directly from EIB for re-lending. As a not-for-profit organisation THFC uniquely passes on the EIB money at cost and does not charge a margin, which is a substantial advantage to housing associations. The money must be for urban regeneration.
- Issues with programmes such as retrofit projects are that it is not high enough up the HAs agenda at the moment.
 - This is mainly due to the fact that energy efficiency programmes cannot lead to a return due to the fact that typically HA rents are controlled by law and thus the positive cash inflows in respect of the energy efficiency programmes do not materialise.
 - Furthermore, such programmes do not materialise in value of the HAs stock given the methodologies adopted by valuers.
 - Additional risk is due to regime change risk that HAs are not willing to take as well as tax complications.
- Typically, HAs energy efficiency programmes take place as HA stock is replaced (i.e. when boilers are replaced, they are done so with more energy efficient models). As a result, HAs already do such energy efficiency projects –perhaps suggesting that there is little funding gap for this type of programme.
- Given the choice between extensive energy efficiency programmes and building more homes, the incentives from government currently point more towards house construction rather than delivering energy efficiency on existing homes. Rules on use of LGF funding currently does not allow for energy efficiency on new build housing projects.
- Due to type of projects that THFC typically funds such as HAs with high value rolling replacement programmes, LGF is unable to fund significant parts of these programmes, it is difficult to determine directly where the LGF funding is going to and thus also hard to identify the degree of private sector leverage the funding has achieved.
- Moreover, in the context of a very high value scheme, it may be seen as not worth it, administratively, to get a smaller tranche under the LGF scheme.

Where is the funding gap? – Stages/Sectors/Instruments

- It was discussed that experience in many sectors has been that the funding gap is in project preparation and development. This is where many of the good projects fail due to lack of development funds.
- The Housing Associations with whom THFC operate, are typically very good at developing propositions for funding. There does not appear to be issues as in other sectors.
- THFC's remit is narrower than the other funders in respect of both sector and instrument in that it is restricted to debt funding in a social housing context.
- That said, they have experienced some success with loan guarantees through a different scheme: the Affordable Housing Guarantee Scheme, so there is experience with this slightly different instrument.
 - It has not been used under the LGF scheme.
 - It was planned to be used at the outset but the size of the projects made it unworkable in the context of the funds available under LGF.
- There is not significant requirement for this type of financing but it will be used if available; this suggests there may not be a significant financing gap in this narrow sector.

Other

- Housing Associations in the Netherlands are able to increase rents to reflect programmes for energy efficiency. There may be the opportunity to transport this model across to the UK.
- It was proposed that there perhaps should be more focus on job creation for HA tenants rather than energy efficiency. Job creation is currently seen as a nice by product of any programme but is unlikely to ever be the main driver.
- There are suggestions that LEEF could also step into the housing space, but this would also need EIB approval.

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Transitioning the London Green Fund

Stage Two Report

A report for The European Investment Bank



December 2014

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Glossary of terms

Term/Acronym	Definition
CPR	Common Provision Regulation
DECC	The Department of Energy & Climate Change
EIB	European Investment Bank
EIF	European Investment Fund
ELENA	European Local Energy Assistance
EMR	Electricity Market Reform
ERDF	European Regional Development Fund
ESIF	European Structural and Investment Fund
FEF	Foresight Environmental Fund
GLA	Greater London Authority
GSH	THFC Greener Social Housing Fund
HMT	Her Majesty's Treasury
IIGCC	Institutional Investors Group on Climate Change
IRR	Internal Rate of Return
JESSICA	Joint European Support for Sustainable Investment in City Areas
LEEF	Amber London Energy Efficiency Fund
LGF	London Green Fund
LWARB	London Waste and Recycling Board
MW	Megawatt
MWh	Megawatt Hour
PPP	Public Private Partnership
PV	Photovoltaic
SDCL	Sustainable Development Capital LLP
SPV	Special Purpose Vehicle
THFC	The Housing Finance Corporation
UDF	Urban Development Fund

Executive summary

Introduction

The European Investment Bank (“EIB”) has commissioned Deloitte to undertake a review in respect of transitioning the London Green Fund (“LGF”). The review seeks to:

- Determine the potential future market demand for funding, taking into account expected recycling of existing UDF funding and possible alternative and supplementary financing and co-investment sources.
- Determine the nature of the required funding, in terms of sector (such as energy from waste, renewable heat, energy efficiency etc.), and product type (such as debt, equity, mezzanine or guarantee).
- Identify preferred delivery structures, taking into account lessons learned from the 2007 – 2013 JESSICA programme.

This report should be read in conjunction with our Stage One report dated November 2014.

Structure of this report

In particular, we draw your attention to the following sections of this report.

1. **Approach** - Outlining the approach, assumptions and limitations of this analysis.
2. **Target Market** - future scale, focus and timing of financing need and range of products.
3. **Delivery Mechanisms** - delivery structure, including potential roles and investment strategies for UDFs and other intermediaries such as the EIB.
4. **Management Arrangements** - Assessment of options for management, governance and delivery arrangements for UDFs and remuneration of UDF managers.
5. **Desired Outcomes** - Estimation of potential outputs and outcomes including:
 - Financial return;
 - Leverage of LGF capital;
 - Potential value added against strategic objectives, policy needs and in addressing market failures;
 - Other non-financial indicators.
6. **State Aid** - Identification of potential State Aid issues.
7. **Recommendation** – Summary of the recommendations in the report.

Appendix 1 – Workshop stakeholders

Approach

Our approach combines desktop reviews and stakeholder meetings in order to consider the lessons learned from the performance of the current funding arrangements and to consider how future arrangements should be structured. Section 1.2 shows this approach diagrammatically.

Target Market

Findings indicate that there is demand in both the public sector with regard to energy efficiency and the private sector with regard to waste projects. However, consideration should also be given as to whether other potential recipients should also be targeted – for example, the private sector energy efficiency market.

The consideration of demand within each sector indicated an addressable future demand in all of the sectors that are currently considered in the LGF. The steering group has expressed a view that it is therefore appropriate to maintain a focus on these sectors.

Any project that offers an appropriately high level of emissions-lowering or waste management performance, will assist in meeting the strategic objectives for London and, where there is an identified market failure, will assist in meeting the objectives of the London Green Fund. As a result, sector impartiality, within the EU rules, may be appropriate in order to most appropriately deliver the objectives by:

- Meeting unsated demand for funding as it arises across sectors; and
- Allowing flexibility across technologies to optimise carbon reduction and waste management.

The LGF should consider its current investment strategy boundaries and consider the inclusion of additional sectors such as the ones listed above.

Consultations suggested that the financial instruments used in the first programming period would likely continue to be appropriate for the next programming period given that they have proved deployable to date. We would also recommend that the LGF further considers additional instruments. Consultations indicate that a wide variety of products would be helpful in order to bring projects to fruition, therefore unless there is a requirement to artificially restrict the types of financial instrument that can be offered, fund managers and project developers should consider the most appropriate instrument for each specific situation and decisions regarding instruments should be made on a project-by-project basis. New products such as development capital and guarantees/underwriting products are two such instruments that stakeholders felt could prove useful in the 2014-2020 programming period.

Delivery Mechanisms

Our consultations with stakeholders noted that waste projects were distinct from projects in other sectors due to the idiosyncrasies of the sector including number of stakeholders and issues with sites and development. These factors, together with the ability to ring-fence investment funds for waste projects mean that a separate waste sector UDF may work best for the LGF.

Furthermore, debt and equity were seen as fundamentally different products with conflicting interests. There are governance structures/management arrangements that can assist in mitigating the conflicts of interest between debt and equity as described in Section 3.2. The possibility of mitigating conflicts by having separate debt and equity UDFs was also considered however the steering group felt there was not yet sufficient scale in the LGF for it to remain efficient and have sufficient liquidity if fragmented in this way.

In order to best ensure that all latent demand from investment-appropriate projects which support the ESIF and the London Plan is answered it may be most appropriate to structure the LGF based on financial product offering with each targeting a broad range of emissions reducing and waste management projects. Furthermore, the conflicts of interest between debt and equity must be managed effectively, for example as described in Section 3.2. In practice, this may mean a separation of waste and other sectors. A distinct development finance product or UDF may also be deemed appropriate.

There are also potential benefits from increased co-ordination between GLA/London Boroughs, GIB and EIB (as well as others) to collaborate in market development activities and development of investment pipeline.

Management Arrangements

One of the key factors in determining the direction and performance of the LGF will be ensuring effective incentivisation of managers to achieve outcomes. For example, in order to encourage development activities, the provision of additional incentives along the investment route could be suitable. At the moment the fund managers effectively underwrite abortive costs and there is a significant amount of work for the fund managers in project development before the point of investment. Consultations suggested that there should an interim point whereby the client (the final recipient of the financial instrument) has demonstrated a commitment to the project, and fund managers should receive remuneration in respect of the effort expended to get the project to that point. This could be via an agreed fixed fee per deal, a percentage of funds committed, or on a “cost plus” or day rates basis.

Desired Outcomes

Stakeholders did not indicate their required rates of return but noted that the relative speed of recycling of capital is important. The faster that capital can be returned through the structure to the LGF, the faster that this capital can be redeployed in other investment-appropriate emissions lowering and waste management projects.

Consultations indicate that fund managers are confident of achieving and exceeding the levels of leverage achieved in the first programming period for the 2014-2020 programming period. Such matched funders could include public sector bodies, commercial banks and institutional investors.

State Aid

Throughout consultations, although it has been seen as potentially helpful to projects, subsidised finance on its own has not typically been seen as a major requirement for projects. The waste UDF experience has been that investing *pari passu* with commercial lenders/investors has been helpful in terms of meeting a financing gap. Rather, the requirements in the green infrastructure sector have focussed on (i) the educational aspects of market development, (ii) the need for technical assistance for the development of projects up to the point of being financeable, and (iii) the provision of liquidity (at *pari passu* market rates). As a result, it is not expected that State Aid will be a significant issue from a subsidised finance/preferential remuneration point of view.

If the market changes sufficiently such that preferential remuneration is required, State Aid may become more of an issue for LGF. Further, if private sector projects are targeted with more affordable finance, again State Aid will have to be considered in more depth.

For UDF managers, should remuneration for development activities be deemed appropriate, consideration will have to be given regarding the pricing of such a regime. If a UDF manager is procured through a competitive tender process in line with the requirements of Directive 2004/18, the management fees paid to the UDF manager are normally considered to comply with State Aid regulations. Therefore, running such a process should be considered to appoint UDF managers for the next programming period.

Recommendations

In Section 7, we set out the recommendations of this report with regard to the preceding sections and offer areas that should be considered by the LGF Investment Board with regard to the 2014-2020 programming period. In summary:

- The target market should include projects, in a sector exhibiting market failure, that offer an appropriately high level of emissions-lowering or waste management benefits that will assist in meeting the strategic objectives for London. A wider-focus than the current scope should be considered.
- Consultations also indicate that a wide variety of products would be helpful in order to bring projects to fruition, therefore unless there is a requirement to artificially restrict the types of financial instrument that can be offered, fund managers and project developers should consider the most appropriate instrument for each specific situation and decisions regarding instruments should be made on a project-by-project basis.
- Furthermore, our consultations noted that waste projects were distinct from projects in other sectors meaning a separate waste sector UDF may work best for the LGF. Debt and equity are seen as fundamentally different products with conflicting interests. The possibility of mitigating conflicts by having separate debt and equity UDFs was also considered however the steering group felt there was not yet sufficient scale in the LGF for it to remain efficient and have sufficient liquidity if fragmented in this way.
- Regarding fund manager incentives, consultations suggested that there should be a point in the project development lifecycle whereby the client (the final recipient of the financial instrument) has demonstrated a commitment to the project, and fund managers should receive remuneration in respect of the effort expended to get the project to that point. This could be via an agreed fixed fee per deal, a percentage of funds committed, or on a “cost plus” or day rates basis. This feedback from fund managers, and potential solution should be considered.

1 Approach

1.1 Introduction

The European Investment Bank (“EIB”) has commissioned Deloitte to undertake a review in respect of transitioning the London Green Fund (“LGF”). The review seeks to:

- Determine the potential future market demand for funding, taking into account expected recycling of existing UDF funding and possible alternative and supplementary financing and co-investment sources.
- Determine the nature of the required funding, in terms of sector (such as energy from waste, renewable heat, energy efficiency etc.), and product type (such as debt, equity, mezzanine or guarantee).
- Identify preferred delivery structures, taking into account lessons learned from the 2007 – 2013 JESSICA programme.

This report should be read in conjunction with our Stage One report dated November 2014.

1.2 Approach

This report outlines our findings in respect of Stage Two of the review which included:

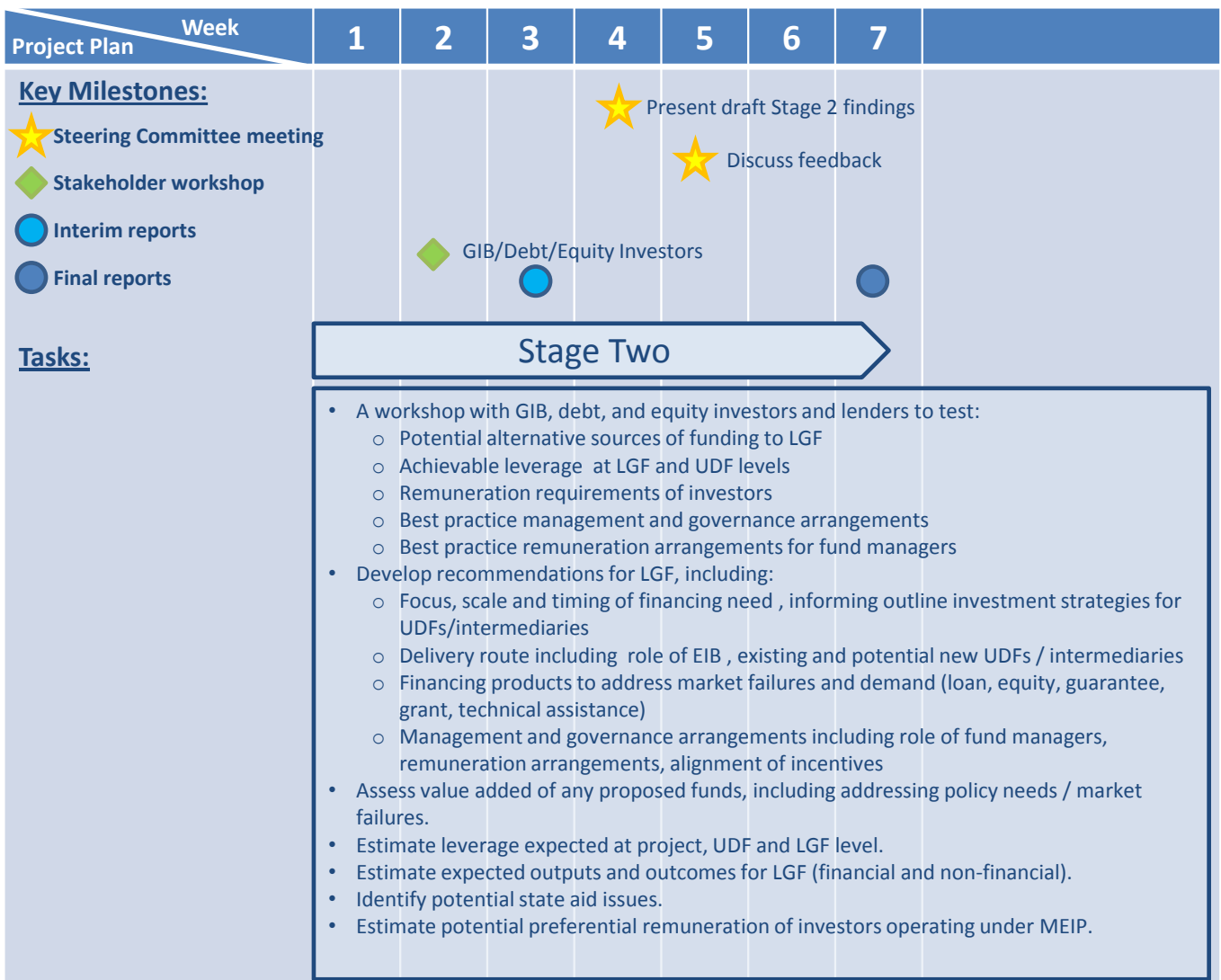


Figure 1 - Stage Two Approach

1.3 Workshop Objectives

The objectives of our workshop with potential co-investors / lenders included:

- Describe the funding gap which was identified at Stage One and test investor views on the accuracy of this.
- Test investor appetite to provide supplementary or complementary finance to help address the funding gap (or parts thereof).
- Test investor preferences for co-investment / lending at project / UDF / LGF level
- Test investor constraints, e.g. MEIP requirements, risk appetite, credit policy, sectoral focus
- Test investor views on existing fund management and governance arrangements and lessons learned.

1.4 Limitations

In developing this report, Deloitte has relied on the views of the Steering Group (including the EIB, LWARB and the GLA) and the stakeholders involved in our consultation (as set out in Appendix 1, and views discussed in our Stage One report). We have not independently corroborated any of the information provided to us.

We have not considered accounting, tax or legal issues.

2 Target Market

2.1 Scale and timing

Our Stage One report identified a demand for financial instruments, indicated by the value of the pipeline in the relevant sectors as well as the potential addressable market. The value of the addressable markets for the key sectors in which LGF is involved is estimated in the range of £2.8bn to £7.1bn of projects across the energy efficiency, waste and decentralised energy sectors.

Whilst it is recognised that the LGF funding may be used in other sectors, the sectors identified above are expected to provide the key pipeline for the LGF in the 2014-2020 programming period. The addressable market for the 2014 – 2020 programming period is calculated as the value of this pipeline less the expected recycled funds, i.e. £2.7bn to £7.0bn (there is £0.1bn of UDF recycling expected). Whilst there are certainly other sources of finance available for projects, the degree to which other current schemes are deployed outside London is a significant factor in determining the available financing within London. For example, whilst the Green Investment Bank also has a low-carbon agenda, this is on a national scale and their efforts have not brought about significant schemes in London to date. Even where schemes have identified budgets and investment guidelines which align particularly well, in many cases these schemes will have started a number of years ago and as a result the remaining available finance is indeterminable without further primary research. Ultimately, each scheme will have a specific mandate that will restrict their ability to meet the funding gap in a manner appropriate for LGF’s purposes.

The analysis did provide an indication as to the required investment in all sectors but we note that this will be heavily dependent on the differing levels and focuses of technical assistance/project development support across different sectors.

In any case, both our analysis presented in the Stage One report and the consultations with stakeholders indicated that there was an expected funding gap for green infrastructure that the LGF can go some way to address during the 2014-2020 programming period.

2.2 Sectoral Focus

The JESSICA Evaluation Study¹ recommended that investment should initially focus on decentralised energy systems and waste infrastructure and particularly in those projects that, due to demand/technical risks or a long timescale for returns, were incapable of being supported by conventional commercial financing. Indeed, investment should be targeted at those projects which had a clear commercial rationale but whose risk profile was unacceptable to the private sector due to factors such as uncertain market demand or unusually long lead time for returns.

In view of the above policy drivers and findings from the JESSICA Evaluation Study, LGF’s investment strategy² determined that the initial objective of the LGF “will therefore be to invest in UDFs, which, in turn, will invest in:

- decentralised energy systems; and/or,
- refurbishment of existing buildings including social housing to make them more sustainable and environmentally friendly; and,
- waste infrastructure Urban Projects.”

We note that in practice, decentralised energy systems did not initially deliver an appropriate pipeline for the beginning of the first programming period but demand increased later as PWLB borrowing costs increased.

¹ Deloitte MCS Ltd. Scoping the use of JESSICA in London. September 2008.

² The London Green Fund - Appendix 1 Investment Strategy and Planning Document

Regarding sectors requiring investment during the 2014-2020 programming period, given the scale of demand identified in the Stage One report and the corresponding financing gap, the sectors identified include waste, energy efficiency, and decentralised energy (which spans combined heat and power, solar, renewable heat and some energy-generating street lighting³).

The strategic priority of the ESIF plan for London is to “invest in London’s infrastructure to help ensure the capital has the underpinning technological, business and low carbon infrastructure to generate growth”⁴.

The ESIF plan also develops “key themes where ERDF investment will be targeted” including “*Investing in London’s Infrastructure Theme 5 – Low carbon, environmental and green infrastructure*”. Theme 5 will specifically “support activities that will address the impact and realise the economic opportunities of mitigating and adapting to climate change”. It also states that “financial instruments will be utilised... where the potential for leveraging private investment or making cost savings is significant”. Indicative activities for ERDF investment include:

- Develop “whole place” low carbon initiatives;
- Support the development of energy and water efficiency retrofit activity;
- Invest in the development of high-efficiency, low carbon co-generation district heat and power networks;
- Support the establishment of sustainable infrastructure for waste management;
- Provide project development funding; and
- Develop green infrastructure and other climate change adaptation activities.

The London 2050 Bigger and Better report⁵ also acknowledges the need for a 20% increase in energy supply capacity around 40 new waste facilities.

The indicative activities and London 2050 Bigger and Better report point to a wide body of project sectors. The Stage One report also identified a range of projects that would have been potentially appropriate for LGF investment. Ultimately, any project which offers an appropriately high level of emissions-lowering benefits will assist in meeting the strategic objectives for London and, if in a sector exhibiting market failure would also meet the strategic objectives of the LGF. As a result, sector impartiality, within the EU rules, may be appropriate in order to most appropriately deliver the objectives. This will help ensure that demand is met by the most appropriate projects, in a timely fashion, with maximum flexibility in capital deployment. For example, whilst the EU has previously not allowed the pursuit of such projects, should the regulations change, enabling the LGF to invest in street lighting could help in meeting its objectives – the Steering Group indicated that investments in energy efficient / energy generating street lighting often exhibit returns in respect of both financial and non-financial measures. The LGF may wish to consider re-assessing its sectoral mix in light of this.

2.3 Product Mix

The Common Provision Regulations (“CPRs”) state that the fund’s investment strategy should provide an indication of the rationale behind the choice of the financial product to be provided by the financial instrument. Financial instruments can support projects by providing different financial products, namely: debt, equity, quasi-equity or mezzanine capital; and guarantees.

As a result, a UDF could, in theory, offer all these financial products, though the fund management should adhere to the following guiding principle on risk sharing: UDFs should not try to finance the entire investment requirements of the project, but should share risks with project investors and/or (commercial) lenders external to the UDF. Therefore, along with the financial products of the fund, all project promoters who are applicants for fund financing (whether they be public or private, companies or households) also have to take some investment risk.

The financial products that will likely be offered include those which were offered as part of the first programming period:

³ Street lighting could also form part of the energy efficiency sector depending on the specific technology deployed.

⁴ EU ERDF; Mayor of London; EU ESF. 2014-2020 European Structural & Investment Funds Strategy for London. January 2014

⁵ Mayor of London. London 2050 Bigger and Better. August 2014.

- Debt – e.g. £20m provide to the London Borough of Croydon for an energy efficiency project;
- Equity – e.g. equity investment in PlasRecycle – a project to develop and build the UK’s first post-consumer plastic film recycling plant; and
- Mezzanine – e.g. loan from shareholder in TEG biogas – an anaerobic digestion plant project.

Equity and mezzanine products were only used in the waste sector whereas for energy efficiency projects, debt products were predominant. In the waste sector SPVs are often set up for the projects: it is the SPV that then enters into a series of contracts to facilitate the finance, design, construction and maintenance of the scheme. As a result, equity products are much easier to introduce in this sector rather than for a public sector body attempting to deliver energy efficiency measures through its own balance sheet.

Consultations suggested that the financial instruments used in the first programming period would likely continue to be appropriate for the next programming period given that they have proven deployable to date and stakeholders did not feel that market conditions had changed significantly. Below, financial products not used in the 2007-2013 programming period are considered based on the results of the consultations – development capital, guarantees/underwriting products and technical assistance.

Development capital

During our stakeholder consultations, respondents indicated that the LGF should consider providing development capital. In some sectors, the allocation of development or venture capital (a form of equity) was felt to be the financial instrument with significant potential impact on projects. In particular, respondents indicated that the technical assistance currently available was focussed on technological issues and did not include assistance in making projects “investable”. Development capital would support the early stages of project development and assist with technical and financial aspects of preparing their proposition for investment. In this context, the company is likely to be a project-specific special purpose vehicle or a start-up business (e.g. in the waste sector) – as a result, this type of finance is likely not to be appropriate for public sector projects without an SPV, which cannot offer equity, nor private sector energy efficiency projects which are developed through existing corporate bodies. However, in the waste sector and in some forms of decentralised energy, where SPVs are more prevalent, development capital may be more appropriate.

In this instrument, the UDF would acquire equity stakes in the project SPV via a combination of “sweat equity” (e.g. time spent and work done by the UDF manager in developing the project) and/or cash investment to fund technical and financial assistance). In this case, there is not usually a fixed interest rate for the capital invested nor periodic interest payments, but rather, a single repayment plus premium when the project is refinanced. A higher sale price can often be achieved for the equity investment (including the value of cash and “sweat equity” investment), if the project has been de-risked during the development phase, e.g. by achieving planning permission. Exit could take place once the project has left its development phase perhaps at financial close, at the same time as senior debt is injected. The LGF could maintain a stake in the project if it were still required e.g. because replacement equity capital cannot be sourced.

To help mitigate potential conflicts of interest between separate UDFs participating in the sale and purchase of such a project, a selling price at financial close could be contractually fixed as an exit premium on the basis of the project’s expected profitability.

In the case of UDFs providing equity capital for the development phase, it must be borne in mind that this kind of early stage financing is relatively high risk as some projects may never develop to the point of successful refinancing.

Equity capital is often critical for many types of urban development projects: if sufficient equity capital is available to cover “first loss”, then additional sources of capital (e.g. senior loans) are more likely to become available for project developers. At the same time the lower cost of capital of these additional sources of finance (e.g. senior loans) leads to improvements in the internal rate of return for other investors, which makes it easier to find private

equity partners. Therefore, developers could benefit from the provision of UDF development capital, since the UDF manager can also provide management expertise to the urban development project via “sweat equity”⁶.

In light of the feedback from some fund managers indicating that such an instrument would be useful to the market, the LGF should consider making such an instrument available to its UDFs for the 2014-2020 programming period. Co-investing alongside other targeted development capital funds may be a route the LGF wishes to consider. For example, it is understood that LWARB is seeking partners for such a development capital fund. As with other products, should the LGF be in a position to offer two different products to the same project, conflicts of interest arise; these should be managed in line with the potential governance arrangements noted in Section 3.2.

Guarantees/underwriting products

A UDF could support projects by providing guarantees to pay the remaining balance of a loan, including unpaid interest, in the event of default by the main borrower. Guarantees could be issued to commercial lenders in respects of payments due from project companies, in order to facilitate access to external debt finance, in return for a fee to cover both the risk exposure and the administrative and processing costs. Guarantees are an appropriate financial instrument in cases where project companies are unable to provide the lender – typically a bank or leasing company – with the necessary collateral or assurance over expected cash flows to gain access to debt finance on economically viable terms.

The fees the borrower pays for the guarantee depend on a series of factors: the guarantee period, the risk factor, and the proportion of the loan to be guaranteed. Infrastructure UK (IUK) has stated that guarantee fees will be “charged at market rates”⁷. In most cases, the fee is 1-2% per annum of the outstanding guaranteed amount (i.e. of the loan amount insured)⁸.

While guarantees are typically a more efficient use of capital than direct lending, where they have been suggested in order to get commercial banks involved in projects State Aid approvals can present a more difficult hurdle and guarantees have therefore not been pursued by LGF in the past.

There is the potential for LGF to team with the IUK team, since the IUK team has significant experience of guarantee products. This may allow the LGF to leverage the IUK £40bn scheme as well. A concern might be that IUK would not be keen to deal with smaller projects (NB – this has not been tested with IUK). That said, SDCL has worked with IUK on £10m and £12m projects in the past. Similar schemes include The Singapore Economic Development Board, which offers guarantees on debt and finds this can bring in more private sector leverage⁹. The LGF may wish to explore whether collaboration with IUK could assist its projects in raising more private sector debt.

In a similar manner to the guarantee products set out above, consultations suggested that a credit-underwriting product might be of use. This product, a form of financial guarantee, covering a specific loan, debt issuance, or other financial transaction, could be used to improve the credit quality of projects and encourage senior debt providers to lower third party finance costs – thus giving greater leverage of the EU contribution.

Importantly, this product could be used to underwrite the credit quality of businesses which may be unable to borrow to implement cost-reducing measures due to the businesses’ low credit quality / lack of collateral or other factor affecting their access to finance.

Technical assistance

As noted above, development capital may be required to assist with the development of an appropriately “investment-ready” proposition to investors and lenders. Whilst this could come in the form of development capital,

⁶ EIB, EU Regional Policy. JESSICA – UDF Typologies and Governance Structures in the context of JESSICA implementation. November 2010.

⁷ Allen & Overy. The UK Guarantees Scheme for Infrastructure Projects: A brief overview of the standard documentation. 2013.

⁸ EIB, EU Regional Policy. JESSICA – UDF Typologies and Governance Structures in the context of JESSICA implementation. November 2010.

⁹ Per stakeholder discussions.

there are other options regarding the funds for these activities. Options include grants (which clearly do not have the benefit of “recycled capital” and loans repayable once the project proposition has been developed and is ready for external finance. Such loans could eventually provide a return from successful projects but would be more risky (and therefore should be higher priced) than the financing of “investment-ready” projects (i.e. normal project loans).

2.4 Key findings

The CPRs require consideration of how the financial instruments are going to address the identified market needs – this includes the final recipients targeted (or the sectors with appropriate addressable markets) and the financial products to be offered. Regarding the sectors with appropriate addressable markets, given the scale of demand identified in the Stage One report and corresponding financing gap, the sectors identified include waste, energy efficiency, and decentralised energy (which spans combined heat and power, solar, renewable heat and some energy-efficient and energy-generating street lighting). Stakeholders have indicated that there is demand in both the public sector with regard to energy efficiency and the private sector with regard to waste projects. However, consideration should also be given as to whether other recipients should also be targeted – for example, the private sector energy efficiency market.

Ultimately, any project which offers an appropriately high level of emissions-lowering or waste management benefits will assist in meeting the strategic objectives for London, and if in a sector exhibiting market failure will also meet the objectives of the LGF. As a result, sector impartiality, within the EU rules, may be appropriate in order to most appropriately deliver the objectives. This will help ensure that demand is met by appropriate projects in a timely fashion.

Furthermore, whilst there is no data regarding the extent of future demand for each distinct financial instrument, consultations indicate that all the instruments noted above would be helpful in bringing projects to fruition. Each product has its own specific characteristics, responds to different needs and its suitability depends on each particular case being considered.

Consultations suggested that the financial instruments used in the first programming period would likely continue to be appropriate for the next programming period given that they have proven deployable to date and stakeholders did not feel that market conditions had changed significantly.

We would also recommend that the LGF further considers additional instruments as well. Unless there is a requirement to artificially restrict the types of financial instrument that can be offered, fund managers and project developers should consider the most appropriate instrument for each specific situation and decisions regarding instruments should be made on a project-by-project basis. New products such as development capital and credit underwriting / guarantee products are two such instruments that could prove useful in the 2014-2020 programming period.

3 Delivery Mechanisms

3.1 Current delivery structure

For the first programming period, the LGF procured and contracted three UDFs to operate in the Greater London region: Foresight Environmental Fund (FEF), Amber London Energy Efficiency Fund (LEEF) and THFC Greener Social Housing Fund (GSH). The three UDFs are fully operational and approaching full deployment of their current funding commitments. The general structure of the LGF for the first programming period is shown below:

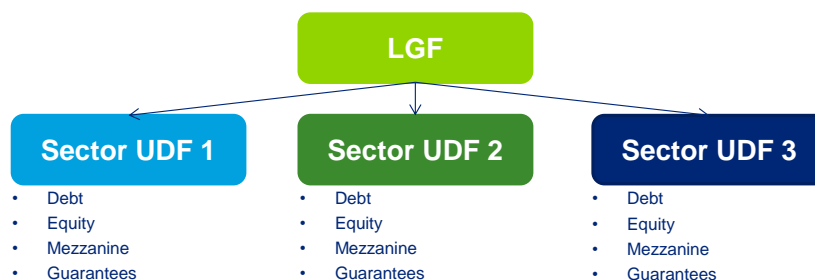


Figure 2 - Current UDF structure

Each UDF is managed by a different fund manager, each with specialist sector expertise and networks.

Advantages	Disadvantages
<ul style="list-style-type: none"> • Provides a focus on sectors which may suit some fund managers 	<ul style="list-style-type: none"> • Potential to miss investment-appropriate emissions-lowering/waste management projects that do not sit squarely / entirely within any of the UDF sectors
<ul style="list-style-type: none"> • Further development of sector expertise 	<ul style="list-style-type: none"> • Projects may overlap across sectors and there is a risk that UDF managers may end up competing for the same projects, though this could be managed by the boundaries of the investment strategies
	<ul style="list-style-type: none"> • With no split between debt and equity, there could potentially be some conflicts of interest if a single UDF tries to invest both products in the same project
	<ul style="list-style-type: none"> • A potential lack of transparency over how much of UDF managers' remuneration relates to each of their potential activities: <ul style="list-style-type: none"> - lending - equity investment - structuring of guarantees - provision of "sweat equity" / project development support¹⁰

3.2 UDFs

In order to characterise, systemise and consider the different fund models available for the next programming period, we note that a study by the EIB and the EU¹¹ determines three key categorisation criteria for urban development funds:

¹⁰ EIB noted that this has been an issue for the current programming period. This issue may arise if the UDFs are providing different types of product within the same sector.

- i) The quality of UDF business strategy;
- ii) The nature of financial products to be provided along with the envisaged final recipients; and
- iii) The quality of the governance structure of the UDF.

These three key dimensions should not be viewed separately, as there are heavy dependencies among them.

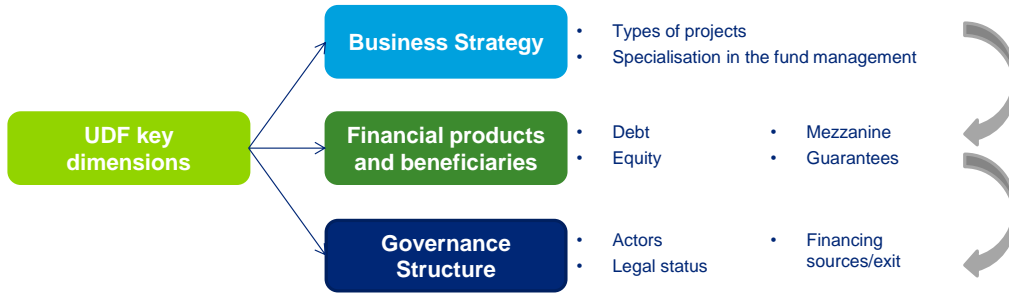


Figure 3 - UDF Key dimensions

Section 2 of our report considers the business strategy in terms of target sectors in which market failures arise. The EIB/EU study states that “the business strategy of the UDF, as the first key dimension, determines the choice and configuration of financial products that are to be provided in order to support urban investment projects”. Our consultations with stakeholders (supported by the market failure/market demand review) identified distinct “types of projects”, being waste, energy efficiency and decentralised energy. These different types of projects tend to require different types of financial products depending on their corporate and commercial structure/size, and the nature of the project sponsor/developer. In the consultations, it was noted that there is a particular development financing gap in each stage of the waste sector, whereas later stage projects more often only require debt finance solutions.

Sectoral structure

One possibility for the UDF structuring would be having a number of UDFs that would focus on one special theme such as energy efficiency or waste improvements (given the sectors described above) – as is the case now. Such a focus would limit UDF investments to assets in these sectors, leaving potentially more effective or as yet unidentified low carbon projects outside the scope.

The Steering Group acknowledged the importance of a separate waste sector fund given the idiosyncrasies of the sector and also since it would allow any potential investment from LWARB to be invested only in waste projects rather than other projects too. Aside from waste, however, the Steering Group agreed that whilst there are differences between other sectors (such as decentralised energy and energy efficiency projects); these differences were not sufficiently substantial to support the need for further separate UDFs. Therefore, a structure recognising the difference for waste projects may prove appropriate.

LWARB indicated that they are able to meet the demand for debt funding for waste projects, so it is possible that the LGF would not have to offer debt products in the waste sector. That said, in case of any future increase in demand beyond the capacity of LWARB, it would provide more flexibility if LGF did not restrict the financial products for the waste sector but collaborate with LWARB to ensure they were not competing for projects.

The structure allowing segregation of the waste sector is shown below.

¹¹ EIB, EU Regional Policy. JESSICA – UDF Typologies and Governance Structures in the context of JESSICA implementation. November 2010.

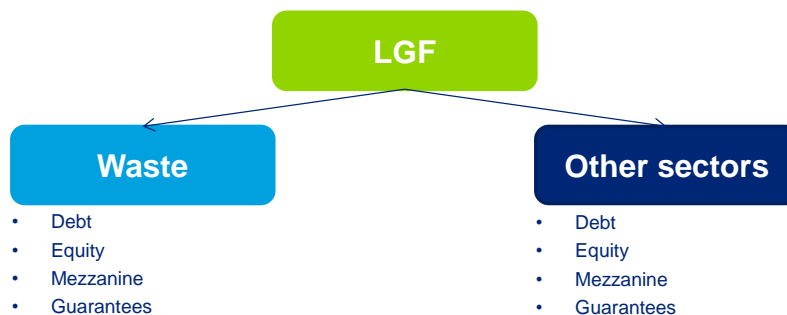
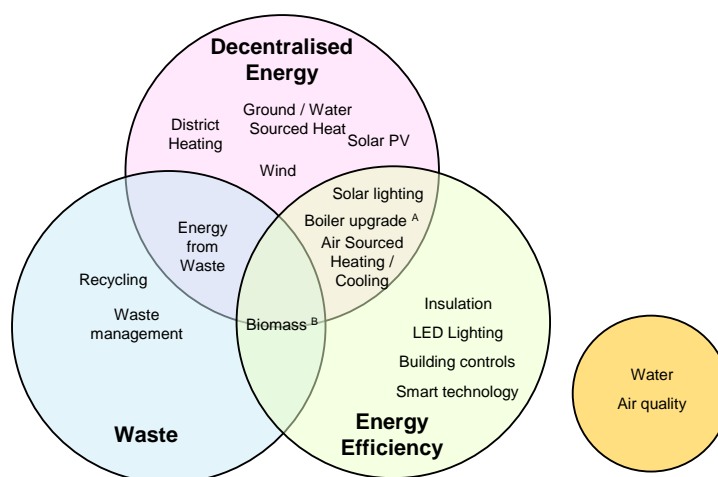


Figure 4 - Sector split

The decision regarding the degree of thematic specialisation of their UDFs is borne on two competing impacts: if a UDF specialises in certain assets, this could enhance the expertise of the fund management in the chosen sector. At the same time, this could result in higher financial risks for the UDF, since there is no cross-sector risk diversification at the UDF level. Furthermore, there is also the possibility that the fund may be unable to find enough viable projects in its chosen sector. This may lead to insufficient demand for UDF financing at project level. If such a situation persists over time, the UDF may have to pay back part of its capital resources to the ERDF by the end of the programming period. There may also still be latent unanswered demand from investment-appropriate projects that do not meet the chosen sector focus.

We note that there are projects that could fit into more than one sector and as a result, there may be some disagreement between any UDF managers as to who should advance such an “ambiguous” project. The below Venn diagram shows such ambiguity between three of the key sectors for the LGF:



A – including biomass boilers where this is part of a larger building overhaul would be within the energy efficiency sector
 B – stand alone facilities (not including biomass from unsustainable fuels) would be within the waste sector

Figure 5 – Project mix

This highlights the importance of defining the mandates of the respective UDF managers such that projects are not targeted by two UDF managers, nor missed by all UDF managers. This is particularly relevant for projects which sit in the overlapping sections of the above diagram.

The consultations noted further sectors that may be appropriate for LGF investment. It was felt by the Steering Group that these could be agreed by the Investment Committee at a later date as such potential projects arise since the Investment Strategy is not unalterable across the programming period.

Advantages	Disadvantages
<ul style="list-style-type: none"> • Maintaining waste sector specialist expertise 	<ul style="list-style-type: none"> • Projects may overlap across sectors and there is a risk that UDF managers may target the same projects (though this could be mitigated through clear mandates for projects in the waste sector including definition of which fund would target energy from

<ul style="list-style-type: none"> • Maintains overall breadth of scope of projects with investment appropriate qualities via the “non-waste” UDF 	<p>waste)</p> <ul style="list-style-type: none"> • With no split between debt and equity products, there could be some conflicts of interest in trying to invest both products in the same project. EIB have stated that the regulations for the 2014-2020 period are more prescriptive in respect of debt and equity, so this concern should be addressed through the regulatory requirements of the fund
<ul style="list-style-type: none"> • Could potentially be easier to attract more waste-specific co-investment streamed towards the waste UDF (e.g. from LWARB) 	<ul style="list-style-type: none"> • A potential lack of transparency over how much of UDF managers’ remuneration relates to each of their potential activities: <ul style="list-style-type: none"> - lending - equity investment - structuring of guarantees - provision of “sweat equity” / project development support¹²
<ul style="list-style-type: none"> • This structure is similar to that used currently, which has delivered projects and has developed market awareness/traction 	

Product structure

An alternative structure could be based on financial product offering with each targeting a broad range of emissions-reducing or waste management projects across sectors.

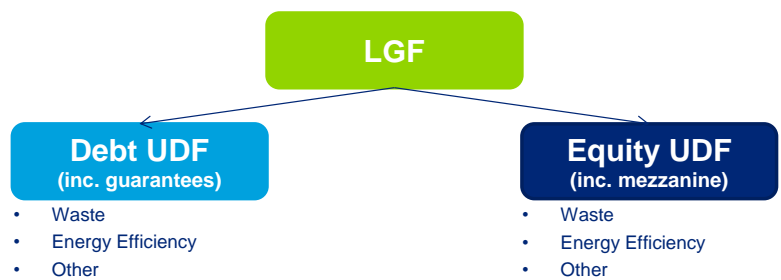


Figure 6a - Product split 1

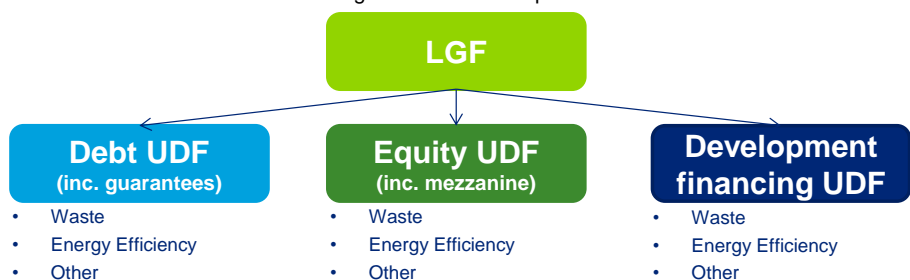


Figure 6b - Product split structure

Stakeholders questioned the need for a debt fund with regard to the waste sector. The contention is that larger waste projects (debt requirements of greater than approximately £30m) are targeted by the Green Investment Bank’s debt offering and that LWARB is able to invest in projects with smaller debt requirements. It is not clear the extent to which this leaves a gap in the middle as an outstanding market failure. As a result, it may be advisable for

¹² EIB noted that this has noted been an issue for the current programming period. This issue may arise if the UDFs are providing different types of product within the same sector.

LGF to maintain the ability to provide debt in waste even where it is unlikely that there is a market gap for investing debt in waste.

Advantages	Disadvantages
<ul style="list-style-type: none"> • Fund manager expertise in specific products such as debt, equity and project development capital/technical assistance 	<ul style="list-style-type: none"> • Potential loss of sector specialism
<ul style="list-style-type: none"> • No conflict between equity and debt provision if there are separate managers for each UDF 	<ul style="list-style-type: none"> • The structure in figure 5a risks not meeting latent demand through an underdevelopment of the potential project pipeline
<ul style="list-style-type: none"> • Ability to provide early development stage project support 	<ul style="list-style-type: none"> • LLWARB delivers some development finance in the waste sector and there may be unwanted overlap
<ul style="list-style-type: none"> • The structure in figure 5b may assist in ensuring that there is collaboration between the development of pipeline and the eventual financing (see also 3.4 below) 	
<ul style="list-style-type: none"> • The structure in figure 5b should allow clarity of the financial returns to investors and UDF managers from each type of investment product 	

As a result of the disadvantages of the sectoral and product structures presented above there is the potential for a hybrid structure. Our consultations with stakeholders noted that waste projects were distinct from projects in other sectors due to the idiosyncrasies of the sector including number of stakeholders and issues with sites and development. Furthermore, debt and equity were seen as fundamentally different products and an effective way of managing the conflicts of interest between debt and equity ownership is to have separate UDFs for the two distinct products.

Therefore, a potential structure could be:

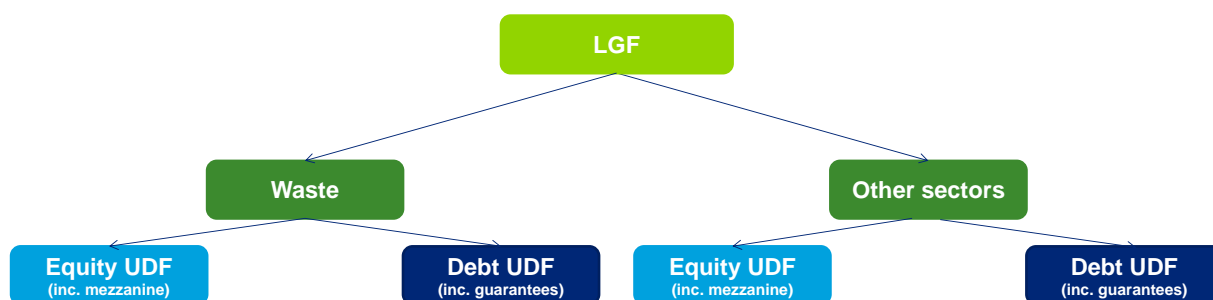


Figure 7 – Hybrid structure

This structure has four separate UDFs thus recognising the need for a separation of waste as well as managing the conflicts of interest between equity and debt.

However, it may be that there is not sufficient scale for separate debt and equity UDFs for each sector and the cost of administering such a structure may be prohibitive. As a result, mitigation of debt and equity conflicts through the use of separate UDFs for financial products may not be possible¹³. Where this is the case, conflict mitigation is still possible through appropriate governance structures or management arrangements such as:

- Precluding fund managers from investing in both equity and debt in the same project;

¹³ EIB noted that this has not been an issue for the current programming period.

- Additional investment committee oversight/approvals on projects with both debt and equity investment; and
- Requirement for pari passu investment from private sector thus applying an appropriate higher level of discipline; investment from private sector at pari passu will assist in avoiding queries regarding State Aid.

Recommendation

The consideration of demand within each sector indicated an addressable future demand in all of the sectors that are currently considered in the LGF. It seems sensible therefore to maintain a focus on these sectors.

However, in order to best ensure that all latent demand from investment-appropriate projects (that are in sectors exhibiting market failure) which support the ESIF and the London Plan is answered, the LGF should consider its current investment strategy boundaries and consider the inclusion of additional sectors such as the ones listed above.

Our consultations with stakeholders noted that waste projects were distinct from projects in other sectors due to the idiosyncrasies of the sector including a number of stakeholders and issues with sites and development, and the extent to which LWARB addresses debt financing requirements in this sector in London. These factors, together with the ability to ring-fence investment funds for waste projects (and therefore the possibility of receiving co-investment from LWARB) mean that a separate waste sector UDF may work best for the LGF. If additional sectors that the LGF decides to target are again significantly distinct in their characteristics, further separate sector UDFs may be appropriate, however based on stakeholder soundings and discussions with the Steering Group no such sectors were identified.

Debt and equity are seen by stakeholders as fundamentally different products with conflicts of interest. Where the LGF wishes to invest both products via a particular UDF, conflict mitigation is possible through appropriate governance structures or management arrangements such as:

- Precluding fund managers from investing in both equity and debt in the same project;
- Additional investment committee oversight/approvals on projects with both debt and equity investment; and
- Requirement for pari passu investment from private sector thus applying an appropriate higher level of discipline; investment from private sector at pari passu will assist in avoiding queries regarding State Aid.

The LGF should consider whether development finance is also beneficial to meeting its objectives, as stakeholders identified a potential gap in the provision of financial assistance (as opposed to technical) during the project development phase. The LGF should consider whether a separate UDF for development finance would be appropriate or whether development finance should be provided via the “waste” and “other sectors” UDF structure as described above.

3.3 Project Delivery Unit

The findings from the consultations point to a complex environment, in which there is a role in facilitation of development and operation of green infrastructure financing markets. Stage One consultations noted that finance tends to focus on supply, that is, the provision of funding through finance schemes and programmes of that nature. It was noted that whilst this finance is clearly helpful in enacting these projects, supporting the development of demand for finance should also be addressed.

UDF fund managers all report that strong project development support would be beneficial in building a viable project pipeline. The Steering Group acknowledge the work done to date in by LWARB and the GLA project development units in this space¹⁴.

Some form of enhanced delivery unit might involve a series of complementary actions, of different types and at different levels across the various sectors:

¹⁴ It is acknowledged that LWARB has been fulfilling this role for the 2007-2013 programming period but LWARB have not confirmed any long term role in technical assistance depending upon LWARB's decisions, the ability for LGF to provide (or to help finance) such technical assistance is understood to be helpful in the context of the waste sector.

- assistance in preparing projects' financial and commercial propositions such that they are "investment ready"
- information provision and networking, notably with regard to mezzanine funding, angel finance, and government backed support schemes;
- working with SME lending schemes to improve the supply of debt finance for SMEs considering green infrastructure;
- working with experienced fund managers to manage the risks and transaction costs involved in relatively small equity propositions, and in early stage businesses where there are longer lead-in times co-funding start-up activity; and
- Co-ordination of GLA/London Boroughs, GIB and EIB to collaborate in market development activities and development of investment pipeline.

Both the GLA (and a commissioned EU report¹⁵) acknowledge there is a need for dialogue and knowledge exchange between public and private sector parties. It was thought that collaboration over the objectives of financial instruments funded partly or wholly through public sector sources (including those administered under the LGF) could increase visibility, encourage understanding and increase knowledge of the requirements of both sets of parties. This was also seen as having potential benefits in terms of balancing the commercial approach inherent in many financial instruments, and the wider cohesion-related objectives of the ESIF plan for London which require non-financial returns. Indeed, it emerged that objectives and incentives of project implementation units within the GLA and those of the LGF are not necessarily perfectly aligned. Greater alignment in objectives and incentives may lead to fewer projects being aborted for financing reasons and more efficient pipeline development for investment including appropriately aligned carbon metrics as well as financial hurdle rates.

Furthermore, the EU CPRs state that financial instruments may be combined with grants. Grants as technical support for the benefit of the final recipient and for the purpose of technical preparation of the prospective investment can be combined with a financial instrument in a single operation if they are directly related to the relevant financial instrument (provided that they target the same final recipients and that separate records are maintained for each form of support). Grants may be used to deliver an additional service (such as project development support) in combination with the financial instrument (such as loans, equity or guarantee programmes).¹⁶

More generally, LGF could provide development support to projects on the condition that they agree first rights to financing exclusivity to the LGF and its partners. This exclusivity may also be an incentive for matched-funders such as GIB to invest alongside the LGF both at the early stages and later stages.

3.4 Scale of investment

The scale of investment is largely dependent on not only the return made on existing investments, but also on the provision of any new ERDF financing and the appetite to invest from entities such as the GIB, the GLA and LWARB.

The waste UDF has shown that it has been able to bring private sector investors in alongside at the project level. The Steering Group suggested that as a result, the scale of required investment from ERDF might be as low as £7-8m though this is contingent on amounts available for matching from entities such as LWARB. It was acknowledged by the Steering Group that the scale of this investment in the waste sector would need to be of "critical mass", which was suggested to be around £15m in total from such sources including ERDF and LWARB. This should be considered with further input from the waste UDF manager. The Steering Group indicated that the remaining targeted sectors' investment from ERDF would utilise the remainder of the ERDF pot. Assuming a further £50m from the ERDF, this would mean as much as £42-43m.

¹⁵ EU, EIB, Mazars, ECORYS, EPRC. Financial instruments: A Stock-taking Exercise in Preparation for the 2014-2020 Programming Period. March 2014.

¹⁶ EC, EIB and PwC. Ex-ante assessment methodology for financial instruments in the 2014-2020 programming period. April 2014.

3.5 Key findings

For the first programming period, the LGF procured and contracted three UDFs to operate in the Greater London region: Foresight Environmental Fund (FEF), Amber London Energy Efficiency Fund (LEEF) and THFC Greener Social Housing Fund (GSH). The three UDFs are fully operational and approaching full deployment of their current funding commitments.

The consideration of demand within each sector indicated an addressable future demand in all of the sectors that are currently considered in the LGF. It seems sensible therefore to maintain a focus on these sectors.

However, in order to best ensure that all latent demand from investment-appropriate projects (that are in sectors exhibiting market failure) which support the ESIF and the London Plan is answered, it may be most appropriate to structure the LGF based on financial product offering with each targeting a broad range of emissions reducing and waste management projects. The LGF should consider its current investment strategy boundaries and consider the inclusion of additional sectors such as the ones listed above.

Our consultations with stakeholders noted that waste projects were distinct from projects in other sectors due to the idiosyncrasies of the sector including number of stakeholders and issues with sites and development. These factors, together with the ability to ring-fence investment funds for waste projects mean that a separate waste sector UDF may work best for the LGF. If additional sectors that the LGF decides to target are again significantly distinct in their characteristics, further separate sector UDFs may be appropriate.

Debt and equity are seen by stakeholders as fundamentally different products with conflicts of interest. Where the LGF wishes to invest both products via a particular UDF, conflict mitigation is possible through appropriate governance structures or management arrangements such as:

- Precluding fund managers from investing in both equity and debt in the same project;
- Additional investment committee oversight/approvals on projects with both debt and equity investment; and
- Requirement for pari passu investment from private sector thus applying an appropriate higher level of discipline; investment from private sector at pari passu will assist in avoiding queries regarding State Aid.

If the LGF considers that development finance is also beneficial to meeting its objectives, the LGF should consider whether a separate UDF for development finance would be appropriate.

There are also potential benefits from increased co-ordination between GLA/London Boroughs, GIB and EIB (as well as others) to collaborate in market development activities and development of investment pipeline.

We have been informed that the regulations for the 2014-2020 period are more prescriptive in respect of debt and equity than the previous regulations; these should be fully understood and any concerns should be considered and addressed in the context of the above.

4 Management Arrangements

4.1 Management, Governance & Monitoring

The role of governance is a key factor in the structure and on-going management of the UDFs; governance will include:

- Oversight of the operation of the UDFs;
- Monitoring of financing and environmental performance;
- Approvals of any process changes to UDFs; and
- Approval processes such as approval of certain investments over a certain size.

From this perspective, it is important that there are appropriate members on any such governance committee/board. Consultations on the first programming periods suggested that the governance processes were considered appropriate. As a result, any changes in thematic specialisation or sectoral focus should be reflected in the composition of the governance group. For example, if there is a shift of importance of a particular sector (such as the re-emergence of the decentralised energy sector), people with appropriate sector experience should be part of the oversight of the relevant UDF.

Indeed, with the consultations highlighting the value of technical assistance and the requirement for greater cooperation between fund managers and project implementation units (e.g. RE:FIT), the Steering Group may deem it suitable to appoint appropriate persons with knowledge of these such bodies to the governance committee/board.

Distinct from this is the governance of the holding company through the LGF Investment Board, which must carry out important roles such as reviewing performance of the UDFs and any re-allocation of funds in response to market need or UDF performance.

4.2 Remuneration Options

We understand that for the first programming period the remuneration arrangements for the UDFs were based on funds invested and performance relating to CO₂ reduction.

EU and EIB¹⁷ have also encouraged the use of performance based fees, rather than a flat management fee. This is intended to align objectives of the UDF managers with the objectives of the LGF. This could include formulae which take into account benchmarks for effective investments, and could be linked to the quality of investments effectively made, possibly linked to their contribution to the achievement of the strategic objectives of the Operational Programme and the UDF, as well as the value of the resources returned from investments.

Participants in our consultations expressed the view that in order to encourage development activities, it may be appropriate to provide additional incentives along the investment route ahead of the point of funds invested. At the moment the fund managers effectively underwrite abortive costs and there is a significant amount of work for the fund managers before the point of investment. It was acknowledged that incentives on the point of investment also align the interests of the fund managers with the investors in the LGF.

Participants in our consultations also suggested that there could be an interim point of remuneration in respect of the effort expended by the fund manager in developing the project as a potential investment, perhaps at the point of funds being committed.

¹⁷ EC and EIB. JESSICA UDF Handbook, Horizontal Study, Final Report. July 2012.

They did agree that maintaining the incentivisation based on “funds invested” would encourage the principal focus to remain on deal completion.

Given that the fund managers already perform such activities under the existing remuneration scheme, one could argue that altering the remuneration regime is unnecessary. However, given that consultations revealed some issues with aligning the expectations of suppliers of finance with the investment-readiness of those projects demanding finance, it may be beneficial to incentivise fund managers to perform more development activities. The Steering Group has stated that the regulatory provisions regarding the remuneration structure for UDF managers are more prescriptive for the 2014-2020 programming period and as a result, the fee structures for UDF managers will have to be amended in any case.

Differentiating remuneration for different activities could also help to provide transparency as to how the LGF’s fund manager remuneration mechanism compares to market benchmarks. For example:

- Debt arrangement fees tend to be around 0.75% of debt raised;
- Equity arrangement fees tend to be around 1.25% to 1.5% of equity raised; and
- Technical and financial advisory support to develop projects can be benchmarked against advisory firms’ fees.

In terms of the mechanism for remunerating development activities, there are various options including:

- Hourly/day rates for time spent;
- A percentage fee at the point of funds committed;
- Direct expense recovery for third party advice (e.g. from technical advisers); and
- A monthly retainer.

Non-financial targets (and associated fund management incentives) are also expected to remain appropriate. Non-financial incentives are discussed in Section 5.

4.3 Key findings

Governance will be a key factor in determining the direction and performance of the LGF. The Steering Group may deem it suitable to review the membership of the governance group in light of any shifts in the strategy or activities of the LGF.

Participants in our consultations expressed the view that in order to encourage development activities, it may be appropriate to provide additional incentives along the investment route ahead of the point of funds invested. At the moment the fund managers effectively underwrite abortive costs and there is a significant amount of work for the fund managers before the point of investment. Participants also suggested that there could be an interim point of remuneration in respect of the effort expended by the fund manager in developing the project as a potential investment, perhaps at the point of funds being committed.

5 Desired Outcomes

5.1 Financial return

As is established in Portfolio Theory, the higher the risk of the investment, the higher are the expected risk or default costs. The expected return for the different types of investors therefore has to be high enough to compensate for their risk-return expectations. This is shown by the Capital Market Line¹⁸:

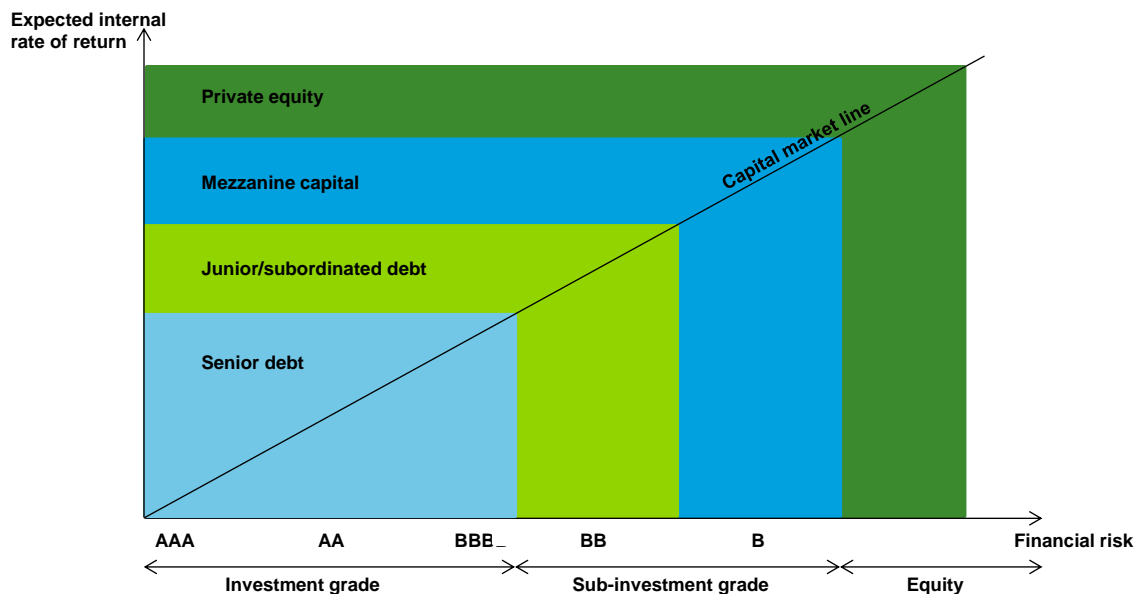


Figure 6 – Capital Market Line; Source: JESSICA – UDF Typologies and Governance Structures in the context of JESSICA implementation¹⁹

The highest internal rates of return are expected for venture capital. As financial risks to the capital provider reduce, the expected rate of return is lower. Even where no financial risks exist, the rates of return will have to at least cover the management and financing costs of the lender.

Stakeholders did not indicate their required rates of return and the appropriate rate of return will vary on a project by project basis, however, the above indicative rates can serve as broad brush guidelines and show the relative rankings of types of financial instrument in terms of risk and return. Also of importance is the relative speed of recycling of capital of projects. The faster that capital can be returned through the structure to the LGF, the faster that this capital can be redeployed in other investment-appropriate emissions lowering and waste management projects.

As at 30 April 2014, the total funding that was expected to be available for recycling would be £123m after the completion of the first round of investments. Based on these forecasts, this is a 3.04% IRR for the LGF²⁰.

5.2 Value added

The value added by the LGF was identified as part of the Stage One report. This included, in particular, leverage and the revolving effect of LGF funds.

Leverage

¹⁸ The line is used in the generic capital-asset pricing model to present the rates of return for efficient single investments or portfolios.

¹⁹ EIB, EU Regional Policy. JESSICA – UDF Typologies and Governance Structures in the context of JESSICA implementation. November 2010.

²⁰ EIB report on returns forecast; expected to be 2.7% after management cost and GP share; performance varies between UDFs.

The policy of leveraging other investment is a significant factor in ensuring that value is added by the LGF. This is particularly relevant in times of budgetary constraints and funding concentration, as leveraging external funds will increase financial instruments' added value in the delivery of ESIF Policies objectives.

Implementation of ERDF funding through the LGF requires a degree of matched-funding. Matched funding at the LGF level was also leveraged by additional financing and investment of resources from other sources as well. For the first programming period, analysis²¹ showed that Local Authority energy efficiency, housing association energy efficiency and waste projects have leveraged significant amounts of finance from other sources. Depending on the sector, the EU contribution was leveraged 15-20 times with sources of finance from other sources.

Consultations suggested that following the market development work done by fund managers as part of the first programming period, leverage would be easier to achieve for the next programming period. Sources of leverage are possible from both public and private sources as set out below.

Public

At the LGF and/or UDF level, as with the first programming period, the GLA and LWARB may consider investing as part of the next programming period.

GIB may also consider investing at this level. GIB may be suitable as a fund level co-investor since they also allocate their money through fund managers. As a result, by co-investing at the top level, fund manager costs would be split with the EU and the other co-funders.

At the project level, there will possibly be appetite from many of the local authorities to invest or provide resources alongside financing from the LGF.

Enhancing the role of the EIB

Co-ordinator/market-maker: The EIB could perform a role to help facilitate the market through bringing together the key players in green infrastructure finance. The stakeholder engagement process has shown that bringing together EIB, GIB, LWARB and fund managers can be helpful. This could also help facilitate the matched-funding process.

Debt funding/buying of aggregated debt: During the first programming period, the EIB approved a loan for up to £400m for the purpose of on-lending to final beneficiaries carrying out investments in the social housing and urban regeneration sector throughout the UK. This is being administered through the UDF manager, THFC.²² In addition, the EIB has approved a LGF co-financing facility of £500m; this will be for Local Authority borrowers and is intended to match LEEF style activity.

Since the EIB is a debt investor at commercial rates, it is possible that the EIB could provide debt funding to other energy efficiency projects within the LGF structure. At some point during the next programming period, it may also be appropriate to aggregate the debt currently invested by the LGF and package it to sell on to EIB.

Preferred Lender: If LGF gives guarantee/credit-insurance products, EIB could develop agreed standard terms and lending procedures utilising these products.

Private

Given that the LGF is seeking to address market failures, it is unlikely that significant private sector matched funding will be available at the LGF level.

Private sector match funders are more likely to sit at certain UDF and project levels. For the first programming period, the Amber-managed London Energy Efficiency Fund received in principle agreement to matched funding of £50m from RBS, although we note that this was difficult to deploy. For example, a blended interest rate with RBS

²¹ Based on data from Greater London Authority and EIB.

²² <http://www.eib.org/projects/pipeline/2013/20130244.htm>

was at higher cost than the interest rates from PWLB. FEF has been successful in bringing in private investors at the UDF level.

Some of the fund managers in the green infrastructure market have successfully raised private sector investment. If the LGF provides debt and equity products at market rates in order to address market failures in the supply of finance then it may be possible for UDF managers to raise private sector investments at the UDF level.

Private sector co-investment is unlikely in any UDF which provides:

- “Cheap” finance relative to the risk of the investment; and
- Financial instruments for which the achievable returns or relative risks are unknown; for example, this could include credit-insurance, technical assistance or early stage capital for project development.

Since the inception of the first programming period, institutional investors have come back into play and may offer an option for co-investment in a debt-focussed UDF. “Many borrowers may struggle to find lenders who can meet their credit needs. It is this gap in the availability of credit that matters and credit funds are beginning to help address this issue”²³.

Regarding the general project finance market, there is evidence of improving conditions in the long term (15-30yr) debt market because of an increasing number of participants from institutional investors. Large institutional investors with significant fixed income businesses who have created dedicated infrastructure teams within their existing business are signalling a tendency towards greater involvement in the general infrastructure sector.²⁴

Revolving effect for recycling the funds

Investments made under the LGF programme are expected to provide returns, through dividends and interest payments as well as returning loan principals and potential equity sale proceeds or return of equity over the projects’ lives.

The next programming period should offer the opportunity to reinvest funds recycled from existing investments from the first programming period as they begin to provide these returns. This is a major benefit in terms of value added for a programme such as the LGF (relative to grants which have no expectation of any return of financing support) since the leverage achieved can potentially be repeated.

Projects from the first programming period are expected to deliver £123m of such returns which may be made available for reinvestment²⁵. If fund managers can achieve similar leverage in the next programming period, this could potentially mean that the original stakes invested by the EU and each of the matched funders (GLA and LWARB) could achieve 30-40 times leverage overall.

5.3 Other non-financial indicators

All projects under the LGF should contribute to social and public benefits defined by underlying plans or strategies (in particular lowering London’s emissions and managing waste) measured by operational programme output targets and/or economic rates of return. Examples of relevant indicators for the measurement of performance could include CO₂ reductions achieved (it is understood that is already a performance metric); tonnes of waste recycled; renewable energy production (in MWh); or private financing leverage at project and UDF levels. Non-financial indicators could also include ease and transparency of funding application process, speed of investment approvals, and adequacy of feedback to unsuccessful applicants. If there is reliable data for such metrics noted here, it may be deemed appropriate to use them to assess the performance of the UDFs and thus incentivise the fund managers accordingly.

²³ John Reidy, Director, Alternative Investments Client & Sales Management, Citi Securities and Fund Services. Citi. The credit fund opportunity: How are fund managers navigating the new non-bank lending landscape in Europe? August 2013.

²⁴ CoStarfinance blog, <http://www.costarfinance.com/anyblogname>, accessed on 28 August 2012.

²⁵ Data from the EIB.

5.4 Key findings

The financial rates of return on each investment should reflect its relative risk. This will increase options for matched funding at LGF level (from GIB) and UDF level (from GIB or institutional investors). The faster that capital can be returned through the structure to the LGF, the faster that this capital can be redeployed in other investment-appropriate emissions lowering projects.

Consultations indicate that fund managers are confident of achieving and exceeding the levels of leverage achieved in the first programming period, for the 2014-2020 programming period.

6 State Aid

6.1 Potential State Aid issues

There is a need to consider State Aid issues arising from proposals for any changes to the investment strategy. The operations of the funds need to be in compliance with Article 107 of the Treaty of the Functioning of the European Union (TFEU) on State Aid rules.

State Aid, as defined in the TFEU, arises where government resources are used to selectively support undertakings which then result in a distortion to competition and an impact on trade between Member States. In general, State Aid is not permitted under the TFEU but some aid measures may nevertheless be approved by the European Commission under specific circumstances.

State Aid should not be an issue where:

- The holding fund acts as a vehicle for the transfer of funds to UDFs and ultimately projects;
- Investments are made at market rates based on the MEIP
- The remuneration of fund managers at market rates; and
- A competitive and open tendering for selection of managers and management companies is in place.

Investments

The key test to assess whether State Aid exists is the Market Economy Investor Principle (MEIP). The essence of the MEIP is that when a public authority invests in an enterprise on terms and in conditions which would be acceptable to a private investor operating under normal market economy conditions, the investment is not State Aid. Therefore, if an intervention is under equivalent terms to that which a private sector investor would have applied, then there is no 'selective' support being provided and no distortion of competition.

A typical approach to an MEIP test is to assess the prospective investment returns and benchmark those with the returns of similar or equivalent arrangements in a competitive market. Assessing whether the proposed structure of funding is consistent with the MEIP will require an analysis of the value of the remuneration of investors under the proposed approach to establish whether the expected returns are in line with those in a competitive market.

Throughout consultations, although it has been seen as potentially helpful to projects, subsidised finance on its own has not typically been seen as a major requirement for projects. The waste UDF experience has been that investing *pari passu* with commercial lenders/investors has been helpful in terms of meeting a financing gap. Rather, the requirements in the green infrastructure sector have focussed on (i) the educational aspects of market development, (ii) the need for technical assistance for the development of projects up to the point of being financeable, and (iii) the provision of liquidity (at *pari passu* market rates). As a result, it is not expected that State Aid will be a significant issue from a subsidised finance/preferential remuneration point of view.

If the market changes sufficiently such that preferential remuneration is required, State Aid may become more of an issue for LGF. Further, if private sector projects are targeted with more affordable finance, again State Aid will have to be considered in more depth.

If a UDF is set up to provide relatively novel products such as development finance or credit-insurance and cannot achieve private sector matched funding, then demonstrating that these investments meet the MEIP may be more challenging. Such a strategy would require the fund manager to develop some evidence, via benchmarking or otherwise, that these products are provided under MEIP.

Fund manager remuneration

UDF Fund Managers receiving management fees for their services have the potential to be State Aid recipients and as such the basis on which they are remunerated must be compliant with State Aid rules.

For UDF managers, should remuneration for development activities be deemed appropriate, consideration will have to be given regarding the pricing of such a regime. If a UDF manager is procured through a competitive tender process in line with the requirements of Directive 2004/18, the management fees paid to the UDF manager are normally considered to comply with State Aid regulations (as the tender process will operate to as a benchmark in terms of the market rate of remuneration). Therefore, running such a process should be considered to appoint UDF managers for the next programming period.

The Commission Risk Capital Guidelines state that: “there is a presumption of no aid if the managers or management company are chosen through an open and transparent public tender procedure or if they do not receive any other advantages granted by the State.”²⁶

6.2 Key findings

Throughout consultations, although it has been seen as potentially helpful to projects, subsidised finance on its own has not typically been seen as a major requirement for projects. The waste UDF experience has been that investing *pari passu* with commercial lenders/investors has been helpful in terms of meeting a financing gap. Rather, the requirements in the green infrastructure sector have focussed on (i) the educational aspects of market development, (ii) the need for technical assistance for the development of projects up to the point of being financeable, and (iii) the provision of liquidity (at *pari passu* market rates). As a result, it is not expected that State Aid will be a significant issue from a subsidised finance/preferential remuneration point of view.

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²⁶ EC and EIB. JESSICA UDF Handbook, Horizontal Study, Final Report. July 2012.

7 Recommendations

7.1 Target Market

Findings indicate that there is demand in both the public sector with regard to energy efficiency and the private sector with regard to waste projects. However, consideration should also be given as to whether other target recipients should also be targeted – for example, the private sector energy efficiency market.

The consideration of demand within each sector indicated an addressable future demand in all of the sectors that are currently considered in the LGF. It seems sensible therefore to maintain a focus on these sectors.

Ultimately, any project which offers an appropriately high level of emissions-lowering or waste management benefits will assist in meeting the strategic objectives for London and, if in a sector exhibiting market failure, will also meet the objectives of the LGF. As a result, sector impartiality, within the EU rules, may be appropriate in order to most appropriately deliver the objectives. This will help ensure that demand is met by appropriate projects in a timely fashion. The LGF should consider its current investment strategy boundaries and consider the inclusion of additional sectors such as the ones listed above.

Consultations suggested that the financial instruments used in the first programming period would likely continue to be appropriate for the next programming period given that they have proven deployable to date and stakeholders did not feel that market conditions had changed significantly. We would also recommend that the LGF further considers additional instruments as well. Unless there is a requirement to artificially restrict the types of financial instrument that can be offered, fund managers and project developers should consider the most appropriate instrument for each specific situation and decisions regarding instruments should be made on a project-by-project basis. New products such as development capital and guarantees/underwriting products are two such instruments that could prove useful in the 2014-2020 programming period.

7.2 Delivery Mechanisms

Our consultations with stakeholders noted that waste projects were distinct from projects in other sectors due to the idiosyncrasies of the sector including number of stakeholders and issues with sites and development and the role of LWARB in providing debt finance to this sector. These factors, together with the ability to ring-fence investment funds for waste projects (therefore enabling streaming of any co-investment from LWARB) mean that a separate waste sector UDF may work best for the LGF.

Debt and equity are seen by stakeholders as fundamentally different products with conflicts of interest. Where the LGF wishes to invest both products via a particular UDF, conflict mitigation is possible through appropriate governance structures or management arrangements such as:

- Precluding fund managers from investing in both equity and debt in the same project;
- Additional investment committee oversight/approvals on projects with both debt and equity investment; and
- Requirement for pari passu investment from private sector thus applying an appropriate higher level of discipline; investment from private sector at pari passu will assist in avoiding queries regarding State Aid.

The LGF should consider whether development finance is also beneficial to meeting its objectives, as stakeholders identified a potential gap in the provision of financial assistance (as opposed to technical) during the project development phase.

There are also potential benefits from increased co-ordination between GLA/London Boroughs, GIB and EIB (as well as others) to collaborate in market development activities and development of investment pipeline.

7.3 Management Arrangements

One of the key factors in determining the direction and performance of the LGF will be ensuring effective incentivisation of managers to achieve outcomes. For example, in order to encourage project development activities, the provision of additional incentives along the investment route could be suitable. At the moment the fund managers effectively underwrite abortive costs and there is a significant amount of work for the fund managers in project development before the point of investment. Consultations suggested that there should be an interim point whereby the client (the final recipient of the financial instrument) has demonstrated a commitment to the project, and fund managers should receive remuneration in respect of the effort expended to get the project to that point. This could be via an agreed fixed fee per deal, a percentage of funds committed, or on a “cost plus” or day rates basis. This feedback from fund managers, and potential solution should be considered.

7.4 State Aid

Throughout consultations, although it has been seen as potentially helpful to projects, subsidised finance on its own has not typically been seen as a major requirement for projects. The waste UDF experience has been that investing *pari passu* with commercial lenders/investors has been helpful in terms of meeting a financing gap. Rather, the requirements in the green infrastructure sector have focussed on (i) the educational aspects of market development, (ii) the need for technical assistance for the development of projects up to the point of being financeable, and (iii) the provision of liquidity (at *pari passu* market rates). As a result, it is not expected that State Aid will be a significant issue from a subsidised finance/preferential remuneration point of view.

If the market changes sufficiently such that preferential remuneration is required, State Aid may become more of an issue for LGF. Further, if private sector projects are targeted with more affordable finance, again State Aid will have to be considered in more depth.

For UDF managers, should remuneration for development activities be deemed appropriate, consideration will have to be given regarding the pricing of such a regime. If a UDF manager is procured through a competitive tender process in line with the requirements of Directive 2004/18, the management fees paid to the UDF manager are normally considered to comply with State Aid regulations. Therefore, running such a process should be considered to appoint UDF managers for the next programming period.

Appendix 1: Workshop Stakeholders

Stakeholder Participants	Company
Jenny Curtis	Amber
Will Church	CBRE
Frank Lee Emily Smith	European Investment Bank
Sion Jones	Equitix
Sarah Cole Mark Burrows	Foresight
Malcolm Ball	Green Investment Bank
Kenroy Quellennec-Reid	Greater London Authority
Jamie Mehmood	RBS
Jonathan Maxwell	Sustainable Development Capital LLP
Gareth Francis	The Housing Finance Corporation

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Delivery Arrangements for the Energy Efficiency Fund

1. Introduction

- 1.1 During the 2007-2013 programming period, London established the London Green Fund (LGF) under the “JESSICA” initiative. JESSICA enabled ESIF and match funding to be invested through Urban Development Funds (UDFs) in projects via loans, equity and/or guarantees. Returns from these investments could then be used to make further investment in new projects, thereby creating a revolving investment fund for Greater London.
- 1.2 LGF was established by the London Development Agency and the London Waste and Recycling Board in 2009 with an initial capitalisation of GBP 100m. The LGF procured and contracted three Urban Development Funds (UDFs) to operate in the Greater London region: Foresight Environmental Fund, London Energy Efficiency Fund (LEEF) and the Greener Social Housing Fund. The funds have performed well in terms of project commitment and disbursement targets.
- 1.3 Deloitte was appointed to undertake a strategic review of the London Green Fund and provide advice on the activities for the 2014-2020 period. Specifically, the review aimed to determine the future market demand for funding, the nature of the required funding in terms of sector, geography and product type, and to identify potential delivery structures. The reports from Deloitte, along with this document, is the *ex-ante* assessment that is required to inform the establishment of new low carbon financial instruments during the 2014-2020 period.
- 1.4 The new low carbon fund will not be deployed using a “fund of funds” structure like the LGF. Instead, the GLA will contract directly with the financial intermediary. This document therefore sets out the overall approach to the establishment of a “stand-alone” fund, rather than a proposed investment strategy for a new fund of funds structure.

2. London’s overall ESIF strategy and objectives

- 2.1 London has been allocated almost €750m of ESIF funding for 2014-2020. The 2014-2020 ESIF Strategy for London¹ (the ESIF Strategy) lists the ESIF priorities as:
 - Skills and employment to ensure Londoners have the skills to gain sustainable jobs;
 - Enhancing the competitiveness of London’s small and medium sized enterprises (SMEs) to support SMEs to innovate and grow;
 - Strengthening science and technological development and fostering innovation in London enterprises to help realise the potential of the capital’s world class business sectors that drive innovation and growth;

¹ <https://lep.london/publication/european-funding-strategy-2014-20>

- Investing in London’s infrastructure to help ensure the capital has the underpinning technological, business and low carbon infrastructure to generate growth.

The ESIF Strategy highlights the importance of low carbon infrastructure. The Operational Programme for England facilitates the use of financial instruments under Priority Four – “Preserving and protecting the environment and promoting resource efficiency”, as well as Priority Six – “Supporting a shift towards a low carbon economy in all sectors”. The London ESIF Strategy also states that financial instruments will be used where the potential for leveraging private investment or making cost savings is significant, and provides indicative activities for ERDF investment:

- Develop “whole place” low carbon initiatives;
- Support the development of energy and water efficiency retrofit activity;
- Invest in the development of high-efficiency, low carbon co-generation district heat and power networks;
- Support the establishment of sustainable infrastructure for waste management;
- Provide project development funding;
- Develop green infrastructure and other climate change adaptation activities; and
- Low carbon modal shift/smarter choices.

3. Investment priorities

3.1 The 2014-20 ESIF Strategy for London, combined with other LEP priorities and the review undertaken by Deloitte, have been translated into the following indicative areas for intervention using financial instruments:

(i) Decentralised energy systems (DE)

- District Heating
- Wind
- Ground/Water sourced heat
- Solar PV

(ii) Energy Efficiency (EE)

- Insulation of the building envelope:
 - Insulation materials and measures
 - Windows and doors
 - Other building related measures which impact on thermal performance
- Building Systems:
 - Space heating – generation, storage, distribution and emitters
 - Domestic hot water – generation, storage, distribution and emitters
 - Ventilation systems – generation, recovery and distribution
- Cooling: Passive or inactive cooling measures (or a combination of both)
- Lighting – light sources and luminaries and associated control systems, including applications to increase the use of daylight

- Building Automation and Controls
- Connection to energy supplies (grid or storage) – first connection to the energy network

(iii) Waste infrastructure

- Biomass
- Energy from waste
- Recycling
- Waste management

3.2 Investment should be targeted at projects which have a clear commercial rationale, but due to market failures are difficult to finance through traditional commercial financing. The Deloitte review identified market failures across three broad areas: financial; structural and market barriers; and information. These market failures often mean that projects cannot withstand the financing terms offered (if indeed they are available) by private sector investors.

3.3 Projects do not necessarily need to be within the borders of Greater London, but any projects financed should clearly benefit London. Where projects are located outside Greater London, clear contractual benefits to London’s economy should therefore be demonstrated.

4. Implementation options and financial instrument structures

4.1 The review undertaken by Deloitte considered implementation options based on either product or sector focus. A key finding was that debt and equity were considered as fundamentally different products. The possibility of mitigating conflicts of interest by having separate debt and equity financial instruments was also considered. With the exception of the waste sector, the scale of overall funding was considered insufficient to warrant a separate equity fund, as at least two existing equity investment funds for energy efficiency investment funded by the Green Investment Bank and European Investment Bank (EIB) already exist.

4.2 Nevertheless, feedback from fund managers was that it would be useful to have the flexibility to make equity or equity-type investment alongside - or prior to - debt investment particularly in special purpose vehicles or ESCOs supporting “off balance sheet” financing structures for public sector project promoters. Appropriate ring-fencing, governance structures and different management fee arrangements might therefore be required to mitigate, amongst other things, conflicts of interest between debt and equity investment within the same fund.

4.3 A sector split was further considered to ensure that potential demand from the relevant sector will be best met. In this respect, waste projects are considered distinctly different from projects in other sectors due to the characteristics of the sector, including nature of stakeholders, potential match funding contributions, issues with site selection, development and existing London-focussed finance vehicles.

4.4 A separate fund for the waste sector and one for the “non-waste” environmental sectors (i.e. energy efficiency (EE) and decentralised energy (DE)) was therefore considered most appropriate given the current circumstances.

Energy Efficiency fund

- 4.5 Around £43m ERDF from priority axis 4 will be available for investment, via a new fund, in EE and DE activities as listed in section 3.1. The EIB has agreed to commit up to £100m of senior debt financing to the new fund, subject to its own due diligence. Additional funding from other investors (including banks and other institutions), and/or project promoters of at least £260m will be secured by the manager of the new fund, at fund and/or project level.
- 4.6 Besides the investment of the 2014-2020 ESIF, returns from existing investments are also expected to flow back into LGF and could be used to make further investments in the new fund.
- 4.7 The work undertaken by Deloitte indicated that a wide scope of instruments would be helpful in bringing projects to fruition. It is therefore proposed that the energy efficiency financial intermediary, in particular, is able to provide the following forms of finance:
- Senior debt
 - Mezzanine debt
 - Equity
 - Development capital
- 4.8 The energy efficiency fund will primarily seek to provide loans public or private sector entities. In addition, at least 10% of the fund may be invested as equity, or equity type, in final beneficiaries such as special purpose vehicles (SPVs) and energy service companies (ESCOs).
- 4.9 Diversification provisions will also apply. The fund is expected to support up to 30 projects with investments averaging between £5m to £10m. Projects are expected to be classified, according to their risk profile, into three categories (low, medium and high) with a cap to be agreed. This will be further developed as part of the procurement process.
- 4.10 Investment will not be permitted in project activities that represent a wholly statutory duty on public bodies, nor will investment be permitted where it involves the creation of further financial instruments such as venture capital, loan and guarantee funds. Investment must always finance the development, construction and/or operation of assets.
- 4.11 Given the relatively wide risk spectrum proposed, and in order to attract a relatively large EIB co-financing loan whilst still addressing market failure by providing affordable financing to public (and regulated) final recipients, it is likely that all or part of the ESIF funds will be required to act as subordinated or equity investment into the energy efficiency fund.
- 4.12 It is recognised that the project development timetable of EE and DE projects differ, with DE projects often having much longer lead in times of between 3 and 7 years. In acknowledging the time limited nature of the ESIF funds available, the output profile will need to be developed to ensure that the long development timetables of DE projects are appropriately taken into account.

Waste Fund

- 4.13 The London Waste and Recycling Board (LWARB) is expected to contribute £7m to any new waste fund, which will be treated as national co-financing for up to £7m of ERDF. It was originally intended that a waste fund would invest in the waste infrastructure activities listed in

section 3.1; and that this would be primarily invested by way of equity, recognising the role of other debt providers in this sector, including LWARB themselves.

- 4.14 However, following discussions of the *ex ante* Steering Group, it was decided that the activities to be supported should be widened to include the circular economy. This was in recognition of recent work completed by LWARB and increasing policy interest in the area. To that end, a supplementary *ex ante* assessment was commissioned. PwC was selected to carry out this assessment, with a view to examine the market failure and finance gaps facing businesses in the circular economy (CE) and how this could be addressed through repayable finance.
- 4.15 One of the recommendations from the CE *ex ante* assessment was that any waste fund would be better placed under the ERDF SME fund, which was separately being developed. The waste fund is therefore being developed as a component of the SME fund.

5. Role of technical assistance/support

- 5.1 The review of the existing LGF points to a complex environment, in which there is a continuous need for support in the development and operation of green infrastructure financing markets. Technical assistance/support for development of projects up to the point of being ‘financeable’ is expected to help further develop the market demand and increase the number of suitable projects for financial instrument investment.
- 5.2 The existing GLA Project Implementation Units (PIUs) – REFIT; RENEW and DEPDU - are expected to continue to operate, with the objective to also provide technical assistance/support to potential future beneficiaries of the financial instruments. Interest returns on the GLA’s proportion of the LGF will be used to fund part of the costs of these PIUs going forward.
- 5.3 The regulations on the use of ESIF resources stipulate that technical support grants may also be combined with a financial instrument in a “single operation” (i.e. through the same financial instrument), provided that it is directly related to the relevant financial instrument (i.e. that they target the same final recipients). In addition to, and to complement, the assistance provided by the PIUs mentioned above, it is recommended that the energy efficiency fund manager should also be allowed to invest a small proportion of LGF returns as development capital, to support the business case development of projects which are not yet investment ready.
- 5.4 This additional resources from the LGF would be for those items of project preparation and implementation not currently provided by the PIUs and this funding would be provided on a primarily, if not fully, recoverable basis and would only be intended to be utilised on projects that were likely to come forward for financing from the fund. In this respect, the provision of development capital should assist and accelerate the project structuring and due diligence process, and will complement the activities of the PIUs.

6. Governance and overall management structure

- 6.1 Following the conclusion of a competitive procurement exercise, the GLA will contract directly with the successful financial intermediary that will establish and invest the capital of the new fund. GLA will monitor the progress and performance of the financial intermediary going forward, with assistance from EIB where appropriate.

Monitoring Committee

- 6.2 A Monitoring Committee will be established to advise the GLA, in its role as Intermediate Body, on the performance of the financial intermediary against the objectives of the Investment Strategy, including non-financial returns; commitment and deployment milestones. Membership of the committee will include independent expert members who will be procured by the GLA. Members may be drawn from the London ESIF Committee.

Financial Intermediary

- 6.3 The key roles for the fund manager will broadly be to:
- Establish and develop the project pipeline;
 - Invest in and lead the negotiation and structuring of financial deals in eligible and viable projects which fit within its investment strategy;
 - Monitor compliance and risk in accordance with EU rules;
 - Secure match funding and/or leverage where appropriate
 - Manage the portfolio of project investments to ensure the achievement of expenditure, output and financial return targets;
 - Recommend and manage appropriate exit strategies from project investments;
 - Perform fund administration tasks, including all relevant ESIF reporting requirements.
- 6.4 The terms and conditions for investment in financial intermediary by GLA will be negotiated under specific ERDF and commercial agreements. This will include, among other things, the business plan, the financial intermediary's investment strategy, monitoring of implementation, exit policy and winding up provisions. These agreements will also oblige the fund managers to comply with relevant ESIF Regulations, state aid rules and the objectives of the ESIF 2014-2020 Operational Programme.

Advisory Committee

- 6.5 In addition to the monitoring committee mentioned above, it is common practice to establish an advisory committee that which allows all investors to represent their views, approve key strategic decisions, and have visibility of ongoing fund issues and performance. It may also allow access to specialist independent advice and secure stakeholder buy-in. Advisory Committee normally carry out roles such as:
- approval of key amendments to the Investment Strategy or other applicable guidelines;
 - approvals for Projects that are outside of or other exceptions to the Investment Strategy;
 - approval of key policy documents;
 - where relevant, approvals for costs above certain thresholds;
 - appointment of a new or replacement key executive;
 - a change to the auditors; and,
 - consultation on actual or perceived conflicts of interest.

7. Final recipients

- 7.1 The new fund will primarily provide loans to final recipients including local public sector entities such as the local authorities, hospitals, higher education institutions, housing associations, other not-for-profit organisations and other public or private sector entities. In addition, a maximum of 10% of the Fund will be invested as equity in final beneficiaries such as special purpose vehicles (SPVs) and energy service companies (ESCOs).
- 7.2 Investment in projects will be required to be undertaken in accordance with national and EU rules including those related to state aid. This will be further developed but is likely to include, for example, *pari passu* requirements for equity investments, utilising the EC Reference Rate Methodology or the new energy efficiency provisions outlined in the General Block Exemption Regulation.
- 7.3 Investment will not be permitted in project activities that represent a wholly statutory duty on public bodies. Investment must always finance the development, construction and/or operation of assets or the provision of development capital to facilitate pipeline development.

8. Envisaged combination with grant support

- 8.1 There is currently no envisaged combination with grant support, other than technical assistance/support as outlined in Section 5 above.

9. Output targets

- 9.1 Below are the Output Targets expected from the financial intermediary investments in projects.

Indicator - ID	Indicator - Description	Output Target
C1	Number of enterprises receiving support	30
C7	Additional funding secured by the Fund Manager at Fund and/or Project level	£260m (at least 60% from private sources)
C30	Additional capacity of renewable energy	17 MW
C34	Estimated annual decrease of GHG	36,746 Tonnes of CO ₂ eq
C31	Number of households with improved energy consumption	774
C32	Decrease of annual primary energy consumption of public buildings	747,190 kWh/year

10. Provisions for Update

10.1 As market conditions and investment trends may evolve before and during the implementation phase of the energy efficiency fund, Article 37 (2) (g) CPR requires that the *ex-ante* assessment includes provisions for its revision and update.

10.2 Possible indicators to trigger an update include:

- Significant anticipated variances between the proposed targets and observed and forecast results;
- Demand – both in terms of inadequate volume of the financing to meet the observed demand, or lower demand than anticipated;
- Miscalculation of the risk to be taken by the fund: A situation may occur where the risk profile of the fund is significantly higher than expected, leading the fund to incur significant losses and thereby compromising its revolving nature; or
- Material change to the economic conditions and funding supply.

10.3 The need for update and review of the *ex-ante* assessment could be signalled through regular reporting/monitoring of the fund or through ad hoc or planned evaluations (e.g. ongoing evaluations).

10.4 The GLA plans to monitor performance against financial and non-financial targets on a quarterly basis, and the fund will be required to submit a suite of management information to demonstrating how it is performing. This will enable the GLA to assess cumulative performance.

10.5 In addition, at mid-point, and in conjunction with other financial instruments where appropriate, the GLA will assess the fund and the *ex-ante* assessment may be reviewed for ongoing relevance. The precise timing of this mid-point review will be determined at a later stage, but the GLA anticipates it will take place during years 2 or 3 of the fund.

September 2017