



Financing Green Initiatives

A Local Authority User's Guide

www.claspinfo.org

October 2011



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1. Foreword

Local authorities now have increased financial and economic incentives to develop energy saving and renewables schemes that will make and save money. There is currently great pressure on authorities' finances as a result of the reductions in public sector spending and the rising costs of energy. These pressures, combined with the desire to address the global issue of climate change, are making more authorities, together with partners from both the public and private sectors, explore ways of working together to undertake projects which will generate both an economic and an environmental return for themselves and their communities.

The opportunity is already being taken by many authorities up and down the Country, including:

- Bristol City Council for example has £14m investment programme delivering £25m of savings over 20 years
- Stroud District Council has won the 2010 Green Energy Award for being the South West's Most Proactive local authority, at the South West Green Energy Awards
- Birmingham City Council has contracted for a city centre Combined Heat and Power plant saving participating organisations and businesses £130,000 per annum

To develop these projects a wide range of different models and mechanisms are available to local authorities utilising money drawn from many different sources. As part of CLASP's Climate Change Skills Fund Programme KPMG were commissioned by NWIEP to undertake the Green Finance Project and provide support to local authorities to help deliver these schemes. Our *Guide to Green Financing* in [Section 3](#) of the report takes you through the step-by-step process to develop a project from inception to delivery by looking at:

- Developing business cases;
- Explaining the project lifecycle;
- Identifying the different structures that can be used for individual projects; and
- Demonstrating the range of different sources of finance available for these projects.

Throughout this guidance the key messages are clear. Local authorities are in a unique position to lead, facilitate and exploit this opportunity. There are a range of different options available to each local authority which will allow projects to be developed taking account of the level of finance you wish to invest in a project and the risk you are prepared to accept in undertaking the project – nothing is impossible. Whatever approach you take, it is possible for the local authority to make a financial return on projects.

Finally, we show some examples of how these principles have been put into action by local authorities within the North West, with a series of pilot studies exploring a range of projects including the installation of solar panels, community heating schemes, energy efficiency and even a low carbon investment unit to promote the development of other green projects.

Enjoy the guide, and if you have any questions, please contact our team – our details are given in [Appendix 4](#).



Jon Gorrie
Director, KPMG LLP

2. About the Green Finance Project

2.1 Introduction

The business case for renewable energy generation has been significantly bolstered by government policy initiatives including the introduction of Feed-in-Tariffs (FITs), Renewable Heat Incentive (RHI) and removing the restriction on local authorities selling electricity to the grid. This means local authorities now have financial and economic incentives to develop schemes that will make and save money.

At the same time local authorities have the opportunity to deliver benefits in terms of jobs, business growth and community engagement as well as saving energy and reducing carbon. The Green Deal is already opening up potential for further large scale investment opportunities. Local authorities are in a unique position to lead, facilitate and exploit this opportunity. Taking renewable generation and energy efficiency projects together represents a very exciting opportunity with a potential capital value of many billions of pounds.

While ideas for renewable and low carbon projects are rarely difficult to come by, working up viable schemes and funding them is much more difficult. Just making your way through local, national and European grant and funding applications can be complicated and time consuming.

But help is at hand. As part of CLASP's Climate Change Skills Fund Programme KPMG were commissioned by NWIEP to undertake the Green Finance Project and provide support to local authorities to help deliver these schemes. This document summarises the outcomes of the project and provides a 'Green Finance Guide' to practitioners across authorities, whether from finance, sustainability or estates backgrounds. CLASP is the climate change support programme for North West local authorities and Local Strategic Partnerships.

The following considerations are discussed in further detail below:

- [Who is this report for?](#)
- [What are the main lessons that came out of the work?](#)
- [Aims of the Green Finance Project](#)
- [What has the project involved?](#)
- [The opportunity and context](#)
- [Climate change and energy](#)
- [Government policy response](#)
- [The local authority opportunity](#)

2.2 Who is this report for?

The 'Foreword' and this 'Introduction' are aimed at a wide audience including chief executives, members and other decision makers.

The detailed 'Green Finance Guide' is aimed at practitioners throughout local authorities who want to understand the subject better and need guidance to help them take schemes forward, whether they are from finance, sustainability or estates backgrounds.

2.3 What are the main lessons that came out of the work?

There are a number of key learning points for local authorities that have arisen from our pilot studies. These include:

- Support from senior decision makers – elected members and senior officers need to be engaged with both specific projects and the framework in which they are being created. Local authorities who have succeeded in gaining this buy-in have found it much easier to gain support for more and larger projects.
- Different investment approaches – local authorities can participate in these projects in a range of different ways from just leasing land to a developer to planning, building and then managing a project in its entirety. Each approach requires a different level of finance, but a low level involvement in one project can create the confidence and generate the funding required to invest and be more involved in the next project.
- Projects need to create a return – to attract private sector finance a project needs to have a return that can be monetarised. Without this clear cash flow from a project, there are no funds available to repay the capital investment, be that a loan or equity finance. However, projects with a monetary return can be included in a portfolio with others that do not have a return and finance sought for the whole portfolio.

2.4 Aims of the Green Finance Project

Across the UK, local authorities are developing their own low carbon delivery plans. It's all down to the ambitious carbon reduction targets set out by the Government to reduce carbon emissions by a minimum of 80% by 2050.

This low carbon agenda is an exciting opportunity for local authorities as projects can generate a new revenue stream, create local jobs and meet key objectives. While ideas for renewable and low carbon projects are rarely difficult to come by, finding the finance for them can prove to be problematic. Making your way through local, national and European grant and funding applications can be complicated and time consuming.

The Green Finance Project was set up to assist local authorities develop thinking and assess the various delivery structures that may be adopted to progress their low carbon delivery plans.

2.5 What has the project involved?

The support took the form of advice and support to specific pilot projects, covering all of the Local Enterprise Partnership areas of the North West, and seminars to provide an insight into the pilot projects and provide an introduction to green finance issues.

The specific pilot projects involved workshops with six project teams to help them develop robust green finance models and approaches for renewable and low carbon energy schemes, and working with each team to explore how the options might be taken forward.

The pilot projects were:

- Cheshire and Warrington – solar PV installations
- Cumbria – low carbon transport
- Greater Manchester – Low Carbon Investment Unit
- Lancashire – two projects: solar PV and renewable heat supplies

- Merseyside –district heating scheme

Details of each pilot project are set out in [Section 4](#).

Seminars were held to provide an insight into the pilot study work and provide an introduction to green finance issues covering:

- The types of financing available and the structures that can be used to access these
- Barriers to developing projects, and how these can be overcome
- A summary of pilot projects undertaken to understand how green financing works in practice
- Sharing plans for invest to save schemes from participants' authorities and discussion of practical next steps to take projects forward

Three seminars were held across the North West (Liverpool, Manchester and Preston) in May and June 2011.

The remainder of this introduction covers the background and context to the low carbon opportunity, setting the scene for the Green Finance Guide and detailed pilot studies which follow.

2.6 The opportunity and context

Putting the low carbon opportunity in context for North West local authorities involves a journey from the global to the local. The North West may only be a small part of the world but there is a big potential opportunity in the region. The aim of this section is demonstrate what the opportunity is for local authorities in the North West through a summary of:

- The global drivers - climate change and energy prices
- The national Government response
- The local authority opportunity.

2.7 Climate change and energy

As energy prices and global average temperature continues to rise. Carbon reduction and climate change are increasingly seen as both a business risk and an opportunity by companies, governments and organisations of many different types. Capitalising on the economic opportunities of the emerging low carbon economy, and seeking to minimise cost and disruption, are providing a driver for reducing carbon emissions.

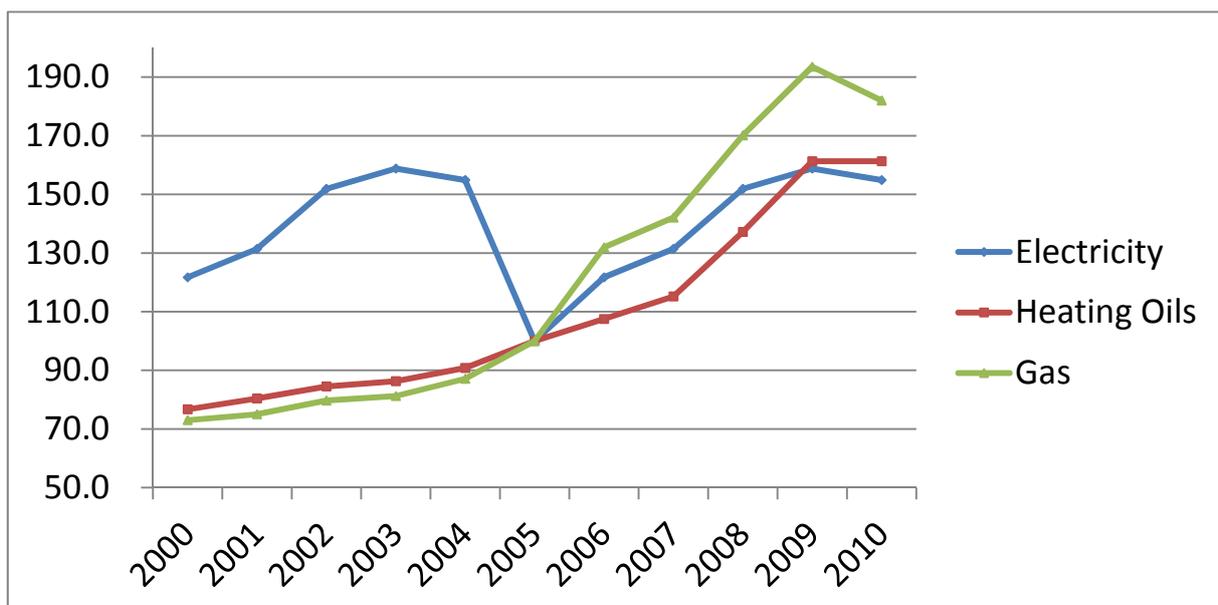
For local authorities, along with other UK organisations, this driver is given particular weight and expression by the Climate Change Act (2008). It created a legally binding target to reduce emissions of greenhouse gases (GHGs) to at least 80% below 1990 levels by 2050. Setting and meeting five-yearly carbon budgets for the UK during that period has become an ongoing process. The latest (fourth) carbon budget was set in June 2011.

Table 1: UK Carbon Budgets

UK Carbon Budgets	2008-12	2013-17	2018-22	2023-27
Reduction on 1990 levels	22%	28%	34%	50%

Rising energy prices are a key underpinning of the business case for low carbon investment. The figure below shows the trends in UK energy prices over the last 10 years.

Figure 1: Retail Price Index – Fuel Components



Source: DECC Quarterly Energy Prices, March 2011, Table 2.1.1

Increases in energy prices are expected to continue driven by massively increased demand and limitations in supply. For example:

- Forecasts are that by 2030, world primary energy demand will be 40% higher than in 2007
- Fossil fuels are expected to remain the dominant source for 77% of the demand increase. For oil, this is the equivalent of adding four Saudi Arabia's to production

Linked to rising energy prices is the issue of energy supply and security. Globally there is a huge focus on securing future energy supplies illustrated for example by the scramble for oil in the Arctic and parts of Africa.

Globally the consumer is likely to carry the burden in higher overall fuel and food prices.

The international response to these global challenges has been to focus effort on the shift to low carbon, climate resilient development paths. This includes scaling up the deployment of low carbon technologies and building confidence in long-term private investment in low carbon.

Investment in renewable infrastructure is increasing rapidly. In 2009, investments in renewables effectively doubled across the world. This is shown in the table below showing the investments in renewable across regions of the world in 2008/9.

Table 2: Global investment in renewables 2008/9

Investment in renewables	2008 (\$Bn)	2009 (\$Bn)
Asia-Pacific	59.5	161
North America	181	215
Europe	155.5	254

2.8 Government policy response

In the UK the government response is that both climate change and energy policy drivers mean there is an urgent case for action. For example in September 2010 Charles Hendry, Energy Minister made a speech about the future of UK energy:

'Our wind, biomass, wave and tidal resources makes us a natural world leader for renewable energy but Britain has not realised its own potential.

We need a higher level of ambition because there is a reservoir of opportunity that we are not taking advantage of.

In fact we are the third worst performer in the EU - but we have the resources - over 40 per cent of the EU's wind is in the UK, and we have the largest tidal resources in Europe.'

There is a wide range of policies in place and planned to support the Government's response. The recent Carbon Plan is a good summary. First published in March 2011, it is a Government wide plan for action on climate change. A link to the document is at: http://www.decc.gov.uk/en/content/cms/tackling/carbon_plan/carbon_plan.aspx

Policies are aimed at different sectors of the economy for example major energy generators (e.g. Renewable Obligation), energy suppliers (e.g. Electricity Market Reform). Some of the policies that particularly underpin the business case for low carbon and renewable energy investment by organisations like local authorities are set out in the table below:

Table 3: Government policies

Policy	Outline
FITs and RHIs	The Feed-In Tariff (FIT) was introduced in April 2010 to provide better support for small-scale renewable electricity. The Renewable Heat Incentive (RHI) will provide long term support for renewable heat technologies from next year.
EUETS/ CRC	The EU ETS is an EU wide cap and trade scheme covering electricity generation and the main energy-intensive industries covers 42% of emissions in the UK. The CRC, now just getting going, provides a financial incentive to reduce energy use by putting a price on carbon emissions.
Green Deal	A scheme being developed to enable private firms to offer consumers energy efficiency improvements to their homes, community spaces and businesses at no upfront cost, and recoup payments through a charge in instalments on the energy bill.

Other policies being developed such as the Green Investment bank may also support schemes developed by local authorities.

2.9 The local authority opportunity

The basic business case for renewable energy generation has been significantly bolstered by the government policy initiatives mentioned above including Feed-in-Tariffs (FITs), and the Renewable Heat Incentive (RHI) and removing the restriction on local authorities selling electricity to the grid. This means authorities now have financial and economic incentives to develop schemes that will make and save money.

At the same time local authorities have the opportunity to deliver benefits in terms of jobs, business growth and community engagement as well as saving energy and reducing carbon. The Green Deal is already opening up potential for further large scale investment opportunities. Local authorities are in a unique position to lead, facilitate and exploit this opportunity. Taking renewable generation and energy efficiency projects together represents a very exciting opportunity with a potential capital value of many billions of pounds.

The private sector already generates sufficient returns to make these projects viable. If structured correctly then the public sector can deliver these projects on their own or with the support of the private sector.

A study by the Northwest Climate Change Partnership funded by the Northwest Regional Development Agency (NWDA)¹ reveals how the five sub-regions of Cheshire, Cumbria, Greater Manchester, Merseyside and Lancashire have the potential to deliver a significant percentage of the nation's renewable energy targets, in line with the Renewable Energy Strategy, to generate 30% of electricity from renewable sources by 2020.

The opportunity is already being taken by many authorities up and down the country. Bristol City Council for example has £14m investment programme delivering £25m of savings over 20 years. The Council plans include biomass boilers in schools, modernising street lighting and improving council homes with energy efficiency and renewable energy improvements.

Stroud District Council has won the 2010 Green Energy Award for being the South West's Most Proactive local authority, at the South West Green Energy Awards. 'Stroud is an exemplar to all smaller local authorities.' The council was particularly noted for its three-year Climate Change Programme "Target 2050", which has helped over 180 householders, 66 businesses and 20 community buildings to reduce their CO2 emissions.

Birmingham City Council has contracted for a city centre Combined heat and Power plant saving participating organisations and businesses £130,000 per annum.

In the North West there are also many examples and as part of this project a number of schemes have been developed and these are detailed in the pilot studies in [Section 4](#).

¹ 'Assessment of Potential Carbon Savings Achievable in the North West Region by 2020', NWDA June 2010

3. Guide to Financing Green Projects

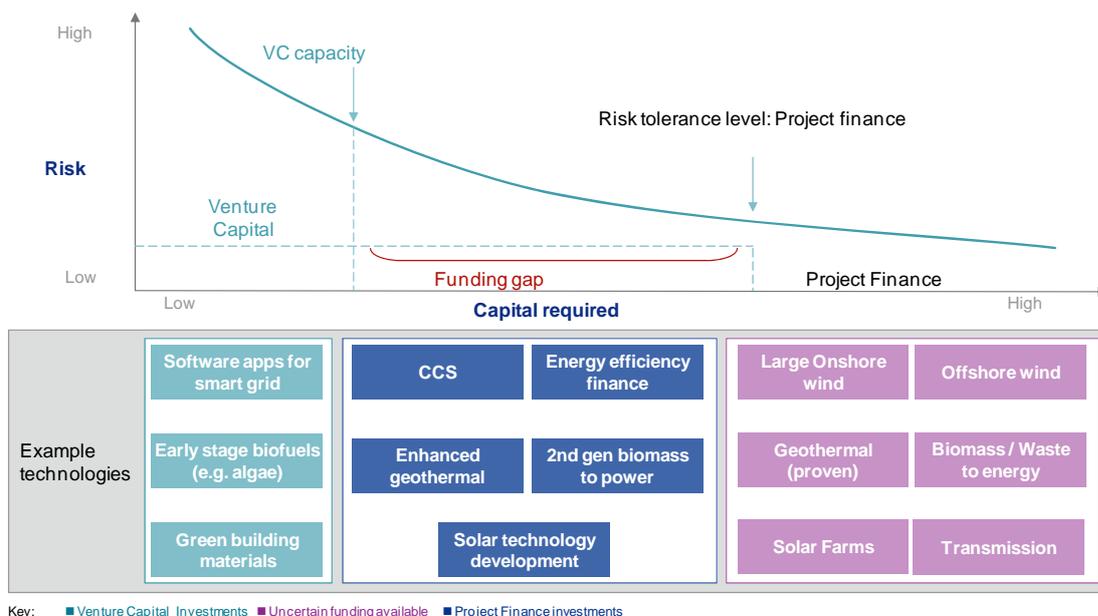
3.1 Introduction

There are a wide variety of “green projects” that could be developed by a local authority. The projects may be identified as part of a technical assessment or asset review or they could be identified by community groups or individuals that want to generate their own renewable energy. Once the idea has been generated then a decision needs to be taken about the viability of the project and ultimately how it is going to be financed. This section sets out a guide to financing green projects.

At the heart of any decision to progress with any project is the business case. The first sub-section of this paper sets out the main areas of the business case and what needs to be addressed for green projects. The subsequent sub-sections then set out the key areas of assessment that need to be undertaken to support the financial and commercial elements of the business case and the conclusions drawn from the business case.

There are various forms of finance that can be used to fund green projects. The finance that is available for specific projects will depend on the project structure, delivery model and the technology that is being used. The project structure and delivery model dictate the risk that is retained by the local authority through the lifecycle of the project. As technologies mature they present less risk to the project developer. The technology is a key element of the risk that is associated with a project. The forms of finance available are also impacted by the quantum of debt that is required. The figure below gives an indication of where some green technologies appear on the risk curve and forms of finance that can be used to construct projects.

Figure 2 – Low carbon technologies and sources of finance



It can be seen that a gap exists where no immediately identifiable form of finance is available to fund the project and where project structuring will be critical to creating the appropriate risk profile to make the project 'bankable' and, therefore, enable access to finance.

Another critical aspect of financing green projects is the ability to fund the development process. Revenues can be generated from green projects, however, these will not materialise until operational and the funding requirement prior to this point needs to be identified. This guide, therefore, details the process for creating a business case to support the decision to finance green projects.

There are a number of steps that need to be followed in order to complete the business case process, not all of which are addressed in this report. Figure 3 below shows some example steps that might need to be followed in order to take a project from inception through to construction and the stages of the business case process that the steps relate to. There will be a number of technical aspects of the project that also need to be undertaken during the different stages.

The source of the finance is crucial. However, there will be a range of options available and it is the process for choosing the most appropriate form of finance that is critical for a local authority. The guidance applies equally to energy efficiency projects as well as generation projects as both types of project face similar issues with accessing finance although there will be project specific issues to be considered.

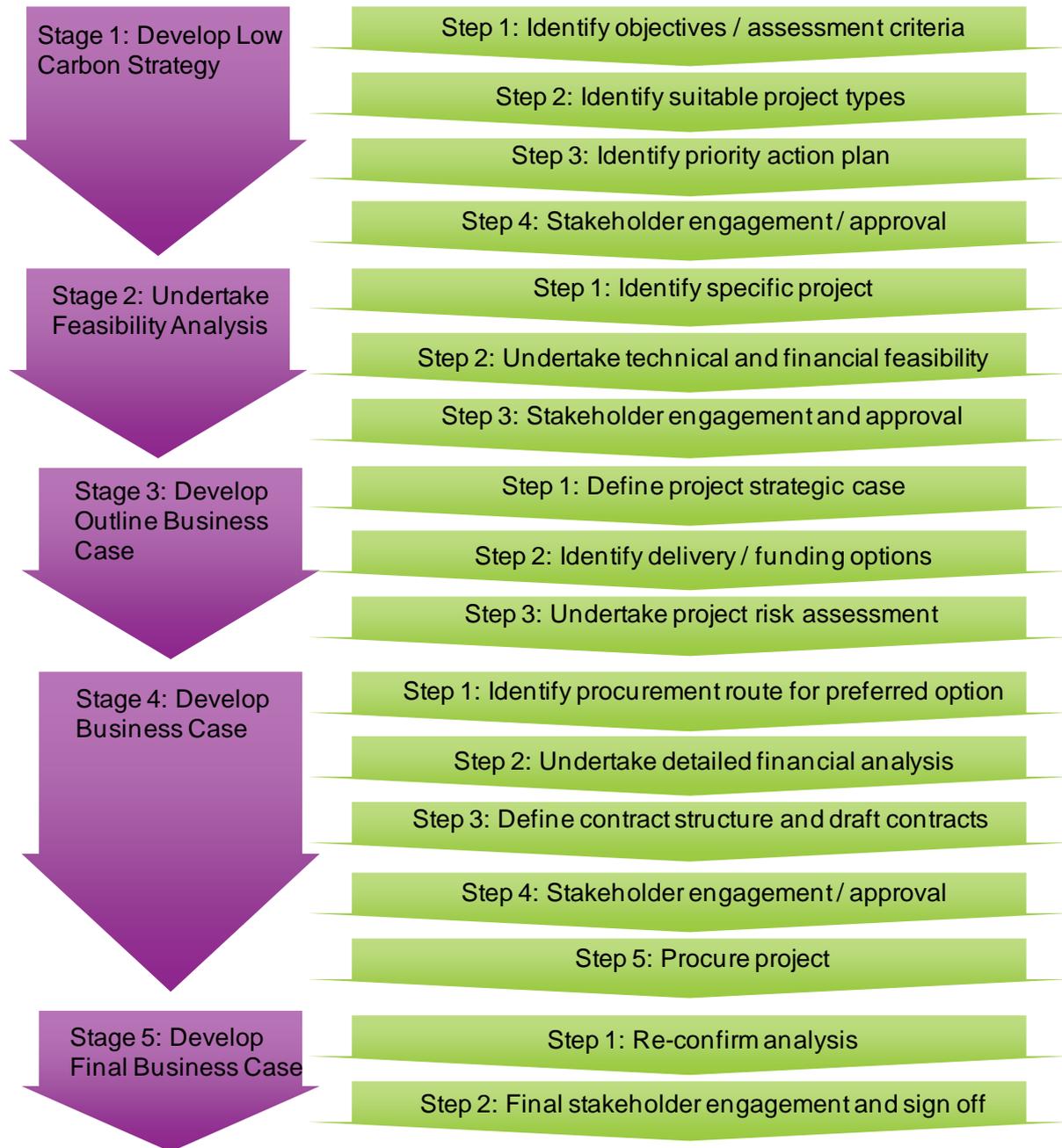
Given the above the guide is split out into the following sections:

- Business Case Guidance
- Project Lifecycle and Risks
- Project Structures
- Financing Options and Funding Considerations

Disclaimer

The information contained herein is of a general nature and is not intended to address the circumstances of any particular individual or entity. Although we endeavour to provide accurate and timely information, there can be no guarantee that such information is accurate as of the date it is received or that it will continue to be accurate in the future. No one should act on such information without appropriate professional advice after a thorough examination of the particular situation.

Figure 3 – Business Case Development Process



3.2 Business Case Guidance

3.2.1 Introduction

The business case will need to be developed in order to access finance, provide the support required to gain internal approval or even to apply for grant support for projects. There are a number of areas that therefore need consideration regardless of the financing option. The finance team are likely to need to agree to investment in both the development activity and the project and to understand the liabilities that are being placed on the local authority.

This section looks to summarise the guidance that is available and highlight those areas that are specific to green or renewable energy projects. Links to various guidance documents are included at the end of the section. The following considerations are discussed in further detail below:

- [The development process](#)
 - [Development of a low carbon strategy](#)
 - [Feasibility analysis](#)
 - [Outline business case](#)
 - [Business case](#)
 - [Final business case](#)
- [Key points for considerations](#)
- [Useful links.](#)

3.2.2 The development process

Local authorities have always been required to prepare business cases for projects undertaken. The same principles that have been adopted previously for business case development can equally be applied to renewable energy projects. However, the delivery mechanism for renewable energy projects is likely to be different and new approaches will need to be adopted. Projects looking to attract external investment will need to be 'bankable' and therefore offer both sufficient incentive for the private sector to want to invest in the project and have a suitable structure that will allow access to third party finance, where this is required. These will need to be explored as part of the business case.

The development process for a renewable energy project is also materially different to projects that local authorities are traditionally used to delivering. More detailed analysis may be required in advance of procuring the project to ensure that the project is viable.

Development of renewable projects can be complex and the risk associated with a project is linked to the type of project and not the capital value. For example, the same risks will likely apply to a 1MW wind farm as a 40MW wind farm and, therefore, the development cost may not be proportionate to the capital value. Economies of scale can therefore be achieved by developing larger projects. The financial risk associated with a project may, however, increase with the capital value and there will be a trade off between financial risk and economies of scale that needs to be considered.

Theoretically there is a number of projects that could be developed and would be economically viable, however, there are various site specific issues that may impact on the project viability that need to be understood such as the grid connection point, site conditions etc. There is also a very major risk that some projects, such as wind farms, hydro plants and biomass plants, fail to get planning permission resulting in the loss of development costs.

A business case can be prepared for a specific project, however, there may be additional steps required to determine those projects that are suitable for detailed development and equally what the objectives and assessment criteria should be that will allow the assessment of options. A means to prioritise the wide range of potential projects should also be developed to focus effort on the project providing the best overall outcomes.

Therefore, project viability should be assessed at each stage of the development process to limit the effort spent on unviable projects:

Figure 4: The development process



3.2.2.1 Low carbon strategy

A low carbon strategy can be developed to determine the types of low carbon projects that could be undertaken by a local authority. The strategy can prioritise types of projects that are more likely to get approval or could prioritise specific projects based on the objectives and drivers of the local authority. It can therefore serve to prioritise the investment of the local authority in those projects providing the greatest benefits.

The factors that are likely to drive the strategy will be based on local policy and political considerations. As with the objectives for specific projects, the drivers of the low carbon strategy will vary between local authorities and could include CO2 footprint reduction (and CRC); tackling fuel poverty; security of supply; job creation/green economy; and cost saving (and / or profit). It is worth noting that these agendas are at times complementary and at times contradictory.

The strategy can also be used to shortlist specific technologies that might be suitable for development in the area and be used to form the framework within which specific projects are developed. The strategy may also be used to identify the action plan for developing projects.

The development of a low carbon strategy has the additional benefits of providing a clearer policy for low carbon investment that can influence the private sector when deciding whether to invest in a specific geography. Where a local authority has already progressed their low carbon strategy they will need to ensure that their project accords with the overall objectives of the strategy.

3.2.2.2 Feasibility analysis

Prior to developing a detailed business case for a renewable energy project it is recommended that a feasibility study is undertaken, analysing the technical and economic feasibility of the project. This is necessary as projects can be highly influenced by the specific site on which they are located. For example, specific sites may not be suitable for planning reasons or excessive grid connection costs, due to location, may make the project uneconomic. Some examples of the key considerations in relation to the feasibility of a project are as follows:

- What is the local planning strategy and does it impede renewable energy generation projects?
- What are the environmental consents required and development cost?
- What is the cost of connecting the project to the local electricity distribution network and overcoming any related obstacles?
- What is the likely amount of electricity that can be generated (e.g. wind speed, capacity factor etc)?

This list is by no means exhaustive and the economic feasibility of a project is a key hurdle that needs to be addressed at an early stage of the process.

Examples of feasibility analysis that have been undertaken are available on the CLASP website resource library at www.claspinfo.org

3.2.2.3 Outline business case

Once the feasibility of a project has been determined an outline business case can be developed. The purpose of the outline business case is to set out the key elements of the project, the main options that could be feasible and should therefore be subject to more detailed analysis. The outline business case is not essential for the development of a project, however, the benefits are that it can be used to discuss the high level concepts of the project with those parties that will be required to approve the full business case prior to having done the detailed analysis. This helps educate the local authority and allows issues to be aired at an early stage of the process such that they can be addressed during detailed analysis. The sections of the outline business case should be similar to those of the full business case.

3.2.2.4 Business case

The business case is prepared to enable members and officers to endorse the necessary investment in a project and approach. It should provide all the necessary information about the specific project to enable a decision to be made.

Most local authorities will already have their own templates for an outline business case and this guidance will help to inform the completion of those templates. It is recommended that if your local authority has a business case template then this is utilised. However, this may not include all the elements below, so the guidance should be used to bolster your existing business case process.

The Treasury guidance notes refer to a five case model. This model sets out the key elements or “cases” that should be addressed within the business case and are as follows:

- The Strategic Case: Is the proposal needed, what is its scope and how does it fit?
- The Economic Case: Is it technically feasible? Is it Value for Money, what is the best option for delivery?
- The Commercial Case: Is the procurement route appropriate? Is it commercially viable? Is the project structure deliverable and are the risks being addressed in a way that suits both the public and private sector?
- The Financial Case: Is it affordable and how will it be financed?
- The Management Case: Is it deliverable in programme and project management terms?

The business case needs to address each of these elements providing robust answers with supporting analysis. In order to address each of the cases it is likely that detailed technical analysis will be required. The elements outlined in [Appendix 1](#) “Business case outline”, look

to address each of these five cases and describes key questions that should be asked about the project and answered within the business case.

When completing the sections of the business case it is always important to ask whether each of the above cases have been addressed and it may be necessary to include additional sections in the business case to provide the answer to the questions posed by the different cases.

As renewable generation projects are revenue generating and energy reduction measures are cost saving then the Value for Money test should focus on the returns that can be provided to the local authority through the project taking into consideration the risks that are being faced by the local authority and any associated liabilities. The assessment should also consider the lost opportunity cost of any of the assets being used for the project. For example, where assets such as buildings are being locked into 20+ year contracts then it is important to understand the lost opportunity costs associated with future usage.

3.2.2.5 Final business case

While the business case is required to support the development of the project the business case will be approved prior to the completion of the development or procurement of a project. As projects mature or firm prices are received there is often a requirement to prepare a final business case prior to signing final contracts committing to the necessary work. The detail of the final business case will normally include a re-confirmation that the approach included within the business case has been adopted and that the price of the contract has fallen within the boundaries as set out in the initial business case. Where the approach has deviated then explanation will be required and justification of the project still meeting the objectives.

3.2.3 Key points for consideration

As renewable energy generation is likely to be a new area of development for local authorities, the business case may require more detailed explanation of some of the aspects of the project to ensure that the reader fully understands the implications.

In addition to the preparation of the written document it will also be necessary to gain the internal support of senior members within the local authority. Projects are likely to have a higher level of endorsement if the members and officers are brought along with the process so that they have a clear understanding prior to reviewing and endorsing a detailed business case. This could be done on a more informal basis prior to the detailed development of the business case.

There is of course no one size fits all solution that can be adopted by every local authority. As well as the potential steps outlined, internal briefing notes may be produced that can educate people within the local authority. Not everyone required to comment on the proposals will have time to digest the detailed analysis and briefing notes may support the process.

The objectives of the local authority should be key to selecting the approach that is adopted. The objectives need to be understood from the outset to ensure the project development is focussed on the most appropriate options. The identification of the objectives may be time consuming where a low carbon strategy has not been developed, however, these are critical for the development phase.

Local authorities are constrained by the internal resources available and it may be possible to reduce the development costs of projects by forming partnerships with other local authorities and public sector bodies. Local authorities could benefit from economies of scale through a partnership by undertaking joint feasibility studies and other analysis that would benefit all organisations in the partnership.

There is a direct link between the delivery model and the risks that are retained by the local authority and this needs to be clearly identified in the business case.

The following three sections provide additional detail on key elements that need to be assessed and considered in order to develop the business case sections.

3.2.4 Useful links

There are a number of guidance notes available on the development of business cases:

HM Treasury – guidance on its best-practice ‘Five Case Model’ business case:

http://www.hm-treasury.gov.uk/data_greenbook_business.htm

OGC – guidance on business cases to obtain management commitment and approval for investment in business change:

http://www.ogc.gov.uk/documentation_and_templates_business_case.asp

OGC have also issued guidance on business cases for specific areas such as engagement of consultants:

http://www.ogc.gov.uk/policy_and_standards_framework_consultancy_develop_business_case.asp

Local Government Improvement and Development have also produced guidance in respect of business case development:

Capacity Building Programme – guidance on how to manage the business case process

<http://www.idea.gov.uk/idk/aio/6055977>

3.3. Project Lifecycle and Risks

3.3.1 Introduction

There are various stages to the lifecycle of a renewable energy project, each with their own applicable risks. Both the lifecycle and the risks relating to each stage need to be clearly understood. The risk assessment undertaken for a project supports the deliverability and risk section of the business case. The risk assessment also underpins a number of the other sections of the business case, such as the options appraisal, as it should set out the key risks associated with each of the different options.

The following considerations are discussed in further detail below:

- [Project lifecycle](#)
 - [Development](#)
 - [Construction](#)
 - [Operation / maintenance](#)
- [Risk assessment](#)
- [Risk assessment process](#)
- [Risk management process](#)
 - [Risk identification](#)
 - [Risk evaluation](#)
- [Key risks](#)
- [Revenue risk](#)

3.3.2 Project lifecycle

The figure below represents the typical lifecycle of a renewable energy project. The time required for each stage will vary depending on the project and each stage has a different risk profile. The figure gives some examples of the sources of finance that can be used to finance the various stages of the project and some of the risks that may materialise at each stage. It is important to note that the sources of finance for the development phase are limited and revenues are only generated once the project becomes operational.

Four stages of the process have been identified:

- [Development - pre planning](#)
- [Development - post planning \(procurement\)](#)
- [Construction](#)
- [Operation / maintenance](#)

3.3.2.1 Development

The development phase involves all elements of preparing the project such as undertaking initial project feasibility through to procuring the necessary contracts and arranging the necessary finance. The development phase is separated into pre and post planning as planning represents one of the significant risks for a renewable energy project. This may not be applicable to all projects depending on the technology.

The risk profile of the pre and post planning phases are significantly different due to the nature of the work being undertaken. For example, during the pre planning phase, feasibility assessment is undertaken with a risk that projects will not be feasible as a result of site conditions. During the post planning phase more detailed development will be undertaken for

the specific project being taken forward and procurement and delivery risks will need to be managed and mitigated.

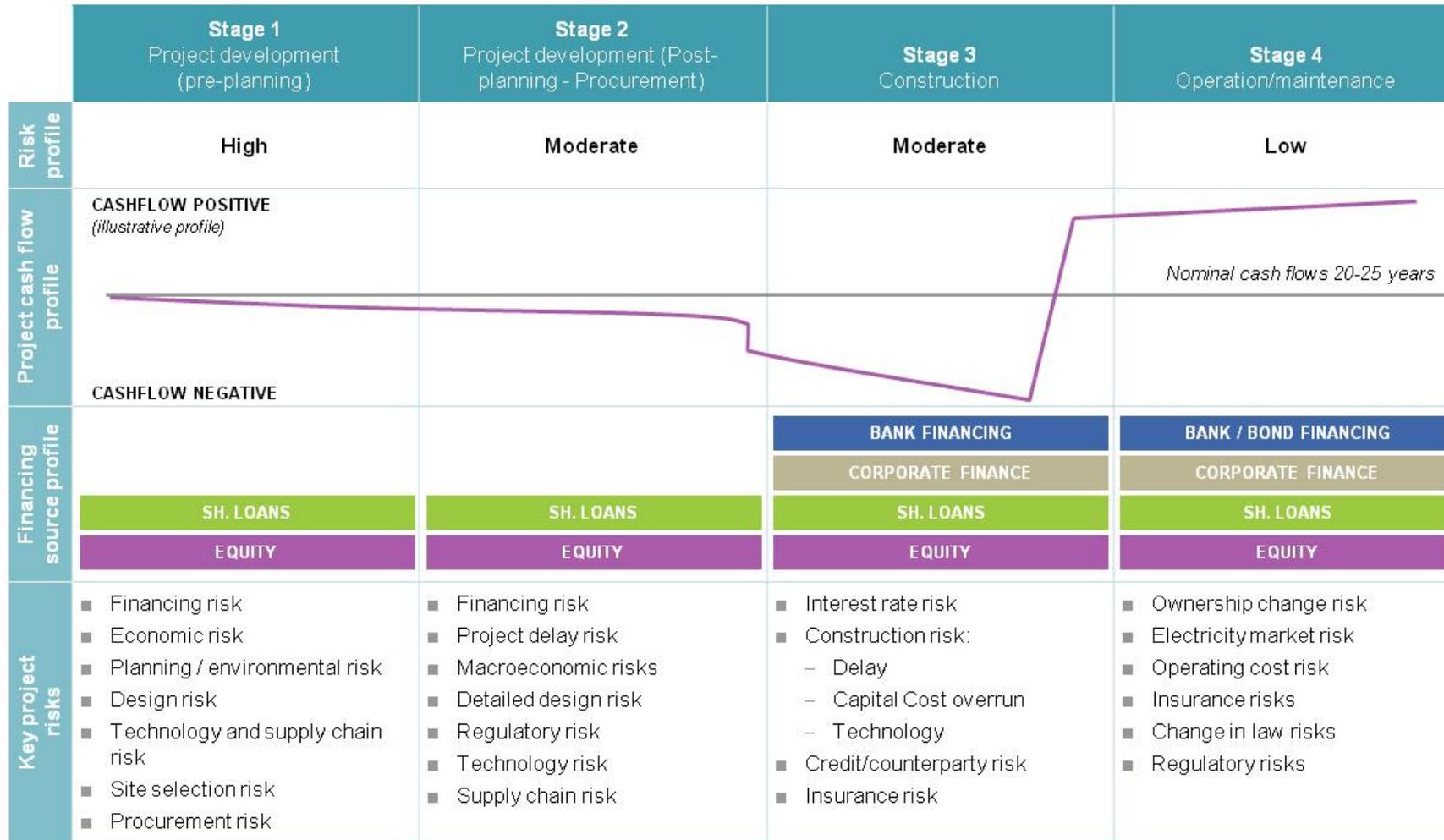
The development phase is the riskiest part of the lifecycle as some projects will fail to demonstrate economic viability or achieve the necessary planning consents. The quantum of investment in the development phases is unlikely to be as significant as the construction phase, however, there is greater risk associated with the investment as investment in unviable projects will be lost.

The affordability approach is likely to be different to that undertaken for projects such as schools as the projects are revenue generating. Some elements of the costs are specific to electricity generation and can have a significant impact on economics, such as the grid connection costs. This development work may require significant investment and economies of scale can be achieved through larger developments.

Any project requires the delivery team to have suitable construction and operation experience to ensure that projects are developed appropriately and that construction and operating plans are realistic and achievable.

Renewable energy projects can be complex and, therefore, previous experience is essential. Failure to include appropriate experience can result in unidentified costs materialising, cost increases and reduced output. Involvement of the appropriate experience during the development phase is critical to understanding the long term economic viability of the project and to ensuring appropriate risk analysis is undertaken.

Figure 5 – Typical project lifecycle



3.3.2.2 Construction

Ordinarily, all the necessary construction and operational contracts will be entered into prior to the start of construction and due consideration will need to be given to the construction during the development phase. This includes putting in place the necessary finance arrangements so that funds are available as construction commences.

The construction period involves capital intensive work and, therefore, the impact of any cost or delay risk materialising during this period increases significantly. This can have a severe impact on the project costs and impact on the economic viability of a project.

The time taken to construct a project and to start developing electricity depends on the technology. Some renewable technologies, such as biomass plants, need to be fully constructed before the plant can begin operation, with construction normally taking more than a year depending on the size of the plant. Technologies such as solar PV and wind turbines involve the installation of multiple assets that can start operation on a phased basis. Where solar PV is being installed on a large number of roofs, each individual property can start operating as soon as the panel is installed. The phased construction approach leads to an overlap between the construction and operational phases of projects.

3.3.2.3 Operation/maintenance

Once the project is operational a large number of the risks will have been overcome, however, there are still significant risks that can materialise. The de-risked nature of the operating phase is likely to lead to greater availability of finance from funders who are not willing to take construction risk. The project may therefore be able to refinanced at this stage but the project will need to be appropriately structured to allow these forms of finance to be used and refinancing to take place.

Failure to operate the plant results in lost revenues with capital still requiring to be repaid. Renewable energy projects generally have a long operating life of 20+ years and, therefore, the risks associated with the long term availability of equipment and the operating and maintenance regime need careful consideration.

In some instances, and as part of the planning conditions, the project owner will be required to decommission the project as the operating period ends. This could potentially incur significant costs and, therefore, careful financial planning will be required to reserve the necessary funds from the project to pay for these costs.

3.3.3. Risk assessment

The risk analysis needs to consider the whole lifecycle from the outset. The materialisation of project risks will result in cost increases and project delay. This will impact the project economics and viability of the project. Early identification enables risks to be appropriately managed and mitigated through the structure adopted, contracts entered etc. The risk assessment needs to consider all the phases of the project lifecycle separately. The projects risks will be allocated to different parties where they are best able to manage the process. This is a risk management technique that will be applicable to some, but not all risks. There will therefore be risks that remain with the local authority and during the development process it is likely that the majority of risks will need to be managed and mitigated by the local authority.

Risk can be assigned to the private sector through the contract agreed. Transferring risk to the private sector is likely to result in reduced returns to the local authority as the private sector will expect a suitable risk reward balance for taking project risk. It is likely that not all the risk can be transferred and there is generally residual risk that remains with the local authority during the construction and operating stages of the project. An understanding of the risks that are retained by the local authority is critical. The contractual structure of a project will be agreed at a point in time during the lifecycle. It will impact on both the development process undertaken in advance of signing the contract and the risks and reward that the local authority will be exposed to over the duration of the project. The contract structure is therefore a critical element of the process.

The risks that face a project will change throughout the lifecycle of the project. The risk will generally decrease as the project matures, a better understanding of the risks is formed and the ability to manage and mitigate risks is created. Some early stage risks may also not materialise and may, therefore, not be relevant for future stages. With long term financing requirements often associated with renewable energy projects the risks that may materialise during the future phases need appropriate mitigation measures to be identified during the development phases.

Most risks can be managed and some can be fully mitigated. Some risks are outside the control of the developer. Management of risk can be achieved through adopting suitable robust processes and techniques for identification and assessment during the development phase. It may be possible to group categories of risk together and apply management process to cover risk groups. A number of risks are managed by using experienced teams to undertake the necessary work during all phases of the lifecycle. There will be some internal risks specific to the local authority that will need to be considered as a result of the internal approval proposal.

Local authorities may be lacking some of the necessary skills to develop or progress certain tasks and so these skills may need to be sought externally.

3.3.4. Risk assessment process

Risk assessment and management is an ongoing process throughout the development, delivery and operation of a project and is a key element of any contractual arrangements. It is essential therefore that the nature of the risks associated with the project, and how these risks can be managed, is fully understood at every stage of the process. Only with this understanding can an optimum transfer of risk to the private sector be determined and incorporated in the contract and effective decisions made about how to deal with risks which are to be retained and create a liability for the local authority.

The level of assessment required will vary depending on the stage in the process; varying as the project matures and the options are reduced. For example, there is only a need to identify high level risks for the long list of potential options to enable the down selection of preferred options. As more detailed options assessment is undertaken and the business case is produced, more rigorous risk assessment will be required.

There are many different assessment techniques that can be adopted and local authorities may have their own internal guidance that needs to be adopted for assessing project risks.

Below is a link to the Treasury Green Book Guidance which gives further detail on risk assessment techniques for projects. There is, however, no specific guidance on risk assessment for renewable energy projects:

3.3.5 Risk management process

There are two key stages in the assessment and management of risks on any project:

- The identification and description of each separate risk which may potentially arise on the project.
- The evaluation of the likelihood of each identified risk arising, and of the potential impact on the costs of the project, having regard to ways in which risks may be mitigated and managed.

3.3.5.1 Risk identification

This first stage is initiated through the development of a risk register for the project and should include a detailed description of every individual risk which could potentially impact on the project. [Appendix 2](#) provides a detailed list of risk descriptions which have been separated into pre and post construction contract signature, however, some of the risks may be present throughout the project lifecycle.

The aim should be to record all relevant information for the purposes of evaluating and managing risks. It is important that all high impact risks are identified even if the likelihood of occurrence is low. These risks may have a significant impact on whether or not the project is successful. Careful consideration also needs to be given to identifying risks which are correlated or share a common cause as these will need to be grouped together for evaluation.

The risk register needs to be seen, and acted upon, as an 'active' document. The development of the risk register for the project should be initiated at an early stage. It should be viewed as a management tool and be subject to regular review during the course of the development and procurement process to ensure it is up to date at all times.

The identification of the potential risks for the project is a matter to be developed by the various technical, financial and legal specialists having detailed knowledge and experience of the project requirements and the likely contractual arrangements. In our experience, this is best developed through a series of risk workshops held to promote detailed discussion between the specialists. Failure to identify risks will prevent suitable management of risks that may materialise and make the project unviable.

3.3.5.2 Risk evaluation

This refers to quantifying and evaluating the extent to which risk can arise on projects. This involves assessing the likelihood of each individual risk arising and estimating the probable impact on project costs if the risk were to arise.

There is, inevitably, a significant degree of subjectivity in the quantification and evaluation of risks. An important requirement is that this subjectivity is provided by specialists who are best placed to understand the nature of the risks involved, who have experience of their cost impacts and of mitigating and managing these risks. The potential cost impact of individual risks can be derived in three ways:

- From the knowledge and experience of specialists who can estimate of the costs which can actually be incurred in dealing with risks when they arise;

- As estimates of the costs of measures which can be taken to eliminate or mitigate particular risks arising; and
- As estimates of the costs of insuring against specific risks.

It will be for specialists to decide which will be the best way of dealing with each individual risk. Where the cost impact is based on estimates of the cost of actually dealing with risks when they arise, then it will be appropriate to attach different probabilities to a range of potential cost outcomes.

As the project progresses to a more detailed development phase probability modelling can be undertaken to assess the overall risk impact on a project based on the probability of risks materialising to aid the quantification of risk contingencies that should be adopted. With a large number of risks facing a project it is improbable that all the risks will materialise and, therefore, probability modelling enables the potential risk impact to be assessed. The main assessment technique employed is Monte Carlo assessment. Estimating the probable impact of the more extreme outcomes should also be considered.

3.3.6 Key risks

When doing detailed risk analysis for the purposes of assessing the contractual structure, the risks at each of the different phases of the project will need to be understood and assessed.

The key risks will vary from phase to phase. The table below sets out some of the risks for each phase. It should be noted that risks will be very project specific and projects will need to be assessed on an individual basis.

Table 4: Key risks for each phase

Phase	Development	Construction	Operations / Maintenance
Examples of Key Risks	Financing risk Macroeconomic risk Planning / environmental risk Design risk Technology and supply chain risk Site selection risk Procurement risk Project delay risk Regulatory risk Technology risk Supply chain risk	Interest rate risk Delay risk Capital Cost overrun Technology risk Credit/counterparty risk Insurance risk Civil construction risk Mechanical risk Electrical works risk Interface risk	Revenue risk Ownership change risk Electricity market risk Operating cost risk Insurance risks Change in law risks Regulatory risks

The development phase of the project can be a protracted process due to the detailed planning process, complexity of projects and detailed technical analysis required. The macro economic factors impacting the project therefore need to be assessed to ensure that long term movements in macro economic factors will not impact on the economic viability of the project.

Each of the risks can be further broken down and a number of the risks will have both legal and financial impacts which will need to be understood and assessed.

The risk assessment for a project should take into account all the elements that will impact on the project and all risks internal to the local authority should be identified so that suitable management processes can be put in place.

3.3.7 Revenue risk

Various revenue support mechanisms have been put in place to support renewable energy projects, improve project economics and, therefore, make projects commercially viable:

- **Renewable Obligation:** this is the longest standing support mechanism for renewable energy projects and applies to projects generating more than 50kW of electricity.
- **Feed In Tariffs:** this regime was introduced in 2010 and supports small scale renewable energy projects up to 5MW.
- **Renewable Heat Incentive:** this has been introduced in 2011 to provide long-term financial support to renewable heat installations to encourage the uptake of renewable heat.
- **The Green Deal:** this is the Government's initiative to support the implementation of energy efficiency measures to households and businesses. The cost of these measures will be repaid through the savings in electricity bills and the necessary powers to do so will be included in legislation as part of the Energy Bill and will come into force in Autumn 2012.

Revenue certainty is key to supporting the economics of the project and is impacted by a number of different factors such as operational performance, availability and electricity prices. Some of the support mechanisms are variable in price, such as the Renewable Obligation Certificates and some are fixed, such as the Feed in Tariff. The price of electricity is variable and robust electricity forecasts need to be used when assessing renewable energy projects.

With changes in the way the electricity market operates, as part of the Energy Market Reform, and changes being proposed to the different regimes, such as the Renewable Obligation and Feed in Tariff, local authorities need to fully understand the risks and impacts of any potential changes that can impact over the 20+ year operational life of the project.

The Energy Market Reform will change the support mechanisms that will be available for renewable energy projects. The changes are yet to be finalised but include the following:

- A carbon price floor to reduce investor uncertainty, putting a “fair price” on carbon and providing a stronger incentive to invest in low carbon generation now.
- The introduction of feed-in tariffs - with contracts for difference – to replace the current Renewable Obligation Certificate (ROC) system.
- An Emissions Performance Standard (EPS) set at 450g CO₂/kWh to support Carbon Capture and Storage technologies.

There will be a transition period and the current mechanisms will be available until 2017 when the changes will be imposed. During the transition period project developers will be able to elect which regime they adopt and those that elect to adopt the current regimes will be grandfathered to the new regime in 2017.

It should also be noted that some project technologies, notably Good Quality Combined Heat and Power projects, may qualify for carbon allowances under the EU Emissions Trading Scheme. These allowances may be sold, generating an additional project revenue stream.

The Department for Energy and Climate Change published the Electricity Market Reform white paper 2011 on the 12th July and this outlines the changes that are expected to be made to the electricity market. Further detail can be found at the following link:

http://www.decc.gov.uk/en/content/cms/legislation/white_papers/emr_wp_2011/emr_wp_2011.aspx

3.4. Project Structures

3.4.1 Introduction

As part of the options appraisal for the business case the local authority will need to assess the potential project structures and delivery mechanisms that could be used to deliver the project.

There are a wide range of variant structures that could be developed to deliver local authority projects. This section sets out some examples of the project structures that could be adopted and the pros and cons that should be considered when assessing options. The options will need to be assessed against the objectives of the local authority and in some instances a perceived benefit for one local authority may be a negative from the perspective of another local authority.

The contractual structure will impact the following for a project:

- Investment requirement
- Risk exposure
- Resource requirements
- Ongoing management requirements
- Liabilities

The project structure ultimately drives the appropriate and available forms of finance for a project. The structures contain varying degrees of risk for the public sector. Various delivery models have been used to deliver infrastructure projects by local authorities and central government and lessons can be learnt from the delivery models used to deliver previous infrastructure projects. The different models adopted transfer more or less risk to the private sector.

The percentage of revenue generated for the public sector by a project will depend on the contract structure and the level of risk adopted. Low risk structures generally result in the lowest revenues being generated by the public sector. Similarly, if the public sector takes more risk during the development phase of the project then it is likely to incur greater development costs for which it could receive a greater proportion of revenues. As the level of risk increases the certainty of generating the predicted revenues tends to decrease, adjusting the risk reward balance.

The following issues are discussed in further detail below:

- Key Considerations
- Procurement
- Contracts required
- Potential renewable energy structures
 - Land rental
 - Minority equity stake
 - Partnership
 - Authority development

3.4.2. Key considerations

A local authority will have a number of objectives when developing renewable energy projects. The structure should be adopted to meet the objectives and drivers of the local authority. This will ensure that the local authority chooses a project and structure best suited to its objectives. Some of the key considerations are as follows:

- Local authority objectives

- Existing strategies for low carbon and asset management
- Capital requirements
- Risk appetite
- Project economics and returns
- Timescale and speed of delivery
- Resource and experience

The structure will set out the local authority investment requirements. It is likely, as discussed in the finance options section, that equity investment is required where the private sector is involved. Investment in projects can come in the form of assets being invested as well as capital and this can reduce the financial burden of a project from a local authority perspective.

The projects will require internal sign off from senior members within the local authority. Obtaining their views at an early stage and involving them in the process will help increase understanding at a senior level and increase the chances of internal sign off.

The assessment of project viability needs to take into account the available authority resources. An authority's ability to undertake specific roles will depend on their skills to manage and deliver renewable energy projects. Senior members will need to be convinced that taking on the risk is within the capabilities of the local authority. Where skills don't exist within the local authority then external advice can be sought. The appropriate structure for doing this will depend on the local authority constraints and should be considered during the early development stage of the project.

A key obstacle for local authorities is the ability to fund the development process. Projects could be financed by re-investing profits generated from current projects into future project development. Different project delivery models can be adopted to address development funding, each with varying timing of returns. An example would be selling land to generate capital to fund development activity.

3.4.3 Procurement

Under all the structures the private sector should be involved where there are insufficient resources or skills within the local authority, for example construction contractors. The procurement of any necessary in house skills will also be required. The local authority will need to adhere to the EU procurement rules and the procurement process will need to be designed in order to achieve the best economic value through the procurement process.

Procurement can introduce competition into the process and should drive Value for Money from the bids. The procurement process can also be used to encourage the private sector to help the local authority meet its objectives, such as providing local community benefits.

Due to the evolving nature of the market there may be little market precedent for procuring projects of this nature under some of the structures. Any procurement approach should look to learn from previous processes run in the market. Where novel concepts are being considered then it may be advisable to market test the approach in advance of launching the official tender. The size and nature of the project will influence the types of parties that may be interested in the project and overly complex procurement approaches will reduce interest unless the capital value is significant.

3.4.4 Contracts required

The actual contracts required will be dictated by the structure adopted. Where direct contractual arrangements are not required with third parties appropriate governance arrangements will still be required.

The contracts in place will assign risks to the different parties and define the risks and liabilities that sit with each. Under structures where services / resources are provided from within the authority governance structures are required to monitor and control the operations and the necessary repayment of debt.

The table below sets out some of the key contracts that may be required for a renewable energy generation project finance structure. The exact contracts required will be dependent on the specific project.

Table 5: Key project contracts

Key project contracts
<ul style="list-style-type: none">• Offtake Arrangements – Power Purchase Agreements• Construction / Installation Contracts• Grid connection agreements• Land agreements (site and access)• Supply agreements for equipment• Long Term Operating and Maintenance Contracts• Interface Arrangements• Renewable Obligation and FIT contracts?• Loan agreement

A description of the different contracts is contained in [Appendix 3](#).

3.4.5 Potential renewable energy structures

To illustrate the types of project structures that could be adopted the following section considers four project structures, each with different levels of control and capital requirements associated:

- [Land rental](#)
- [Minority equity stake](#)
- [Partnership / Joint Venture](#)
- [Authority development](#)

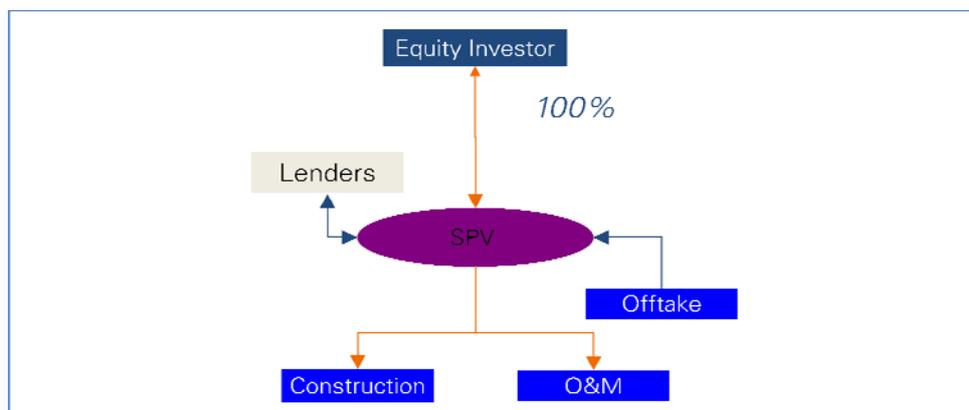
A brief description of some of the pros and cons of each structure are discussed further below.

The most appropriate structure for a specific project should be assessed against the objectives of the local authority. The list of structures is not exhaustive and many variations also exist. The structure should be adapted to suit the local authority, within the limits of what the market is willing to accept.

3.4.5.1 Land rental

The local authority could procure a project developer and rent available land to them. The developer would then develop, finance, install, operate and maintain a renewable energy generation installation.

Figure 6: Example land rental structure



This is a low risk structure from a local authority perspective. The developers would incur the development costs of the project and the public sector would receive a rental payment. Payments will be small in comparison to the equity returns generated but will not be exposed to the risk of the project failing. This model is similar to that offered by Partnerships for Renewables, an organisation set up by the Carbon Trust in 2006 to develop, construct and operate renewable energy projects on public sector land.

The local authority could run a competitive process for renting land whereby private sector developers bid a rental value for the ultimate use of the land or roof (subject only to the suitability of the asset) with the most economically advantageous tender winning. An example of this process is the recent Forestry Commission Scotland competition which was seeking developers to develop wind farms on the land that it owns.

Pros:

- Private finance is available, provided the contractual arrangements are appropriate
- Some potential benefits of the project can be retained, such as rent cash flow or free electricity for the property occupants if solar panels are being installed
- Minimal capital outlay required from the authority
- Potential improvement to speed of delivery through use of multiple partners
- All risk of project development, delivery and maintenance is transferred to developer

Cons:

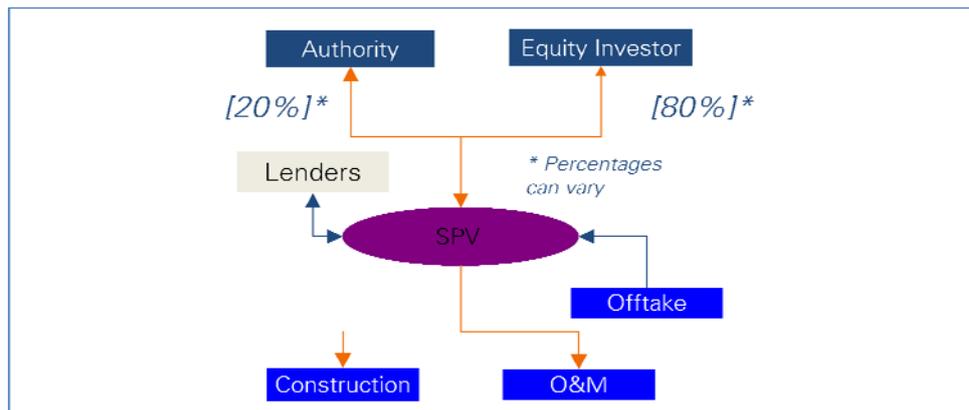
- Loss of income from electricity generation exported to the grid and any FIT which is likely to be transferred to the private sector
- More expensive debt is used to fund the project and, therefore, reduces the economics (prudential borrowing interest rates are lower than third party finance rates)
- Restrictions over what can be done with the land / properties
- Potential for local authority residual liabilities through the contract arrangements

3.4.5.2 Minority equity stake

The local authority could procure a project developer who would develop, finance, install, operate and maintain the assets. The timing of the procurement process could

vary with more or less of the project development having been undertaken by the local authority. Debt would be raised by the developer to fund capital expenditure and the local authority would invest a minority proportion of equity. This provides the local authority with a degree of influence over the projects. However the minority rights prevent the authority having control over the project except in express circumstances that may be agreed in advance. An example of this type of structure being adopted would be the Building Schools for the Future Programme.

Figure 7: Example minority equity stake structure



This structure could be used to engage community groups as well as the local authority and has been seen on a number of projects where local involvement has aided the project development by preventing local objections to planning applications.

Pros:

- Private finance is available, provided the contractual arrangements are appropriate
- The public sector can influence the project
- Some potential benefits of the project can be retained, such as equity cash flows and free electricity for the property occupants if solar panels are being installed
- The local authority shares in the equity benefits of the project
- Minimal capital outlay required from the local authority
- Potential improvement to speed of delivery through use of multiple partners
- The majority of the risk of project development, delivery and maintenance may be transferred to the private sector
- SPV / private sector responsible for contract management

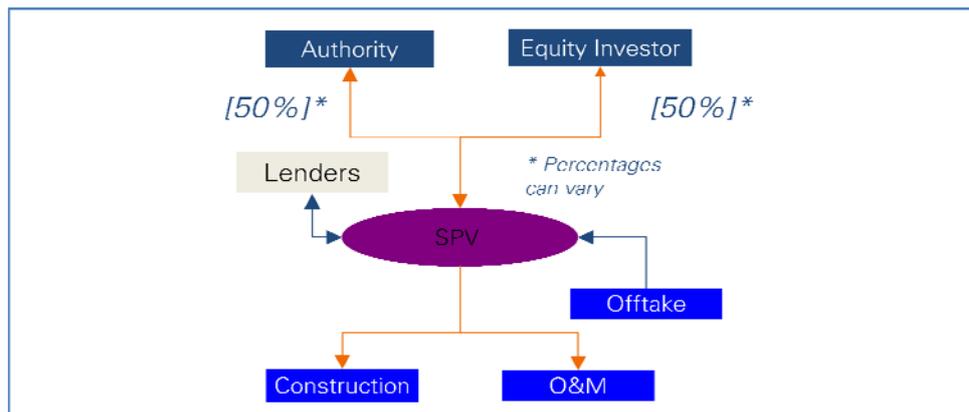
Cons:

- Loss of the majority of the income from electricity generation exported to the grid and FIT which is likely to be transferred to the private sector
- More expensive debt is used to fund the project and, therefore, reduces the economics (prudential borrowing interest rates are lower than third party finance rates)
- Restrictions over what can be done with the land/properties
- Potential for local authority residual liabilities through the contract
- More complex procurement process and contractual documentation
- Potential requirement to incur disproportionate development costs compared to the returns generated.

3.4.5.3 Partnership

The public sector establishes a partnership or joint venture with the private sector to develop the project(s), sharing in the risk of the project. The principle of the JV would be that the private sector provides the development resource and capability that does not exist within the public sector. The local authority shares in the project risk and could provide the land as part of the investment.

Figure 8: Example partnership structure



Pros:

- Leverage skills and experience from the private sector
- Could be beneficial to a developer because a relationship with the local authority could bring a significant pipeline of opportunities
- Local authority is directly involved in approving site selection and project scope
- Retention of 50% of all the project benefits
- Share project risk with the private sector
- Public Works Loan Board (PWLb) finance is available to the local authority at a low interest rate that could be used to fund the authority share of the project providing increased project returns

Cons:

- Loss of total project control
- Balance sheet considerations as debt would be brought onto the local authority's balance sheet
- If a PWLB loan is taken, interest is payable immediately regardless of the project operating i.e. no ability to roll up interest during construction
- Potential loss of equity and / or debt should the project fail to operate as required
- Potential for greater development costs to be incurred by the public sector

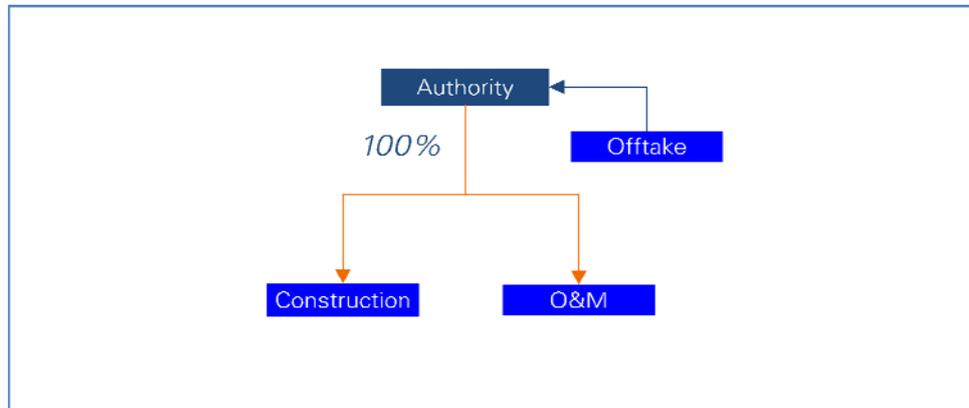
For a large scale project, this may be a preferable option compared with the local authority taking full control, as the capital requirement will be less and the project risk is shared.

3.4.5.4 Authority development

The local authority develops the project using its own resources and finances, installs, operates and maintains the assets. The construction and operation contracts

could still be procured from the private sector, however, the transfer of project risk to the private sector would be limited.

Figure 9: Example authority development structure



The local authority takes over entirely the role of project developer. The local authority could fund development either directly (by outsourcing activities to professional consultants) or indirectly by developing an in-house capability. The public sector is able to generate similar returns as the private sector if it retains 100% of equity in the project and undertakes the development, finance, construction and operation of a project. This approach increases the risk to the authority but increases the returns that can be generated.

Pros:

- Full project control
- Potential for some risk transfer through the contractual structure
- All benefits retained by the local authority
- Potentially cheaper funding options available with less debt restrictions
- Less onerous procurement routes could be followed

Cons:

- Increased capital requirements
- Full equity and debt repayment risk borne by the local authority should the project fail
- Reduced risk transfer to the private sector
- Local authority is responsible for all aspects of contract management
- If a PWLB loan is taken, interest is payable immediately regardless of the project operating i.e. no ability to roll up interest during construction

3.5. Financing Options and Funding Considerations

3.5.1 Introduction

This section sets out the forms of finance that might be available to local authorities or that could be used by developers funding projects procured by local authorities.

There is a number of financing options that are available for renewable energy projects. Finance can come from public grants, public sources or the private sector, each with pros and cons.

Not every form of financing will be available for all projects. The project type, funding requirement and structure will dictate whether a project is 'bankable' and the forms of finance that are available. The appropriate form of available finance should be driven by the objectives of the local authority, examples of which are set out in [Appendix 1](#). The circumstances of the local authority, from a skills and balance sheet perspective, may also influence suitable forms of finance.

Funding constraints may limit the extent to which some objectives can be met and maximising local authority assets can help improve the Value for Money achieved by projects.

The following forms of finance and issues are discussed in further detail below:

- Public Sources of Finance
 - [Grants](#)
 - [Supporting Bodies](#)
 - [Community Energy Saving Programme \(CESP\)](#)
 - [Carbon Emissions Reduction Target \(CERT\)](#)
 - [Energy Company Obligation \(ECO\)](#)
 - [Salix Finance](#)
 - [Internal Resources](#)
 - [Prudential Borrowing](#)
 - [Green Deal](#)
- European Funding
 - [European Local ENergy Assistance \(ELENA\)](#)
 - [European Regional Development Fund](#)
 - [European Investment Bank](#)
 - [JESSICA](#)
 - [EEE-F](#)
- Private Sources of Finance
 - [Equity Requirements](#)
 - [Third Party Debt Requirement](#)
 - [Corporate Debt](#)
 - [Project Finance](#)
 - [Asset Finance](#)
 - [Funding Requirement and Technology](#)
 - [Lender Considerations](#)

The table below identifies the stage of the lifecycle to which each of the funding sources may typically be applicable. In some instances the sources of funding can be used through different stages and, therefore, the table should be used as a guide and each option considered separately as part of the options appraisal.

Table 6: Funding sources and project lifecycle

	Development	Construction	Operations
Funding Source	Grants Internal resources Prudential borrowing ELENA ERDF EEE-F	Grants CESP CERT ECO Salix Finance Internal resources Prudential borrowing ERDF EIB Corporate Debt Asset Finance Project Finance	Revenue support mechanisms Capital sources are the same as construction with potential access to wider forms of private finance sources such as bonds and the capital markets

3.5.2 Public Sources of Finance

3.5.2.1 Grants

Grants are available from UK sources and from European institutions. The number of grants available from UK sources has diminished recently with the UK government looking to the revenue support mechanisms to provide the necessary interventions.

The eligibility of a project to qualify for a grant depends on the specific characteristics of the project. For example, the technology that is being used will determine whether a project is eligible as some grants will only be available to technology projects that have never been constructed on a commercial scale and, therefore, cannot access third party finance.

The grants available have reduced due to the effective closure of organisations such as the North West Development Agency. There are a wide range of grants that may still be available and local authorities should seek advice from supporting bodies in relation to what may be available. Grant applications will need to be made in order to access the funds and, therefore, there is no certainty over the ability to access grant funding.

It should be noted that applying for grants can be a time consuming exercise whether applying for UK or European sources of funding. Some of the grant application forms require detailed information to be included about the project and are, therefore, time consuming to complete and require the project to be developed to a specific point before the application can be made.

3.5.2.2 Supporting Bodies

There are a number of organisations that provide support to local authorities seeking grant funding for projects and that can be contacted for further detail on eligibility for grants. The Energy Savings Trust and the Carbon Trust are two such examples; however, this is not an exhaustive list.

The **Energy Saving Trust** is the UK's leading impartial organisation helping people save energy and reduce carbon emissions. It provides expert insight and knowledge about energy saving, supporting people to take action, helping local authorities and communities to save energy and providing quality assurance for goods, services and installers.

The **Carbon Trust** is a not-for-profit company with the mission to accelerate the move to a low carbon economy. It provides specialist support to help business and the public sector cut carbon emissions, save energy and commercialise low carbon technologies. By stimulating low carbon action it contributes to key UK goals of lower carbon emissions, the development of low carbon businesses, increased energy security and associated jobs.

3.5.2.3 Community Energy Saving Programme (CESP)

Community Energy Saving Programme (CESP) targets households across Great Britain, in areas of low income, to improve energy efficiency standards, and reduce fuel bills. There are 4,500 areas eligible for CESP. CESP is funded by an obligation on energy suppliers and electricity generators.

CESP promotes a “whole house” approach i.e. a package of energy efficiency measures best suited to the individual property. The programme is delivered through the development of community-based partnerships between local authorities, community groups and energy companies, via a house-by-house, street-by-street approach. This partnership working allows CESP to be implemented in a way that is best suited to individual areas and coordinated with other local and national initiatives.

The CESP obligation period will run to the 31st December 2012. Further guidance on the CESP programme can be found at the following links:

<http://www.ofgem.gov.uk/Sustainability/Environment/EnergyEff/cesp/Pages/cesp.aspx>

<http://www.energysavingtrust.org.uk/business/Global-Data/Funding-Information/Community-Energy-Saving-Programme-CESP>

3.5.2.4 Carbon Emissions Reduction Target (CERT) Funding

The Carbon Emissions Reduction Target (CERT) is a legal obligation on the six largest energy suppliers to achieve carbon dioxide emission reductions from domestic buildings in Great Britain.

CERT is currently the Government's primary mechanism for improving the energy efficiency of the existing housing stock. It was estimated that between 2008 and 2011, the energy suppliers will need to spend £2.8 billion on carbon reduction measures in order to meet their targets. In September 2008, the Government announced that the level of funding available would be increased by £560 million.

Local authorities and Registered Social Landlord's (RSL) can utilise the funding that is available from the energy suppliers to fund carbon reduction measures in their own housing stock and also to set up schemes to improve private sector housing in their area.

The CERT third supplier obligation phase expires runs to 31st December 2012.

A link to a guidance note can be found through the following:

<http://www.energysavingtrust.org.uk/Publication-Download/?oid=190233&aid=502241>

3.5.2.5 Energy Company Obligation

The Government has announced that it will introduce a new Energy Company Obligation (ECO) as part of the Green Deal. This will take over from the existing CERT obligation. The Government has stated that the ECO will focus on providing energy efficiency measures to low income and vulnerable consumers and those living in 'hard to treat' properties which cannot achieve financial savings without a measure of support'.

The Government has stated that it will "include powers in the forthcoming Energy Security and Green Economy bill to introduce a new obligation on energy companies from 2012, to take over beyond CERT".

The Comprehensive Spending Review announced that Warm Front will continue but at a much reduced level until 2013. After this, the Green Deal and ECO will become the main funding mechanism for tackling fuel poverty.

Warm Front provides heating and insulation improvements to households on certain income-related benefits living in properties that are poorly insulated and/or do not have a working central heating system.

3.5.2.6 Salix

DECC and the devolved administrations fund Salix Finance, a private company, to enable the public sector to fund the up-front capital investment for energy saving projects. It offers interest free loans to public sector organisations for energy efficient investments.

Salix provides funding in two possible forms:

- A recycling fund, whereby a public sector body is given match funding for a number of projects. The client can continue to recycle energy savings returned to the fund into more projects, always maintaining the value of the fund at a constant level. Money is returned to Salix only when no more suitable projects can be found.
- Loans targeted at specific projects, which when completed repay their costs to Salix from energy savings.

The schemes offered through Salix allow public sector bodies to apply for interest free loans to finance up to 100% of the costs of energy saving projects. Projects must fulfil the following criteria:

- The project must pay for itself from energy savings within a maximum 5 year period;
- The cost of CO2 must be less than £100 per tonne over the lifetime of the project; and
- The project must be "additional" i.e. would not have happened without the funding.

Further detail on the forms of Salix funding and application process can be found at the following link:

<http://www.salixfinance.co.uk/home.html>

3.5.2.7 Internal Resources

Internal funding for a project can be provided from local authority internal reserves.

The availability of internal reserves will depend on the circumstances of the local authority and developers of projects will need to discuss the position with the Finance Officer to determine what resources may be available.

3.5.2.8 Prudential Borrowing

Local authorities have the powers to prudentially borrow. This brings with it some financial benefits over private sector financing but equally carries risks that need to be managed by the local authority. Funds are borrowed from the Public Works Loan Board (PWLB) by the local authority and are not linked to specific projects. It is the local authority that is responsible for repayment of the loan and the public sector will need to repay prudential borrowing regardless of project success. Internal governance procedures will need to be put in place to ensure that suitable risk mitigation measures are in place and that the funds can be repaid from the revenues generated from any project.

There is no ability to roll up interest, i.e. defer interest payments until revenue is generated, when using prudential borrowing. Renewable energy projects do not generate revenues until constructed and therefore interest payments, and any Minimum Revenue Provisions (a prudent provision held on the balance sheet to repay the loan) required under the public works loan board rules, during the construction period need to be paid from other resources during this period.

Further guidance on the rules associated with prudential borrowing can be found at the following link:

<http://www.dmo.gov.uk/index.aspx?page=About>

3.5.2.9 Green Deal

The Green Deal is the Coalition Government's initiative to support the implementation of energy efficiency measures to households and businesses through the establishment of legislation that enables the recovery of the costs of energy efficiency measures through a charge in instalments on the energy bill. The Government is establishing this framework to enable private firms to offer consumers energy efficiency improvements to their homes, community spaces and businesses at no upfront cost. At the heart of the Government's proposals is the "Green Deal plan", an innovative financing mechanism which allows consumers to pay back through their energy bills. This means consumers can see the Green Deal charge alongside the reductions in energy use which generate savings on their energy bill.

The Green Deal framework is a key element of the Energy Bill due to be implemented in the first session of this Parliament. It is anticipated therefore that the Green Deal will be launched in autumn 2012.

Further detail about the Green Deal can be found at the following link:

http://www.decc.gov.uk/en/content/cms/tackling/green_deal/green_deal.aspx

3.5.3 European Funding

3.5.3.1 European Local ENergy Assistance (ELENA)

To facilitate the mobilisation of funds for investments in sustainable energy at a local level the European Commission and the European Investment Bank have established the ELENA technical assistance facility (European Local ENergy Assistance) financed through the Intelligent Energy-Europe programme. ELENA support covers up to 90% of the cost for technical support that is necessary to prepare, implement and finance the investment programme for large sustainable energy investment programmes in cities and regions. This includes feasibility and market studies, structuring of programmes, business plans, energy audits, preparation for tendering procedures - in short, everything necessary to make cities' and regions' sustainable energy projects ready for EIB funding. Funding is available to local or regional Authorities or public bodies, or a grouping of such bodies.

ELENA offers specific support for projects such as retrofitting of public and private buildings, sustainable building, energy-efficient district heating and cooling networks, or environmentally-friendly transport etc.

The objective of ELENA is to increase experience in developing investment programmes of a certain size, normally above EUR 50 million. Small projects can be supported when they are integrated into larger investment programmes. Regrouping of small projects into larger programmes allows transaction costs to be reduced and improves the “bankability” of the individual projects, which is one of the ELENA selection criteria.

Any public entity wishing to apply for ELENA must previously have identified an investment programme that contributes to the objectives of the European Union in the fields of energy and climate change, known as the “20-20-20” initiative.

One objective of the ELENA facility is to contribute to the development of investment programmes in order to achieve a minimum ratio (leverage) of 25 between the total investment costs of the investment programme supported and the total cost of the ELENA grant assistance.

To obtain EIB financing for an investment programme it is not a prerequisite to be receiving ELENA assistance, and vice-versa. However, as one of the objectives of ELENA is to improve the bankability of the investment programme, ELENA assistance may facilitate access to financing from the EIB or other banks.

Assistance will be granted on a first-come first-served basis within the limits of the given budget.

European Commission Climate Action, EU climate and energy package;

http://ec.europa.eu/clima/policies/brief/eu/package_en.htm.

3.5.3.2 European Regional Development Fund

The European Regional Development Fund is a vehicle for promoting the economic development and regeneration of certain areas within the European Union. Projects should comply with the three horizontal themes of sustainability, equal opportunities and social inclusion. The current ERDF programme that runs until 2013 is investing over £2.5 billion in the English regions. Following a legislation amendment by the Commission, ratified by the EU Council and EU Parliament, member states are now able to allocate up to 4% of their overall ERDF allocation to energy efficient refurbishment and the use of renewable energy in existing homes for social cohesion purposes.

The current ERDF programme will be delivered through a convergence programme and a Regional Competitiveness and Employment Programme with funds pre-allocated to each of the regions. The Department for Communities and Local Government is the designated Managing Authority for all ERDF structural fund programmes in England. The Regional Development Agencies (RDAs) are responsible for delivering the 2007-13 round of programmes on the ground. They work in partnership with the Department for Communities and Local Government and representatives from across the programme area, ensuring the programme and its objectives are implemented effectively. The Government Offices (GO) continue to administer the 2000-06 programmes, which are now being closed. The GOs also chair the Programme Monitoring Committees (PMCs) for the 2007-13 programmes. With the planned abolition of the RDAs local authorities will need to engage directly with the local RDA to determine what funding remains under this option although there is thought to be limited funding available.

The following website provides further information:

http://ec.europa.eu/regional_policy/funds/feder/index_en.htm

3.5.3.3 European Investment Bank

The European Investment Bank (EIB) has invested considerable resources in developing initiatives and on specific objectives for lending to promote cleaner energy sources, in particular lending for renewable energy and energy efficiency projects.

Low-carbon sources of energy, renewable energy and energy efficiency support the climate change mitigation and adaptation objectives of the European Union and in particular the EU environmental sustainability goal to reduce CO₂ emissions resulting from energy production and consumption. They have also become a priority for the EIB.

The traditional instruments of the EIB are medium and long-term loans with fixed or variable interest rates in Euros or other currencies. The main advantages of EIB financing are:

- Extended maturities of the loans – typically up to 12 years in the industrial sector and up to 20 years for energy infrastructure or longer;
- Appropriate grace periods, normally reflecting the construction phase of a project, which in the case of research, development and innovation projects can accommodate a relatively long time span between the start-up, market launch and payback stages;
- Favourable financing cost, based on the EIB's funding cost on a not for-profit basis; and
- EIB funding can act as a catalyst to lever financing from the private banking sector.

Depending on the project size and client's needs the EIB can provide:

- Individual loans: provided to projects and programmes costing over EUR 25m which are in line with EIB lending objectives.
- Intermediated loans: credit lines to banks and financial institutions to help them provide finance to small and medium-sized enterprises or public institutions with eligible investment programmes or projects costing less than EUR 25m.

Microfinance has also been provided by the EIB in some countries.

3.5.3.4 JESSICA

JESSICA, Joint European Support for Sustainable Investment in City Areas, is an initiative developed by the European Commission and the European Investment Bank, in collaboration with the Council of Europe Development Bank.

It supports sustainable urban development and regeneration through financial engineering mechanisms. Under new procedures, Member States are being given the option of using some of their EU grant funding, their so-called Structural Funds, to make repayable investments in projects forming part of an integrated plan for sustainable urban development.

Contributions from the European Regional Development Fund (ERDF) are allocated to Urban Development Funds which invest them in public-private partnerships or other projects included in an integrated plan for sustainable urban development. These investments may take the form of equity, loans and/or guarantees.

JESSICA funding is available for urban infrastructure projects, which includes energy, and a number of holding funds have been set up in the UK to manage JESSICA investments. The assessment criteria are different for each of the funds and project developers would need to contact JESSICA funds directly.

3.5.3.5 European Energy Efficiency Fund (EEE-F)

The European Energy Efficiency Facility (EEE-F) of the European Energy Programme for Recovery (EEPR) is a financial facility dedicated to sustainable energy and was launched in July 2011.

The EEE-F will invest in energy saving, energy efficiency and renewable energy projects, particularly in urban settings. Sustainable energy investments promoted by local, regional and (where justified) national public authorities will qualify. The investment criteria will be that projects need to achieve at least 20% energy saving or CO2 emission reduction through the following methods:

- Energy saving
- Energy efficiency
- Renewable energy projects in urban settings

The EEPR will allocate approximately 146 million Euros (i.e. 3.7% of the total EEPR envelope) towards the financial facility. The European Investment Bank and others have also invested resulting in an initial fund volume of 265 million Euros. Other financial institutions at Member State level have been invited and could also join the fund. The funding is to be provided through the following financial structures:

- Senior / junior debt
- Guarantees
- Equity participation
- Grants (up to €20m total for technical assistance at early development stage)

Further information on the EEE-F can be found at the following link:

<http://www.managenergy.net/news/articles/74>

3.5.4 Private sources of finance

This section sets out private sources of finance that might be available to the private sector financing projects procured by the public sector.

The requirement for private sources of finance will be determined by the delivery model used for the project. Where the delivery model assumes that private finance will be available for a project then independent professional advisors can act as a conduit between the project team and the finance market and enable market testing to give confidence over the availability of funds under the proposed structures.

3.5.4.1 Equity requirements

It is normal for third party lenders to provide less than 100% of the project costs with equity being required as a form of risk capital. The percentage of debt supported by a project, where a project is financeable, will be a function of the project risk. For example, under a project finance structure debt will typically be provided for up to 80% of the overall project cost.

The equity can come from either the public or the private sector. There are a wide variety of private sector sources of equity such as Venture Capital funds, High Net Worth Individuals and sponsor equity. The timing of the equity injections can also vary. The significance of the source of the equity is that it impacts on the returns that may be required from a project and the potential exit of equity providers from a project once it becomes operational. Not all equity providers want to be tied into a project over the operational life and will look to exit their investment after a number of years to release capital for further re-investment.

3.5.4.2 Third party debt requirement

The type of private sector debt finance available will depend on the type of project that is being considered and the project structure, with lenders having varied appetite for taking on project risk. The type of debt finance will drive the economics of the project and the project structure and debt terms and covenants will determine the risk profile for the different parties. For example, not all technologies are proven and capable of raising external bank project finance however asset finance may be available at increased debt costs with increased security arrangements.

The ability of the lender to gain access to cash flows and control assets are forms of security that lenders may require. Security will be required for any third party debt that is raised. The level of security required depends on the specific project risks and the ability of the project to generate revenues.

3.5.4.3 Corporate debt

Corporate debt is typically defined as securitised short and long-term debt issued by corporations. The debt instruments are issued by Corporates in order to fund their ongoing operations. The corporate entity is likely to be a listed company or a large private company that may lend to a project on the basis that it has an interest in the project such as a majority shareholding. Examples of these would be company loans and overdrafts that have been provided to the project from the corporate entity.

For the purposes of local authorities looking to procure renewable energy projects from the private sector, this could be one of the available forms of finance that could be used by Corporates to fund the project where they are competing to develop the project.

The ability of a Corporate to use its general debt to fund a project depends entirely on the circumstances of the Corporate as there is no link or security required from the debt providers over the project. For example, a listed company may raise debt by issuing bonds. Investors will invest in the bonds in return for a regular interest payment with no link to any specific project. The corporate then uses the capital to provide debt to individual projects. The bond investors did not invest directly in the project and are relying on the ability of the corporate to repay the investment from its ongoing operations regardless of the success or otherwise of the project. The Corporate is, however, likely to insist that security similar to any other form of private finance is provided over the debt it provides to the project.

The Corporate is effectively using internal resources or borrowing against its own balance sheet to fund the project rather than borrowing specifically against the individual project that is being funded. The advantage of this type of debt is that the security and covenants required by the Corporate would be more flexible than a bank.

3.5.4.4 Project finance

Project finance is defined by the International Project Finance Association (IPFA) as:

“The financing of long-term infrastructure, industrial projects and public services based upon a non-recourse or limited recourse financial structure where project debt and equity used to finance the project are paid back from the cashflow generated by the project.”

Translating the definition; this means that project financing is a loan structure that relies primarily on the project's cash flow for repayment, with the project's assets, rights, and interests also held as security with no further recourse to the equity providers. Debt is therefore borrowed to undertake a specific project and the lender is relying on the generation of project revenues. Institutions that ordinarily provide project finance include the majority of large UK banks and a range of other international banks.

For the equity providers this means that if the project were to fail the equity that they have invested in the project would be lost but there would be no further costs incurred. As an example, a standard scenario for the use of project finance would be an onshore wind farm where a developer will provide equity to the project and raise project finance debt from a bank. Should the wind farm generate half the electricity predicted then the bank may step in and take over the ownership of the project and try and recover its debt. The developer would lose their invested equity but their losses would be limited to the invested equity even if the bank could not recover all its debt from the project.

3.5.4.5 Asset finance

Asset financing is the purchase of assets in exchange for a security interest in those assets. The most common kind of asset financing is to extend loans to purchase company cars, vans, machinery and equipment or to fund accounts receivable, short-term investments or inventory.

Under an asset finance structure the lender will focus on the value of the asset that could be recovered if it was sold on the open market as well as the revenues that can be generated. Asset finance typically is more appropriate to projects of a smaller capital value that could be moved to another location. Due to a perceived risk that assets may not be sellable, or that the value may be much lower than the cost of

manufacture, lenders may be unwilling to lend to the project unless there is additional security over other assets, in addition to the project assets, should the project fail.

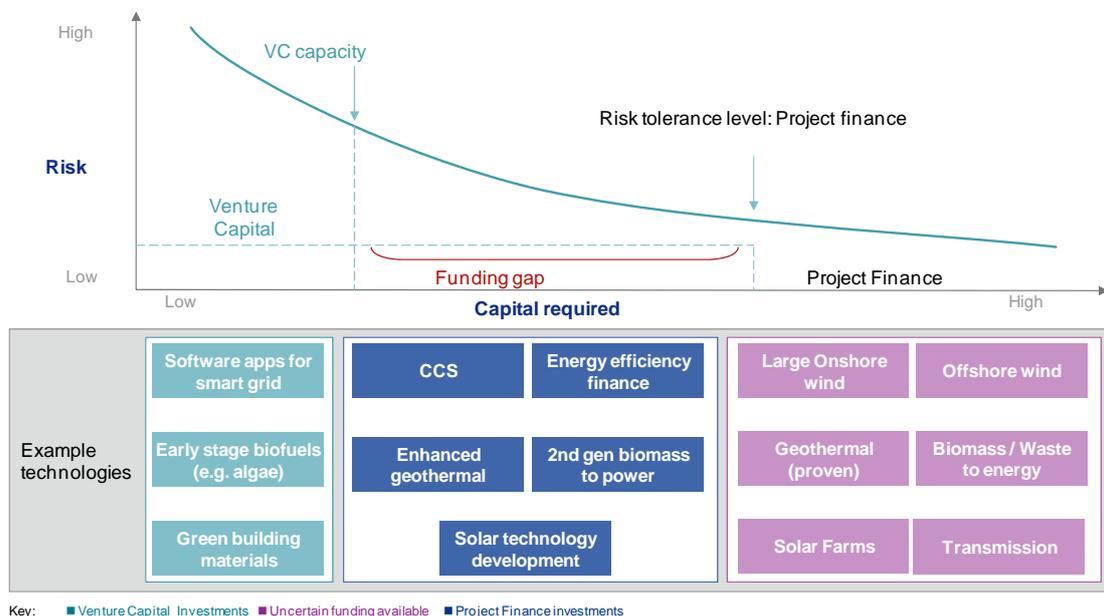
An example asset finance structure would be small scale wind farms where wind turbines eligible for revenues generated under the Feed in Tariff regime are installed on farms. The lender may require security over some of the farm land in addition to the revenues generated in case revenues are insufficient.

3.5.5 Funding requirement and technology

The quantum of the debt required influences the forms of finance that may be available for a project. For example, it is typical that project finance will only be a suitable funding route for projects with a capital value of greater than £20m. There are, however, no hard and fast rules and with challenging financial markets the landscape continually changes with lenders looking for innovative ways to finance projects and provide products to meet the funding gaps.

Bankers do not like new technology that they don't understand or that has not been proven to be commercially viable. Proven technologies require examples of similar projects successfully operating elsewhere, using the same technology, on the same scale. There have been examples of generation plants that have been tested on a small scale that have failed to operate as predicted when constructed on a commercial scale.

Figure 10 – Low Carbon Technologies and Sources of Finance



The figure above represents the reducing risk profile of maturing technologies and the changing forms of finance across the different levels of capital requirements. It also shows examples of technologies that are suitable for the different forms of finance. The funding gap represents those technology types that have been proven to some extent but still contain material risk that prevents a project finance structure. For large capital projects project finance will be unavailable until the project risk reduces to the right level as in the case of offshore wind. An example of a developing technology type is energy efficiency measures. Energy Performance Contracting is a

means to finance these measures where a third party will install energy efficiency measures in a property and recover the costs through the savings in the utility bills. This is not a new concept, however, it has not historically been financed by the private sector on a large scale in the UK or used a project finance structure. Lenders have a number of issues that will need to be overcome before it will be possible for lenders to provide finance specifically for these projects. The introduction of the legislation for the Green Deal should address some of the issues but a project structure will still need to be developed that is suitable to allow access to project finance.

When considering new and emerging renewable energy technologies the appropriate finance solution should take into consideration the certainty over the generation of the revenues and the risks associated with an unproven technology.

Where the technology is not well understood then the lender may require more security, such as security over other assets owned or additional guarantees over performance from manufacturers, before providing finance.

Local authorities may therefore need to retain a greater amount of risk if selecting a novel technology for a project.

3.5.6 Lender considerations

Lenders do not like to take project risk and will require due diligence to be undertaken around all aspects of the project to ensure that the risks and long term liabilities associated with the project are suitably managed and mitigated and that the project is therefore 'bankable'. Key issues from the lenders perspective will be:

- the ability to generate revenues and certainty over the generation. Lenders will take a prudent view of the revenue generation potential, focussing on plant availability and electricity price forecasts.
- project risk and the risk that might materialise if the parties fail to perform.
- fuel arrangements for some technologies are critical to the ability to raise finance. For biomass projects there is competition for limited resource and the supply of fuel needs to be secure.
- timetable and delays incur additional interest and normally come hand in hand with increased construction costs. The timetable needs to be deliverable and contracts need sufficient incentives for contractors to deliver on time. Incentives include for example, damage payments should the project be delayed and an Engineering, Procurement and Construction (EPC) contract can be used to 'wrap' the construction risk under a single contract.
- the deliverability of the project. Suitable construction and operation experience is required to ensure that contractors will have the ability to deliver the project and projects are constructed and operated as designed. Renewable energy projects can be complex and therefore previous experience is essential. Failure to do so results in cost increases and reduced output.
- the financial standing of contractors and the likelihood that the company could fail as a result of its ongoing operations.
- any interface agreements and interface risks between different contractors delivering different aspects of the project.

Projects should be developed with the form of financing in mind. For example, the offtake arrangements entered into, specifically the duration and pricing of the contract, will affect the ability to raise long term third party finance.

A special purpose vehicle is likely to be required where third party finance is injected into a project to allow cash flows from the project to be separated from general company cash flows.

The rigour and scrutiny that third party lenders undertake on projects provides a good health check on the projects. Even without third party finance being involved, local authorities should adopt rigorous review processes to satisfy themselves that all risks are identified and suitably mitigated through the contractual structure.

4. Pilot Studies

4.1 Introduction

As part of the Green Finance Project KPMG provided advice and support to specific pilot projects, covering all of the Local Enterprise Partnership areas of the North West, and seminars to provide an insight into the pilot projects and an introduction to green finance issues.

The specific pilot projects involved workshops with six project teams to help them develop robust green finance models and approaches for renewable and low carbon energy schemes, and working with each team to explore how the options might be taken forward.

The pilot projects were:

- [Cheshire and Warrington](#) – solar PV installations
- [Cumbria](#) – low carbon transport
- [Greater Manchester](#) – Low Carbon Investment Unit
- [Lancashire](#) – two projects: solar PV and renewable heat supplies
- [Merseyside](#) – district heating scheme

4.2 Cheshire and Warrington

4.2.1 Background

Within Cheshire and Warrington a partnership approach was being adopted to utilise solar photo-voltaic (PV) arrays within the public sector. Organisations involved included all three local authorities (Cheshire West and Chester, Cheshire East and Warrington) in addition to organisations from the NHS, Police and Fire and Rescue and Colleges / Universities.

All of the organisations involved recognised that solar PV was not the number one priority from a purely environmental perspective, but that the 'Feed in Tariff' ('FIT') regime would permit organisations to generate a revenue stream from its activity that could be invested elsewhere, including further green initiatives.

Projects considered by partners included:

- Solar farms on former county farm estate or contaminated brown field sites unsuitable for other forms of economic regeneration;
- Sitting of arrays on corporate buildings such as council offices or hospital buildings; and
- Sitting arrays on school buildings.

4.2.2 Initial challenges

Most of the challenges facing the group were common. These included:

- Knowledge of technology and time to investigate – many officers in the public sector simply do not have the time to investigate and understand the technologies, Feed in Tariffs, prepare a business case etc.
- Condition of host buildings – the FIT regime generates payments over a 25 year life. Buildings that require significant investment, i.e. a new roof or repairs to a roof in this period, would lead to potentially prohibitive costs as the array would need to be dismantled and then re-erected.
- Planning issues – solar farms could prove difficult to obtain planning permission for due to objections from local people despite recently announced restrictions on the size of commercial solar arrays.
- Metering – not all entities control their own access to the national grid, e.g. hospital sites where facilities are shared amongst different organisations, preventing the organisation that had invested in the solar array reaping the full benefits of the investment.
- Security of tenure – cost pressures are making many organisations reconsider their property strategy, especially where fewer staff need to be accommodated. The costs incurred in installing a solar array would be unlikely to be recouped when disposing of a building even if the new owner took advantage of the FIT revenue and energy saving derived from the array.
- Local authority restructuring – potential government policy to allow schools to become fully independent of local authorities could see their investment in the solar array on school buildings transferred away from their control with minimal compensation.
- Financial payback periods – many organisations have strict rules regarding the required payback period for capital investment, typically five years. Solar arrays, even with FIT revenues, typically payback over a longer period, 9 to 12 years, although FIT revenues are guaranteed for 25 years from inception.
- Matching concept – solar PV is seen as a capital investment made centrally that often generates revenue benefits for specific sub-sections of the organisation, i.e. the department utilising the relevant office building – how can this benefit then be matched to the expenditure incurred?

4.2.3 Potential solutions

Following discussions at the second workshop a range of actions were identified that addressed one or more of the above challenges:

- Production of guidance notes for the public sector across Cheshire and Warrington and sharing of business cases, etc.
- Project financing – an alternative to using all revenues to pay back the original capital investment is to structure the financing over the life of the project, i.e. the 25 year life of the FIT income. This would reduce annual repayments and allow revenue gains to be realised from the date the project first became operational, which could then be reinvested or utilised in other areas.
- Framework agreements – establishing a procurement framework agreement for the solar arrays reduces the costs of commissioning a scheme and makes smaller schemes encouraged by the FIT regime viable. Such a framework would also encourage local contractors and suppliers to participate, providing further economic gains to be included in the project appraisal.

- Flexibility of solution – there is no ‘one size fits all’ approach to the challenge facing organisations. In some cases, agreeing a ‘rent a roof’ approach, e.g. for a school site, allows the school to receive a financial benefit for no capital outlay and minimal risk, provided proper legal advice is obtained and the contract terms understood fully.
- Collaboration models – there is scope to create either a separate legal entity or a specific cross organisational group to develop schemes on behalf of a range of organisations in the area. A separate legal entity could examine projects that fall outside local authority constraints, i.e. longer payback periods. By using prudential borrowing supplied by local authorities projects would still be financially viable. This could be done in conjunction with the LEP.

4.2.4 Key lessons

Early buy in from senior decision makers (executive directors, elected members, governors etc) is vital. At Warrington Borough Council a small amount of Salix Finance funding was used to invest in environmental projects, with the returns being ring-fenced and re-invested in new projects of a similar nature. Extensive consultation and regular updates for executive officers and councillors ensured that this approach was supported and continues to operate despite cost pressures.

Seeing is believing. Many decision makers are risk averse, especially in times of economic challenge – demonstrating that a similar scheme is operating successful somewhere else can overcome some of the concerns that would otherwise be raised.

4.2.5 Future actions

To progress the project further some key actions need to be addressed:

- A technical understanding is required of how the FIT regime works with multiple users of a single site (with one external meter to the grid)? Does the 50 kW apply to the single external meter, or the different users (each with their own internal meter) located on a single site.
- The appetite of partner organisations to engage in collaboration needs to be explored – would organisations be happy to create a separate entity to take the project forward and how would this be financed and operate? Would a procurement framework allowing access to providers be more appealing? Could the two work side by side given different levels of involvement from different organisations?
- Success stories from within Cheshire and Warrington need to be circulated to key contacts in each organisation and these used to inform, educate and persuade key decision makers. Examples already exist in respect of ring-fencing savings at Warrington Borough Council, and solar PV arrays fitted at Mid-Cheshire College.

4.3 Cumbria

4.3.1 Background

The Lake District National Park Authority ('LDNPA') has created a vision for a Transport Framework which is designed to create a sustainable Lake District. A range of transport solutions have been included within the framework, including:

- Transport hubs;
- Traffic management;
- Low carbon vehicles;
- Passenger transport; and
- Non-motorised transport.

The Authority was submitting a bid to the Local Sustainable Transport Fund to finance the development of these solutions as a pilot study within the southern part of the National Park.

In developing the projects linking into the Framework, a range of partners were engaged, including Cumbria County Council, Cumbria Community Rail Partnership and a number of commercial organisations including transport, hotel and attraction operators.

4.3.2 Initial challenges

A number of challenges were identified relating to the specific projects arising from the Transport Framework developed:

- Fundability of proposals – to attract third party commercial financing for a project it needs to be able to generate a revenue stream which can be used to make capital and interest repayments. Some of the projects identified may not be able to generate this type of revenue stream and would need to be financed in other ways, i.e. grant, investment by the LDNPA etc.
- Customer focus – success of the project will be measured by the number of existing visitors, who currently use their car to travel to and around the National Park, who switch to the new low carbon alternatives. While new visitors must be encouraged to visit the Park, it is critical that the current visitors change their behaviour.
- Need for co-ordination – integrated transport is important, for example having a coach operator collecting rail passengers from the station and transferring them to their hotels. However, it is important that this is incorporated within the Framework as outside operators, while making a profit on such services, could impact on the viability of the overall Framework if they acted in competition to other arrangements.
- Rail transport – rail franchises for both Virgin West Coast (serving Oxenholme from London, the Midlands and Scotland) and First Trans Pennine (serving the Windermere line from the North West and North East) are due to be renewed shortly. This could result in the loss of a connecting service to Windermere when further investment in the line to improve services, such as electrification, is required.
- National Park ethos – the National Park was created to expand opportunities for ordinary people to visit and enjoy the environment. The schemes and the costs

for use of these schemes cannot prevent access to the National Park for those who cannot afford these options.

- Smartcards – Cumbria County Council have been developing a Smartcard system for use on buses and visitor attractions. Need to understand how to develop a business case to roll this out which can be used to attract companies and other organisations to the scheme.

4.3.3 Potential solutions

Some of the potential solutions to these issues were discussed as part of the workshop. These included the following:

- Product placement – negotiations have been held with car companies to supply low carbon electric vehicles for a locally based hire car scheme – they would use the opportunity to promote their products to wide group of potential customers. One company believes the area covered is too small, although other manufacturers may be interested. Similar opportunities may be available for other companies looking to demonstrate new technologies and products.
- Commercial partners – the LDNPA has been approached by one organisation to create an electric bicycle network within the southern Lake District. For a small initial capital contribution the organisation would create and operate the network financed by charges made to the scheme's users.
- Behaviour changing – Nurture Lakeland have begun work with hotels and other providers of holiday accommodation to promote attractions that are local to the accommodation. This promotes repeat visits or multi-centre stays with visitors exploring specific areas of the National Park as opposed to visiting attractions across Cumbria with the resultant need to travel by car.
- Visitor vouchers – tickets or vouchers could be sold or provided free of charge to visitors alongside their accommodation or rail ticket. Agreement would need to be made with the relevant partners (for rail, this would need to be included within the terms of the franchise) and a method of financing this discount would need to be agreed.
- Working with other regions – Manchester promotes itself as a transport hub with the attractions that can be accessed from the city. The National Park is one area that can be easily accessed by rail, and support might be forthcoming to promote this option to visitors. Extension of Manchester's 'plugged in places' scheme to the National Park is another option.

4.3.4 Key lessons

Money talks. To create a project that will be attractive to outside financiers, a clear revenue stream for the project must be identified. This will be subject to scrutiny by the financier who will focus on the downside risk to ensure that the financing can be repaid even if the project is not as successful as hoped. Projects may be bundled to attract funding for some activities which cannot demonstrate such revenue generating opportunities provided the overall revenue covers the cost of financing the whole portfolio.

Collaborative working is important. No single entity can create and operate such a Framework without the support and assistance of a range of other organisations from across the public and private sectors. A clear strategic vision is vital to attract

this support and ensure that the framework does not lose its focus in the face of competing interests.

4.3.5 Future actions

To progress the project further some key actions need to be addressed:

- Individual projects proposed need to be reviewed to identify the revenue streams that may be generated by the project. Potential synergies need to be identified between those that can generate a return with those that cannot to assist in the bundling of projects into a portfolio that could attract outside finance.
- The support of partner and other organisations for specific schemes should also be identified. This support could allow schemes to be funded by these organisations for reasons and synergies that are specific to that organisation and which would not be available elsewhere, allowing these to progress without the need for specific project or asset backed finance.
- Business cases need to be developed for the projects and / or portfolios to attract support for these schemes.

4.4 Greater Manchester

4.4.1 Background

Authorities within Greater Manchester have been working collaboratively for some time under the banner of the Association of Greater Manchester Authorities ('AGMA'). This is a structure which sees Chief Executives from around the conurbation take the lead on cross-regional working for different policy areas, including sustainability and climate change. As of 1 April 2011, this co-operation had a solid statutory footing with the establishment of the Greater Manchester Combined Authority, the first in the UK.

Greater Manchester is creating a Joint Investment Unit ('JIU') to support the implementation of this policy framework and to maximise the benefit of the JESSICA European monies to the region. It is proposed that a Low Carbon Investment Unit ('LCIU') also be created to focus specifically on supporting projects with objectives around sustainability and the environment.

Discussions around the creation of the LCIU are ongoing.

4.4.2 Initial challenges

In the creation of a LCIU a number of challenges and questions were identified by KPMG and colleagues at AGMA:

- Structure – should the LCIU be part of the JIU, and then interface with colleagues around AGMA on projects, or should it stand alone, working directly with AGMA colleagues and providing an interface with the JIU?
- Role of the LCIU – what should be the role for the LCIU? It could act as a gate keeper appraising projects submitted by local authorities and approving or rejecting their advancement to the next stage of development. Alternatively it could work directly with the staff in the local authorities providing support, advice and guidance to them as they develop the projects initially.

- Project prioritisation – how should the projects supported by the LCIU be prioritised? Should priorities focus on carbon reduction, or economic return to the Unit from the project?
- Project development – following the initial development and approval, significant work will then be required to develop the project further to make it a project that could attract external investment. How would this work be financed?
- Skill base – what skills does the LCIU need to incorporate and what skills can it access from elsewhere within AGMA and through contracting with external experts?
- Private sector involvement – while the private sector does need to be involved in these projects, there is a risk that the most attractive projects could be ‘cherry picked’ leaving the local authorities with the residual projects that generate little return on the investment.
- Other projects – other projects may well be developed within AGMA and the JIU which do not have a low carbon focus but could have this as a side effect with a small amount of development. What role would the LCIU have in reviewing these other projects, identifying the opportunities and supporting the development of the low carbon opportunity that the projects represent?

4.4.3 Potential solutions

Following discussions at the workshops, a number of potential solutions were identified:

- Role of the LCIU – irrespective of its eventual name or structure, the LCIU needs to focus on stages one and two of the project lifecycle (see [Section 3.3](#)) and seek to attract private finance into the project for stage three. The focus should be on using public funds to leverage in private finance, not finance the whole project itself from the LCIU.
- Skills sets – majority of skills required to operate the LCIU exist within AGMA at present and can either be transferred directly into the LCIU or accessed by it, as and when required. AGMA, however, will need to decide whether to bring in permanent in-house skills to assist with aspects of the detailed technical analysis. This will depend on the number of projects being developed that require these specific skills and the ability to attract staff of sufficient calibre.
- Portfolio approach – the LCIU should have targets for carbon reduction arising out of the projects it supports. This allows a range of projects to be developed and could allow projects with a financial return to be packaged with projects with a significant carbon reduction benefit and minimal financial return to create one overall bundle which could attract investment.
- Finance – a number of different finance options could be used depending on the size and risk of a project. For smaller projects the LCIU could use its own funds (possibly generated by returns from earlier projects) while it could also go into the market to seek funds for the larger projects it cannot support itself. For riskier projects, it might also be able to act as a guarantor to the private sector to allow commercial finance to be raised.

4.4.4 Key lessons

Senior support is vital. While AGMA as a group is committed to working together to improve and develop Greater Manchester, it is a grouping of different local authorities each with their own objectives and political focus. This makes it even more difficult and important to get senior buy-in for a project like this to develop.

Clear vision. To aid that buy-in process and focus the development of a LCIU there needs to be a clear objective for the LCIU in terms of its overall vision and how it will operate in supporting local authorities and the projects that they want to develop.

4.4.5 Future actions

To take the project forward, the following steps need to be taken:

- Agreement within AGMA that a LCIU or equivalent will be created, with an agreed structure and role and the resources to allow it to develop.
- Focus on three projects which are known to work and can be used by the LCIU to test and develop their own working arrangements. These are electric vehicles, heat networks and retrofitting environmental technologies to houses.
- Start with relatively small investments in the first instance and then start to take on larger projects as experience develops. A range of investment models could be used to help ramp up this experience, for example initially renting land to private sector developers then taking on a more involved development role later on.

4.5 Lancashire County Council

4.5.1 Background

Lancashire County Council has a portfolio of 2,000 buildings that they own and operate – this includes over 600 schools. The Council wants to take action to reduce the energy usage and costs of these buildings to reduce the environmental impact of the estate and to address the financial challenges facing all local authorities at the current time.

A draft Energy Strategy has been written for the schools estate which is looking at exploiting the Feed In Tariff regime (FITs) as well as more economical lighting and heating systems. These would free up resources to reallocate to teaching and supporting learners. Some schools have already entered into 'rent-a-roof' schemes with commercial operators.

Across the rest of the estate the use of solar arrays has been reviewed, but no work has yet been done. The Council has estimated that it can prudentially borrow over 25 years at 3.5%, which gives it a significant cost advantage over private companies looking to invest in similar technologies, making the returns higher and, therefore, more schemes financially viable.

4.5.2 Initial challenges

To develop these ideas a number of challenges exist:

- Payback period – although the cost of borrowing would be low, payback periods on renewable projects such as solar arrays would still be eight to ten years. The Council has a ring-fenced fund of £0.5 million for energy efficiency projects, but these must repay over a maximum of five years.
- Survey costs – all potential schemes must be properly surveyed before they can be developed. This would include a survey for technical feasibility and cost, as well as detailed financial analysis. These represent a cost to the Council that must also be financed even if the proposed scheme does not proceed. Some organisations have offered free surveys in return for the contract to deliver the works – this, however, is not possible given EU procurement regulations.
- School autonomy – schools are becoming increasingly independent of local authorities, especially when they take advantage of the opportunity to be academies and leave the control of the local authority completely. The Council's investment in the school estate that then falls outside of the Council's control could again impact on the financial viability of the schemes proposed.
- Rent a roof schemes – a number of schools in Lancashire have signed up to deals already. By doing so independently of the Council's advice there are concerns over the clauses that might be contained within these contracts, which could pose significant financial penalties on the schools if the contracts cannot be honoured in full, i.e. because during the life of the project the solar array needs to be dismantled to allow for repairs to the roof on which they are located.

4.5.3 Potential solutions

As with our second Lancashire pilot only a single workshop was held, however, some discussions were held about potential solutions to the challenges faced:

- Structuring of debt finance – the Council has already identified that it can borrow at 3.5% over 25 years. It could use these monies to finance green projects over a 25 year life cycle. While this would extend the debt repayment period, the Council would be generating instant cash returns that could be used to develop other environmental improvements and projects, or support the Council's wider service.
- Different contracting structures – the Council could begin to generate returns from green projects without an upfront initial investment. The 'rent a roof' schemes would generate a small financial return which could then be used to invest in other projects, such as the Council installing solar panels itself on its own buildings.
- Contractual support – the Council could procure one or more 'rent a roof' providers based on a standard contract that would then be recommended suppliers to schools – mitigating the risk of contractual issues on the schools behalf that might arise if a school failed to undertake a proper legal review of the contracts before signing.
- Facilities management – the Council could undertake a tender exercise to identify a firm to undertake a full survey of, and manage, an energy efficiency programme for the Council. While there would be a charge for this service, it would be more efficient than a piecemeal approach and could identify a range of innovative solutions that had not previously been considered.

- Sample surveying – if the Council did want to retain control of the surveying process, it could commission a small number of surveys of properties deemed to be representative of the Council's wider property portfolio, and use the information gained from these surveys to identify and then develop a technical and financial business case for a standard range of projects.
- Private sector partnerships – the Council could enter into a partnership with a private sector company to develop some of these environmental solutions. Smaller local companies might be able to work with a lower cost base and make the schemes more affordable, as well as promoting local economic development.

4.5.4 Key lessons

Clear goals win political support. To develop these projects it is important to get the support of the elected members. To win this support, and maintain it over the lifetime of more than one council, clear goals, both financial and environmental, are needed to attract support and maintain this support despite changes in the elected membership and possible changes in political power.

4.5.5 Future actions

To progress the Council's development in this, the Council needs to identify its key goals for the programme of environmental works – what targets does it want to set itself to achieve, and what is it prepared to do (i.e. borrowing, working with private partners, support schools to work independently of the Council) to achieve these?

4.6 Lancaster City Council

4.6.1 Background

At Lancaster City Council climate change is one of the four Corporate Plan priorities, and there remains a commitment to reduce energy consumption and access Feed in Tariffs to address climate change while also helping the financial position.

Lancaster's 'Energy Coast' is also a key driver for economic regeneration in the area.

One opportunity identified by the Council to reduce energy consumption is the Salt Ayre Sports Centre, which was built in two phases in the 1980s and 1990s. It represents half of the Council's annual energy costs and its heating system is due to be replaced in the next few years.

The sports centre is adjacent to a landfill waste site operated by a private waste collection company. A sub-contractor has been appointed by the site operator to collect the methane gas created by the landfill site and use it to generate electricity for export to the National Grid. The turbines used to generate the electricity are water-cooled – this water is currently cooled by more water, and then released into the drainage system.

The Council has had initial discussions with the waste site operator to pump the hot water to the sports centre and use this for heating the pool and buildings. An initial feasibility study has been conducted and confirmed that it is technically feasible.

4.6.2 Initial challenges

To develop a specific project such as this poses a number of challenges:

- Capacity of scheme – the swimming pool would only utilise one third of the hot water generated by the site. Other commercial entities could use the remaining capacity through a district heating scheme, but this could be complex to establish.
- Technical considerations – the use of the hot water by the heating scheme may have a negative impact on the efficiency of the electricity generators as a result of changing the system. The full impact of the reduced efficiency would need to be identified and the site operator and sub-contractor would need to be compensated for this loss in generation capacity.
- Long-term viability – it is estimated that there would be sufficient gas generate by the site to power the generators for at least the next 15 years. This life-cycle would make the project financially viable when looking at the global costs and revenues derived from the scheme. However, the life of the site is not guaranteed, and an earlier than expected closure would impact on the returns of the project.
- Financial costs – the initial expectations are that the scheme would cost c. £1 million to install and make operational. The County Council, who own the land fill site, are not willing to invest this level of resource into the project, and neither, as yet, are the site operator.
- Contractual relationships – to develop the scheme a series of contracts would need to be established between the Council, the site operator and the sub-contractor over the construction and operation of the scheme. Clear lines of responsibility would need to be established so that responsibility can be attributed to a given party in the event of a technical failure and the financial costs that would ensue.

4.6.3 Potential solutions

Only a single workshop was held for this project, but arising from it there were a number of actions required to take the project forward:

- Technical structure – the simplest way to develop the project is to contract with the site operator for an outflow pipe to be constructed to bring the hot water from the generators to the site boundary. This operation would be within the site operator's control. The Council, through a subcontractor, would then take responsibility for extending the pipe to the sports centre, and connecting it to their heating system.
- Contracting structure – clear contractual relationships would need to be put in place between all three parties. The site operator would need to be able to guarantee the quantity and temperature of the water provided at the boundary of the site and the time span and availability of the supply. Failure to meet one or more of these requirements would hinder the efficiency of the centre's heating system and require additional energy consumption, increasing costs and reducing the financial return of the scheme.
- Joint venture structures – it would be possible to create a joint venture structure in which the Council, site operator, sub-contractor and possibly even the construction company installing the scheme could all invest. The contracting structure would be between the JV entity and the other parties. It would allow the Council, for example, to develop the scheme with a reduced capital input, while incentivising other partners to maximise the return for the Group.

4.6.4 Key lessons

Identify and resolve the key issues upfront. To raise the finance to pay for this project, it is essential that a guarantee be obtained from the site operator that the electricity generating facility will remain operational for a sufficient length of time for the projects costs to be recovered as a minimum. This guarantee would include operating the site at less financially attractive times to ensure that the hot water continued to be supplied, or agreeing to make a financial payment to the Council or other investors if the project were terminated early. Without this guarantee the project would be too risky to be financed by a private financier.

4.6.5 Future actions

Having identified that the project is technically feasible, the Council must enter into negotiations with the site operator to see if it would be willing to give the required guarantees that would allow the project to progress. Without an agreement that these guarantees would be forthcoming, it would not be recommended that the more detailed, and costly, second stage of the feasibility study be commissioned as the scheme would be unlikely to be financed, and further costs would have been incurred with no financial return.

4.7 Merseyside

4.7.1 Background

Knowsley Metropolitan Borough Council ('KMBC') is involved as the current major land and freehold owner for the majority of the Knowsley Industrial Park ('KIP') and as the public body responsible for the economic development of the Borough. KIP has a range of office, warehouse and manufacturing facilities with major companies such as Dairy Crest, QVC and the Potter Group through to SME traders. There are over 800 companies based at the park employing 15,500 people.

KMBC are exploring the option to build and operate a combined heat and power plant on the Park to supply heat to the businesses based in the Park and potentially to a residential area nearby. It will address two strategic aims for KMBC:

- 1) To enhance the delivery of climate change strategy; and
- 2) To increase the attractiveness of Knowsley to business.

The report 'Future of Knowsley Industrial Park – Strategic Framework – DTZ 2010' confirmed that the heaviest energy users on the Park could benefit from a local heating network. Some of the companies based on the Park have expressed an interest in being involved in the project, as have two large commercial power companies. At present no decision has been made on the energy source, although various options could come under consideration.

4.7.2 Initial challenges

Following the initial feasibility study, a number of challenges have been identified to the development of the project:

- Customer base – a power plant such as this is a long-term project and requires a long-term commitment and usage requirement. The diverse nature of the Park's residents and the ability for the mix of residents to change in the long-term will

make it difficult to identify the long-term generation needs of the plant and how that need can be met, for example will demand remain steady throughout a 24 hour period, or will it change rapidly during the day?

- Development of the Park – the Park will change and develop over time as the demand changes. The Park could be expanded and the nature and use of the units on the existing site could also change. These will also have an impact on the overall demand and the nature of the demand for heat from the plant.
- Local government spending constraints – KMBC are undertaking a significant review of their structures and finances (as with the rest of the local government sector) as a result of the Comprehensive Spending Review. Given this KMBC may have reduced options to access prudential borrowing sources to commit to this type of development, and it is likely to be funded through the private sector.
- Private Finance Initiative ('PFI') – many large capital schemes within the public sector in the last ten years have been financed under the PFI model where private companies contract with the public sector to build and operate an asset that is then used by the public sector for a fixed term in exchange for lease payments to the private sector. While such a model would be technically feasible here, there is currently a lack of projects in the market of a similar type and scale increasing the time taken to develop the project.
- Pricing – energy prices have experienced significant fluctuations over recent years, and are currently trending upwards making the project attractive. However, some customers may be reluctant to sign long-term energy contracts in case energy prices reduce in the future leading to uncertain future revenues and issues with raising the necessary finance.

4.7.3 Potential solutions

Throughout the workshop discussions a range of different financing solutions were identified:

- Working with an existing partner – one energy provider already has planning permission for a power plant in the area. KMBC could work with that company and pay them for the heat takeoff from that plant. This would be complex from a contractual perspective as KMBC may bear the risk of supplying customers on the Park for heat to meet their demands, while only receiving a fixed supply of heat.
- Large energy companies – renewable energy is an evolving market in which large energy companies can borrow against their corporate balance sheet as well as raising specific project finance for schemes. Working with one of these companies could meet the environmental and operational needs of the project with minimal risk and financial input from KMBC.
- Pension funds – pension funds invest contributions from members to generate a return to finance their future pension payments. Energy projects such as this could prove to be attractive to pension funds as a way of generating a long term cash flow and return. However, they would be focussed primarily on the financial return from the project and other social and environmental benefits would have only a marginal impact on the investment decision.
- Joint ventures ('JVs') – there are a range of project structures available in which KMBC could have a smaller or larger stake depending on their ability and interest in investing capital (both financial and physical assets). Partners working with

KMBC in the JV could make a range of contributions including financial, management or equipment.

4.7.4 Key lessons

Plan. Large scale capital projects can be very expensive to construct, but also expensive to develop. It is essential to undertake a rigorous and robust feasibility and options appraisal early in the project development stage to ensure that there is demand for the project's output and that the right solution has been identified before further costs are incurred and money potentially wasted in developing blind alleys.

Senior officer support is critical. When making significant capital investment decisions senior officers and members must be supportive of and buy into the project in addition to seeing a financial return. Senior officers can provide long-term support for a project as it is under development. Elected members may be unable to do so due to the election cycle and turnover of members and changes in administration. Senior officers will be the key point of contact for members and essential to bring their support to the project when required.

4.7.5 Future actions

To progress the project further a feasibility study needs to be undertaken to:

- Assess the practical issues including the technical options, delivery options, charging, funding and financial models, commercial issues, planning, land requirements, site location options and issues, usage, consultation and involvement of key businesses, supply arrangements, risks and business case development issues.
- This will allow a full business case to be developed and a clear decision to be taken as to whether such a Plant will be technically as well as commercially viable, the size of the heat network to be developed (to encompass the whole Park, or just a sub-section of it) and the size and cost of the plant required to meet these demands.

4. Appendices

Appendix 1 – Business case outline

The following appendix sets out the sections that should be included as a minimum in the business case to address the questions posed by the five case model, as set out in [Section 3.2.2.4](#):

- [Strategic fit](#)
- [Objectives](#)
- [Options appraisal](#)
- [Commercial aspects](#)
- [Affordability](#)
- [Deliverability and Risk](#)

This list is not exhaustive but covers the main areas that would be required to support a project. Individual local authorities may have additional guidance and requirements that will need to be addressed in addition to the above.

The specific areas that may differ for a renewable energy project, in comparison to other local authority delivered infrastructure, are under the commercial, affordability and deliverability aspects of the project. The low carbon market is evolving and the commercial and deliverability aspects of a project will be impacted by what the private sector will accept and this needs to be market tested. In terms of affordability, green projects can have the ability to generate revenues and, therefore, affordability can be expanded to include repayment of any loans used to fund development solely from project revenues.

In addition, further information is also provided on the key questions that should be asked about the project and answered within each section of the business case. The questions included are not exhaustive and may be applicable to different sections depending on the structure of the actual business case. Additional questions will be applicable depending on the project and the local authority requirements. Unanswered questions or queries will lead to further work being required post the completion of the business case.

The following link contains template documents that can be used through the different stages of the project:

http://www.hm-treasury.gov.uk/d/greenbook_toolkittemplates170707.pdf

Strategic fit

As a minimum this section of the business case should describe the business need and how fulfilling this need fits in with existing strategies, policies, programmes and project management structures and how it will contribute to the achievement of the organisation's overall business strategy. This should clearly set out the links to these different strategies etc.

Renewable energy may not be included within the current strategic plans for the local authority and part of the process for developing the strategic case for a specific

project will be to define the strategic case for renewable energy projects within the local authority e.g. local spatial plans, renewable energy targets, carbon reduction plans etc.

Some of the key questions that should be addressed within the strategic fit section are as follows:

- What is the low carbon strategy of the local authority and where is this documented?
- What does the strategy say in relation to the specific project being considered or the type of project being considered?
- What does it say in the local Spatial Plan / Local Development Frameworks in relation to renewable energy projects and the area in which the project is proposed to be constructed?
- What are the stated renewable energy targets or carbon reduction targets identified in any local authority strategy documents?
- What are the outcomes of the project and how do these meet / link into the different strategies and address any issues highlighted?
- What is the investment case for the project?
- Why is the project needed now?

Objectives

This section can be combined with the “Strategic Fit” section above or stand alone. It needs to detail why the project is needed now and what are the key benefits that will be realised from proceeding with it. It also needs to explore what will be the critical success factors for the project and how, and at what stage(s), they will be measured.

Some examples of the key benefits that may be achieved through the development of a renewable energy project may be as follows:

- Revenue generation
- Electricity cost savings
- Addressing fuel poverty
- Increased local employment
- Carbon reduction
- Meeting renewable energy targets

The objectives need to be clearly defined and articulated to support the assessment criteria that will be required to select the preferred project approach. The proposed outcomes and associated benefits also need to be set out.

Projects developed will be unlikely to meet the expectations of all the parties involved. It is, therefore, critical to develop the objectives of a project while consulting with the stakeholder group in advance of undertaking detailed analysis. A change in objectives for a project can alter the preferred approach and lead to wasted effort in development.

The objectives section should answer the following key questions:

- What are the key objectives / outcomes of the project?
- What are the benefits of the project?
- What are the critical success factors against which the project will be assessed?
- How have the objectives of the project been defined and who has been consulted?

Options appraisal

The potential viable options for meeting both the business need and for delivering the project should be outlined and their relative costs and benefits should be detailed.

This should include as a minimum:

- Description of key features of (ideally) at least three options for delivering the project;
- High level cost/benefit analysis of each option;
- Analysis of 'soft' benefits that cannot be quantified in financial terms e.g. jobs that might be created as a result or businesses that could be attracted to an area as a result of its "green" approach; and
- The preferred option highlighting any trade-offs that would be made in accepting this preferred option.

For the purposes of assessing renewable energy projects, the options appraisal should focus on the project structural options that could be adopted and the funding routes that could be used to fund the project.

The appropriate delivery mechanism for a project should meet the objectives of the local authority and be deliverable i.e. the private sector should be willing to deliver the project under the proposed contract structure. The assessment of the delivery mechanism is critical as it defines the risk and the benefits that are transferred to the private sector. Due to the long term nature of projects the local authority could be locked into a long term delivery contract with associated financial liabilities that need to be managed. The deliverability of the project should be market tested where a novel approach is being considered.

Some of the financing and delivery issues to be considered are discussed in more detail in [Section 3.5](#) of this report.

The delivery mechanism should consider the constraints of the local authority from both a financial resources perspective and a skills perspective with the assessment of each option addressing the financial and resource requirements. The financial constraints assessment can be included under the options appraisal or affordability sections as appropriate. Where suitable resource is not available the options should include the appropriate route to filling that gap and the associated cost such that the costs of delivering the whole solution can be included and compared for each option. The options analysis needs to reflect the high level risks that are associated with each of the options with reference to the detailed analysis included in the Deliverability and Risk section.

Key questions that should be answered as part of the options appraisal include:

- What is the outcome if nothing happens (the do nothing case)?
- What is the methodology for assessing the options?
- What are the potential internal and external funding sources that could be used to fund the project?
- What are the restrictions around each of the potential funding sources? This should include legal restrictions, applicant restrictions, timetable issues etc
- What are the delivery options that could be used?
- What are the pros and cons of using each of the delivery options? This includes identifying what funding sources may or may not be available as a result of the delivery option

- What are the authority cash flows generated from the project under each option?
- What is the associated development cost and timetable associated with each of the delivery options?
- Are there any market precedents for delivering similar projects in a similar way and what were the outcomes / lessons learnt?
- What are the soft benefits that are generated through the delivery options?
- What are the key risks retained by the local authority under each option?

Commercial aspects

This section should contain information on the key metrics of any potential commercial arrangements being entered into.

Renewable energy projects can involve a number of different departments from across a local authority, e.g. estates, sustainability and finance teams, and in order to successfully deliver the project on time, resource will need to be committed. The commercial approach should, therefore, include details of the external arrangements, such as the construction contractual approach and electricity offtake arrangements, along with the arrangements for the internal delivery of the project and internal agreements that will be required where appropriate.

The contracts that may be required for a project are discussed in more detail in [Section 3.4.4](#) and the minimum content required for this section would include:

- Key features of proposed commercial arrangements (e.g. contract terms, contract length, payment mechanisms and performance incentives)
- The procurement approach/strategy with supporting rationale.

The procurement approach should detail the process that is to be adopted and address any procurement legislation that may be applicable to the procurement process and how the proposed approach meets the requirements.

The liabilities that will be retained by the local authority should be clearly identified.

Key questions that should be answered as part of the commercial section include:

- Have the contracts required to be developed been identified?
- Have details of the risks transferred under each of the contracts been set out?
- Have the key contract terms, such as termination provisions, been developed and considered against market precedents?
- Have the payment terms and performance requirements been developed?
- Have the liabilities associated with the preferred option been assessed from the local authority perspective, including any residual risk?
- Has the procurement process been defined?
- Has a detailed plan for the delivery of the project been developed?
- Have all internal agreements for land access / transfer been identified and approved in principle?
- Have the internal stakeholders required to participate bought into the process and committed any required resource?

Affordability

This section may be included here or as part of the options appraisal and, depending on the project, may be very short and simple or more complicated. It needs to cover what the available funding is and estimates of the projected whole-life cost of the

project including any resourcing or 'opportunity' costs for staff who would be working on this rather than something else.

Key questions that should be answered as part of the affordability analysis include:

- Have the investment costs in the project been assessed?
- Has an estimate of the development costs been calculated and funding sources identified?
- Has the cost analysis included Optimism Bias, as detailed in the green book guidance, and risk contingencies?
- Have the project costs and revenue streams been accurately modelled over the life of the project?
- Has a financial sensitivity analysis been undertaken to determine the robustness of the project to movements in underlying costs or poor project performance?
- Has the project been assessed for acceptable balance sheet treatment from the perspective of the finance department?
- Has account been taken of all the appropriate financing and tax costs associated with the delivery model?

Deliverability and Risk

This section needs to cover two critical areas; the plan for achieving the desired outcome and the main risks to this plan being achieved. It should contain both for the project as a whole and specifically for the preferred option:

- High level plan for achieving the desired outcome, with key milestones and any major dependencies;
- The scope for contingencies and any outline contingency plans;
- Skills and experience required to achieve plans; and
- Major risks identified and any risk mitigation or management strategies proposed for addressing them.

Key questions that should be answered as part of the deliverability and risk appraisal include:

- Has the timetable been developed with input from people experienced in undertaking similar projects?
- Has a suitable delivery team been assembled to deliver the project within the timetable?
- Does the timetable include sufficient time for the internal approval processes?
- Has the commercial structure been adopted on other projects or has the structure been tested with the market (private sector and potential lenders to the project)?
- Has a full risk analysis of the project been undertaken?
- Has the impact and frequency of project risks materialising been assessed?
- Have all eventualities (initiating events) been identified and the associated risks been assessed?
- Has a management / mitigation strategy been identified for each of the risks facing the project?
- Has the risk analysis taken into consideration both the public and private sector risks?
- Has the risk analysis taken into consideration the planning risks that face the project and the costs associated with overcoming any planning conditions?
- Has the delivery capability of the local authority been assessed and matched against the requirements?

Appendix 2 – Risk descriptions

This appendix describes the risks that have been included within the “Guide to Financing Green Projects”. The risks have been separated into pre and post construction contract signature, however, some of the risks may be present throughout the project lifecycle.

Pre Contract Signature Risks

Risk	Description
Financing Risk	<p>The risk that it is not possible to raise the necessary finance for the project. This includes the raising of both debt and equity finance required.</p> <p>This also includes the risk that the margins (debt costs) that will be applicable when the project is ready to be constructed are higher than those estimated during the development phase.</p>
Interest Rate Risk	<p>The risk that interest rates will increase during the life of the project, increasing the overall project cost. It is possible to mitigate / hedge interest rate risk through the use of interest rate swaps.</p>
Economic Risk	<p>The risk that economic pressures impact overall project costs. Inflation may increase over the development period resulting in the outturn costs being greater than expected. Raw materials may be sourced from outside the UK and the project could be exposed to changes in exchange rates. Economic pressures may limit skilled labour to undertake the project resulting in increased costs.</p>
Planning / Environmental Risk	<p>The risk that the project fails to achieve the necessary planning consents or that any Environmental Impact Assessment shows that the environmental damage associated with the project is too great.</p>
Design Risk	<p>The risk that the preliminary design is not deliverable as the design matures. This can result in increased costs, due to more complex requirements, and can potentially change the orientation and footprint of the project resulting in increased costs or even sites becoming unsuitable.</p>
Technology Risk	<p>The risk that the technology being considered and included in the design either becomes obsolete, no longer meets environmental criteria, is superseded by more advanced technology or even that the technology fails elsewhere in the world rendering it no longer suitable as a choice.</p>

Supply Chain Risk	The risk that there is reduced availability of the supply chain to deliver the project. This includes the manufacturers, installers and operators of the technology. The capacity of the supply chain can be influenced by the delivery model of the project (e.g. training suitable staff to operate the project), however, the project will compete for resources available to undertake the project with other similar projects and, therefore, there may be insufficient resource to deliver or long waiting lists for the required equipment.
Site Selection risk	The risk relates to the suitability of a site for a specific technology. While preliminary studies can show that specific sites may be suitable, more detailed site investigations can reveal characteristics that may make a site unsuitable, such as ground conditions.
Procurement Risk	This relates to the procurement approach that is adopted and the risk that the procurement process does not comply with EU regulations. There is also the risk that the procurement process does not attract sufficient interest in the project.
Project Delay Risk	Projects are subject to an assortment of delay risk as a result of other risks materialising and as a result of other external events or governance processes that delay the project.
Regulatory Risk	The risk that there will be a change in the regulation applicable to the project during the development phase. This can include changes in electricity market regulation as well as tax and accounting rules.

Post Contract Signature Risks

Construction Risk	The risk that delays, capital cost over runs or technology risks, such as failure of technology during the commissioning phase, materialise during the construction period.
Insurance Risk	The risk that changes in the insurance market result in some of the risks becoming uninsurable during the lifecycle of the project or that insurance premiums increase resulting in an increase in the project cost.
Ownership change risk	The risk that shareholders will change over the life of the project resulting in inexperienced owners taking control of the project and potentially poor performance.
Electricity Market Risk	The risk that the price of electricity will change outwith the predicted electricity price range resulting in reduced project revenues and project returns.

Operating cost risk

The risk that operating costs estimates, including both general day to day operating and maintenance costs and larger capital replacement costs, are underestimated.

Change in Law Risk

The risk that laws affecting the operation of the project will change after the project has been constructed and is operational. This risk could result in certain projects being unable to operate or require additional capital items to be installed in order to continue operation and, therefore, impact on the returns that can be generated from the project.

Appendix 3 – Project contracts

This appendix describes the key project contracts that may be required as part of a low carbon project. The contracts required will depend on the project type and the delivery model.

Contract	Description
Offtake Arrangements – Power Purchase Agreement	Power Purchase Agreements (PPAs) are contracts between two parties, one who generates electricity for the purpose of sale (the seller) and one who is looking to purchase electricity (the buyer). There are various forms of Power Purchase Agreements and these are differentiated by the source of energy harnessed (solar, wind, etc.). All sales of electricity are metered to provide both seller and buyer with the most accurate information about the amount of electricity generated and bought. Rates for electricity are agreed upon in the contract.
Construction / Installation Contracts	A contract to construct a project or install equipment. The contract will specify the terms that must be satisfied on completion of the contract, such as the specification that must be met by the completed project, and the damages that will be payable for performance failures under the contract. It is possible to deliver the construction under an Engineering, Procurement and Construction (EPC) contract. Under this structure a single party acts as the counterparty to the procurer and is responsible for delivering the whole construction project and procuring subcontracts as necessary.
Grid connection agreements	A formal agreement to connect the electrical systems of the project to the electrical distribution system. The connection requirements will be a function of the project and, therefore, connection agreements will vary in complexity based on the part of the network to which the project will be connected. For example, connecting a 4kw solar panel to the network will be different to connecting a 10MW wind farm. The agreement will need to set out the specification of the connection, the timetable for making the connection and the associated cost.
Land agreements (site and access)	Site access will be required in order to construct the project. The number and complexity of agreements will depend on the project but in all circumstances the project must have the necessary legal documents in place to install the equipment and operate for the term of the contract. For larger projects site access will be an issue and wayleaves (A right of use over the property of another) may be required in order to access the site and construct the project.

Supply agreements for equipment	A contract under which a supplier is required to provide equipment subject to the terms and conditions agreed in the contract.
Long Term Operating and Maintenance Contracts	Contracts for the provision of operating and maintenance services throughout the lifecycle of the project. The contracts should set out the necessary obligations, the payment terms and the mechanism for adjusting payments.
Interface Arrangements	When constructing projects there is potentially a requirement to have a number of different contractors on site delivering different elements of the project. An interface agreement sets out the responsibilities of each of the individual parties with a view to avoiding disputes at a later stage in the process. The requirement for a local authority to understand the detail of the interface agreements in place will depend on the delivery model and the residual risk remaining with the local authority.
Renewable Obligation and Feed in Tariff	While not formal contracts, projects need to be accredited under the appropriate scheme to qualify for the revenue benefits. Renewable energy projects need to be accredited for Renewable Obligation Certificates (ROCs) under the Renewable Obligation. The scheme is administered by Ofgem and accreditation is required to qualify for the ROCs. The Feed In Tariff (FIT) regime is similarly administered by Ofgem. Contracts will also be required to receive payment for both the ROCs and the FIT (unless traded directly in the market), the arrangements for which will need to be considered during the development of the project. The FIT is paid by the licensed electricity supplier and requires the necessary documents to be in place. The ROCs are a tradeable instrument and, therefore, there are different contractual arrangements that can be entered, the most straight forward being inclusion as part of the Power Purchase Arrangements.
Loan agreement	A loan agreement is a document setting out the details of the loan and includes but is not limited to the term of the loan and the representations, warranties, and covenants of the borrower. An interest rate swap agreement may also be required.

Appendix 4 – Contact Details



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Jon is a Director in our Public Sector Audit and Advisory practice and leads for KPMG on sustainability in the public sector. He is currently advising a number of public sector bodies on climate change strategy, performance management of carbon reduction, and reporting as well as on green infrastructure development and funding. Clients include DECC, Coventry City Council, Derbyshire County Council, OGC, and Centrica.

Jon has led KPMG's work with NWIEP on the Green Finance Project.

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Andrew McIntosh – Associate Director, KPMG LLP

Andrew is an Associate Director in KPMG Corporate Finance and has over six years experience providing project finance PFI & PPP advice to public and private sector entities. Andrew has advised on a range of energy infrastructure projects covering finance options for biomass, onshore and offshore wind projects and provided advice on partnership and delivery models to a number of public sector clients.

Andrew has led the technical support provided to the pilot projects as part of the Green Finance Project.

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Iain Leviston – Manager, KPMG LLP

Iain has 11 years working in KPMG's Public Sector Audit and Advisory practice, specialising in the local authority and social housing sectors. In addition to his audit responsibilities, Iain has undertaken a range of advisory engagements including options appraisals and due diligence assignments. Iain is also the sustainability lead for local government in the North.

Iain has project managed the Green Finance Project for KPMG, including establishing the Seminars attended by local authority colleagues from across the North West.

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