DEPARTMENT OF ENERGY & CLIMATE CHANGE

RESEARCH REPORT

Evaluation of the Low Carbon Buildings Programme

Undertaken by Ipsos MORI and CAG consultants for the Department of Energy and Climate Change

The views expressed in this report are those of the authors, not necessarily those of the Department of Energy and Climate Change (nor do they reflect Government policy).

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Contents

1. Executive Summary 3

2. Introduction 11

3. Summary of LCBP delivery 17

4. The alignment of the LCBP within Government's wider policy framework 21

5. Strengths and weaknesses of LCBP set-up and management 29

6. Experiences of LCBP applicants 43

7. Wider impacts of LCBP 59

8. Evaluating the LCBP against its objectives 79

Appendices 89

Appendix 1: Detailed logic model

Appendix 2: Methodology

Appendix 3: Research materials

1. Executive Summary

1.1 Research background and objectives

The Low Carbon Buildings Programme (LCBP) was initiated by government in January 2006 with the aim of supporting the growth of the UK microgeneration industry. The Programme had four main aims which were to:

- support a holistic approach demonstrating combinations of energy efficiency and microgeneration;
- demonstrate emerging microgeneration technologies on a wider scale;
- reduce the cost of microrenewable products; and
- to raise awareness, develop skills and encourage project replication.

The LCBP comprised of two main phases: Phase 1 (LCBP-1), administered by the Energy Saving Trust (EST), provided grants to householders, community groups and commercial organisations; and Phase 2 (LCBP-2), administered by the Building Research Establishment (BRE), provided grants to not-for-profit, non-domestic projects. LCBP-1 commenced in January 2006, and LCBP-2 joined it in 2007. These phases were extended in July 2009 and, alongside a series of other streams, closed to new applications in March 2010.

The Carbon Trust led one of the other LCBP streams. It ran a dissemination programme which involved detailed monitoring of 17 LCPB-2 exemplar projects and the production of a range of publications, videos and other resources to spread good practice for specific technologies.

An internal review of the LCBP has been undertaken by the Department of Energy and Climate Change (DECC). In addition, Ipsos MORI and CAG Consultants were commissioned to conduct an external independent evaluation of the LCBP. Through a mix of primary and secondary research the evaluation aimed to provide a comprehensive understanding about what the LCBP achieved and how the Programme was delivered at the strategic policy level and implementation operational level. In-depth interviews were conducted with the internal project management and finance team and the delivery contractors – BRE and EST (13 interviews), representatives from across the microgeneration industry (14 interviews) and grant applicants (38 interviews). A comprehensive desk review of documentation related to the LCBP (including all monitoring data) was also conducted.

This report presents the findings from this external evaluation. As a retrospective evaluation it should be acknowledged that the desk review was dependent on the availability of evidence and for some elements for the LCBP (e.g. the fuel poverty streams) this was limited. The evaluation also relied on the recall of the stakeholders who were interviewed. It was particularly challenging to evaluate the long-term impacts of the LCBP. This would have required the scope of the study to be extended to include a control group of people who had not received an LCBP grant or who had received financial assistance through another route.

1.2 Strengths and weakness of the LCBP

Figure 1 below uses evidence collected throughout the evaluation to consider the strengths and weaknesses of the LCBP. It draws on the attitudes of the full range of stakeholders interviewed (internal stakeholders from DECC, delivery stakeholders and industry representatives) and the literature which was reviewed.

Figure 1: Strengths and weaknesses of the LCBP

	Strengths	Weaknesses
LCBP objectives and design	The desk review suggested that the LCBP was aligned with wider Government framework for microgeneration and renewable. It was considered by stakeholders to have been designed in clear response to the Microgeneration Strategy 2006. The LCBP was designed following a public consultation (the extent to which some industry views were considered was questioned however, by a range of stakeholders although predominantly those from industry). The delivery stakeholders felt the LCBP took forward lessons learned from predecessor programmes (although no formal evaluation of these took place).	Many stakeholders agreed the LCBP objectives were broad and unfocused and not tailored to each phase and stream of the Programme. A range of stakeholders felt the LCBP did not successfully support the full range of technologies as its design favoured the solar PV industry. There was a tension between the internal stakeholders about whether the focus on solar PV was correct. This depended on how the objectives of the LCBP were interpreted (i.e. to generate awareness and raise interest –in which case solar PV was felt to be appropriate focus, or to reduce carbon emissions – in which case it was not). The definition of microgeneration (according to capacity) which was set by the Energy Act 2004 was considered a limiting factor on the scale of systems which could be supported through the LCBP. Some industry stakeholders, particularly those involved in heat technologies and wind felt this limited the number of installations they made through the scheme and prevented it achieving greater carbon emission reductions. The Framework Supplier model used in LCBP-2 was considered anti-competitive by a range of stakeholders, predominantly those from non-solar PV parts of the industry. However, this was resolved under the extension phase and

		was thought to be key in the development of the Microgeneration Certification Scheme as way of certifying suppliers.
LCBP management by internal government team	Some internal and delivery stakeholders felt the LCBP management improved in its latter stages –involving an internal audit and more rigid financial reporting.	Internal stakeholders felt the initial government project team lacked the key skills required to manage the LCBP, particularly with regard to financial management. Industry stakeholders felt commercial understanding was lacking from the DECC project team. Industry stakeholders heavily criticised the lack of communication with them throughout the LCBP. The limited notice given about changes to the value of grants, and in particular the closure of the Programme, was reported to have severe consequences for some parts of the industry with staff losses and company closures. Internal and delivery stakeholders agreed that these decisions had been taken very quickly.
LCBP delivery by external contractors (BRE and EST)	The full range of stakeholders agreed that the two main phases of the LCBP were successfully delivered by expert bodies, EST and BRE. The applicant interviews revealed high levels of satisfaction with the application and installation process.	The key performance indicators (KPIs), against which the delivery contractors were measured, were not linked to the aims of LCBP. This creates challenges when trying to assess the performance of the contractors in facilitating the Programme to meet its objectives. It was not possible to assess the value for money offered by the delivery contractors.
Monitoring and reporting of the LCBP's progress, finances, achievements etc.		Internal stakeholders criticised the LCBP's financial reporting which was felt to be severely limited in the early stages of the Programme. It was also focused on grant commitments rather than spend which led to unrealistic expectations about the final underspend. This evaluation was constrained by limited reporting on some aspects of the LCBP e.g. the fuel poverty streams and product costs.

1.3 Challenges and constraints facing the LCBP

This evaluation uncovered two key factors which constrained the achievements of the LCBP, and contributed to some of the weaknesses highlighted above.

- **Changing policy environment** – the frequent change in ministers, departments, and ultimately the administration of government created a number of challenges for the LCBP. Internally, this led to wide-ranging and evolving objectives and prevented a continuous core project team building up knowledge and experience of the Programme. Industry stakeholders reported it to have created a stop-start Programme which removed the incentive to invest in different stages of the supply chain.

- **Recession** – the worsening economic climate led to cancellations and delays in many large-scale projects. This was a significant contributor to the underspend of the project according to many stakeholders.

1.4 Evaluating the LCBP against its objectives

Figure 2 below sets out the four main objectives of the LCBP and summarises the evidence collected through this evaluation which provides an indication of the extent to which each of these aims have been achieved, or not.

Figure 2: Evaluating the LCBP against its objectives

Objective	Evidence to suggest objective was met	Evidence suggesting objective was not met	Assessment of overall performance based on the evidence
To support a more holistic approach by demonstrating combinations of both energy efficiency measures and microgeneration products in a single development	Many non-domestic projects were new build which would have had energy efficiency measures installed to meet regulations. The applicant interviews suggested that many domestic applicants had already taken steps to address energy efficiency. Further, delivery stakeholders reported that the on-site inspections revealed	Installation of energy efficiency measures was not a pre-requisite for award of all grants. 17% of LCBP-1 inspected projects failed initial energy efficiency check. Although most of these issues were resolved, only 2% of projects were inspected during the Programme suggesting a fair proportion of projects could have failed on	Across the LCBP as a whole this was unlikely to have been achieved, although some parts of the Programme were likely to have performed better (i.e. large non-domestic projects due to building regulations and Carbon Trust guidance)

	some domestic applicants were prompted to take-up efficiency measures following installation of microgeneration. The Carbon Trust worked with a few large sites to develop holistic approaches to energy management, installation of energy efficiency measures as well as microgeneration measures.	this account.	
To see demonstrated on a wider scale emerging microrenewable technologies	Many stakeholders considered the LCBP an effective demonstration project which had helped finance around 11,000 thermal technologies and 9,000 electrical technologies. The LCBP was considered to have impacted significantly on the non-domestic sector by enabling not-for-profit organisations to install microgeneration	Many stakeholders were unconvinced that the LCBP had demonstrated microgeneration on a wider scale across the domestic sector. They felt that this would have been at a similar level in spite of the Programme. The applicant interviews suggested that many of these householders would have installed microgeneration anyway in the absence of the grant.	The LCBP created additionality (in terms of microgeneration installation) across the non-domestic sector but had a limited additional impact on the demonstrations of microgeneration at the domestic level.
The costs of microrenewable products will reduce over lifetime of the Programme against a 2005 baseline	Industry stakeholders felt the LCBP had contributed to reduced installation costs, although they did not think it had affected product costs.	In general, microrenewable product costs did not fall over the course of the Programme and where they did no causative link was found with the LCBP. Industry stakeholders claimed the scale of uptake of technologies was too limited to have	The LCBP did not appear to have reduced microrenewable product costs.

		an impact on global market.	
To raise awareness through publication of case-studies and by linking projects to a wider programme of activities including developing skills and encouraging project replication	The Carbon Trust led a dissemination programme of publications, case-studies and videos related to the lessons learned from the LCBP. Stakeholders agreed that the technology field trials have led to improved skills in installation, operation and maintenance. Nearly all stakeholders felt the LCBP was instrumental to the inception of the Microgeneration Certification Scheme (MCS).	The evaluation has not been able to prove a link between the Carbon Trust dissemination programme and a change in levels of awareness due to the difficulty finding evidence for this. Some stakeholders suggested this impact may have been low across the general public given the documents were targeted at industry and domestic recipients tended to have a good level of knowledge about microgeneration already. The evidence reviewed during this evaluation suggested there has been little project replication.	The LCBP has led to greater awareness of microgeneration, particularly across the non-domestic sector, and has promoted improved skills across the industry. It is unclear whether LCBP-funded projects have been replicated more widely however.

1.5 Other achievements of the LCBP

Beyond a consideration of the LCBP against its original objective, there was agreement across most of the stakeholders involved in this research that the LCBP had also laid the foundation stones for the Feed-in-Tariff (FITs). The LCBP was perceived to have created three essential conditions in which FITs could operate:

- it was felt to have initiated the MCS;

- it produced visible examples of technologies operating effectively in-situ; and

- it generated learnings for optimal design, installation and maintenance.

In the absence of the Programme, most stakeholders agreed there would not have been sufficient consumer confidence in the technologies or the industry for successful uptake of the FITs.

1.6 Looking to the future for microgeneration

Microgeneration policy has continued to evolve rapidly since the close of the LCBP and is set out for the future in the Microgeneration Strategy 2011[1]. The most significant development in UK microgeneration policy has been the replacement of the grant based approach of the LCBP with revenue-based financial payments through the Feed-in-Tariff (FIT), the Renewable Heat Incentive (RHI) and Renewable Heat Premium payment scheme (RHPP).

The promotion and development of the microgeneration industry, spearheaded by the LCBP according to some internal and industry stakeholders, is also being maintained by the Microgeneration Government-Industry Contact Group, which launched its Action Plan in 2011[2]. The Contract Group is working to tackle the non-financial barriers facing microgeneration technologies as part of the Strategy.

[1] Microgeneration Strategy (June 2011) available here: http://www.decc.gov.uk/assets/decc/11/meeting-energy-demand/microgeneration/2015-microgeneration-strategy.pdf

[2] Microgeneration Government-Industry Contact Group Action Plan (2011) available here: http://www.decc.gov.uk/assets/decc/11/meeting-energy-demand/microgeneration/2014-microgeneration-action-plan-june2011.pdf

2. Introduction

2.1 Background to the research

The development and deployment of microgeneration technologies was recognised by Government, in its 2003 Energy White Paper, to be largely in its infancy in the UK. The Government therefore initiated a number of grant programmes and other financial incentives to stimulate this market and, by encouraging wider public interest and uptake, to develop the manufacturing, distribution, installation and other infrastructure necessary to establish the industry. One of the most significant of these programmes, in terms of budget, was The Low Carbon Buildings Programme (LCBP).

The four objectives of the LCBP, expressed in a variety of forms over the lifetime of the Programme, were originally defined as:

- **Objective 1:** To support a more holistic approach to reducing carbon emissions from buildings by demonstrating combinations of both energy efficiency measures and micro-generation products in a single development;
- **Objective 2:** To see demonstrated on a wider scale emerging microrenewable technologies;
- **Objective 3:** It is expected that the costs of microrenewable products will reduce over the lifetime of the Programme against a 2005 baseline as a consequence of the greater acceptance and uptake of the technologies promoted by the Programme; and
- **Objective 4:** To raise awareness through the publication of case studies and by linking projects to a wider programme of activities including developing skills and encouraging project replication.

A core aim of the LCBP, underpinned by its objectives was to support the growth of the micro-generation industry. This was to be achieved in a number of ways:

- Through providing funds that would allow an expansion of the market for domestic and community scale renewables, with this in turn helping to reduce the costs of the technologies and thus further increase their uptake;
- Through providing support for investment in technology development; and
- Through building awareness among the public as to the potential for micro-generation.

The LCBP superseded two predecessor programmes, 'Clear Skies[3]' and The Major Photovoltaics Development Programme[4], in January 2006. It comprised of two phases:

[3] 'Clear Skies' was a grant scheme for not-for-profit organisations to install a range of microgeneration technologies (aside from solar photovoltaic cells – solar panels generating micro-electritiy). It was managed by the Building Research Establishment.

- Phase 1 of the LCBP provided grants to: householders; community groups such as schools, social authority housing and charities; SME's and larger commercial organisations. This was administered and delivered by the Energy Saving Trust (EST).

- Phase 2 was introduced in 2007 to provide grants to not-for-profit, non-domestic projects. This was administered and delivered by the Building Research Establishment (BRE).

In July 2009, these two main phases were extended. The whole Programme was closed to new applications for grants on 24th May 2010 and closed to all claims for payment of outstanding grants on 31st March 2011.

In addition, the Programme involved a series of other streams, including four fuel poverty pilots run by the Welsh Assembly Government (WAG) and three regional development agencies, and a dissemination programme led by The Carbon Trust.

2.2 Research objectives

Ipsos MORI and CAG Consultants were commissioned to conduct an independent evaluation of the LCBP. The LCBP contractors, BRE and EST, have also prepared their own reports discussing the LCBP[5].

The purpose of this evaluation was to provide a comprehensive understanding about what the LCBP achieved and how the Programme was delivered at the strategic policy level and at the implementation operational level.

The evaluation had the following key objectives:

1. Did the Programme achieve its objectives?
    a. What were the actual inputs (resources, activities and costs), outputs, outcomes and impacts that were delivered by the LCBP?
    b. How did these differ, if at all, from the expected outputs and outcomes and why?
    c. What were the main constraints and barriers to achieving the Programme's objectives?
2. What was the LCBP's relationship with wider Government policy? Specifically:
    a. To what extent did the LCBP contribute to Government's microgeneration and renewables strategies?

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[4] The Major Photovoltaic Demonstration Programme was funded by the Department of Trade and Industry to bring solar panels generating micro-electricity to households and communities across the UK. It was managed by the Energy Saving Trust. Further information is available here: http://www.energysavingtrust.org.uk/content/download/179195/422297/version/1/file/S-PV_AR_0405_Final.pdf/perma/1

[5] The 'Low Carbon Buildings Programme 2006-2011 Final Report' is scheduled to be published at the end of August 2011.

   b. How was delivery of the Programme affected by Government policies and strategies as they evolved over time and what effects did these have on the programmes outcomes?
3. Programme management by Government
   a. What were the strengths and weaknesses of the way in which the Programme was set-up and how it was subsequently managed?[6]
   b. How well was the learning from the first phases used to inform the extensions?
4. Contractor performance.
   a. Was the Programme implemented effectively by the contractors against stated KPI's? If not, why not?
   b. What was the perceived added value of using contractors to deliver the Programme?

5. What are the perceived longer-term impacts or effects that result from the Programme and are these positive? Who has been affected and how wide ranging are these effects?

2.3 Overview of methodology

This evaluation used a mix of primary and secondary research to address these objectives.

Ipsos MORI conducted 65 in-depth interviews with a range of stakeholders and grant applicants.

- 38 interviews were conducted with grant applicants. These interviews were spread across applicants from Phase 1 and Phase 2 and covered a mix of technologies, grant values and grant offer dates. This included 8 interviews with applicants who withdrew from the programme prior to claiming their grant offer.

- 13 interviews were conducted with internal stakeholders, that is representatives of the policy and finance team in DECC, and the delivery teams at EST, BRE and The Carbon Trust.

- 14 interviews were conducted with industry stakeholders. These were spread across trade associations, installers and manufacturers in different sectors of the microgeneration industry.

CAG Consultants led a comprehensive desk review of documentation related to the LCBP. The documents they reviewed included contextual information (e.g. on developing Government policy and the microgeneration industry), administrative and financial data for the whole programme and detailed information on each of the LCBP streams.

[6] Including, where possible, a consideration of whether the programme was constructed with: a clear ministerial mandate; an effective project team; clear reporting structures; adequate financial management skills; appropriate contractor management procedures; and effective risk management and mitigation procedures.

A more complete breakdown of the interviews conducted for this evaluation, and how the respondents were identified and sampled, is included in the appendices. This also provides further information about how documents were identified for the desk review.

This evaluation builds on internal evaluation work co-ordinated by DECC. This included an LCBP Evaluation Scoping Workshop conducted in February 2011 between DECC and the major delivery contractors, BRE, EST and The Carbon Trust.

2.4 Limitations to this evaluation

The retrospective nature of this evaluation means that the desk review has been dependent on the availability of evidence and that the primary research has been reliant on the accuracy of stakeholders' recall. Particular elements of the Programme (e.g. the fuel poverty stream) have been difficult to assess given limited documentation. The evaluation has also faced challenges due to the closure, or reduced size, of some organisations involved in the delivery of the LCBP (e.g. the regional development agencies responsible for delivery the fuel poverty pilots).

When considering the wider impacts of the LCBP it is important to acknowledge the factors which make such an assessment challenging:

- An evaluation of the Programme was not built in to its development, so no clear indicators of progress or success were established to measure against;
- In relation to the point above, the KPIs used to assess successful delivery of the Programme by the contractors were not as SMART as they could have been. They also changed throughout the lifetime of the Programme, making it difficult to track success/impact;
- There is no control group or comparable scheme that could be used to isolate these impacts from wider policy or the industry context and, therefore, assess the extent to which they are a direct result of the Programme (i.e. to answer the question of what would have happened without the Programme?);
- There have been no UK-wide measures of public awareness of microgeneration technologies conducted before the LCBP commenced and after it ended;
- There was no evaluation undertaken of Phase 1 and Phase 2 before extending them, which would have provided useful information on the achievements of the Programme to date.

2.5 Presenting the findings of the evaluation

2.5.1 Referring to different phase of the programme

The following abbreviations have been used throughout this report to refer to the various phases and streams of the LCBP.

LCBP-1: Phase 1 householder stream, launched in January 2006 and administered by EST

LCBP-1c: Phase 1 communities stream, launched in November 2006, administered by EST

LCBP-1(2a): Phase 1 Stream 2a with medium-scale projects, launched in November 2006, administered by EST

LCBP-1(2b): Phase 1 Stream 2b with large-scale projects, launched in November 2006, administered by EST

LCBP-1e: Phase 1 householder extension, launched in July 2009, administered by EST

LCBP-2: Phase 2 non-domestic stream, launched in 2007, administered by BRE

LCBP-2e: Phase 2 non-domestic extension, launched in July 2009, administered by BRE

2.5.2 Referring to participants in the evaluation

The term, 'stakeholders', is used to refer to anyone interviewed for this evaluation other than grant applicants. This includes members of the DECC policy team, the DECC finance team, the Low Carbon Innovation Fund (LCIF), the Microgeneration Certification Scheme (MCS), the Building Research Establishment (BRE), the Energy Saving Trust (EST) and Carbon Trust, representatives of industry in trade associations as well as manufacturers and installers.

The report also pulls out contrasting views between different sets of stakeholders. These sets are referred to as:

- internal stakeholders; comprising of DECC, LCIF and MCS
- delivery stakeholders; comprising of EST, BRE and Carbon Trust
- industry stakeholders; comprising of trade associations, installers and manufacturers

Where the report makes a general references to the 'findings of this evaluation' this refers to evidence that comes from both the primary stakeholder interviews and secondary desk review.

3. Summary of LCBP delivery

This chapter presents an overview of the LCBP to show how it was designed. It provides an overview of the Programme's outcomes and impacts, which are explored in more detail throughout the report.

It is possible to describe and define any programme according to the following factors:

- The context in which it was designed and the large-scale issues it sought to address;
- The inputs provided in terms of resources invested in the programme;
- The initial and direct outputs created by the programme;
- The short and medium-term outcomes it produced for its beneficiaries; and
- The longer-term impacts and the legacy created by the programme.

The findings of this evaluation have been drawn together to describe the LCBP in this way (see Figure 4 overleaf). The format of a 'logic model'[7] has been used to display the context, inputs, outputs, outcomes and long-term impacts of the LCBP according to stakeholders and the available documentation for the Programme. The logic model was used at the start of the study to examine the *anticipated* development and successes of the programme and to set a framework for the evaluation. It has been used again here to present an overview of what the LCBP *has achieved*. The logic model provides a useful structure to visually depict the links identified by stakeholders between each of the Programme's 'inputs' (e.g. the dissemination programme or the technology field trials) and its perceived outcomes and impacts. A more detailed model, including financial and installation data for each phase and stream of the LCBP is included in the appendices.

The following chapters of this report include discussion, and presentation of evidence, for the headline assertions stated in the model. The various stages of the model are picked up in the following chapters:

- Chapter 4 explores the background context to the LCBP, and the extent to which its design was aligned to the Government's wider policy framework.
- Chapter 5 presents the perceived strengths and weaknesses of the management and administration inputs to the Programme.
- Chapter 7 discusses the outputs, outcomes and impacts of the Programme and how these have either been promoted or constrained by its activities and processes (inputs).

[7] A 'logic model', sometimes known as a 'theory of change' or 'programme theory', presents the links between the intended outcomes with the policy inputs, processes and theoretical assumptions. See 'The Magenta Book – Guidance for Evaluation' for further information (http://www.hm-treasury.gov.uk/d/magenta_book_combined.pdf)

- Chapter 8 draws the findings of the evaluation together across all of these stages to assess the extent to which the Programme met its stated objectives.

- It should be noted that the outcomes and long-term impacts presented in the model are based on the perceptions of stakeholders cross-referenced with evidence collated from the desk review.

Figure 4: Summary of programme delivery for LCBP (overleaf)

CONTEXT	**INPUTS**	**OUTPUTS**	**OUTCOMES**	**LONG-TERM IMPACTS** *(as perceived by stakeholder)*
Need to diversify energy mix to ensure affordable and secure supply Need to overcome capital constraints to wider uptake of microgeneration Need for improvement in UK microgeneration supply chain, advertising, marketing and installer skills	**Committed budget** £137.2 million budget (reduced to £134.2m) **Programme streams** EST administration of : ○ LCBP-1 householders ○ LCBP-1e householder extension ○ LCBP-1(2a) medium-scale projects ○ LCBP-1(2b) large-scale projects ○ LCBP-1c community projects BRE administration of non-domestic, not-for-profit projects - LCBP-2 and LCBP-2e	**Grant commitments** 20,000 grants allocated **Applicant resources** ○ Application helpline ○ Programme website ○ Guidance documents	**Claimed grants** 18,240 grants taken up £105.9 million spend £28.3 million underspend Estimated 80MW of electrical and thermal microgeneration installed **MCS accreditation system** Volume of installations placed quality and standards on industry agenda **Increased awareness and interest -** especially for non-domestic sector Total lifetime carbon savings: not known at this stage (see LCBP 2006-2011 Final Report)	Microgeneration powering a variety of sites through a range of technologies Laid foundation for FIT Accelerated growth of solar industry, but more limited impact for other technologies Improved quality of installation and increased consumers confidence in technologies
	Carbon Trust dissemination programme Test equipment and Hot Water (TUV/NEL & EST)	Detailed monitoring of 17 LCPB-2 exemplar projects A range of publications, videos and other resources that disseminate lessons and good practice for specific technologies Field trials for wind turbines, solar thermal and heat pumps.	Holistic projects bringing together energy efficiency and microgeneration Increased understanding of all aspects of the installation and management of microgeneration Actual performance data	Facilitated improved design, installation, operation and maintenance standards
	4 fuel poverty projects (WAG, One NE, Yorkshire First; EEDA)	Limited evidence means outputs are unknown	Limited evidence means outcomes are unknown	Limited evidence means long term impacts are unknown

4. The alignment of the LCBP within Government's wider policy framework

This chapter considers the alignment of the LCBP's objectives with the Government's wider policy framework for microgeneration and renewables.

4.1 How well did the LCBP sit within the Government policy framework?

4.1.1 The policy framework for microgeneration

The LCBP emerged during a period, post the Energy White Paper (2003)[8], when the concept of microgeneration was being consolidated and better defined. The White Paper focussed UK energy activity around four goals: climate change; energy security; competitive markets; and fuel poverty. It foresaw a contribution from small-scale energy generation to the first three of these. The White Paper stressed that "t*here will be much more local generation, in part from medium to small local/community power plant, fuelled by locally grown biomass, from locally generated waste, from local wind sources, or possibly from local wave and tidal generators. There will be much more micro-generation, for example from CHP plant, fuel cells in buildings or photovoltaics*".

The 2004 Energy Act[9] promised a bespoke strategy on microgeneration which emerged from the Department of Trade and Industry (DTI) in 2006. The Government's Microgeneration Strategy (DTI 2006)[10] sought to create conditions under which microgeneration became '*a realistic alternative or supplementary energy generation source for the householder, the community and small business'*. The strategy suggested that microgeneration could provide 30-40% of the UK's electricity needs by 2050 and help reduce household carbon emissions by 15% per annum.

The Microgeneration Strategy identified a range of constraints to achieving this vision: upfront costs; inadequate promotion and poor information; technical installation issues; difficulties accessing the rewards available for microgenerated electricity; and planning policy and Building Regulations.

It also identified LCBP as a key measure to tackle the constraint of upfront costs. Informed by the Microgeneration Strategy and in parallel to the LCBP, Government has also acted to tackle other impediments to the roll-out of microgeneration, for example through action on permitted

[8] Energy White Paper, 2003 'Our Energy Future: Creating a Low-Carbon Economy' (accessible here: http://www.decc.gov.uk/en/content/cms/legislation/white_papers/white_paper_03/white_paper_03.aspx)

[9] Energy Act 2004 (accessible here: http://webarchive.nationalarchives.gov.uk/20100211000001/opsi.gov.uk/acts/acts2004/ukpga_20040020_en_1)

[10] Microgeneration Strategy, Department of Trade and Industry (2006) - Our Energy Challenge: Power from the people (accessible here: http://webarchive.nationalarchives.gov.uk/+/http://www.berr.gov.uk/files/file27575.pdf)

development rights. In addition the 2006 Energy Review[11] set out a range of other ways Government would promote microgeneration that included:

- Easier access to the monetary benefits of Renewable Obligation Certificates (ROCs) – ROCs were the main Government funding mechanism for renewables but one which had in general only supported large scale renewable energy development;
- Producing reports on energy measures for local authorities – including promoting microgeneration – that authorities would have to have regard to in the exercise of their functions, under the Act;
- Promoting community energy projects;
- A review of communications activity to assess how to improve information provision; and
- A new power for Parish Councils to promote micro-generation in their own parishes.

Given this policy context, a few stakeholders felt the objectives of the LCBP were aligned with the broad thrust of Government policy in this area. This was generally the view of the internal stakeholders who had been involved in the Programme since its inception. The DECC Evaluation scoping workshop noted that at the start of the process the UK microgeneration industry was behind the rest of the world and there was a need for an improvement in the supply chain, advertising, marketing and installer skills. These were all barriers which the LCBP was designed to address.

Other internal and delivery stakeholders, involved at various stages and in various roles over the course of the LCBP, were less clear about its position within the wider policy framework. In some instances this was due to their lack of familiarity with Government's wider energy policy whilst for others it was due to their perception that the objectives of the LCBP were too vague and wide-ranging.

4.1.2 Interaction with other funding streams and programmes

The LCBP operated within a busy landscape of funding programmes as, over the last decade, the UK Government and other bodies have operated a number of schemes intended to promote microgeneration. On balance, this evaluation found that while there was some degree of overlap between these activities, the LCBP had generally complemented other sources of funding.

The LCBP consolidated existing support mechanisms (principally Clear Skies and the Major PV Demonstration programme) into a single scheme. However, it ran in parallel to others such as the Lottery funded Community Sustainable Energy Programme (CSEP) and the Bioenergy Capital Grants Scheme (which only operated in England). The evidence reviewed showed that

[11] The Energy Challenge: Energy review report, Department of Trade and Industry, 2006 (accessible here: http://webarchive.nationalarchives.gov.uk/+/http://www.berr.gov.uk/files/file31890.pdf)

75% of CSEP projects were also in receipt of LCBP monies[12]. However, it also highlighted a distinction in the objectives of the two programmes, with CSEP more focused on funding projects promoting community involvement, and their target applicants, with CSEP excluding housing associations from its not-for-profit focus. These differences suggested that the LCBP was a distinct programme seeking to achieve different objectives.

While the LCBP was available throughout the UK and in all English Regions, the Welsh Assembly Government and the Scottish Government simultaneously delivered their own microgeneration schemes. A few internal and delivery stakeholders felt that the LCBP was competing with these other funding streams demonstrating a lack of joined-up thinking.

> *"The Scottish Government were allowed to do an LCBP type product, slightly better terms than ours in parallel Northern Ireland did one as well. I don't know where the joined up thinking came from to do that."* Internal stakeholder *(39)*

The desk review and stakeholder interviews highlighted a few aspects of the devolved administration schemes which were different to the LCBP and which, arguably, aided their success in terms of uptake and integration with wider energy policy.

- The Arbed scheme, delivered by the Welsh Assembly Government, made more explicit links to action on fuel poverty, to integrating action on energy efficiency, fuel switching and renewables than the LCBP, and on linking action on energy to wider economic and social goals in Wales.

- The Scottish Community and Householder Renewables Initiative (SCHRI) provided grants of up to 30% of costs (maximum £4,000). A stakeholder involved in the Scottish scheme felt it provided more 'hands on' support to individuals and communities than LCBP. This, in addition to the more generous grants, was felt to be a key contributor to the greater number of applicants to SCHRI when compared with applications to the LCBP (it was not possible to seek funds from both).

4.1.3 Coverage of the LCBP and its evolution

The objectives of the LCBP were frequently judged as too broad and unfocused by stakeholders. Many criticised them for not being SMART objectives (specific, measureable, achievable, realistic and time-bound). A few stakeholders, both internal to Government and within industry, felt the inclusion of a wide range of audiences, within the various phases and streams of the Programme, was necessary given the wholesale shift required in energy production. However, the majority stakeholders felt this lead to a sprawling and fragmented programme which lacked a clear trajectory of what it was trying to achieve.

In particular, some stakeholders highlighted the introduction of new elements, or 'bolt-ons', to the Programme leading to a lack of focus. These 'bolt-ons' included four fuel poverty pilots and the introduction of technology pots. However, the desk review found the introduction of these was at least partly explained by the evolution of government policy. All these elements were responses to UK Energy policy goals as set out in the 2006 Energy Review:

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[12] Source: *Renewable Energy Capital Grants: lessons learned for selected community based micro-generation projects* BRE Trust March 2010

- **Dissemination** – sustainable behaviour change was identified as key to the transition to a low-carbon economy and microgeneration was considered to be strongly linked with a feel good factor of 'wanting to do something to help'.

- **Tackling fuel poverty** was one of the four UK Energy policy goals not explicitly addressed at the outset of the LCBP; and

- **Diversifying technology** was recognised as an important factor in achieving UK security of supply, another UK energy policy goal.

While a few stakeholders criticised the introduction of a fuel poverty strand to the Programme given it was outside its original objectives, others felt this was an unavoidable product of changing Government policy and focus. Indeed, for a few internal stakeholders it was considered a strength of the LCBP that it was able to offer flexibility to allow for these changes.

> *"It is the reality of politics; it's quite difficult back in 2006 to have definitely said what that Government wanted to do for the next four years with all the different technologies in all the different sectors. I think you do have to have flexibility to extend a programme or re-direct some parts of the money in that programme to different things."*
>
> Internal stakeholder *(40)*

4.2 How well did the LCBP sit within wider renewables policy

This evaluation uncovered a range of different views about the role of the LCBP in promoting an appropriate energy mix within the UK. These views were largely dependent on the individual's standpoint on the effectiveness of microgeneration in meeting the UK's emission commitments. In general, internal stakeholders felt the LCBP was not a cost-effective tool to meet these obligations while industry stakeholders, unsurprisingly given their vested interest, supported its focus.

However, it was recognised by many internal stakeholders that there is a need for microgeneration to be part of the energy mix and the LCBP was designed to stimulate this sector. Microgeneration was considered to offer wider benefits in terms of raising awareness, changing behaviour, energy security and the alleviation of fuel poverty, all aligned with Government's objectives. Microgeneration was also felt to be important as a visible demonstration of the Government's action on climate change.

> *"If you ask the general public and commentators what they think the most visible sign of success from the Government of this low carbon transformation, they will say solar panels on every roof."*
>
> Internal stakeholder *(40)*

A few stakeholders also raised a debate about the appropriate definition for microgeneration and questioned whether this affected the success and impact of the LCBP. Industry stakeholders involved in heat technologies, particularly biomass, felt the capacity limits set for microgeneration in the Energy Act 2004 prevented the Programme funding larger, more effective systems. For instance, the limit of 45kWH was felt to be inappropriate for biomass systems,

particularly in the non-domestic sector. This was however addressed in the extension phases of the Programme and so was not a limitation throughout the LCBP.

4.2.1 Suitability of LCBP promotion of specific microgeneration technologies

The LCBP provided more funding for solar PV than for other technologies, amounting to around half the total value of the grants spent. There was a tension among the stakeholders involved in this evaluation about whether it was right for the LCBP to be structured in a way which favoured solar PV technology. The views of stakeholders depended on how they interpreted the objectives of the Programme, that is whether the LCBP should have been promoting interest and awareness in microgeneration or whether it should have been contributing to carbon emission reduction commitments.

The Renewables Innovation Review[13] (2004) had as a main conclusion and recommendation the creation of the LCBP as *"a technology blind programme to support building integrated renewable and energy efficiency technologies".* However, when internal stakeholders considered the design of the LCBP within the broader context of the Government's commitment to carbon reduction they felt there was a tension between this aspiration for recipients to choose the technology that best met their needs and the necessity, as identified in the National Audit Office report[14], that action is focussed on those technologies that will deliver the best outcomes at lowest cost. These stakeholders felt the focus on solar PV was wrongly placed given it is one of the least cost-effective technologies in carbon terms.

Carbon savings were not however, explicitly identified as an objective of the LCBP. The justification for promoting uptake of more popular, but less efficient, technologies therefore returns to the ultimate aims of the Programme. Most stakeholders agreed that if one of the key objectives was to create greater acceptance, awareness and uptake of microgeneration then this was likely best achieved through solar PV.

There was however a counter-argument to this among a few internal stakeholders. They felt that, prior to the LCBP, solar PV was already one of the most advanced technologies in terms of public awareness and appeal. They therefore argued that more effort should have been put into promoting alternative types of microgeneration.

> *"Rather than divert money from the other pots into the solar PV pot, we should have been less generous with solar PV because in terms of additionality and value for money the Government should be addressing barriers and if solar PV is the most attractive, and if you like, closest to being able to stand on its own two feet, then that would argue for giving it the least amount of subsidy not the most amount of subsidy."*
>
> Internal stakeholder *(40)*

Another key objective of the LCBP was to reduce the cost of microgeneration products, and while this may have been achieved for solar PV (see discussion in section 7.4) given the scale of its promotion through the LCBP, the focus on this specific technology was felt to be to the

[13] Renewables Innovation Review, 2004. A summary documents is accessible here: http://webarchive.nationalarchives.gov.uk/+/http://www.berr.gov.uk/files/file21952.pdf

[14] 'Government funding for developing renewable energy technologies', National Audit Office, 2010.

detriment of the increased production of other technologies such as biomass boilers and wind turbines.

4.3 LCBP's alignment with future policy

The LCBP was a response to the position of the microgeneration industry in 2006 and evolved in response to emerging energy priorities. Microgeneration policy has continued to evolve rapidly since the close of the LCBP and is set out for the future in the Microgeneration Strategy 2011[15]. Many of the themes of the LCBP have been maintained in the Government's current plans for microgeneration as set out in the Microgeneration Strategy (2011). The Strategy has recognised that three of the key strands of the LCBP, on enhancing design and installation standards, building skills and communicating with the public, are still vital to the effective expansion of the sector.

A range of stakeholders felt the LCBP had laid the foundation stones required to enable UKmicrogeneration policy to evolve and develop. There was some criticism among delivery and internal stakeholders however, about the lack of clarity provided by Government about how the LCBP would dovetail into future policies and programmes (see section 5.2.3).

A key development in UK microgeneration policy has been the replacement of the grant based approach of the LCBP with revenue-based financial payments through the Feed-in-Tariff (FIT) and the Renewable Heat Incentive (RHI). The FIT was introduced in April 2010 and is a payment to anyone who owns a renewable electricity system, for every kilowatt hour they generate. The payments will be made for 20 years, except for solar systems which will be 25 years. These tariffs should cover the initial capital cost of installation and earn a return for the property owner[16]. In March 2011 the Government announced its plans for the RHI which will be the first financial support scheme for renewable heat in the world. The scheme is likely to be introduced in two phases, with the first targeted at the non-domestic sector, and the second expanded to support households[17]. In the interim between LCBP and RHI a grant-based Renewable Heat Premium Payment scheme[18] is running.

Looking to the future, these revenue-based schemes were considered a positive step for microgeneration policy by most stakeholders. They were felt to overcome a number of failings which stakeholders felt were inherent to a grant scheme such as the LCBP:

- A grant scheme does not encourage investment in the supply chain by industry as it leads to rapid changes in demand for technologies. Industry stakeholders, in particular, felt the

[15] Microgeneration Strategy (June 2011) available here: http://www.decc.gov.uk/assets/decc/11/meeting-energy-demand/microgeneration/2015-microgeneration-strategy.pdf

[16] For further information on the FIT please see http://www.decc.gov.uk/en/content/cms/meeting_energy/renewable_ener/feedin_tariff/feedin_tariff.aspx

[17] For further information on RHI please see http://www.decc.gov.uk/en/content/cms/meeting_energy/renewable_ener/incentive/incentive.aspx

[18] http://www.decc.gov.uk/en/content/cms/meeting_energy/renewable_ener/incentive/factsheet/factsheet.aspx

long-term commitment provided by the tariff-structure (e.g. 25 years for RHI) would create the certainty industry needs to build the market for microgeneration;

- There was agreement across stakeholders, and evidence from the applicant interviews, that grants reward the 'usual suspects' - domestic householders with reasonable levels of income, approaching retirement or retired, and with strong environmental interests. Stakeholders expected the revenue-based incentives to appeal to broader spectrum of people who have interest in investment and protecting themselves against future fuel price increases; and

- Internal stakeholders stressed that while grants help drive down the costs of technology for consumers, they do not promote the long-term viability of projects. According to these stakeholders, the focus of a grant scheme is on installing a technology as opposed to ensuring that technology is performing as efficiently and effectively as possible, which is encouraged under a revenue-based scheme. A range of stakeholders reported that, under a scheme such as the LCBP, some end-users of the technology (such as social tenants, or staff within a non-domestic building) did not understand how to operate the technology installed. Under a tariff-scheme, however, consumers will be incentivised to maintain and monitor their equipment. It will also encourage industry to develop high performing products and optimal sitings. A revenue-based scheme therefore offers greater carbon savings and greater cost savings for consumers

The promotion and development of the microgeneration industry is also being maintained by the Microgeneration Government-Industry Contact Group. The Group launched its Action Plan[19] in 2011, and is working to tackle the non-financial barriers facing microgeneration technologies as well as to support the Strategy.

4.4 Overall alignment of the LCBP with the wider policy framework

Overall, this evaluation found that the LCBP was well-placed within the Government's wider policy framework and evolved in response to changes within that framework. However, a range of stakeholders did raise concerns about:

- Overlap with other financial incentives;

- Whether a focus on microgeneration was the most appropriate way to meet challenging carbon emission reduction targets;

- The more limited integration of microgeneration with other energy and climate change objectives than was the case with some other programmes; and

- Whether the approach taken led to too great a degree of funding being directed at solar PV to the detriment of the development of other technologies.

[19] Microgeneration Government-Industry Contact Group Action Plan (2011) available here: http://www.decc.gov.uk/assets/decc/11/meeting-energy-demand/microgeneration/2014-microgeneration-action-plan-june2011.pdf

5. Strengths and weaknesses of LCBP set-up and management

This chapter focuses on the strengths and weaknesses of how the LCBP was set-up and delivered. It considers the Programme's management by Government and its administration by delivery contractors.

5.1 Strengths and weaknesses of the set-up of the LCBP

This section discusses the role consultation played in the design of the LCBP, how it followed on from the previous programmes, Clear Skies and the Major PV Demonstration and the use of delivery contractors (BRE and EST) to administer the Programme.

5.1.1 Consultation

The LCBP was designed following a period of consultation. However the extent to which its design was based on responses to this consultation was debated by some stakeholders, predominantly from industry.

There was agreement across most stakeholders, including those from industry, that the LCBP was designed following a period of public consultation (responded to predominantly by industry, industry representatives, and intermediaries such as EST and BRE). This was considered a particular strength of the Programme by internal stakeholders.

However, there were considerable concerns from industry stakeholders that some of their views had not been fairly represented during the consultation and that the subsequent design of the Programme had not taken these into account. A number of examples were given of recommendations put forward by other parts of the microgeneration industry which were not taken on board in the Programme design, including:

- a recommendation from the biomass industry to increase the capacity of biomass projects eligible for a grant as the proposed (and final) limit was 45kWh despite the average biomass project being 300kWh; and
- a call from the wind industry to broaden the non-domestic stream to include agriculture and land, as the focus on public sector buildings meant a concentration of urban sites which were not suited to wind . These stakeholders felt the LCBP did not account for the fact that different technologies are suited to different markets and considered the focus of the Programme to be most favourable for solar PV.

> *"You do not get wind traditionally where public sector housing is…the non-domestic side of things was mainly a policy area that supported other technologies. It offered very little market scope for small wind."* Industry stakeholder *(52)*

A common criticism levelled at the consultation by industry stakeholders was that the process was not widely advertised and that certain voices had been given too much weight within the discussion. There was considered to be undue influence from utility companies, large installers and solar industry representatives.

> *"The Government at the time were very heavily reliant on utility influence whereas in fact they're involvement in the provision of installation and manufacturing was very limited at that time."* Industry stakeholder *(52)*

> *"We never got a look in as the big companies took over as at the time we were a very new business."* Industry stakeholder *(63)*

Some industry stakeholders felt that the implication of this influence on the consultation was the subsequent set-up of seven Framework Suppliers, including British Gas and E.ON and large solar companies. The impact of the Framework Supplier model is discussed in Chapter 6.

> *"Their [large solar company] lobbyist did a really good job of building a scheme that suited PV, but didn't suit everybody else and the Government listened to them about putting the framework in".* Industry stakeholder *(57)*

5.1.2 Lessons learned from predecessor programmes

Internal and delivery stakeholders recognised that the set-up for delivering the LCBP had closely replicated that of Clear Skies and the Major PV Demonstration. While it could be considered a strength that the LCBP based much of its administration set-up on a tried and tested approach, internal and delivery stakeholders reported that, to their knowledge, no formal evaluation of these previous programmes had been conducted. They felt that this would have provided a more robust evidence base from which to develop the LCBP.

However, the delivery stakeholders recognised that, despite no formal evaluation of Clear Skies or the Major PV Demonstration, some lessons had been taken forward from these previous programmes, including:

- moving away from a quarterly selection board[20] to assess applications and instead allowing direct contact between the applicant and delivery body so that applications could be turned around faster;
- the validity period for the grant offer;
- the importance of offering interim payments to non-domestic grant applicants (many of which lack the capital required to facilitate the installation process); and
- the installation costs to be used as benchmarks for the Framework Supplier quotes in LCBP-2 to ensure projects were not over-priced.

[20] Please note that a quarterly process was still used for LCBP-1(2a) and LCBP-1(2b) but not for the other phases and streams of the Programme.

5.1.3 Use of delivery contractors

There was agreement across many of the stakeholders involved in this evaluation that the use of external organisations, selected through a competitive tender process, to administer and deliver the programme was a suitable and successful approach. Internal stakeholders felt this model was in line with Government policy to move away from a role of implementation towards one of influence. These stakeholders also recognised that Government did not have the capacity or expertise, in the specific sectors targeted by the LCBP, to administer it internally.

The contractors – EST and BRE - which delivered the major phases (LCBP-1 and LCBP-2) and extensions (LCBP-1e and LCBP-2e) of the Programme were considered, by the full range of stakeholders involved in this evaluation, to be experts within the domestic and non-domestic sectors respectively. Many stakeholders spoke of their suitability for the contract given their track records in delivering similar programmes (Clear Skies and the Major PV Demonstration Programme).

> *"I think the strengths were that they knew the market, they knew what they were doing, they've got good back-up staff, good processes that we could adapt and we could use."*
> Internal stakeholder *(39)*

A few stakeholders across the internal team and one of the delivery partners, felt the Programme would have been more streamlined if both LCBP-1 and LCBP-2 had been administered by the same contractor. In their view, it would have produced a simpler gateway to the Programme for applicants, particularly, for instance, a public authority which could be eligible for either phase. In addition, a single contractor would have provided government with a single point of contact and responsibility which it was felt would have improved the project management of the Programme. However, on balance, given the range of audiences included within the Programme (i.e. the domestic and non-domestic sectors), the use of separate contractors was considered by the whole range of stakeholders to be the most appropriate set-up.

5.1.4 Programme objectives

One of the most commonly identified weaknesses of the LCBP was the lack of clear and specific objectives. Four broad objectives were set for the Programme at its outset but stakeholders reported that these were not reviewed during the lifetime of the LCBP. Although the Programme had a number of different phases and streams, which targeted different sectors and audiences, there was a lack of clarity across the stakeholders about whether there were specific objectives linked to each of these workstreams. Please see section 4.3.1 for further discussion of the Programme's objectives.

5.2 Strengths and weaknesses of internal project management

The internal project management of the LCBP by government was acknowledged by nearly all internal and delivery stakeholders to have faced a number of challenges. The change in government and ministers in charge of the Programme was blamed for frequent changes to the focus of the LCBP. For instance, the extension of the Programme to fund projects addressing fuel poverty was provided as an example of a shift in focus away from the initial objectives assigned to the LCBP.

> *It's certainly true that a succession of officials and more probably ministers meddled with the Low Carbon Buildings Programme. You just need to look at the multiple of spending streams, LCBP was presiding over. No rational person in a right mind would have designed anything so ghastly because it made reporting and monitoring terribly difficult. … So that would be my criticism that it's been meddled with too many times over."*
>
> Internal stakeholder *(42)*

Internal and delivery stakeholders also noted that the series of changes in the department charged with overseeing the delivery of the LCBP (from DTI, to BERR, to DECC) created challenges in maintaining the momentum of the Programme. The change in staff from one department to the next led to the loss of valuable knowledge and experiences about delivery the Programme and made effective decision making difficult (although it was noted that the change in personnel did not necessarily need to happen and a consistent team could have been maintained). Another consequence of the changing departments overseeing the LCBP was the change in the systems used to track and record Programme data.

5.2.1 Suitability of LCBP project team

These challenges aside, internal and delivery stakeholders felt that there was a further fundamental issue with the government's management of the LCBP and that was the project team itself. The Programme was felt to lack a core project team with the key skills required to manage a programme of the breadth and scale of the LCBP.

> *"It was never set up under what you and I would call normal project management criteria."*
>
> Internal stakeholder *(39)*

In particular internal stakeholders felt the project team was lacking in terms of their financial management skills and experience in dealing with high volumes of grant applications. A few industry stakeholders felt another key skill missing from the project team was commercial understanding and an appreciation of market behaviour.

> *"There is no-one that understands market behaviour, they just don't understand how the commercial world functions and that's very evident in some of the decisions made with the LCBP."*
>
> Industry stakeholder *(62)*

A few internal stakeholders also felt there was little experience among the team dealing with the media and, in particular, responding to negative publicity.

Over the course of the Programme, it was reported that there were a long series of project managers each of whom approached the LCBP from a different angle, and with different project management styles.

> *"It was quite difficult for senior managers to get a grip on who was doing which bit and there was quite a lot politicking around, different people having pressures from different ministers."*
>
> Internal stakeholder *(40)*

Delivery stakeholders reported that these frequent changes in project manager occurred with limited notice and also with limited handover. This resulted in frequent re-briefings of new managers and prevented knowledge being accumulated across the lifetime of the Programme.

These stakeholders commented that their reporting requirements changed for each manager depending on where their primary interest lay (e.g. the CO_2 savings generated, the state of the Programme finances or measurements against each contactor's KPIs etc.).

5.2.2 Ongoing consultation by project team

It was reported by a range of stakeholders that Government did consult and listen to industry on a number of occasions over the course of the Programme, and implemented changes to the Programme to respond to the feedback received. However, delivery and industry stakeholders identified some instances where consultation was necessary but not conducted, or where it was conducted but the views collected were not acted upon.

In support of constructive ongoing consultation by the project team, stakeholders mentioned that within six months of the start of LCBP-2 the grant levels were revised so that the maximum value was 50% of the total cost for all technologies, rather than just for solar PV. This was largely a result of pressure from non-solar PV sections of the industry as well as analysis of uptake of the other technologies.

In addition, industry played an important role in ensuring an extension to the Programme. Some internal and delivery stakeholders said that the rationale for LCBP-1e and LCBP-2e was unclear and they did not feel the decision to continue the Programme had been based on a thorough review of lessons learned from LCBP-1 and LCBP-2. However, some stakeholders commented that this was a positive example of Government listening to the needs of industry: they felt the extensions ensured there was ongoing support for the microgeneration industry in the lead up to the FIT and RHI. Under LCBP-2e the Framework Suppliers were dissolved to enable any MCS accredited installer and product to be available to grant applicants. This was another positive example of a 'lesson learned' according to a large range of stakeholders.

> *"It would be interesting to know what the rationale was behind putting more money into the extension programmes...there must have been, presumably, some form of evidence base within DECC to say this is working"* Internal stakeholder *(46)*

The delivery partners also mentioned examples of Government listening to their advice and making adaptations to the Programme as a result. For instance, BRE recommended that grants should be awarded to bigger capacity heat projects and this was agreed for LCBP-2e (grants awarded for projects up to 300kwh).

However, there were a number of areas where stakeholders were less favourable towards the ongoing management of the Programme by Government. This included examples of points in the Programme where industry views were not acknowledged. For instance, during the freeze in the Programme in 2009, there was consultation with industry on the appropriate value for grants going forwards but Government set this at far lower than the recommendation made to them.

Liaison with industry over course of the Programme was very reactive according to some stakeholders (from industry and involved in delivery) rather than ongoing and formative.

> *"I do recall some kind of, you know, 11th hour emergency meetings called with various industry representatives about what needed to be done and how it should be done. But you know it was almost too late, decisions were made and it was all very reactive, it just wasn't consulted quickly enough".* Industry stakeholder *(60)*

5.2.3 Management of changes in the Programme

The frequent changes made to the design of the Programme were identified as significant issues which prevented the smooth running of the LCBP and were felt to be the fault of inconsistent Government policy and management. The impact of some of these changes (for instance, revised grant values, funding caps, the allocation of funding between technologies) are discussed in Chapter 6.

In particular in the late stages of the Programme, delivery and industry stakeholders believed there was no clear steer offered by DECC on how it would dovetail with related policies such as the FIT and RHI. In some cases these stakeholders believed this led to contradictory advice being given to potential applicants. In particular, it was felt it was never clear that there were exemptions allowing both the FIT and LCBP grants to be retained. The impact of this lack of clarity is discussed in Chapter 6.

Delivery and industry stakeholders also criticised Government's handling of the financial constraints of the Programme. For instance, when funding was stopped for LCBP-2 grants for solar PV, Government decided that these applicants could join a waiting list for their application to be processed under LCBP-2e. However, this caused administration difficulties for the delivery contractor as, if these grants were awarded, they had to honour the previous set of terms and conditions (that were applicable for LCBP-2 at the time of the grant being offered). According to these stakeholders, Government could have handled changes such as this, or the need to introduce monthly pots, or even to close the Programme, more smoothly. They also felt that there was a lack of clear communication, a lack of understanding of the impacts of the changes and very limited notice provided to either the delivery contractors or, most importantly, industry. The impact of this is discussed in Chapter 6.

5.2.4 Control of the Programme by senior levels of government

A variety of policy and delivery stakeholders mentioned that there were periods over the course of the Programme where the level of interest and commitment of senior government officials to the LCBP was unclear.

Some internal stakeholders discussed the tensions within DECC about the role of microgeneration in supporting the UK's carbon reduction commitment and the extent to which it was considered a cost-effective solution (see Chapter 4 for further discussion on how the LCBP fitted within wider Government strategy and policy). The delivery stakeholders commented that the frequency of meetings and requests for information was one signal for them of the levels of interest in the Programme. It was reported that this varied from regular requests for information on media coverage, regional uptake of grants and so on, to periods where no information was requested. In particular, the LCBP was felt to lack support following the election as the new coalition turned its attention to a tariff-based structure in place of the grant scheme.

> *"When there was the change in government, there was a complete lack of interest from that point onwards."* Delivery stakeholder *(46)*

There was a suggestion from a range of internal stakeholders that the requirement, at some stages of the LCBP, to regularly submit information for parliamentary questions, ministerial submissions and Freedom of Information requests (FOIs) prevented a focus on managing the

Programme. Internal, and delivery, stakeholders felt there was an over-reliance on the delivery contractors (BRE and EST) for the provision of and interpretation of information to respond to these requests. They felt this overburdened the contractors and deflected them from their main duties.

> *"So there was not enough effort going into running it, and everybody worried about what was said. ... There was a lot of what I call policy people going 'oh panic, panic, make the minister happy'."* Internal stakeholder *(44)*

Internal stakeholders reported that databases were available to DECC for running 'queries' but were not, until the latter part of the Programme, used. A consequence of this, in addition to overburdening the delivery contractors, was reported to be a reactive relationship with industry and other policy officials within DECC. The internal team were not able to inform policy and strategy but only responded to the specific questions asked of them.

5.2.5 The role of LCIF in the management of the Programme

There were differing views on the effectiveness of the role played by LCIF over the course of the LCBP. Some policy stakeholders believed they had played a positive role by providing formal management and ensuring appropriate use of funds by the Programme. A few would have liked to have seen more control by the LCIF board in this respect, whilst others felt a negative impact of their involvement was prolonged decision-making processes.

Delivery stakeholders stated that it was not immediately clear to them that LCIF was providing funding for the Programme or the extent to which it was involved. While this did not present a significant problem, one of the delivery stakeholders felt that it would have been useful to have a greater dialogue with LCIF representatives in order to understand their views towards the Programme, what LCIF's key objectives were and how that translated into how decisions were made on the Programme's management. An internal stakeholder echoed this confirming that there was a lack of direct dialogue between the delivery contractors (BRE and EST) and LCIF.

5.3 Strengths and weaknesses of LCBP financial management

Internal stakeholders felt the flexibility of the LCBP's budget, and the management of it, was a strength of the Programme. However, overall the LCBP's financial management was perceived as relatively poor until the latter stages of the Programme.

A few policy stakeholders considered one benefit of a grant programme to be the clear budget available. This meant that decisions could be taken on the level of grants to provide and the range of technologies and sectors to support on the basis of a clear final budget. The flexibility in how this budget was distributed, especially towards the end of the Programme, was felt by both policy and delivery stakeholders, to be a strength in terms of how the LCBP was financially managed. For instance, measures were taken in February 2010 to limit the amount of money offered to micro-electricity to ensure further support was available for micro-heat technologies leading up to the introduction of the RHI.

> *"Well, the strength is you control money. You know exactly how much money you want to give. We were also able to modulate and to intervene where we felt things went too fast, too slow, so that was good. We opted, at a later stage, to ring fence money according to technology so that one technology would not swallow up the grant funding ahead of other technologies benefiting."* Internal stakeholder *(42)*

5.3.1 Financial reporting

There was agreement across many of the internal and delivery stakeholders involved in this evaluation however, that overall the financial management of the Programme by Government had been poor. These stakeholders reported there to have been no clear line of responsibility within the departments for tracking financial data, limited financial reporting and, at times, limited interest in the financial state of the Programme.

> *"There was no financial control at all. Nobody knew where the finances were...there was not one single final projection, there was not one spreadsheet containing money."*
> Internal stakeholder *(39)*

> *"I was quite shocked by how uninterested they were in how the money was being spent"*
> Internal stakeholder *(44)*

An internal audit review by DECC[21] in 2010 identified a hiatus in financial management and control between the original LCBP phases and their extensions.

> *'Monitoring reports stopped in Spring 2009, as a result of the expectation that the contracts would soon end and was agreed by the then LCBP manager. The reports were later reinstated in June 2009.'*

The lack of a formalised process for reporting financial data on the LCBP within Government resulted in a reliance on the delivery contractors to provide this information. A few internal stakeholders reported that there were not sufficient requests from Government for this data from the contractors and that the data that was held by the delivery partners sometimes did not match the information that Government itself had collected. One internal stakeholder felt that, in some instances, the information requested from the contractors was only produced and delivered by them if significant pressure was placed on the contractor teams to do so.

> *"They* [the DECC project team] *didn't really have a good grip on their contractors. The contractors wouldn't provide the information. … And there was a lot of persuading people* [in the DECC project team] *they could kick ass with the contractors just to get the information."*
> Internal stakeholder *(44)*

The limited financial reporting taking place over the first few years of the Programme made it difficult to track down money which had been redirected by DECC from the main phases of the LCBP to fund other streams of the Programme, such as the delivery of microgeneration measures to areas of fuel poverty by regional development agencies.

> *"Money was filtered out of LCBP to fund other things which I'm not sure were consistent with the original objectives…it took a long time, 18 months it took to find out where the money had actually gone."*
> Internal stakeholder *(39)*

[21] Interal audit report no 1637 - Low Carbon Buildings Programme Audit 2009-2010.

Internal stakeholders felt this issue was partly caused by the changes in the official recording system when DECC was formed and reported that it was resolved within three months.

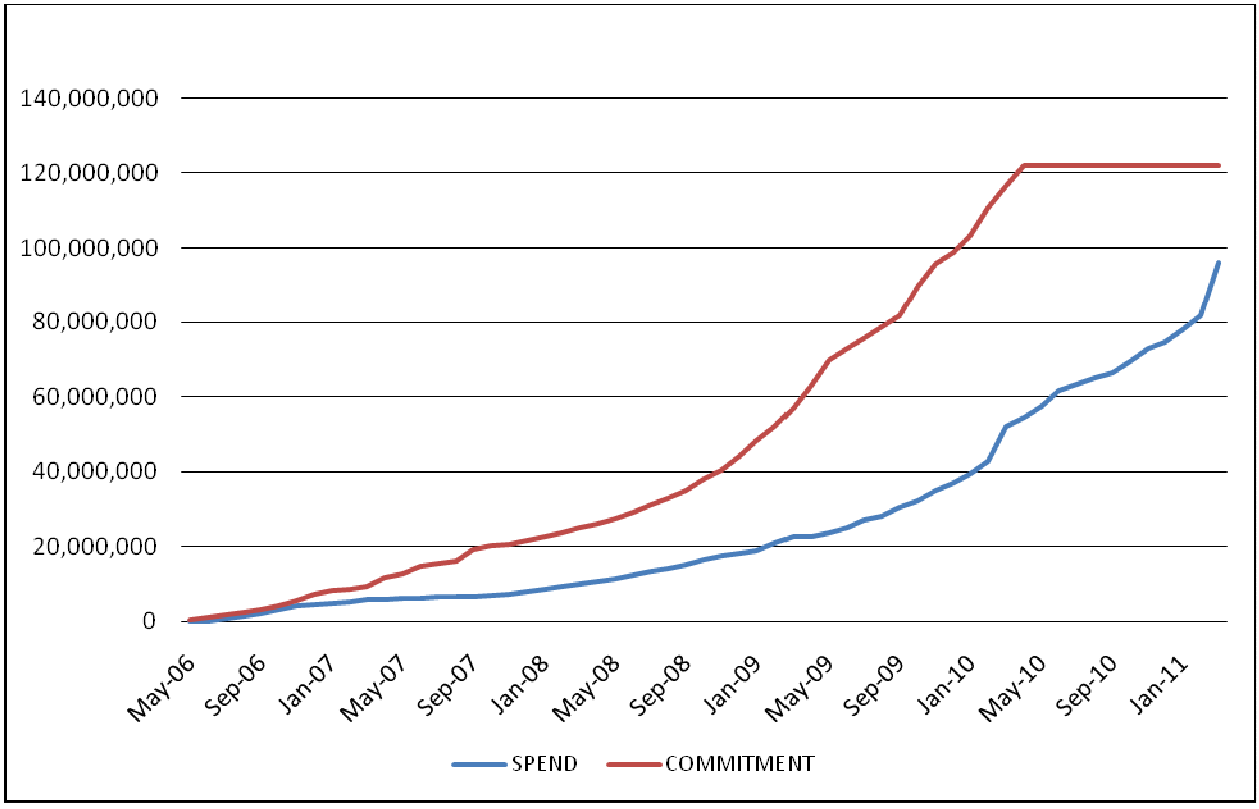
Both internal and delivery stakeholders felt the financial management of the LCBP had improved in its latter years. DECC's internal audit report concluded that, at that time,

> *'Financial liabilities are monitored through data reported and discussed on a regular basis. Apart from not holding the original data in the official record system, monitoring is controlled as it can be'.*

5.3.2 Predicting the take-up of grant offers

All the money available for grants through the LCBP was allocated through Grant Offer Letters (GOLs)[22]. One of the challenges of the LCBP's financial management was the delay between this commitment of grant funds and actual spend against these grant offers. As shown in Figure 5 below, there was a widening gap between commitment and spend over the course of the Programme. By the end of the LCBP, the total underspend was in excess of £28 million, representing about 20% of the total Programme budget. Given all the Programme's funds were committed, one internal stakeholder felt a more accurate term for the LCBP's underspend was 'declined grants' or 'not taken ups'.

Figure 5: Cumulative LCBP commitment and spend at 1st March 2011



[22] Please note £6 million LCBP funds were not allocated through GOLs - £3million was taken away from the Programme and £3million could not be reallocated due to end-of-year carry-over restriction (EYF).

Internal stakeholders anticipated criticism to be directed at the scale of this underspend. However, they felt that the format for reporting the Programme's finances was in large part to blame for the lack of broader awareness of the underspend across more senior levels of government. An internal stakeholder felt there was a fundamental issue that some of the DECC finance staff did not understand how the Programme was constructed and reported only the grants committed rather than grants *paid.*

> *"The reporting was only about commitment, it wasn't about spend so they'd never got any idea how much money we'd actually spent."* Internal stakeholder *(39)*

During the life of the Programme, where cancellations became evident, it was possible to 'recycle' the non-claimed funds to new projects. This cancellation recycling amounted to be around 10% of the annual budget. However, at the end of the 2009 financial year, the Treasury imposed an end-of-year carry-over restriction (EYF) on the budget that precluded the ability to recycle funds where commitment in one financial year would incur spend in the next. Internal stakeholders acknowledged therefore that some of the financial management issues which affected the LCBP were difficulties which many government-led assistance packages face and were not unique to this particular programme.

Some stakeholders believed over-commitment of grants should have been permitted to account for the inevitable drop-off between applications and claims. Stakeholders thought the level of this over-commitment could have been estimated from known levels of uptake for similar predecessor programmes, such as Clear Skies, However, this decision would not have been approved by the Treasury according to policy stakeholders.

> *"We could have over-committed on the basis that you know there's going to be a certain level of fallout and it's not an exact science…if you over-commit and all projects go ahead then the Government's going to be out of pocket."* Internal stakeholder *(41)*

A broad range of stakeholders rejected the supposition that the underspend of the LCBP could have been predicted. A significant number of applicants, who were in possession of valid GOL's, were reported to have withdrawn from the Programme due to their confusion about whether they could benefit from both the LCBP and the FIT. The decision by applicants with valid GOL's to withdraw from the Programme could happen at any stage of the GOL's validity period but tended to occur within the last three months.

> *"They didn't tell us until the grants were just about to expire. …couldn't model it financially so cash flows were very difficult to predict. We guessed and we'd made contingencies for it but these people have got a grant offer letter so I couldn't say to my finance people withdraw the money just in case they came back."*
> Internal stakeholder *(39)*

In addition, some applicants could receive a pre-payment on submission of invoices for the capital element of their installations. A delivery stakeholder reported that this had become a major problem for, in particular, LCBP-2 when the applicants failed to claim the final part of their grant. They were in breach of the terms and conditions and were legally bound to repay the pre-payment. Many were cash-strapped organisations and indeed some of these debts were reported to still be outstanding.

5.4 Strengths and weaknesses of the delivery of the LCBP by BRE and EST

The feedback of internal and industry stakeholders, collected through this evaluation, was very favourable towards the administration and delivery of the Programme by EST. While the views of BRE were more mixed, it was acknowledged that LCBP-2 and LCBP-2e involved many complexities.

Across the full range of stakeholders there was agreement that LCBP-1 had run smoothly under the administration of EST. The online application process was considered to be a key element contributing to this.

LCBP-2 was acknowledged by most stakeholders as having faced more challenges than LCBP-1 due to the scale of projects involved, the size of the grants offered and the complexities of the sites (often involving multiple buildings and energy systems and multiple interested parties, such as architects, designers, end-users etc). The large-scale and complex nature of many of the projects under LCBP-2 meant installers had to play a pivotal role in completing and discussing the applications. The handling of these application enquiries by BRE was rated favourably by some installers.

> *"What was good about it was if there was a problem, BRE would phone us up and say "look, this is not done right" or "we don't quite understand this, can you help us clarify it?" and you know usually you could work through the problem".* Industry stakeholder *(60)*

A few installers involved in this evaluation felt however, that this had not been run as smoothly as possible by BRE. Examples were given of instances where call centre staff were reluctant to deal with the installers themselves and insisted on speaking directly with applicants. This was reported to be a particular issue on large-scale non-domestic projects where the end-client often had little understanding of the process or technology in question. This process was defended by internal stakeholders who highlighted that the grant applicants themselves were ultimately responsible for the details of their application (as stipulated in the ground rules).

A few installers reported that they had not found the BRE call centre staff knowledgeable enough to respond to all their queries on a specific project, although it should be noted that responding to technical enquiries was not the intended role of the call centre. These installers also claimed that little support appeared to be available to BRE from DECC to help respond to technical questions.

> *"There were lots of scenarios where the application was flexing the rules of the scheme and the administrators didn't understand those complexities. When they referred up to DECC to say 'help', DECC said 'we can't help, we don't know' because DECC didn't employ technical experts for these technologies. The administrators were exactly that, they were administrators, so when you got into these tricky areas there was nowhere to go."* Industry stakeholder *(62)*

However, this was not a criticism that was raised by any of the grant applicants involved in this evaluation, all of whom were satisfied with the assistance they received.

A few delivery and industry stakeholders mentioned that the opening up of the Framework Supplier list for LCBP-2e, whilst a positive step for the industry, caused difficulties processing applications and required BRE to have additional resource which was not available. A delivery stakeholder reported that the applications submitted in LCBP-2e were of poorer quality which

resulted in a longer assessment time due to the need to re-contact applicants and request additional information. They felt this was likely to be due to a wider number of installers, less familiar with the LCBP than the Framework Suppliers, completing applications on behalf of applicants.

> *"When there was a handful of framework suppliers… the turnaround of applications was days, so it was very, very quick. As soon as it was opened up to other people, the quality of applications went down, there was not necessarily any more resource put into the BRE so to go from five days to get an answer ended up taking five weeks and again it was terribly frustrating".* Industry stakeholder *(60)*

A few internal stakeholders did report that, although their impressions of how well EST and BRE performed were favourable, it was difficult to measure more formally how they had performed, and in particular whether they offered value for money. The ability of the internal team to monitor the performance of the delivery contractors was felt to be limited by the key performance indicators (KPIs) which were set for them. These focused on the administration of the Programme (for example call response time, guidance document downloads) and were not felt to be sufficiently linked to the Programme's overall objectives.

> *"It goes to show how woolly the KPIs are that I can't actually really remember them."* Internal stakeholder *(46)*

One means of judging the value for money provided by BRE and EST is to consider the proportion of the Programme funds spent on administration as these costs were recorded separately from grant expenditure and other minor funding streams. Overall, administration of LCBP-1 and LCBP-1e by EST and LCPB-2 and LCBP-2e by BRE represented 8% of the core Programme expenditure. This was higher than DECC's target of 6%, which was partly due to the underspend on grants towards the end of the Programme (since this analysis is based on spend rather than commitments or budget).

It is worth noting that the administration budget as a proportion of total spend was monitored closely by DECC and the 6% target was being achieved up until the final few months of the Programme. The final underspend of £28 million had the effect of raising the administration per cent from 6% to 8%.

The breakdown of administration costs compared with the value and number of grants is presented below for LCBP-1 and LCBP-2.

	Value of Grants (£)	All Admin Costs (£)	% Admin Cost	Number of Grants	Cost/Grant (£)
LCBP-1 (all streams)	27,751,023	5,002,864	15.27	15,491	322.95
LCBP-2 & 2e	60,969,514	2,738,537	2.25	2,749	996.19
ALL	**88,720,537**	**7,741,401**	**8.03**	**18,240**	**424.42**

This shows that the administration costs varied significantly between the two main phases of the Programme. Stakeholders suggested that the higher percentage administration costs for LCBP-1 (15% compared to 2% for LCBP -2) may partly be due to the larger number of grant applications and commitments, but other factors also account for this difference.

While the application process for household grants under LCBP-1 was online and relatively simple, the selection process for LCBP-1(2a) and LCBP-1(2b) was more complex and time consuming as it required an initial assessment, a technical appraisal and then a selection process by an expert panel. A significant amount of effort was put into appraising projects that were ultimately unsuccessful, while others were asked to resubmit applications which again added to costs. In addition, projects under LCBP-1c were allowed to continue under LCBP-1e meaning that administration support of these projects ran over a number of years. Finally, for LBCP-1e, £113k of the administration budget was ring-fenced for promotional activities which again increased the overall administration costs per application as many of these became 'Not Taken Ups' at the end of the Programme.

A report by the National Audit Office[23] compared the administrative costs of a range of externally managed renewable energy schemes:

> *'Where scheme management had been contracted out, we found wide variations in costs as a proportion of financial support provided ranging from less than one per cent for the Offshore Wind Capital Grants Scheme to 18 per cent for the Department's Marine Renewables Deployment Fund.' (NAO, 2010)*

This report provides evidence that while overall administrative costs for LCBP were reasonable, administrative costs for the LCBP-1 and LCBP-1e were relatively high compared to other externally managed renewable energy schemes. However, if we compare the average cost per grant within the phases, the administration cost reflects both the number of grants awarded and the complexity of the subsequent approval and processing.

5.5 Overall assessment of the LCBP's set-up and management

There was agreement across stakeholders involved in this evaluation that the use of external contractors was a strength of the set-up and delivery of the LCBP. On the whole, these organisations were felt to have managed the Programme successfully although it was difficult to assess the value for money that they offered. There was however, widespread criticism of the management of the Programme by Government. It was acknowledged that severe challenges were faced in this respect due to changes in departments and the Government's administration. The poor financial management of the Programme was considered a serious issue which prevented a better understanding of the level of underspend and the incoherent management was felt to have wider implications for industry. These are discussed in Chapter 7.

[23] 'Government funding for developing renewable energy technologies', National Audit Office, 2010.

6. Experiences of LCBP applicants

This chapter explores the motivations of applicants[24] to apply for an LCBP grant, their experiences of the application process, and for those who received the grant, their experiences of the installation. It concludes by considering the impacts that the LCBP had on their attitudes and behaviours around energy use.

6.1 Profile of LCBP applicants

This chapter starts by considering the type of people that have applied to the LCBP and presents the distinct differences found by this research in the backgrounds and motivations between domestic and non-domestic applicants.

6.1.1 Domestic applicants

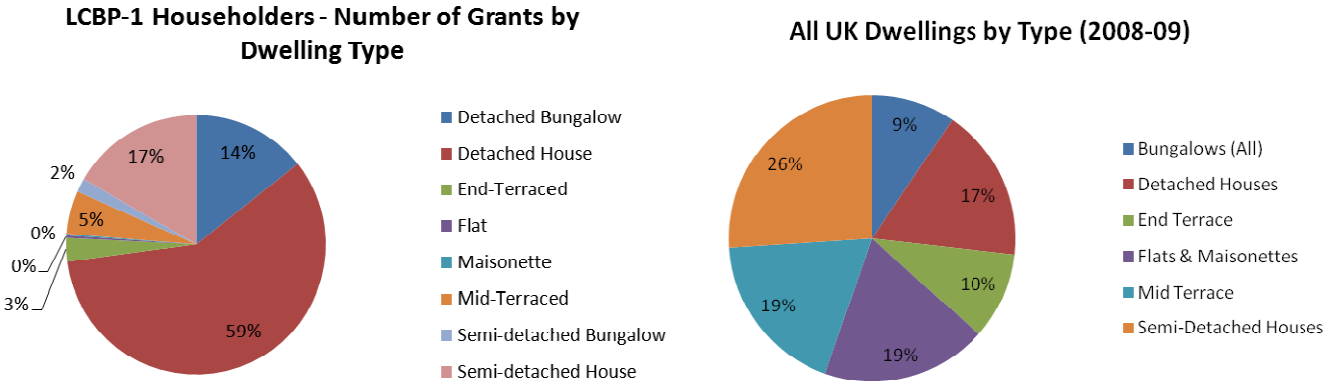
Many of the domestic applicants interviewed described themselves as environmentally-aware and claimed to have a strong interest in reducing their carbon emissions. These applicants provided examples of prior actions they had taken to reduce their environmental impacts. These applicants tended to be empty nesters, either approaching retirement or retired and living on reasonably large incomes.

The profile of domestic applicants involved in the in-depth interviews matches that of all domestic applicants, according to the LCBP-1 grant offer database. An analysis[25] of the housing type of all successful domestic applicants shows they were in general more affluent than the average. As shown in Figure 6 below, three in five (59%) LCBP-1 grant recipients lived in detached properties even though such dwellings only make up 17% of UK housing (2008-9 figure). It should be noted that this focus on LCBP-1 excludes the social housing grant recipients.

[24] The views expressed in this chapter are those of the 38 applicants involved in this evaluation. The qualitative nature of this research means that these are likely to be reflective of the attitudes of LCBP applicants more broadly but does not present a representative picture.

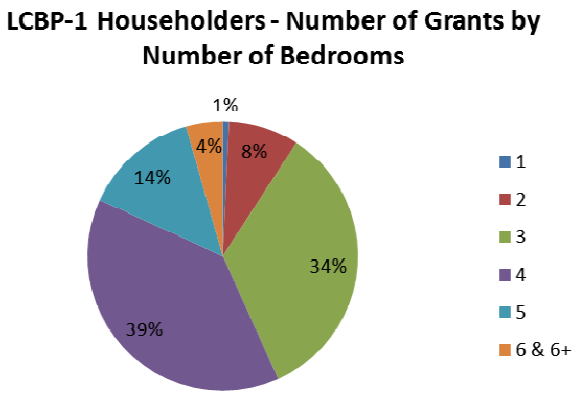
[25] Analysis conducted by EST in February 2011.

Figure 6: Percentage of LCBP grants by houshold type



The most common number of bedrooms in households receiving grants was four (39% of the total) with one-bedroom properties accounting for just 1% of grant recipients. This is shown in Figure 7.

Figure 7: Percentage of LCBP grants by household size (number of bedrooms)



These figures correspond with the views expressed by many stakeholders that, as the LCBP-1 grants only covered a small percentage of total costs, those applying were in general more affluent citizens with easier access to capital. Those in detached properties were also more likely to have complete control over their roof space and access to larger roof space and grounds for the installation of microgeneration technologies.

Many of the domestic applicants involved in this research came from a technical background, such as: previous experience in the microgeneration industry; work on the restoration of old buildings; or employment as an architect, engineer or builder. They felt this experience gave them greater interest in emerging technologies and the confidence to pursue the installation of them.

6.1.2 Non-domestic applicants

The major driver of interest in microgeneration across the non-domestic applicants was a requirement to find a cost-efficient means of heating and powering buildings and appliances. This was also a key driver for domestic applicants which often complemented, or reinforced the environmental interest they had. The research found that, across all the applicants, there was a high level of recognition for the rising cost of energy and a desire to protect themselves against future price increases. Many non-domestic applicants were confident about the financial benefits offered by microgeneration when compared with fossil-fuel based energy costs.

"The cost saving was the big thing. We could identify we've got some very good sites and so we would like to take advantage of the natural resources there and that reduces our running costs, which as a charity is something important."

Grant recipient, Phase 2, GSHP *(29)*

For some non-domestic applicants, microgeneration was appealing as it would allow them to improve, or establish, a reputation for being environmentally conscious. These applicants felt using renewable sources of energy would portray them in a positive light to others, helping them publicise or sell their services. The environmental motivations reported by non-domestic applicants were often made in the context of an organisational commitment to the environment.

It is important to bear these motivations in mind when considering the scale of the impact of the LCBP on interest in microgeneration (discussed further in section 6.5.5).

6.2 Motivations for applying to the LCBP to install microgeneration

The main reason that the applicants involved in this research had applied to the LCBP was due to the financial assistance it provided. The grants enabled them to pursue microgeneration for the reasons discussed in section 6.1 above.

While the financial assistance offered by the Programme was the key driver for all applicants, it was of particular significance for non-domestic applicants. These applicants said they would not have been in a position to install the technology if they had not received financial help (this is discussed further in section 6.5.5).

Although some non-domestic respondents reported that they, or their broader organisation, had a desire to help the environment, it was still the financial help offered by the LCBP which resulted in them fulfilling this idea.

"We were green anyway, we wanted to have the capacity to contribute towards lower carbon emissions. So we had looked at putting panels up when we were refurbishing the building, because we had to do a lot of refurbishment when we came in, but the budget was tight and we didn't include it in the original plans. Then I came across the grant scheme for SMEs and I thought, "Right, that's for us." So I applied. "

Grant applicant, Phase 1 (2a), Solar thermal *(13)*

Some non-domestic applications reported that another motivation for them to apply to the LCBP was because it was considered a safe source of finance which increased the success of their appeals for match-funding.

Many domestic applicants were also financially motivated to go through the LCBP as they perceived the grant 'as an added bonus'. In some cases, they felt the grant helped them to install the technology sooner or made the final decision to proceed with the installation slightly easier.

A number of different applicants said they felt confident and encouraged to apply to the LCBP because the Programme was backed-up by the Government, which for them meant that it could be trusted and that it would be realised in practice for certain. Furthermore, others were assured

by the Programme because of the approved list of suppliers and installers it provided, which they felt meant that the work would be completed to good quality standards.

> *"That limited framework supplier list gave us more confidence in some ways because you could think well, there must have been a process that had gone through for them to be made a framework supplier. So then you had the confidence, well then the product must have been vetted. So as a consumer that's important."*
>
> Grant recipient, Phase 2, Wind turbine *(26)*

This research did not find that applicants were actively choosing to apply for the LCBP over other financial incentives. Many applicants believed the LCBP was the only available funding option at the time. There was some recognition of other sources of funding by non-domestic applicants, and in these cases they reported applying to all available schemes in attempt to cover 100% of their project costs.

6.2 Experiences of the application process

6.2.1 Submitting the application

Most respondents reported positive experiences of the LCBP application process. In some cases it was compared favourably to other application processes, such as those for match-funding. However, it should be noted that there was poor recall among some respondents regarding some of the details due to the lapse of time between their application and the research.

The experience of the application process differed between LCBP-1 and LCBP-2 respondents. Most of the LCBP-1 respondents agreed that the application process was straightforward, user-friendly and that they generally needed little support during the process. This is in line with the results of EST's customer survey which showed 76% of LCBP-1 applicants were *very* satisfied by the services provided by the grants administration team while a further 20% were *fairly* satisfied.

Among the LCBP-1(2a), LCBP-1(2b) and LCBP-2 applicants there were some who found the forms very complex. A few said they did not understand all the technical questions and were frustrated with the amount of paperwork required. For others, technical language such as 'aperture of panel' was unnecessarily complex and could have been avoided.

> *"On the application you had to calculate your energy saving which was... well, I'm not an idiot and I've got a degree in science, but I thought trying to do the maths was I could have done with some help... "*
>
> Grant recipient, Phase 1 (2a), Solar thermal *(13)*

Installers involved non-domestic projects agreed with applicants that the application process involved too much paper work and administration.

> *"We had to jump through hoops to make it fit with the process, it was unnecessarily complicated."*
>
> Industry stakeholder *(63)*

Some of the LCBP-1 and LCBP-2 participants, who agreed that the application process was easy, explained that their application form was filled in for them by an installer, consultant or local authority. Some said they did not feel they had the expertise to complete it themselves, or that it would have taken them substantially longer had they tried. Internal and delivery stakeholders felt a negative implication of this practice could be that the applicants themselves were less familiar with the terms and conditions of the grant offer.

For respondents who required guidance with the application, most were very happy with the prompt response and advice they received from helpline staff. Some applicants liked the BRE and EST call-centre staff because they felt that they could talk to someone on a one-to-one basis and because staff took 'ownership' of the project. Participants were also happy with the information provided on the internet.

> "*At the other end of the phone there was always someone prepared to provide advice and support during the application process.*" Grant recipient, Phase 1, Solar PV *(5)*

The monthly funding pots which were introduced to the LCBP caused difficulties for some applicants. A few applicant respondents, and installers, mentioned having to submit application forms on the 1st of the month in attempt to secure a grant offer. A small number of applicants also reported that they had to submit their application multiple times at the start of each month before it was accepted.

6.2.2 Claiming the grant

Overall, the applicants involved in this research were satisfied with the process for claiming their grants with problems only being raised in a few isolated cases.

Most participants agreed that the decision on the success of their application was made and communicated quickly. Many were also very happy with the fact that the grant money was received promptly and without delay.

> *"Within a week of sending the form back they responded and said you should get information on the grant in a few days which I did…and within a month I had the money, it was brilliant, I can't fault it."* Grant recipient, Phase 1, Solar PV *(5)*

One applicant reported that there was a severe delay in obtaining approval for his application. Industry and delivery stakeholders recognised that at particular 'pinch' points in the Programme, for instance due to implementing a waiting list under LCBP-2e, this was an issue for a wider number of applicants.

> *"They were quite slow in approval, I waited over four months for approval, by which time the impetuous for the project had waned a little, the [organisation] had decided perhaps they didn't want so many wind turbines and the committal period had gone. Eventually LCBP got onto the case and in the end we got our grant but, there was a period where it looked like we might have to pay for the entire turbine costs ourselves.* "
> Grant recipient, Phase 2, Wind turbine *(26)*

A few applicants, including housing associations, who received funding for multiple installations reported they had to spend a lot of time 'justifying' the grant they were offered. They felt a lot of unnecessary paperwork was required in providing proofs of purchase and invoices for their

grant. In some instances applicants reported that installers were unwilling to provide a receipt or invoice which would have revealed their mark-up on the product cost.

> *"They wanted individual invoices for every single installation from everybody that was involved in the process. I mean the panels were on the roof, they were fitted, they were working, but they wouldn't just take the interim certificates. … And I just thought that was unnecessary."*
>
> Grant recipient, Phase 1 (2b), Solar thermal *(23)*

Internal stakeholders noted that the LCBP was particularly concerned about governance, and fraud in particular. They suggested that this could have led the application process, particularly for LCBP-2 where grants were larger, and often covered multiple technologies, to have appeared slow and cumbersome to applicants.

6.3 Applicant withdrawal from the LCBP

LCBP-2 and LCBP-2e saw the greatest number of withdrawals from the Programme. According to stakeholders, and based on the experiences of the small sample of withdrawn applicants involved in this evaluation, the main reasons for this were funding shortages, and delays in project progress meaning the grant offer validity period was exceeded. There were fewer withdrawals from domestic applicants, and the reasons for these tended to be more varied.

Stakeholders reported that two of the most common reasons for withdrawal among larger non-domestic projects were: funding shortages, particularly given the challenge of securing match-funding in the current economic climate; and delays in the progress of projects meaning that they were unable to claim their grant within the stated offer period. This was backed up by the experiences of non-domestic withdrawn applicants' involved in the in-depth interviews. One reported they ran out of time to secure match-funding for the remaining cost of the project and another (a local authority) was forced to abandon their plans due to local government funding cuts.

> *"Microgen's the last thing that goes onto a new building so if you're strapped for cash and suddenly you want to make some changes then the easiest thing for you to do is to drop the microgen."*
>
> Internal stakeholder *(41)*

The greatest number of withdrawals from non-domestic grant recipients in LCBP-2 and LCBP-2e occurred during financial year 2010/11. Analysis of the LCBP-2 and LCBP-2e grant databases shows that there were 328 withdrawals during the period, amounting to a value of £8,759,707[26]. Figure 8 below shows that the highest number of withdrawals was in March/April 2010, amounting to a value of £4.7 million. This was due to the grant deadline expiring at the end of March 2010 and the Programme being unable to carry over funds into the next financial year.

[26] Please note these figures do not include March 2011 as this data was not available at time of writing.

Until these final months of the Programme, funding tied up in withdrawn grants was re-allocated to new applications.

Figure 8: Number of grant withdrawals from LCBP-2e per month in FY2010/11

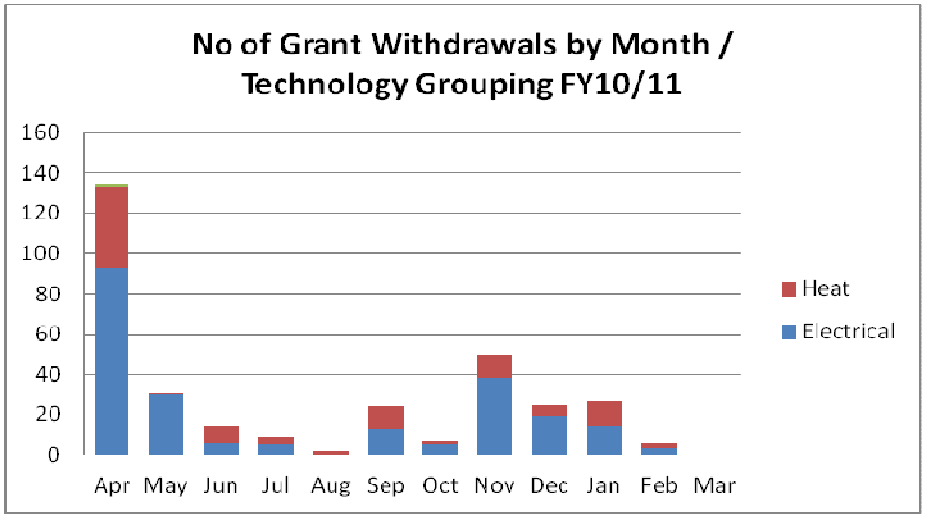


Figure 8, and Figure 9 and 10 below show that the LCBP-2e withdrawals were most commonly from grants funding microelectricity, and solar PV in particular. Withdrawals (in terms of number of grants) among solar PV projects were significantly higher (52%) than the proportion of solar PV projects overall (31%). Stakeholders, across industry, delivery and government, reported that unclear policy announcements around the FIT were a major cause of these withdrawn grant offers. A range of stakeholders reported that contradictory advice had been given to different stages in the lead up to the FIT resulting in some applicants withdrawing until there was greater certainty, and others withdrawing because they had been told that they could not benefit from the FIT if they used an LCBP grant due to European State Aid rules.

Figure 9: Percentage of grant withdrawals by technology in FY2010/11

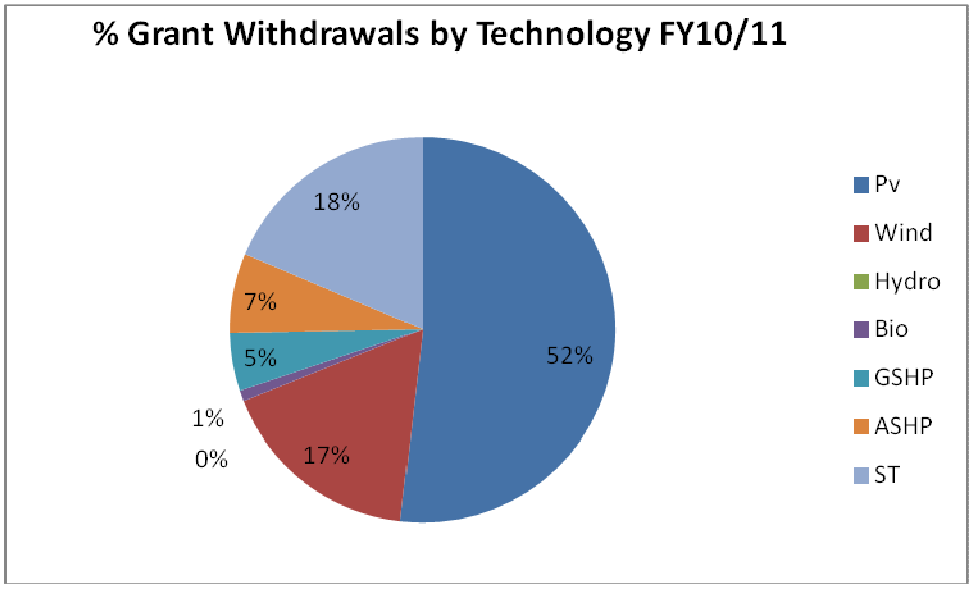
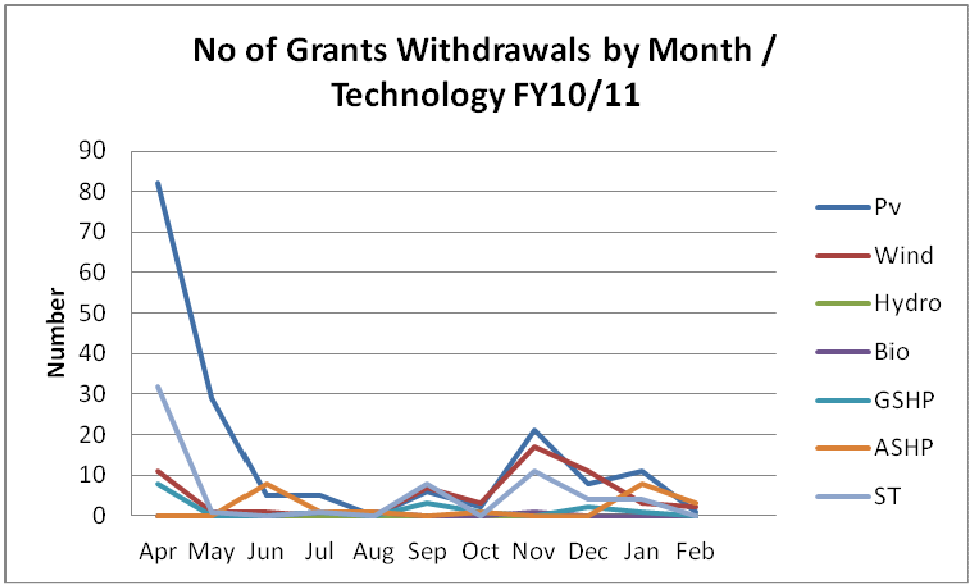


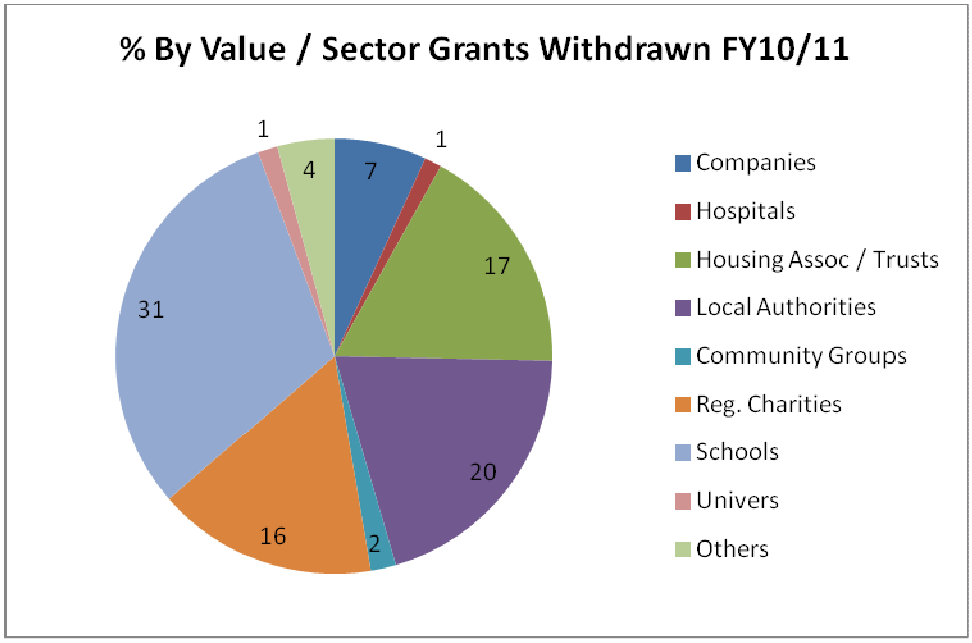
Figure 10: Number of grant withdrawals by month by technology in FY2010/11



There was also a disproportionate withdrawal of wind projects as these accounted for 17% of withdrawals but only 7% of the total number of grants. Withdrawals of solar thermal were by contrast significantly lower than would be expected. Solar thermal accounted for 19% of the number of grants withdrawn even though the technology accounted for 45% of grants.

Figure 11 below shows that a disproportionately high number of withdrawals were from schools (31% of withdrawals despite schools only accounting for 18% of grants), while by contract housing associations/trusts only represented 17% of withdrawals despite accounting for 36% of grants.

Figure 11: Percentage of grant withdrawals by value by sector in FY2010/11



The reasons for withdrawing were more varied for domestic applicants. In a few instances this was due to unexpected costs which arose during the course of the project. The reasons for these additional costs were: undercosting of the project at the quoting stage; having to pay registration fees with the local authority if planning approval was required; or for modifying the design in order to conform with planning regulations. Other domestic householders had withdrawn from the LCBP due to doubts over the cost-effectiveness of the technology.

Planning, although not within the remit of the Programme, was also an issue raised by installer stakeholders, in particular those representing the wind sector. It was reported that although other technologies were given general permitted development rights so that planning permissions were not needed, this was not given for wind. Representatives of this industry involved in this evaluation felt an uneven playing field had therefore been created. It should be noted that the application forms clearly indicated that planning permission may be needed in certain localities and for some technologies and that the process could be lengthy meaning the Grant Offer Validity period may have expired before permission was granted.

6.4 Experiences of the installation process

6.4.1 Selecting installers and suppliers

The approved list of suppliers (the Clear Skies list for LCBP-1, the Framework suppliers for LCBP-2 and the MCS accreditation list for LCBP-1e and LCBP-2e) was the starting point for most applicants in selecting a supplier. Overall, respondents found this stage straightforward. The three main considerations in choosing a supplier were costs, locality and experience in the field. Many reported to have gone with recommendations from someone they knew and in a few cases they followed advice on B&Q's website. Participants who were non-domestic applicants usually conducted a formal tendering process in order to select a supplier.

Applicants to LCBP-2 mentioned some concerns related to the Framework Supplier model through which they selected an installer and product. Some commented that there was a limited or no choice between suppliers. There was a perception across a few LCBP-2 applicants that there was only one supplier on the list for some types of technology and that there were limited, and outdated, products under the scheme. In reality, there were three Framework Suppliers which oversaw delivery of installations for each type of technology. A few participants were concerned that the approved supplier list was not competitive and this lead to artificial inflation of the prices.

6.4.2 Installation process

Most respondents reported the installation was a fairly smooth process. Most were happy with the installation itself, it was completed within timescales and there was no disruption. In cases where there was some disruption, it was within the limits of what they expected. Many also rated highly the installers of the technology and in particular that they were, helpful, explained fully what their service included and provided a contact number in case of queries with the installation.

6.4.3 Post-installation process

A few participants reported some problems post-installation. These were often related to learning the settings and how to use the installation correctly. Some of the issues related to the operation of the technology included faulty parts, such as panels or monitor, air in the system,

leak from a pipe, faulty wood pellets. In all cases, the manufacturing or installation companies promptly rectified the problems. As a whole, the problems outlined were seen as minor issues by participants and there was nothing that had not been resolved.

Bad experiences were rare. In one particular case the installer did not install a vital component on the GSHP system, which meant the system ran throughout the summer instead of shutting down. When this was realised the installer was re-contacted but it was evident they had very little knowledge or experience and the participant decided to use a local firm to rectify the problem. The participant admitted that as a result he was distrustful of the quality of installers subcontracted by Framework Suppliers due to particularly poor experience of the installation company.

> *"Whilst the framework suppliers may have been very good, as it went down through the levels into the local installers … perhaps there wasn't the control over the local installers that there might have been."* Grant recipient, Phase 2, Wind turbine *(26)*

Internal stakeholders provided anecdotal evidence that some non-accredited installers had slipped through the net under the Framework Supplier model. Applicants were required to submit a commissioning certificate by the named MCS certified installer to try to stop this happening.

> *"We do know of cases where things have been subbed out, where people have done it under somebody else's banner when they're not actually accredited."*
> Internal stakeholder *(39)*

6.5 Impact of the LCBP on applicants

This section considers the impacts that applicants felt they had experienced as a result of installing microgeneration technology. It goes on to consider whether the LCBP itself made any difference to their attitudes and behaviours, above and beyond those they may have developed anyway if they had not received a grant.

6.5.1 Impact of technology on energy bills

Most of the applicants involved in this research had experienced reduced energy bills since the installation of a microgeneration technology through the LCBP.

Many applicants confirmed that their energy bills were lower as a result of using microgeneration, and for some this was still the case even after taking into account their increased energy use during the recent harsh winters. The cost reduction was particularly significant for applicants who had replaced an oil-fuelled system with microgeneration technology. For others, the added additional benefit of selling electricity back to the grid was a financial benefit of the technology.

> *"It's certainly produced more than we required so all bills, that's all cooking, all heating, all lighting, all music; everything is covered by the turbine. It's going into the Grid whenever we don't want it and whenever we want more power than the turbine is producing then of course we take it from the Grid but there's a net profit".*
>
> Grant recipient, Phase 2, Wind turbine *(34)*

For some applicants, however, it was difficult to measure the financial impact of their microgeneration technology. This was either due to a lack of baseline fuel costs or because it was too soon after installation to assess its impact.

A few applicants were not positive about microgeneration following their installation as the technology had not met their expectations. The main reasons were that the installation had not produced sufficient energy or that the cost savings were not as significant as hoped.

6.5.2 Behavioural impact of microgeneration technology

Some applicants reported that the technology had a direct impact on their energy consumption behaviour. The fact that they were able to visually see how much energy they were using every day was a strong driver to be more cautious with energy usage.

In the case of community or non-domestic projects, this impact spread beyond the applicant themselves to the users of the building. For instance, Housing Association tenants were reported to have changed their energy habits as a result of the solar PV installation by using their washing machines during the day when there was plenty of light. Another non-domestic applicant reported a positive impact on the energy usage awareness and behaviour of workers within their building.

> *"The local team are particularly interested in the electricity meter we're running in reverse and they have been seen to be turning heaters off just to make sure that they can reduce the bill. So yeah, they become more energy conscious should we say. They know when it's windy that they have got energy going back into their meter and that they can reduce the meter readings."* Grant recipient, Phase 2, Windturbine *(26)*

Some applicants reported that they had installed other microgeneration technologies since an initial installation funded by the LCBP. Others confirmed that they were actively looking into more installations. In one case, an applicant who had installed microgeneration at his workplace through the LCBP said he was now inspired to do the same for his own home. Another applicant confirmed that his restoration company had started a hydro power installation business after their experience of installing microgeneration through the LCBP.

Applicants gave a number of examples where their recommendation to a family member, friend, colleague or local resident or organisation had led them to install microgeneration themselves.

> *"One of the Parish Councillors who didn't know much about the whole thing and I said, 'well you want to look at PV for a start. It's interesting, not necessarily for the Village Hall but for your own house'. He's now a PV installer...Yeah it's a business and he's now put PV on his own house and he's convinced it's a very good idea."*
>
> Grant recipient, Phase 2, Wind turbine *(34)*

6.5.3 Reputational impact of microgeneration technology

A number of non-domestic applicants acknowledged that the microgeneration technology greatly improved their reputation and image. It was evident that these organisations were keen to share their installation, and the financial and CO_2 savings they were generating, by publicising it through website content and open-days.

> *"Obviously having solar panels helped us a lot in getting the green acorn award. So we put that on our website and stuck it on the door and things like that."*
>
> Grant recipient, Phase 1 (2a), Solar thermal *(13)*

One public sector organisation representative reported that they have been increasingly recognised for their energy saving work and, following the installation of microgeneration through the LCBP, featured on 'The Times Top 50 Green companies' list.

It is also worth noting that a number of LCBP-funded projects won awards for their commitment to sustainable development:

- Harlow Carr entered by the Royal Horticultural Society, received a grant under LCBP-1(2b) for solar thermal hot water, a GSHP and a wind turbine. It won the Green Apple Award for Environmental Best Practice and 'Legacy Award – Sustainability' at the Yorkshire & Humber Construction Awards and the UK Green Building Council 2010 Sustainability Awards for 'Sustainable Project of the Year'

- Greenhouse Leeds, entered by Citu received an LCBP-1(2b) grant for a GSHP and solar thermal hot water. It won the UK Green Building Council 2010 Sustainability Awards for 'Sustainable Refurbishment of the Year'.

6.5.4 Additionality created by the LCBP

An important, but difficult, question to answer is whether the LCBP delivered installations of microgeneration technologies over and above what would have happened if the Programme had not been in place. A clear finding from this research is that the existence of grant funding was far more likely to deliver additional non-domestic installations, than it was to deliver domestic ones.

Moreover, while applicants mentioned a range of positive benefits, and knock-on effects, from their installation of microgeneration these were all related to the technology itself rather than the LCBP specifically. The evidence collected by this evaluation suggested that the Programme itself had more of an impact on the attitudes and behaviours (i.e. created additionality) for non-domestic applicants than private householders.

Impact for non-domestic applicants

Feedback from internal and industry stakeholders, as well as findings from grant applicant interviews, showed that the availability of grant funding through the LCBP was pivotal to the installation of microgeneration, and therefore its resulting impacts, across many non-domestic sites. Nearly all of these applicants said that without the grant, which was usually 50% of the cost of the project, they would not have been able to afford the purchase and installation of the microgeneration technology. This was backed up by data from BRE's customer survey which showed that 87% of LCBP-2 applicants stated they would not have carried out the installation without the grant (this figure was 80% for LCBP-2e). Among the few LCBP-2 applicants involved in this evaluation who claimed they would have gone ahead without the grant, they said that the installation would have been at a much smaller scale. In the case of non-domestic applicants, the LCBP was therefore fundamental in achieving the range of impacts discussed above.

Moreover, as well as the number of installations being carried out, it was felt to be bringing microgeneration to an audience that had previously either not been aware of the technology or had not been financially able to invest in it. Many grants to community groups, charities and voluntary organisations attracted match-funding from other sources, often to cover 100% of the total cost. This is reflected in the view that community level microgeneration projects stagnated after funding was no longer available through the LCBP.

> *"Suddenly, and without warning, overnight after the coalition was elected, the LCBP was scrapped and that meant that all the enquiries we had in our pipeline ran away, without the 50% grant there wasn't a compelling reason for them to pursue our solution rather than a fossil fuel based solution."* Industry stakeholder *(62)*

Impact for domestic applicants

In contrast to non-domestic grant applicants, most domestic applicants for LCBP-1 claimed they would have gone ahead and installed the technology even without the financial assistance provided by the Programme. This chapter has already highlighted that domestic grant applicants largely did not view the financial incentive of the grant as significant enough in itself to motivate installing a microgeneration technology. The mean grant level for most technologies was equivalent to around 10% of total costs, although for solar PV it was higher at around 25%.

Stakeholders also largely agreed that, in terms of the householder programme (LCBP-1 and 1e), the level of grant offered did not have a major impact on the number of individuals adopting. Whilst the financial incentive often helped to make the decision easier, and in some cases allowed it to happen earlier than it would have done otherwise, stakeholders did not believe it stimulated demand.

> *"For a domestic installation, bringing the payback of a PV system down from 80 years to 40 years when the panels last 25 years, is hardly a winner is it"?*
> Industry stakeholder*(64)*

> *"The grant didn't swing it one way or another...the £1,200 grant gave them money to landscape the mess we had made"* Industry stakeholder *(61)*

many domestic grant applicants also had strong environmental motivations or were convinced of the financial benefits offered by microgeneration, despite the longer payback period in the absence of help with the upfront cost.

Moreover, some stakeholders felt it was often rewarding individuals who would probably have gone ahead without the grant. Many stakeholders – both internal and industry – felt that, for this reason, the Programme did not bring microgeneration to new types of customer. Although receiving a financial grant, domestic grant recipients were still required to make the initial investment, which is often several thousand pounds. Industry stakeholders generally reported their customers as being early-adopters with reasonable disposable incomes.

> *"It probably rewarded folk for being pioneers. Most of the recipients were self-builders, most of them were reasonably wealthy, most of them were building a house that they were going to live in for a prolonged period and most of them would probably have gone with our technology whether the grants was available or otherwise."* *Industry (62)*

The limited impact that the LCBP therefore had on the domestic sector, when compared with the non-domestic sector, was further displayed by the way in which these applicants described finding out about the Programme. Many domestic applicants reported that they were not actively looking for financial assistance to install microgeneration technology, but were conducting general web searches for information on the most suitable type of technology for their needs. These web searches often led them to the LCBP website and therefore to awareness of the Programme. Other applicants said they were pointed in the direction of the LCBP by EST Advice Centres, energy consultants or architects. In other cases, again indicating their prior intent to install this technology, applicants were made aware of the LCBP by technology suppliers or installers whom they had contacted to obtain a quote for the product and installation.

The motivation for consumers to install microgeneration regardless of financial assistance, was also suggested in the subsequent actions of some withdrawn applicants who did not take-up their grant offers. Of the eight interviews with withdrawn applicants, two householders had gone on to install solar thermal technology through their own funds, and a non-domestic applicant had proceeded with their installation by raising the necessary capital through fundraising.

6.7 Overall experiences of LCBP applicants

On the whole the applicants involved in this evaluation felt their LCBP applications were well managed and did not experience too many difficulties at installation or post-installation.

The installation of a microgeneration technology was reported to have had positive knock-on effects for many applicants as well as their family, friends and colleagues. The technology has led to increased awareness of energy usage, and in some cases a fall in usage, and a wider awareness of the availability and effectiveness of microgeneration. In a few cases, applicants reported that others had installed microgeneration technologies as a result of their initial installation.

However, based on the evidence collected by this research[27], it is questionable as to the extent to which these impacts can be attributed to the LCBP. While the availability of the grant was pivotal in the decision for many of the non-domestic applicants, involved in this research, to install a microgeneration technology, it was far less so for household applicants.

[27] The qualitative nature of this research should be acknowledged here. This finding cannot be generalised to be true of all non-domestic or domestic LCBP grant applicants.

7. Wider impacts of the LCBP

The previous chapter considered the impact of the LCBP on grant applicants. This chapter considers the Programme's wider impacts, including impacts on the microgeneration industry and on the costs of microgeneration technologies.

7.1 Impacts on the scale and scope of the microgeneration industry

7.1.1 Scale of impacts relative to microgeneration industry

Overall the majority of stakeholders were of the opinion that the LCBP grant schemes have provided modest but significant stimulus for the microgeneration industry. The LCBP provided 18,240 grants for the capital and installation costs of microgeneration equipment with 11,696 of these for thermal technologies and 6,755 for electrical technologies[28].

The LCBP has helped support a significant proportion (around 20%) of all microgeneration installations in the UK to date[29] - more than any other scheme. Most stakeholders agreed that it has therefore contributed significantly to the promotion of small scale renewables although the degree to which it stimulated the domestic market is less clear (as acknowledged in chapter 6).

It is difficult to assess the scale and impact of LCBP, relative to the microgeneration market as a whole, owing to the lack of recent data on the microgeneration industry. A report for EST in 2007[30] estimated that about 100,000 microgeneration installations were then in place across the UK. An earlier study by the Environmental Change Institute[31], however, had estimated that there was technical potential for around 53.6 million microgeneration installations by 2050 (about 1.7 installations per dwelling) across the UK.

The period of operation of the LCBP did see a rapid increase in the uptake of microgeneration technologies, albeit from a low base (Figure 12 below). Significant growth between 2002 and 2006 (the period of Clear Skies) was sustained between 2006 and 2009 under the LCBP.

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[28] It should be noted that the technology specific figures in this chapter do not add to the total of 18,240 grant claims as this figure includes multiple claims from individual claimants.

[29] Generating the future - an analysis of policy interventions to achieve widespread microgen penetration', EST, 2007.

[30] Generating the future - an analysis of policy interventions to achieve widespread microgen penetration, EST, 2007.

[31] 'Power from the People - Domestic Microgeneration and the Low Carbon Buildings Programme', Environmental Change Institute, 2009.

Figure 12 – Microgeneration (heat and electrical) capacity 2002 - 2009

Year	Heat Microgenerationeration (toe)	Electrical Microgenerationeration (MWe)
2002	221.1	4.1
2006	335.9	20.1
2009	445.5	55.3

Source: Renewable Energy Capital Grants: lessons learned for selected community based micro-generation projects BRE Trust March 2010

In terms of the budget available for the LCBP, some stakeholders did question whether the pot of money identified was sufficient to bring about large-scale growth in the microgeneration industry.

> *"The Government is always neither one thing nor the other so it's an awful lot of money in terms of small budget, but it's nothing like enough if you actually want to get critical mass and get an industry going."* Internal stakeholder *(40)*

Some industry stakeholders echoed this sentiment. However, generally the LCBP was seen as a necessary requirement for the industry, given the early stage of its development, which stimulated significant growth in certain sectors of the industry.

> *"I don't think without a well-structured subsidy scheme that we would have had a renewable business in the UK because the capital cost of this equipment is high and at that early adoption stage, you do need a level of government subsidy to be able to support it."* Industry stakeholder *(60)*

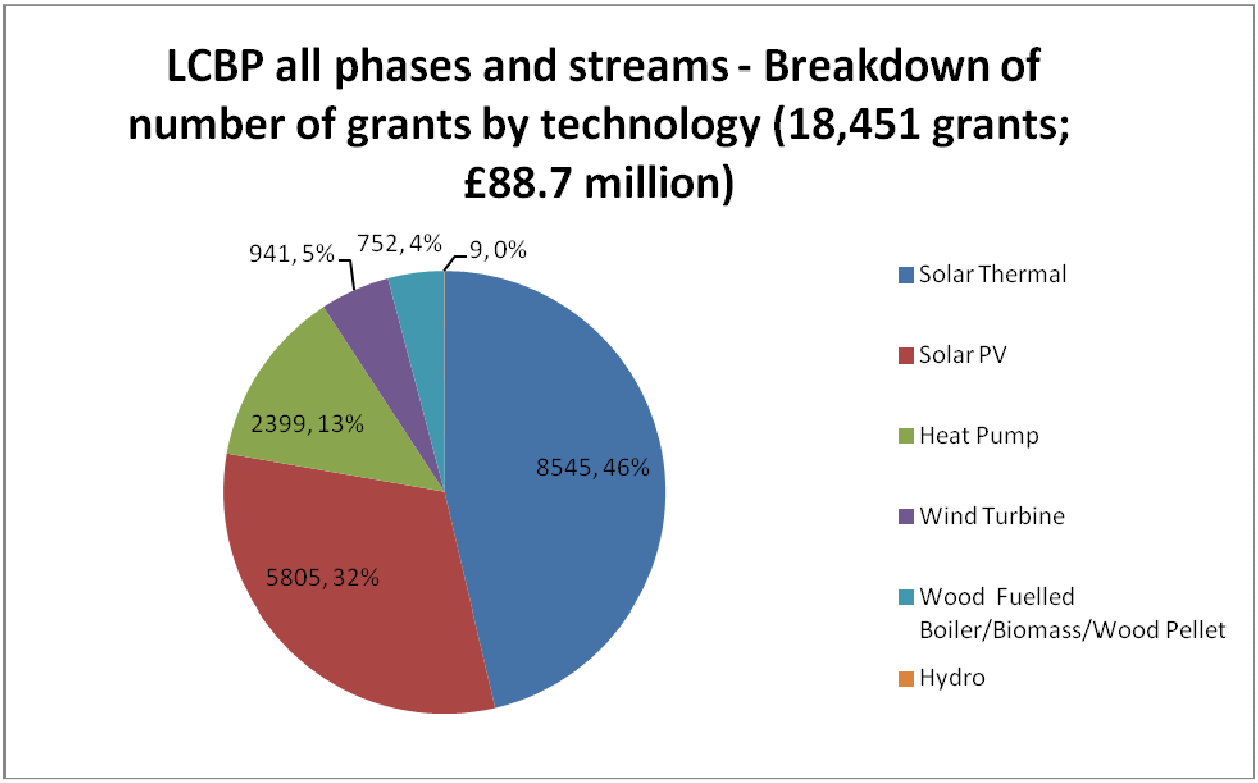
It is important to note that the impacts of the Programme, and its two main phases, were not uniform across the industry and varied by technology type as well as sector. The following section therefore explores how the Programme impacted on each of the particular technologies and on domestic (i.e. household) and non-domestic markets, in more detail.

7.1.2 Impacts on different technology markets

The LCBP provided funds for a range of technologies. However, successful applications to the scheme were dominated by solar technologies due to its more widespread suitability, and the ability of the solar industry to take advantage of and promote the financial assistance available via the Programme.

As indicated by Figure 13, over three quarters (78%) of all grants were allocated to the solar sector. Just under half (46%) of all projects were solar thermal, while solar PV accounted for a third (32%) of projects. One in eight of all grants (2,399; 13% of the total) were provided for heat pumps, while 5% were allocated for wind turbines (971 grants in total) and 4% for biomass/wood boilers (752). Just nine micro-hydro projects were funded through the Programme.

Figure 13 – Breakdown of successful grants by technology (number of grants)[32]



While the funding was not allocated evenly across technologies, stakeholders did report a number of reasons why uptake varied so much between them, including:

- Lead-in times being far longer for technologies such as biomass, GSHP and wind resulting in higher proportions of cancelled applications, while for hydro, lead-in is commonly between two to four years;

- Planning permission was seen as less of a barrier for solar, particularly after changes to Permitted Development Rights;

- The solar industry was generally seen as being more developed at the outset of the LCBP and, therefore, more mobilised to capitalise on a higher underlying level of demand compared to other technologies;

- The range of scales applicable under the Programme being more suitable for some technologies than others, for instance the upper limit for biomass (less than 45kwh) was seen as relatively small by people within the biomass industry;

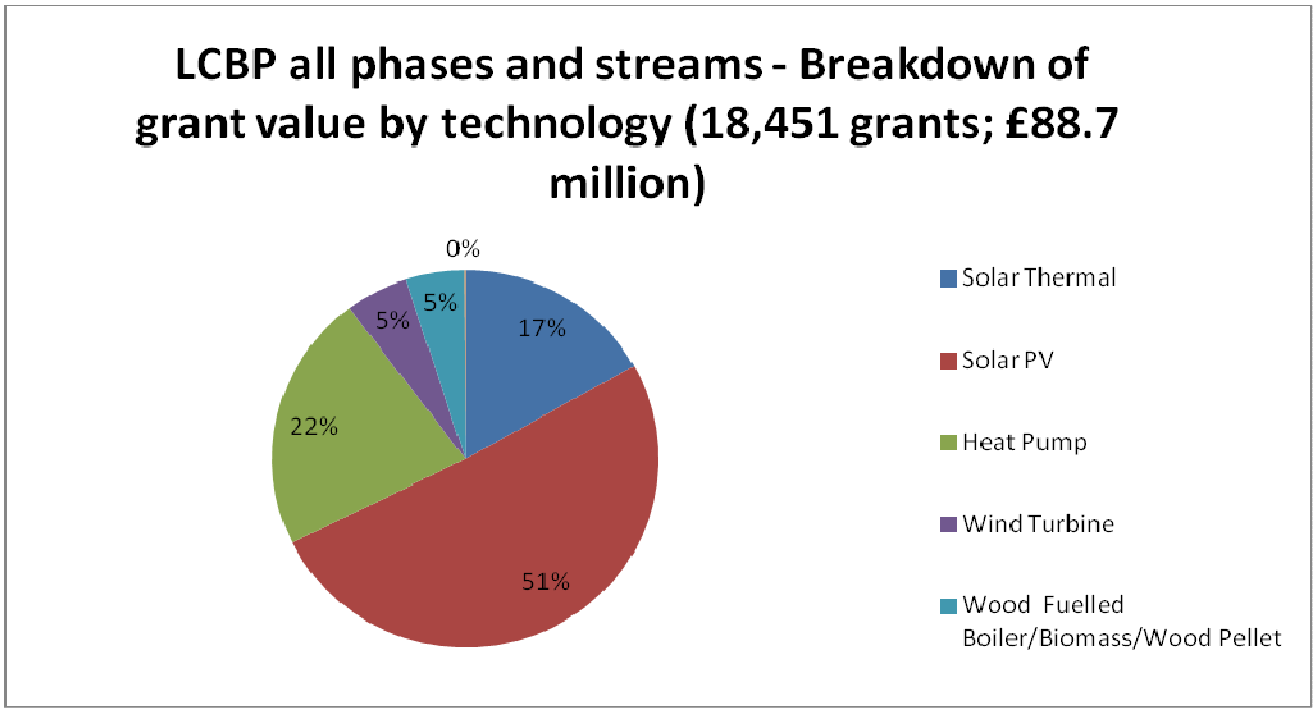
- Wind and hydro technologies are suitable in fewer locations, requiring specific local conditions, while solar (thermal and PV) is suitable in most locations and relatively easily installed.

[32] Please note, the higher number of grants presented here (18,451) is because this chart presents the number of individual grants per technology, compared to 18, 240 grants (presented elsewhere in the report) which is the number of grants per applicant (some applicants received grants for more than one technology).

"Solar is pretty much applicable pretty much everywhere. You've got to be near a stream to do hydro and you've got to be in a windy area to do wind. So I think there are very good reasons why some technologies outperformed others". Industry stakeholder *(58)*

In terms of monetary value of the grants allocated, solar PV was the dominant technology supported (51%), due to its higher unit cost than solar thermal, which received 17% of the grant total.

Figure 14 – Breakdown of successful grants by technology (value of grants)



Given that the majority of installations were limited to one sector of the industry (solar), it is unlikely that the Programme had a significant impact in supporting the development of all technologies. As the main beneficiary of funding, the LCBP injected £45 million into solar PV. Without a commonly accepted figure of the value of the solar PV market, it is difficult to quantify the impact this had on the industry. However, stakeholders broadly viewed Solar PV and Solar thermal as having benefitted to a significant degree from the Programme.

According to industry stakeholders, the sheer number of solar installations receiving LCBP funding provided widespread examples of the technology in action.

"It was a massive boost for the sector. We really managed to get some decent [solar PV] systems installed. It was test bed for the future showing this is real technology and it really works. It allowed us to demonstrate that you can make a significant contribution to even a large site's energy requirements." Industry stakeholder *(59)*

For hydro and biomass, however, the number of installations made as a result of the Programme was such that the impact on the industry was considered to be negligible.

Stakeholder views towards the impact on the ground source and air source heat pump market were mixed. While some believed that the level of the grant was not sufficient to increase

demand for heat pumps, others were largely reliant on additional business generated through the Programme.

"A huge proportion: about 60-70% of total business"

Industry stakeholder *(61)*

However, this is very much dependant on the degree to which manufacturers and installers were able to access LCBP-2 funding. Both internal and industry stakeholders believed that the impact of the Programme was felt very differently between LCBP-1 and LCBP-2, with the non-domestic sector growing significantly as a result of the LCBP. The higher value of the grants under LCBP-2 (up to 50%) and the ability of community-level applicants to attract match-funding were felt to have driven a large increase in the number of non-domestic microgeneration projects. In contrast, the value of the grants on offer to domestic applicants was not felt to be significant enough to generate additional demand. This reiterates our findings from the applicant interviews, presented in Chapter 6.

7.1.3 Impacts on industry of LCBP design and management

Stakeholders cited a number of ways in which the detailed design and management of the LCBP had affected the microgeneration industry. They included: the stop-start nature of the funding; the use of Framework Suppliers in LCBP-2; a lack of consideration for technology-specific needs and a lack of clarity regarding the impact of FIT/RHI on LCBP grants. This section will discuss each of these impacts in turn.

7.1.3.1 Lack of notice given on changes to the Programme, particularly in relation to the budget available

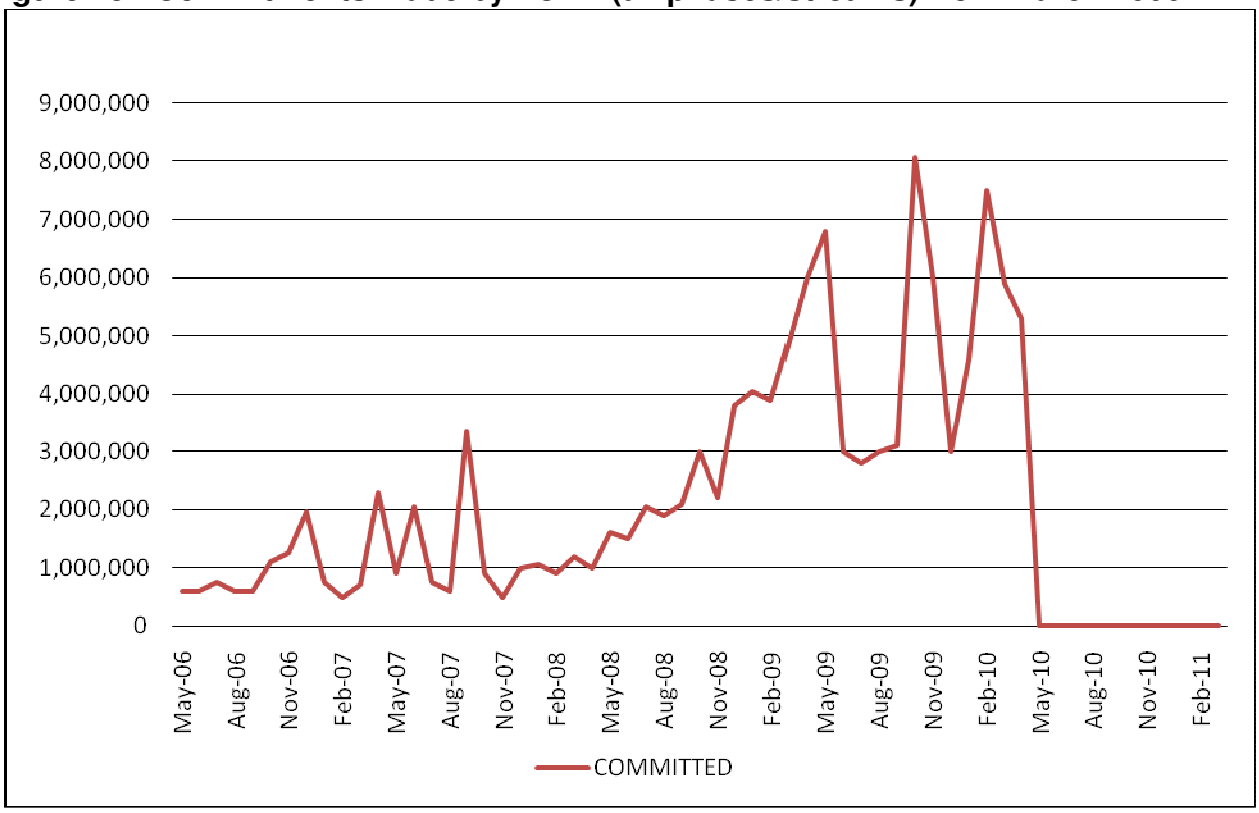
Both stakeholder and industry stakeholders believed that the implementation of the Programme suffered from being very stop/start in terms of the availability of grant funding. This view was acknowledged in the NAO study[33] which identified examples of a 'stop-start' approach. For example, DECC received confirmation that the three-year LCBP would be extended in March 2009, the month that it was due to close to new applications. This meant the scheme had to be closed to new applications for four months while it re-tendered management contracts for the Programme. In addition, the final closure of the Programme in 2010 was rapid – this was for understandable reasons such as to avoid a 'run' on grants – but again caused uncertainty in the industry. In particular it left a gap in support for renewable heat that was not expected be filled until the RHI gets underway[34].

Figure 15 below illustrates the many peaks and troughs in LCBP programme commitments over the life of the Programme. The chart shows the timing of Grant Offer Letters and other financial commitments, rather than the timing of expenditure to honour these commitments.

[33] Government funding for developing renewable energy technologies', National Audit Office, 2010.

[34] Please note that since the time of this research the Renewable Heat Premium Payment scheme has been announced to act as an interim measure until the launch of the RHI

Figure 15 - Commitments made by LCBP (all phases/streams) from March 2006



Some of the factors influencing this timeline include:

- Short-term peaks in grant giving for the householder stream of LCBP-1, particularly after monthly allocations were introduced in December 2006;
- Temporary suspension of the householder stream of LCBP-1 in March 2007, as a result of the full monthly allocation being taken up within 2 hours;
- The re-launch of the householder stream of LCBP-1 with increased funding in May 2007;
- Closure of LCBP-1 (2a) to new applications in June 2007, and closure of LCBP-1(2b) in September 2007;
- Suspension of LCBP-2 grants for solar PVs and heat pumps in March 2009, as these technology 'pots' were exhausted;
- Additional funding of £45million being made available in April 2009, through the LCBP-1e and LCPB-2e;
- Suspension of LCBP-2 grants for solar PVs in December 2009, as the technology 'pot' was exhausted;
- Closure of LCBP-2 on 1st December 2009 and LCBP-1 on 31st March 2010 to all electrical microgeneration, after the announcement of FIT, to preserve some funding for thermal microgeneration in the run up to the introduction of the RHI;
- Closure of all grants and other commitments in March 2010.

Stakeholders reported that the numerous changes to the Programme throughout its lifetime were not always communicated to the industry in advance. It was believed that this - and particularly the corresponding monthly caps on funding for LCBP-1 - led to a stop/start Programme which made it very difficult for the industry to plan, and offered little incentive to invest in the industry, given the uncertainty it faced.

> *"We did grow but it enabled and it disabled me, in that I would grow a business and then suddenly there'd be no work. Then it would start again and you'd try again and then it would stop again and then you'd have to let people go again…So it gave you no financial security because one year we did £3,000,000 and the next year we did £800,000. And without security you cannot grow a business, train staff and make a commitment and investors and banks would not make a commitment".* Industry stakeholder *(57)*

Industry stakeholders reported that, during the monthly caps of LCBP-1, their sales were, to an extent, dictated by funds only being available for a short window at the beginning of each month, meaning that their business was very inconsistent over time. The impacts of this (as well as the impact of funding ending completely) were lessened for those manufacturers and installers who had diversified (such as also being an energy consultancy) or had an export market to rely on.

7.1.3.2 Use of Framework Suppliers

Stakeholders – both internal and industry – were predominantly critical of the use of Framework Suppliers in LCBP-2. Many felt it did not promote development of the industry, as it restricted access to LCBP funding to just a few large companies, and prevented fair trade. Moreover, this also had impacts on existing business prior to the Programme.

> *"Phase 2 was an almighty mess because initially only three framework suppliers had access to Phase 2 grants for ground source heat pumps and we weren't allowed to apply to be a framework supplier because we didn't satisfy the qualifying criteria...as a consequence whatever business we had previously been doing with schools or the public sector fell off a cliff, it just ceased to exist."*
>
> Industry stakeholder *(62)*

Some installers interviewed felt that any installer needed to have had a prior relationship with a framework supplier in order to work with them and benefit from the increased business resulting from the Programme. Overall, views were divided very much between those who had been able to access LCBP-2 funding and those who had not.

> *"It's pretty much a closed shop really. If we'd been on the outside of it, I think we would have been a bit cross that we couldn't access the money."* Industry stakeholder *(60)*

Some stakeholders also questioned whether the use of Framework Suppliers actually led to inflated prices, in contradiction to the Programme objective of reducing product costs. Some industry stakeholders outside of the framework felt that suppliers did not necessarily pass on reductions in installation costs to the customer.

It is worth noting that views of wind industry stakeholders were particularly critical of the Framework Suppliers. A criticism was that the companies which were awarded the contracts did not have expert experience in delivering the technology and had to subcontract to companies that were.

"In the wind industry they awarded the contracts to people who had no clue how to put up wind turbines so although you had an industry ready to put up wind turbines, you had framework suppliers unable to help them put them up... We waited around nearly a year before there was a framework supplier in hand who we could actually work with".

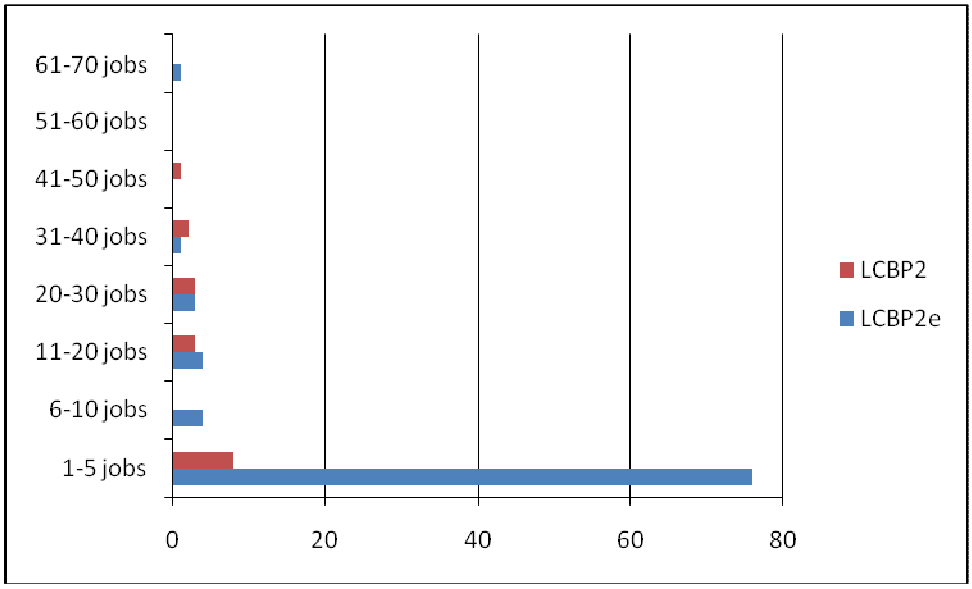
Industry stakeholder *(57)*

Of the few wind stakeholders involved in this evaluation, more than one stated that one of the three Framework Suppliers contracted to deliver wind microgeneration projects did not sell any turbines throughout the lifetime of the Programme, and instead focused their efforts on high return technologies. This highlights one area where the use of framework suppliers potentially hindered the growth of certain sections of the industry.

The decision was taken to open out the framework suppliers in July 2009 and, after this point, the number of installers benefitting from the Programme rose significantly. The impact of broadening the eligible installers in LCBP-2e can be demonstrated by analysing the number of companies involved in installing different technologies. For example, while 17 installers delivered 243 solar thermal installations in LCBP-2 (contracted to one of the major companies in the framework agreement), this rose to 89 installers delivering 396 installations in LCBP-2e.

Moreover, there was particularly a rise in the number of installers delivering one or two installations, with the average number of installations falling from 14 jobs per company under LCBP-2 to 4.5 jobs per company in LCBP-2e. Figure 16 shows that, in both LCBP-2 and LCBP-2e, a small number of companies still delivered fairly high numbers of solar thermal jobs: the top market share was held by a company which delivered 16% of these jobs in LCBP-2e.

Figure 16 - Number of solar thermal jobs installed per company in LCBP2



The change for solar PV was similar. While the number of installation companies rose only slightly from 59 in LCBP-2 to 61 in LCBP-2e, the average number of installations per company fell from 18 per company in LCBP-2 to 4 per company in LCBP-2e (since LCBP-2 had more than 4 times as many solar PV installations as LCBP-2e). This again shows that delivery of

this technology under LCBP-2e was more widely spread across the industry than delivery of LCBP-2.

7.1.3.3 Sensitivity to technology-specific needs

Some industry stakeholders believed that technology-specific needs were not sufficiently accounted for in the development of the Programme, effectively penalising the relevant industry. As already mentioned in this chapter, stakeholders highlighted that lead-in times varied considerably by technology which it was thought had not been taken into consideration. For instance, hydro was not considered suitable for LCBP grants as most projects take between two and four years to reach fruition and would not meet the 12-month grant offer limit.

7.1.3.4 Lack of clarity on FIT/RHI

Stakeholders **-** both internal and from within industry **–** believed that a lack of clarity on FITs/RHI and how they interacted with LCBP hindered the delivery of the latter stages of the Programme. Although this is not a direct impact of the LCBP, stakeholders were critical of how these policy developments (and what they meant for existing programmes) were communicated to industry. Stakeholders reported that conflicting and unclear advice led to difficulties for industry in maintaining demand and withdrawn applications.

This led to problems in planning for the future and widespread uncertainty in the industry. In particular, the continuing uncertainty around the exact detail of RHI has caused significant difficulties for the heat sector.

> *"Obviously we've seen a massive gap, you know when the Low Carbon Buildings Programme finished, we didn't even know whether or not we were even going to get a RHI at that stage, it's been muted and then a change of government, you didn't know what's going to happen so it's fair to say that on the heat side, there's been a fairly disjointed approach since the end of LCBP".* Industry stakeholder *(60)*

7.2 Impacts on public awareness, interest and uptake

One of the original objectives of the LCBP was:

> *'to raise awareness by linking demonstration projects to a wider Programme of activities including developing skills and project replication.'*

This objective has two possible strands – increasing *public* awareness of microgeneration and among potential customers, and increasing awareness and understanding of microgeneration technologies in practice among people within the industry.

Taking the former of these - raising public awareness - there has been no UK-wide assessment of public awareness of microgeneration technologies conducted before the LCBP commenced and after it ended (or indeed a control group to compare against), to allow a robust measure of this objective. However, we can assess the view of individuals within the industry and those involved in implementing the Programme. Any commentary in this report on awareness is therefore based on the views of stakeholders interviewed for this evaluation.

The majority of stakeholders did not believe that the LCBP directly increased public awareness of microgeneration - at the domestic level - as the majority of domestic applicants came to the grant scheme already aware of microgeneration.

> *"[LCBP grants were] only used by [age]-55 pluses, with a bit of money, guardian type characters, very much your early adopters, it's heavily targeted at a niche."*
>
> Industry stakeholder *(54)*

In some cases, grant applicants did cite the information provided by EST as improving their understanding of the technologies and how they work. However, this was generally as part of a wider search for information to help inform their decision and the majority of domestic applicants said they were not prompted to find out about microgeneration by the LCBP grant.

The Programme was felt to have had a far greater impact, however, on the awareness of non-domestic applicants across both phases, due to the type of organisations applying for the grants. Both industry and internal stakeholders believed that the Programme brought new types of customers to microgeneration including charity groups, voluntary organisations and community groups that previously would have been unlikely, or unable, to consider it.

Non-domestic applicants were also more likely to have found out about the LCBP through individuals or groups who had already been through the process of applying. Other grant applicants spoke of spreading the word about microgeneration through hosting community events, village days and school visits to increase awareness – if not necessarily of LCBP, of microgeneration and energy efficiency in general.

> *"At least two other schools in the locality have gone for it due to us"*
>
> Grant recipient, LCBP-1 communities, Solar PV *(36)*

> *"We had three schools come down to be shown around and then I was stitched up and three more came I think.…So they wanted to put up PV and a turbine and this and that and ground source and whatever to teach their kids so they came to us for info and they were busy scribbling and they've now put one up. And Lifeboat stations and village halls and they all came as well plus individuals".*
>
> Grant recipient, LCBP-2, Wind turbine *(34)*

Some of the larger scale grants also stipulated in the terms and conditions that information on the technology, such as the heat or power that it produces, should be displayed, to help in disseminating information about microgeneration.

Some stakeholders believed that the Programme helped facilitate an improvement in the technical knowledge and expertise of the industry through a much wider demonstration of microgeneration technologies. The work of the Carbon Trust in disseminating information on LCBP exemplar case studies has also provided a source of valuable information. This is discussed more in Chapter 8.

7.3 Impacts on the costs of producing and delivering microgeneration

A further objective of the LCBP was: *'To see microgeneration product costs reduce over the lifetime of the Programme against a 2005 baseline'*

Any assessment of the impact of the Programme on price is problematic given (a) the lack of an agreed cost baseline and (b) the difficulty of isolating the effect of the LCBP from wider market forces.

7.3.1 Manufacturing costs

Stakeholders consulted in this evaluation were generally of the view that the LCBP was not of a significant enough scale to bring costs of products down, particularly given the relatively limited UK share of the European market.

This view was expressed particularly strongly from stakeholders within the wind and hydro sectors. This was largely because the LCBP was not considered to be over a long enough period, and at a large enough volume, to encourage investment and economies of scale.

Solar PV costs did fall over the lifetime of the LCBP, though the NAO view[35] was that this could be largely attributed to international market conditions with solar PV '*technology development likely to be driven by international deployment or by research in the UK that is not dependent on UK deployment.'*

Both internal and industry stakeholders back this view up, with the vast majority feeling that it is unlikely that a fall in solar PV costs could be attributable to the UK market, let alone the LCBP. The majority of stakeholders felt that it was largely a result of changes in the European market for PV, particularly in Spain and Germany. The embryonic state of the UK market and its overall scale were not considered significant enough to bring down manufacturing costs.

> *"I don't think the scheme has anything to do with it to be honest, I think these things fall in price as a matter of world demand and supply, the fact that about 0.001% of the world demand was created by the LCBP had very little to do with the declining cost of the components really.."*
>
> Industry stakeholder *(59)*

Prices for other microgeneration technologies did not show a significant downward trend over the period of operation of the Programme and again scale was given as a primary reason for this.

> *"I don't think it's driven down product cost...It didn't shell out sufficient volumes [to bring down product cost], I mean bearing in mind we manufacture about 50,000 heat pumps a year for the German market so an extra 500 or 600 for the UK was never going to make that much difference to the product cost".*
>
> Industry stakeholder *(60)*

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[35] 'Government funding for developing renewable energy technologies', National Audit Office, 2010.

7.3.2 Installation costs

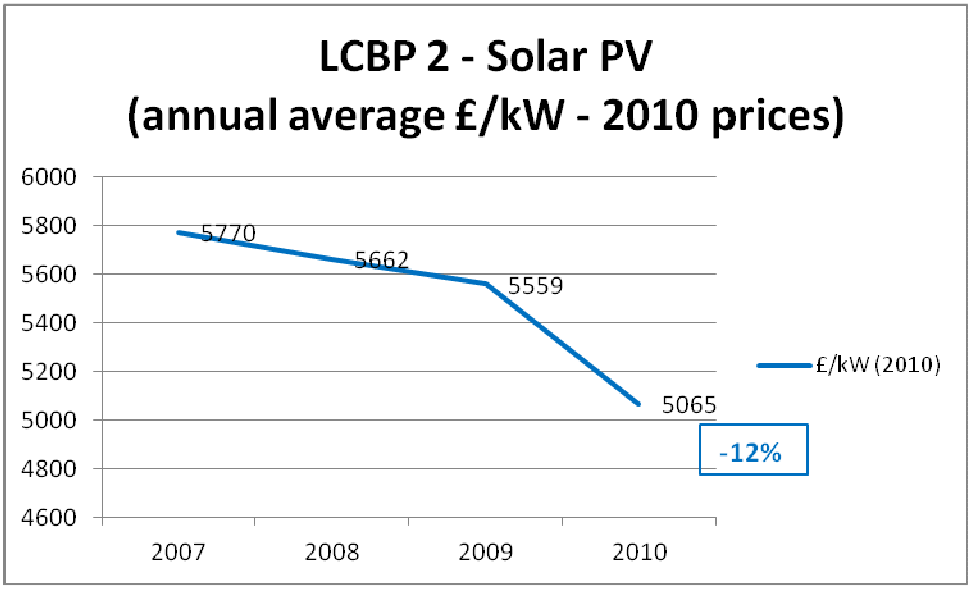
Data for LCBP-1 and LCBP-2 grants, during the lifetime of the Programme, show slight trends in the cost of installation per kilowatt. Broadly speaking, installation costs appear to have fallen for solar PV, biomass and air source heat pumps but have increased for solar thermal and wind turbines. However, there is not sufficient evidence to show causality between these trends and the LCBP specifically.

The ECI report[36] on the first two years of the LCBP commented that there are two elements in these installation costs: the cost of the products themselves and the costs of installing the products. The products costs form a greater proportion of overall installations costs for more complex technologies (such as solar PV) than for simpler technologies (such as solar thermal).

The following charts present installation costs for each of the main technology types using average costs for each year of the Programme[37]. All data has been revised to take account of inflation.

As indicated by Figures 17and 18 below, the cost of solar PV installations decreased slightly over the period of LCPB-1 and LCBP-2, although it should be noted that it is difficult to attribute this directly to the LCBP due to insufficient evidence of this link.

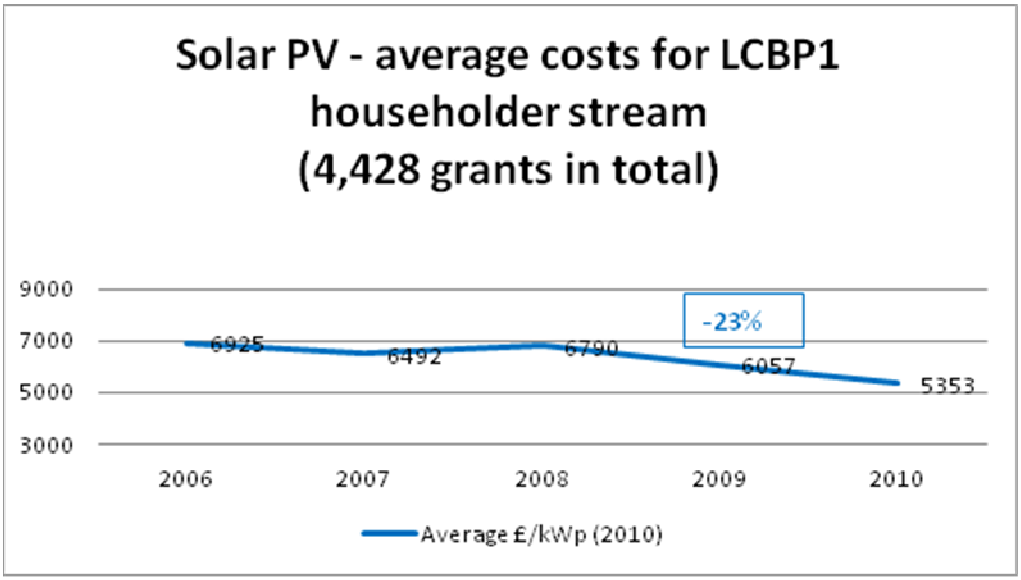
Figure 17 - Cost trends for LCPB-2 solar PV installations (£ per kilowatt installed)



[36] The Status of the UK Domestic PV Market – A review of the impact of the LCBP, Environmental Change Institute – Oxford University. Accessible here - http://www.eci.ox.ac.uk/publications/downloads/jardine09-pvprogramme.pdf

[37] It should be noted that some of the measures are slightly different in some cases (e.g. £/kW or £/kWh annual energy output) due to inconsistent kW figures for some of the LCBP-1 thermal technologies. kWh figures have been used as proxies.

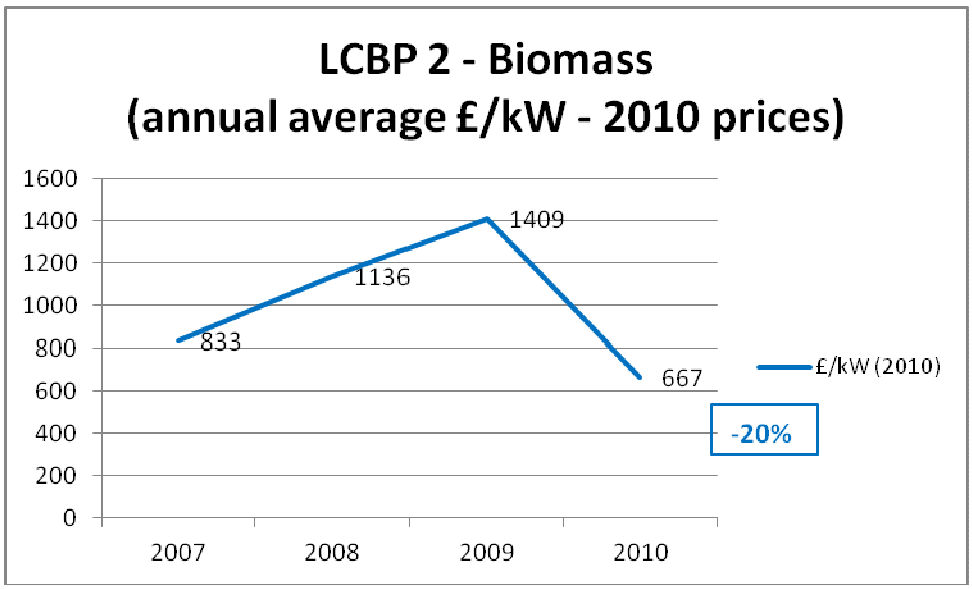
Figure 18 - Cost trends for LCPB-1 solar PV installations (£ per kilowatt installed)



Stakeholders also reported that solar PV installation costs had dropped significantly, certainly during the period when the framework supplier agreement was in place. Several stakeholders felt that suppliers were able to reduce their costs due to refinements and improvements they were able to make through experience of multiple installations.

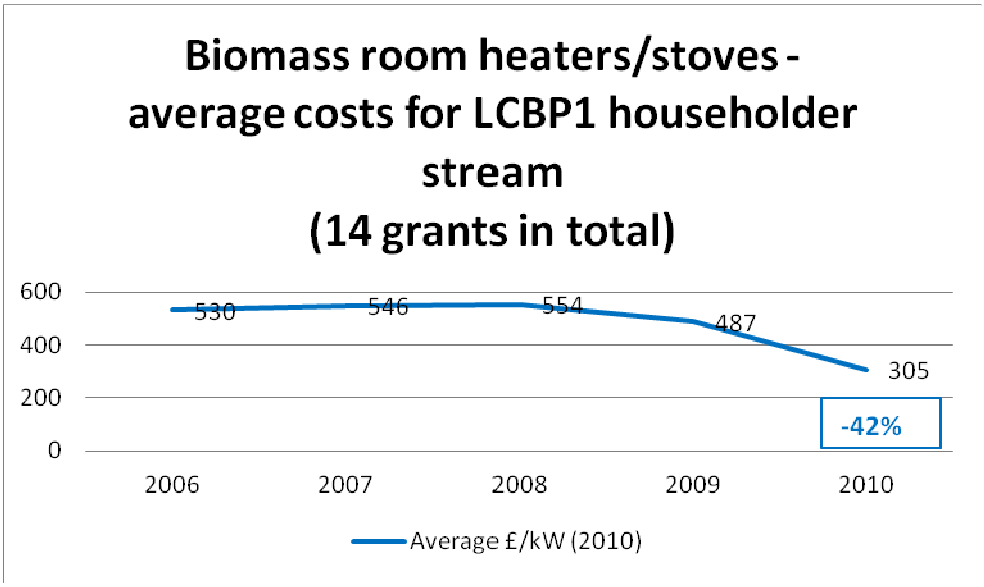
The cost of biomass installations under LCBP-2 also appears to have declined significantly over the period of the programme.

Figure 19 - Cost trends for LCPB-2 biomass installations (£ per kilowatt installed)



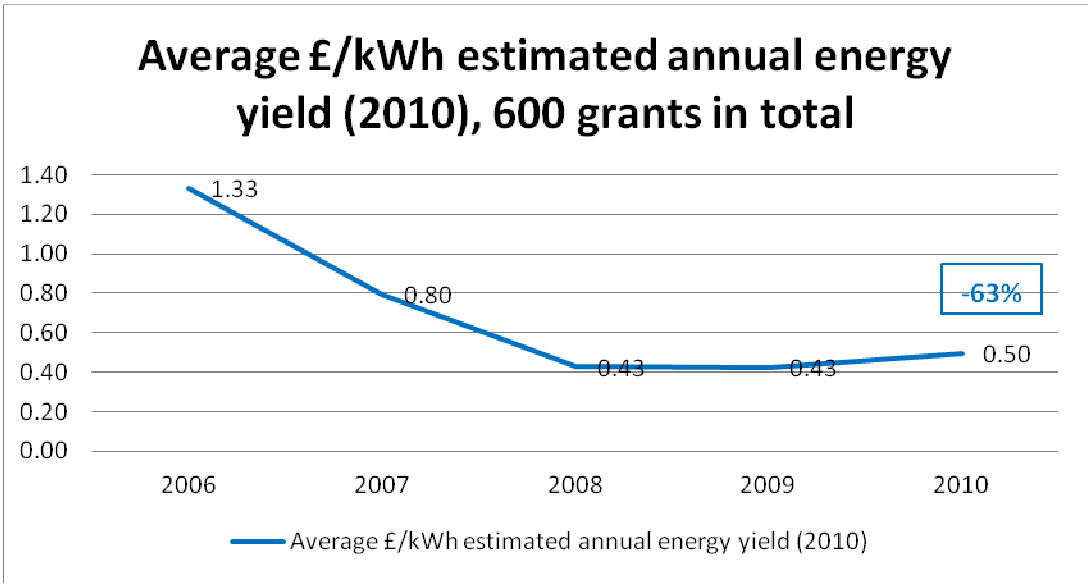
Data for LCBP-1 also indicates that biomass costs fell over the five years of the Programme, although it should be noted that this is on a very small number of successful grants (14).

Figure 20 - Cost trends for LCPB-1 biomass installations (£ per kilowatt installed)



The decrease in costs is borne out, however, through cost data for wood fuelled boilers over the same period of LCBP-1.

Figure 21 - Cost trends for LCPB-1 wood-fuelled boiler installations (£ per kilowatt installed)



Heat pump costs also appear to have declined over time. Views from industry stakeholders were mixed, however; while some felt the volume of work coming through the Programme was insufficient to impact on costs, others thought specific elements of installation costs had clearly fallen.

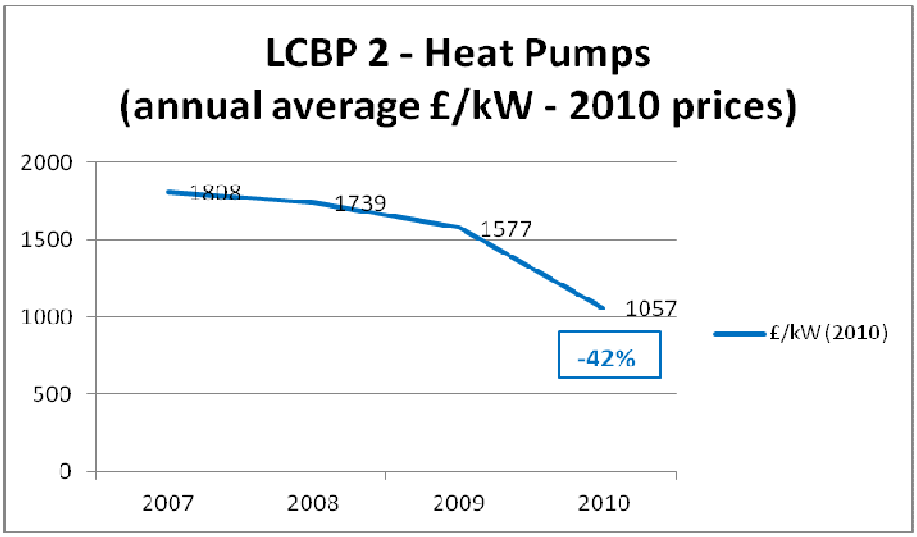
"Being a framework supplier, we had access to all the applications for our products and we can see what costs were being put in for bore holes and drilling and all that sort of

stuff and so those costs are much, much lower now than they were in 2008, 2009 and I think that's the competitiveness in the market has driven those costs down".

Industry stakeholder *(60)*

It should be noted in Figure 22 that air source heat pumps were only included in the extension to LCBP-2. The drop in average costs is partly explained by the fact that air source heat pumps are generally cheaper than ground source heat pumps.

Figure 22 - Cost trends for LCPB-2 heat pump installations (£ per kilowatt installed)



This is also reflected in the data for LCBP-1 which shows that while costs appeared to fall for air source heat pumps they actually increased for ground source heap pumps.

Figure 23 - Cost trends for LCPB-1 ASHP installations (£ per kilowatt installed)

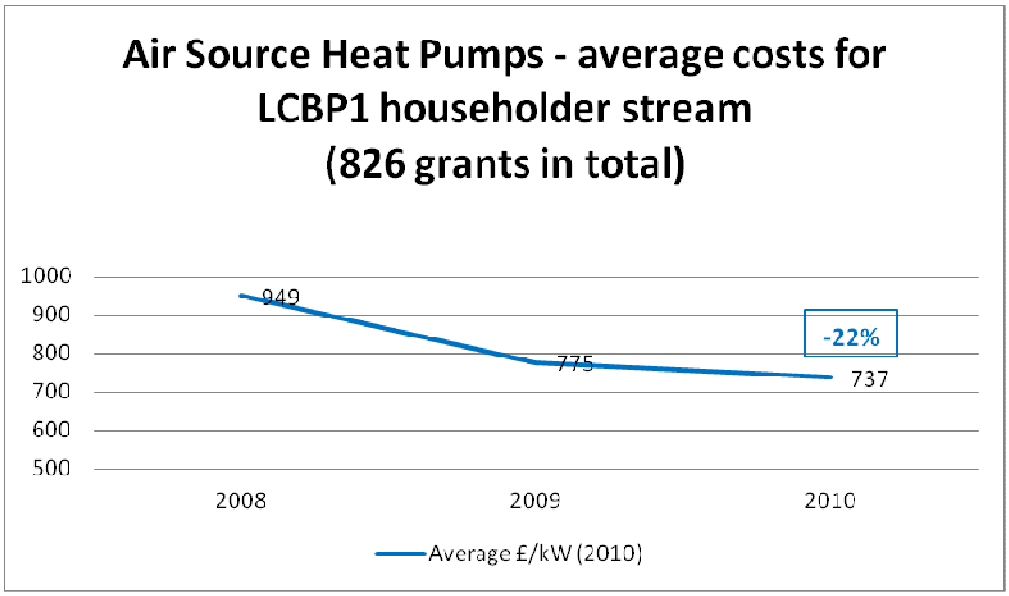
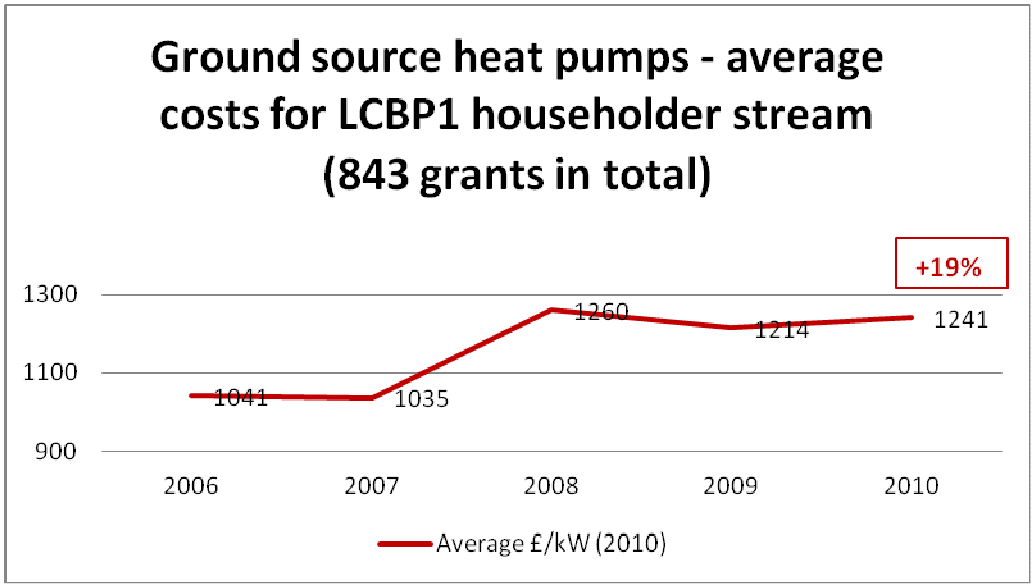


Figure 24 - Cost trends for LCPB-1 GSHP installations (£ per kilowatt installed)



In contrast, the cost of solar thermal installations increased slightly over the period of the programme, and showed fairly wide variation.

Figure 25 - Cost trends for LCPB-2 solar thermal installations (£ per kilowatt installed)

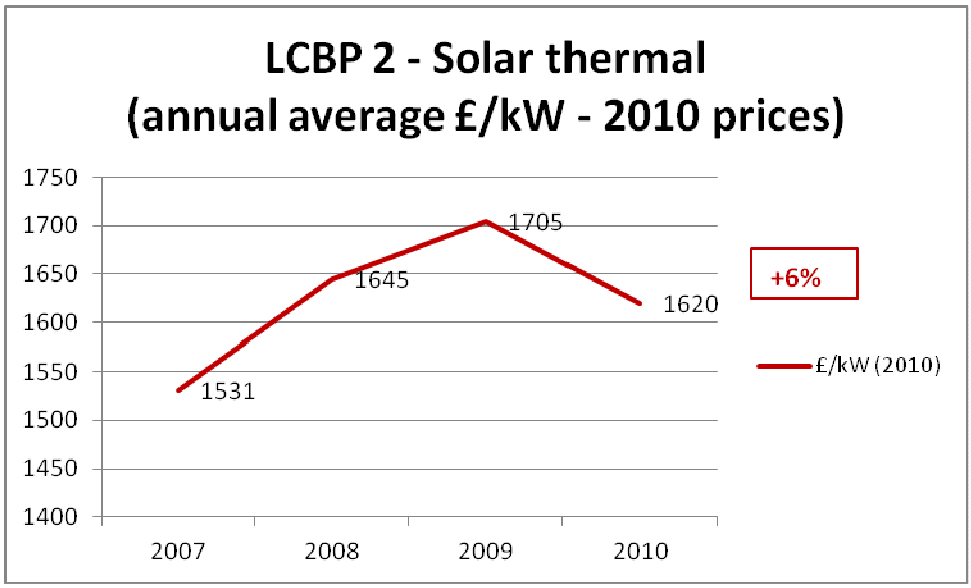
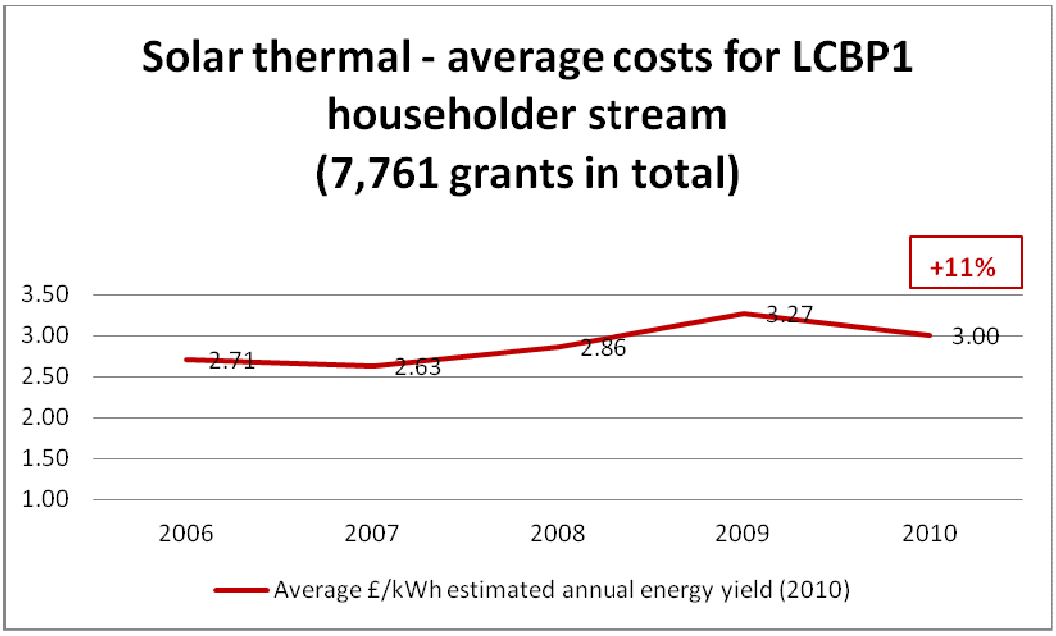
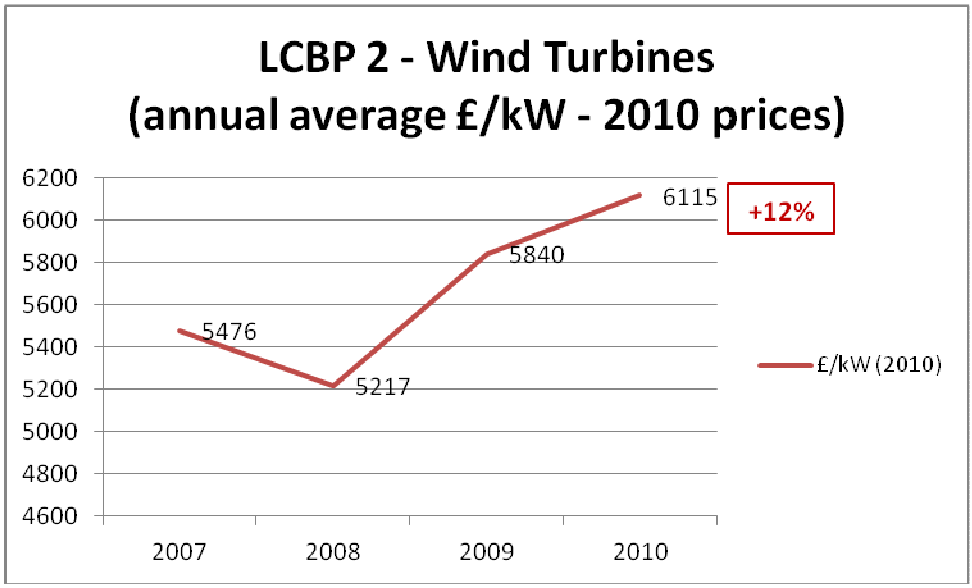


Figure 26 - Cost trends for LCPB-1 solar thermal installations (£ per kilowatt installed)



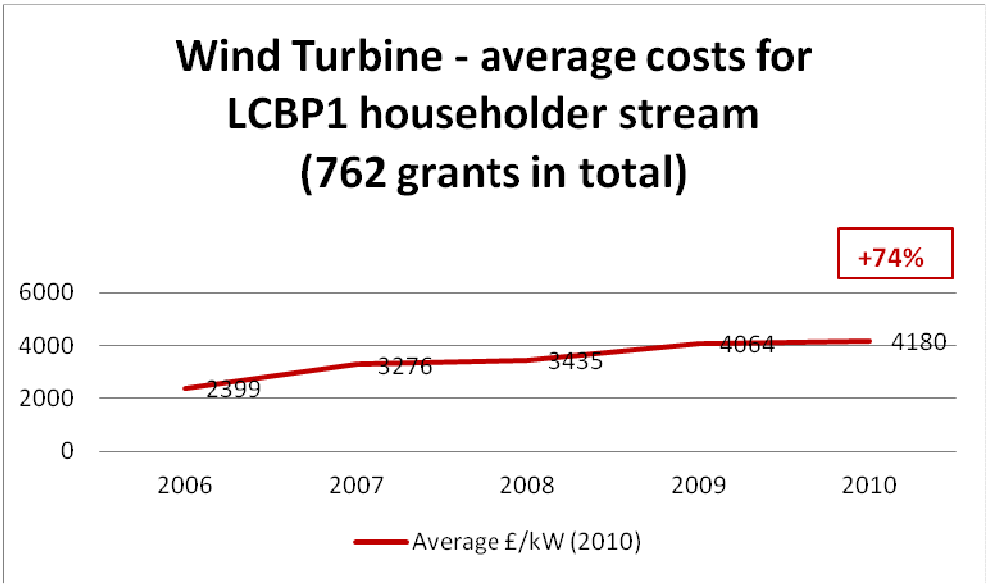
The costs of wind turbine installations have increased slightly over time for LCBP-2 grants.

Figure 27 - Cost trends for LCPB-2 wind turbine installations (£ per kilowatt installed)



Data for LCBP-1 installations show an even steeper increase in costs.

Figure 28 - Cost trends for LCPB-1 wind turbine installations (£ per kilowatt installed)



7.3.3 Factors inhibiting cost reductions

As already discussed, it is difficult to isolate the impact of LCBP on installation and product costs, from that of other influences. Moreover, stakeholders mentioned a number of barriers preventing the LCBP from driving down costs. As already discussed, some felt that the use of framework suppliers limited competition and removed the impetus for companies to reduce the costs they charged to customers. Some also felt that the presence of grants via the LCBP actually reduced the pressure on installers and manufacturers to reduce their costs.

Other contextual issues in the industry also hindered costs falling further – for instance, supply shortages (particularly for solar PV) driving costs up temporarily.

Moreover, some stakeholders argued that the lower limit on costs – as part of the framework supplier contracts – prevented installers from passing on reductions in installation costs to the customer. There is therefore a wider argument over whether any fall in costs was actually reflected in the price charged to the consumer.

> *"Bizarrely we did secure one or two orders which kind of illustrates that the framework suppliers were massively overcharging. We had no grant support at all and we were still the cheapest option; that is utter madness."*
>
> Industry stakeholder *(62)*

Some industry stakeholders who were critical of MCS (due to the administrative burden it places on the industry) held the view that costs may have even risen due to installers having to pass on the cost of MCS accreditation to the end customers. Alternatively, some installers quoted anecdotal evidence of non MCS-accredited competitors reducing their costs to LCBP-1 customers by the value of the grant, so they would not have to go through the LCBP (and MCS)

process. This is one interesting example of how the LCBP may have indirectly reduced the cost of microgeneration to the end consumer.

7.4 Impacts on quality and standards for microgeneration

The LCBP has, in the views of many stakeholders, provided an important driver for the enhancement of industry standards brought about by the Microgeneration Certification Scheme (MCS).

The MCS was launched to improve quality assurance within the industry. It provides consumers with independent information about products and services with an inbuilt consumer code of practice governed by REAL (Renewable Energy Assurance Limited) providing a route for any complaints. In terms of representation across the industry, the MCS is making good progress with a growing number of registered installers and products.

Stakeholders widely agreed that, prior to the development of the MCS, quality standards were lower and less consistent across the industry. The general view was that the microgeneration industry required a quality assurance scheme and was particularly important given the limited understanding that the public had of microgeneration.

Stakeholders generally did not believe the LCBP had directly delivered the MCS but thought the Programme had provided the impetus to industry to become accredited. It was also thought to have created the volume of installations, as well as critical mass of installers, necessary to create a demand for quality standards and put it high on the industry's agenda.

> *"I think there was a lot of, you know poor installation work and you know not great practice going on under the Clear Skies programme...I mean it's certainly not true to say that the MCS was put there just because the grants are coming because the MCS are interested in other things, it's there, it's in the Code for Sustainable Homes for example…. But it was predominately there as a check as part of the Low Carbon Buildings Programme and it probably wouldn't have got the support from industry if there had not been a grant funding mechanism requiring it to be there".*
>
> Industry stakeholder *(60)*

While there was overwhelming backing for the principles of the scheme, there was some criticism from industry stakeholders of the way it has been managed and implemented. The key criticism is the perception that for installers and manufacturers it is overly bureaucratic and a very costly system of jumping through administrative hoops. This is thought to be a barrier to trade for small companies entering the industry who do not see the LCBP market as significant enough to justify joining MCS.

Some also considered it to place too much emphasis on the installer and business processes, and not enough on the specification of the product or technical ability of the individual. Others questioned why existing European standards are not sufficient.

While industry views of MCS were divided, its development is generally thought to have largely been supported by the LCBP, and has increased quality in the industry.

8. Evaluating the LCBP against its objectives

The chapter brings the findings of this evaluation together to consider the extent to which the LCBP can be considered to have met its initial objectives. It also discusses the factors which have either promoted or constrained the achievements of the Programme. It concludes by presenting the lessons that have been learned from the LCBP.

8.1 Evaluating the achievements of the LCBP against its objectives

Objective 1: To support a more holistic approach to reducing carbon emissions from buildings by demonstrating combinations of both energy efficiency measures and microgeneration products in a single development

Across the LCBP as a whole this objective was unlikely to have been achieved, although anecdotal evidence suggested that some parts of the Programme were likely to have performed better against this objective.

The rules of the LCBP set a requirement for all applicants to have already installed energy efficiency measures in order to meet this key objective. However, this evaluation has found that, in practice, this was not used as criteria for the award of all grants. An inspection of energy efficiency measures was conducted on 2% of projects. Under LCBP-1 around 1 in 6 (55 out of 316) failed the initial inspection. These failures were for a variety of reasons and in all cases the issues were able to be resolved. It does however suggest that, for a significant proportion of grants, satisfactory energy efficiency measures will not have been installed.

Anecdotal evidence uncovered through this evaluation suggested that some LCBP-funded projects were more likely to have a holistic approach to energy matters than others. For instance, stakeholders felt this was more likely to have been achieved during Phase 2 as many large-scale projects were new builds which would have had energy efficiency measures installed as standard to meet regulations. This objective was also more likely to have been met for the LCBP exemplar projects mentored by The Carbon Trust. For these larger sites, The Carbon Trust worked on developing a holistic approach to energy management that incorporated demand reduction measures as well as renewables.

That said, a fair proportion of the domestic applicants involved in the in-depth interviews spontaneously mentioned energy efficiency measures they had taken. As these applicants tended to be energy or environmental-conscious consumers it could be taken as likely that they would have taken these steps themselves either before or after installing microgeneration. Indeed, anecdotal evidence from the inspections suggested that the microgeneration installation was sometimes the catalyst for action on energy efficiency.

It is evident from a comparison of the LCBP to the Arbed scheme operating in Wales that there have been different approaches to integrating energy efficiency and fuel switching across the programmes. The Arbed scheme appeared to do this more explicitly than the LCBP with a more rounded set of objectives from the outset that addressed energy policy objectives in a holistic

way. The evaluation of the Arbed scheme has not yet been published so it is not clear at present how well this integrated approach worked in practice.

Objective 2: To see demonstrated on a wider scale emerging microrenewable technologies

There was general agreement across most stakeholders that the LCBP had achieved this objective (i.e. created additionality in terms of microgeneration installation) across the non-domestic sector but had a limited impact on domestic householders.

Overall, the LCBP provided 18,240 grants for the capital and installation costs of microgeneration equipment with about 11,000 of these for thermal technologies and 9,000 for electrical technologies[38]. Many stakeholders felt these figures showed that the LCBP had been an effective demonstration programme and that it had enabled emerging microgeneration technologies to come to the market.

In particular, the broad range of stakeholders agreed that the LCBP had demonstrated microgeneration on a wider scale across the non-domestic market as it had enabled a wide range of not-for-profit and community organisations to install microrenewable products. A range of stakeholders, including installers and manufacturers, commented that prior to the LCBP there had been little, to no, interest in microgeneration products among schools, charities, churches or community buildings. It was hoped that these sites would encourage wider interest in the technologies although limited evidence of whether this is happening or not is currently available.

There was debate, however, about the extent to which the Programme had widened the appeal of microgeneration beyond the 'usual suspects' within the domestic sector. The findings from the applicant interviews conducted as part of this research, suggested that many of these applicants would have been likely to have installed a microgeneration technology anyway and so the impacts these have had were not truly additional as a result of the Programme.

Objective 3: It is expected that the costs of microrenewable products will reduce over the lifetime of the Programme against a 2005 baseline as a consequence of the greater acceptance and uptake of the technologies promoted by the Programme

This objective for the LCBP built on the analysis of the 2006 Energy Review which recognised that the cost of new technologies should decline over time if there is a receptive market and a fair chance to compete. The Review committed the government to '*doing all we can to ensure that we are not missing cost-effective current opportunities, and that we are providing the context in which new technologies can take hold, build scale and become competitive over time'*.

This evaluation did not find evidence to suggest that the production cost of most microgeneration products had reduced as a result of the LCBP. Many stakeholders recognised that the scale of uptake of technologies through the LCBP was not sufficient to impact on the global market.

[38] Source: Low Carbon Buildings Programme website (accessible here: http://www.lowcarbonbuildings.org.uk/Microgeneration-for-your-home/Closure-of-the-Low-Carbon-Buildings-Programme)

According to a range of stakeholders, the cut in solar PV costs was a consequence of the large markets in Germany and elsewhere rather than an impact of the LCBP. It was hypothesised that the cost of microgeneration products, particularly microelectricity would fall now based on a growing UK market due to the long-term commitment offered by the FIT.

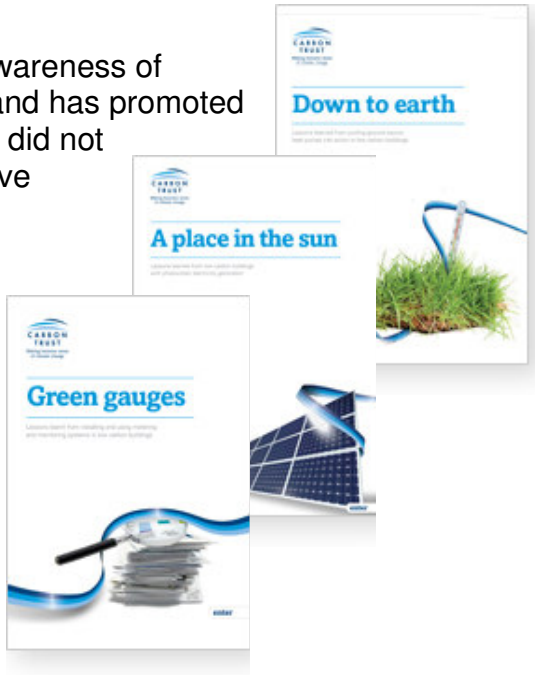
While a fall in the cost of microgeneration products was not felt to have been achieved by the LCBP, industry stakeholders believed the cost of installation had come down due to the Programme. They considered the LCBP to have generated sufficient take-up for the process of installation to be refined and improved. Anecdotal evidence from a solar PV installer was that the cost to the consumer for this technology had been £6,000 per kWh at its peak, but had fallen to £4,000 per kWh (it was reported to have fallen further now due to the launch of the FIT). While part of this reduction was felt to have been in the cost of manufacture, the majority was a result of refined and lower cost installation.

An analysis of the installation costs per kW of installed capacity for the household stream shows that between 2006 and 2010 there were significantly different trends between technologies. Some, like solar PV, did show a significant fall in costs (adjusted for inflation). In contrast the costs of solar thermal technologies rose and the cost of wind almost doubled from £2,399 per kW in 2006 to £4,180 in 2010.

A significant limitation to the achievement of this objective was also the lack of measurement of product costs over the lifetime of the Programme, as well as the lack of recognised baseline in 2005. A re-occurring limitation to the Programme appeared to be that procedures and processes were not put in place at its outset to ensure measurement of data required to monitor progress against its key objectives.

Objective 4: To raise awareness through the publication of case studies and by linking projects to a wider programme of activities including developing skills and encouraging project replication

Overall, stakeholders felt that the LCBP has led to greater awareness of microgeneration, predominantly in the non-domestic sector,and has promoted improved skills across the industry. However, this evaluation did not identify evidence to prove whether LCBP-funded projects have been replicated more widely.



This objective has been met in part through the Carbon Trust's dissemination programme which has produced:

- Publications[39] on the design, installation, monitoring and evaluation of microgeneration technologies - including a wide range of publications on GSHPs, photovoltaics, biomass, natural ventilation, installing and using metering and monitoring systems, control

[39] Publications accessible here: http://www.carbontrust.co.uk/cut-carbon-reduce-costs/products-services/pages/buildings.aspx

systems, commissioning building systems, retrofit of renewables and the gap between design and performance;

- Five videos[40] of large scale projects funded under LCBP-1(2b);
- 17 detailed case-studies of major LCBP1(2b)-funded programmes covering the design, installation, operation and performance of the Equipment; and
- A detailed review of retro-fit situations using RBS Kew Gardens as its example.

Publications such as 'Power Play' and 'Building the Future Together' have presented learnings from the LCBP to the industry and policy-makers, and public-facing publications such as 'Place in the Sun' were considered, by internal and delivery stakeholders, to have offered jargon-free, informative sources of information of people interested in installing microgeneration. The Carbon Trust also prepared a series of case studies and videos for both new build and refurbishment. While these are publicly available documents it has been suggested by a few stakeholders that the audience for these is likely to be commercial rather than general public and that consumers are unlikely to have been exposed to them.

This stream of the Programme has produced a great deal of hard evidence, and actual performance data, about the effectiveness of microgeneration technologies in-situ across different building types and environments. While these publications exist, this evaluation has not found evidence to confirm that they have had an impact on awareness and interest in microgeneration. Many of the exemplar projects which The Carbon Trust mentored and monitored have also held their own awareness-raising events, such as a conference held by RHS Harrogate, an open day held by Greenhouse Leeds and the widely-publicised opening of Hackney Academy.
The lessons that have been learned through The Carbon Trust's work have been built into the Government's Microgeneration Strategy, the Technology and Innovations Needs Assessment, the Part L regulations, zero-carbon regulations and the Green Deal.

Stakeholders felt that a major achievement of the Programme, related to this objective, was the impact it had on the quality and standards to which the microgeneration industry was operating. The field trials which have taken place during the LCBP were cited by a range of stakeholders as an achievement of the Programme which have led to improved standards of installation, operation and maintenance.Stakeholders were also broadly in agreement that the LCBP was instrumental in the inception of the MCS. The LCBP was considered to have generated a sufficient volume of installations for the need for an accreditation scheme to be recognised and acted upon by industry.

[40] Video case-studies accessible here: http://www.carbontrust.co.uk/emerging-technologies/current-focus-areas/buildings/case-studies/pages/default.aspx

Overall performance of the LCBP against its objectives

Overall then, the LCBP has successfully demonstrated a variety of microgeneration technologies (Objective 2), provided positive examples of these working in-situ and has led to learning and development of skills for their design, installation and operation (Objective 4). However, the available evidence suggests it has not managed to reduce the cost of these technologies (Objective 3) and had not ensured that they will be as effective as possible by only permitting their installation in energy efficient properties (Objective 1).

The following section draws together the challenges faced by the LCBP in meeting its objectives and the factors which constrained it from fully achieving all of them.

8.2 What were the main constraints and challenges facing the Programme in meeting its objectives

8.2.1 Policy environment

The lack of a clear policy commitment to microgeneration in the UK was identified as one of the reasons that the LCBP did not meet Objective 3 (reducing the cost of products over the lifetime of the Programme). Industry stakeholders, in particular, blamed it for preventing further investment in the industry which could have generated the volume of production and demand required to reduce costs through economies of scale.

> *"They didn't give long term policy certainty so if you're manufacturer, are you going to invest millions of pounds in building up your manufacturing capacity when you don't know what market is going to be there after the grants run out?"* Industry stakeholder *(52)*

The development of a healthy market requires industry to be given sufficient warning of changes in Government support and that continuity of support is maintained. This was not felt to have been achieved during the LCBP according to industry stakeholders.

> *"The Government just doesn't realise the power of its policy in shaping the market. It completely determines the market.""* Industry stakeholder *(59)*

Internal stakeholders indentified the frequent change in ministers, departments and ultimately the administration of government, as a considerable challenge for the Programme. These changes resulted in wide-ranging and evolving objectives for the LCBP and made it difficult to maintain any continuity in the management or monitoring of the Programme.

8.2.2 Recession

The timing of the economic recession was considered by stakeholders to have been a considerable factor constraining the success of the LCBP. Its main impact was forcing the cancellation of many large-scale projects which, if completed, were hoped to act as exemplars to a far broader community and act as a catalyst for further uptake. However, many large-scale projects fell through altogether due to lack of funding (caused largely due to difficulties for social enterprises to raise capital at the time of a banking crisis) and others were forced to loose their microgeneration element. It should be remembered that while LCBP-2 often offered significant funding, that funding usually only represented a fraction of the total cost of the project (for example £100,000 on a £1.6 million project) and the LCBP was often only one of a number of

funding streams obtained by the applicant. Consequently, failure or delay in one part of the funding matrix due to recessionary pressures produced a 'domino' effect and the LCBP grant was not taken up.

8.2.3 Relationship with industry

A range of stakeholders reported that there was a poor relationship, lacking constructive communication, between industry and the Government over the course of the LCBP. Although the majority of industry stakeholders laid the blame for this with Government, one industry representative did acknowledge that industry's very aggressive strategy towards collaboration with Government was not productive. A particular issue with this relationship, identified by a range of stakeholders, was the emphasis given to needs of the solar industry.

The implications of this poor relationship were felt to be that some key recommendations from the industry were not heeded in the design of the Programme. Some industry stakeholders felt this reduced the possible impact of the LCBP in a number of ways: a lesser impact on the industry as a whole; a lesser impact for diversifying interest in a range of microgeneration technologies; and reduced levels of take-up. Specific examples where industry advice was apparently not heeded to the detriment of the achievements of the Programme included: its focus on small-scale biomass; its focus on micro rather than small-wind; and its lack of recognition for the different lead times required for different technologies.

8.3 Other achievements of the LCBP

There was a perception, particularly among internal stakeholders, that the LCBP had been essential in laying the foundation stones for the FIT in the following ways:

- Some stakeholders felt the LCBP helped to set appropriate tariff levels by providing a greater understanding of the capacity generated by microgeneration in-situ, although how successfully this information was translated into suitable tariffs was questionned by others;

- The LCBP put quality and standards on the agenda for the industry and facilitated the development of MCS. This, along with improved public confidence in the technologies, was considered a vital pre-requisite for the FIT;

- The visible examples of technologies in different situations produced by LCBP provided the consumer confidence needed for widespread interest in microgeneration; and stakeholders felt that

- The learnings collated from the LCBP exemplars and field trials have resulted in improved understanding of design, installation, maintenance and operation. The implication of this for the FIT was felt to be assurance that consumers would be installing effectively performing technologies which generate high carbon savings and financial rewards.

> *"I think without LCBP the industry would have been too small and too disjointed… Without MCS I don't think FIT could have come in... I don't think LCBP has completely revolutionised things but I think it's had a gradual increase in awareness, increase in*

industry size and it's gradually kept the momentum going before policies like FIT and RHI can come in – I think from a standing start it would have been very difficult to introduce". Internal Stakeholder *(46)*

While paving the way for the FIT was felt to be a substantial legacy of the LCBP by internal stakeholders, there was a debate among industry stakeholders about how essential it was for a grant programme to be delivered in advance of the tariffs being introduced. Some of these stakeholders were very vocal about the Government's delay in reacting to examples of FIT's operating abroad and felt a revenue-based scheme should have been introduced far earlier. A few industry representatives did acknowledge however, that consumer confidence and quality standards could have caused teething problems for the FIT had the LCBP not occurred. Overall, there was agreement across nearly all stakeholders that the introduction of the FIT was a positive step for the industry as discussed in the following section.

8.4 Overall strengths and weaknesses of the LCBP

This final section draws together the strengths and weaknesses of the LCBP to highlight aspects which should be retained, and those that should be improved, under any future grant programme.

8.4.1 Strengths of the LCBP

Alignment with wider Government framework

This evaluation found that the LCBP was aligned with Government's wider policy framework for microgeneration and renewables. It was designed as a clear response to the Government's Microgeneration Strategy (2006) which identified the upfront cost of these technologies as a major constraint to its vision of alternative energy generation sources supplying households, communities and small businesses.

Although internal stakeholders questioned the appropriateness of the LCBP's focus on microgeneration, when considering the most cost-effective way of meeting the Government's ambitious carbon emission reduction commitments, the Programme was acknowledged to be a useful tool to meet other important objectives. They agreed it helped raise public awareness of energy use, energy security and the need for changed behaviour. It was also a clear demonstration of the Government's commitment to act to mitigate climate change.

Programme design based on consultation and experience

Internal and delivery stakeholders felt there were strengths to the LCBP's design although they also highlighted areas of improvement related to these. While it was viewed positively that the LCBP was designed following a public consultation, there was uncertainty, especially across industry stakeholders, about the extent to which some of the views expressed during this process were taken forward to influence the Programme.

The delivery stakeholders recognised that the LCBP took forward some of the lessons learned from Clear Skies and The Major PV Demonstration Programme. However, it was noted that no formal evaluation of these predecessor schemes took place and so their broader influence on the design of the LCBP was not based on evidence of this being an appropriate, and successful, model.

Programme delivery by contractors

The two main phases of the LCBP were felt to have been delivered successfully by EST and BRE. The full range of stakeholders considered these organisations to be experts in delivering large-scale programmes to the domestic and non-domestic sectors respectively. The views of applicants, collected through interviews conducted as part of this evaluation, consolidated this appraisal: nearly all applicants were positive about their application process.

8.4.2 Weaknesses of the LCBP

Programme objectives

The full range of stakeholders involved in this evaluation identified the broad and unfocused objectives of the LCBP to be one of its major weaknesses. This had a number of implications for the performance of the Programme: there was a lack of clear steer around the aims of each individual phase and stream of the Programme; it developed in a fragmented way to support projects which did not fit within its original remit; the key performance indicators (KPIs) for the delivery contractors were not specific and measurable against the aims of the Programme; and there was a lack of clarity as to whether the LCBP was attempting to be a deployment or demonstration programme.

Considering the aims of the LCBP more broadly, internal stakeholders questioned whether the LCBP's focus on microgeneration was a cost-effective way of meeting the UK's challenging carbon dioxide emission reduction targets.

Programme design

Across the stakeholders involved in this evaluation there was a perception that the design of the LCBP had prevented it from effectively supporting the full range of microgeneration technologies as it intended. The Programme's design was considered favourable to solar PV installations. The achievements of the LCBP were felt to be limited in this respect for the following reasons:

- The 12-month grant offer validity period was considered too short to allow some projects, for instance, hydro to get off the ground;
- The grant levels were too small to encourage uptake of more expensive technologies (based on both product and installation costs) of projects. They were also considered too small to move uptake beyond those with significant personal resources and commitment to green issues; and
- The size and scale restrictions placed on projects funded under the LCBP (e.g. up to 45kWH for biomass and the emphasis on micro, rather than small, wind) did not enable the industry to grow according to demand and prevented viable projects proceeding.

Another criticism of the LCBP's design was aimed at the Framework Supplier model used in LCBP-2. This was considered anti-competitive and anti-development by a range of stakeholders, predominantly those from non-solar PV parts of the industry.

Programme management

In 1996, the CCTA[41] (Office of Government Commerce) developed a template method of programme and project management called 'Prince2' which is now recognised in Government and industry a best practice. None of the processes outlined in this methodology were incorporated in the LCBP's set up and management and were only applied in the late stages of the Programme. Particular weaknesses of the management which were recognised across internal and delivery stakeholders were:

- The absence of a senior government 'owner' to whom the project management team formally and regularly reported to. This was a weakness throughout the life of the Programme and especially within the last year of its life following the change of Government and change in subsequent policy direction;

- The lack of a dedicated, and sufficiently large, project team overseeing the duration of the Programme. The internal LCBP team were not considered to have the appropriate skills, particularly in financial management, to run a large-scale application programme. Industry stakeholders also suggested the internal team lacked commercial understanding of the microgeneration market;

- Risks to the LCBP were not logged and 'lessons learned' were not recorded, until the final period of the Programme; and

- The internal project team abdicated responsibility for the financial management to the delivery contractors which left Government with little control, or understanding, of the Programme's finances.

The management of the LCBP was recognised to have improved in its latter stages, which involved an internal audit, a review of lessons learned and more rigid financial reporting.

The communication by the internal project team with those involved in, and affected by, the LCBP was felt to be very poor by industry stakeholders. The limited communication about changes to the Programme was reported to have had severe consequences for some parts of the industry with staff losses and company closures

Monitoring and reporting

A challenge for this evaluation, in evaluating the LCBP against its objectives, has been obtaining documentation recording its inputs and outputs. This highlighted limitations to the tracking and recording of various elements of the Programme which is likely to have arisen because monitoring and evaluation needs were not considered holistically at the start of the LCBP. The result of this is a lack of evidence available to assess some of the achievements of the LCBP. In particular, this evaluation was constrained by limited reporting on the fuel poverty streams and the changing renewable product costs.

Internal stakeholders criticised the LCBP's financial reporting which was felt to be severely limited in the early stages of the Programme. It was also focused on grant commitments rather than spend which led to unrealistic expectations about the final underspend.

[41] http://www.ogc.gov.uk/methods_prince_2.asp

APPENDICES

APPENDIX 1: Detailed logic model

APPENDIX 2: Methodology

APPENDIX 3: Research materials

3a. In-depth interview discussion guides

3b. Desk review framework

APPENDIX 1: Detailed logic model

Context	Phase	Inputs	Outputs	Outcomes	Outcomes cont.	Long-term impacts
Need to diversify energy mix to ensure affordable and secure supply Need to overcome capital constraints to wider uptake of microgeneration Need for improvement in UK microgeneration supply chain, advertising, marketing and installer skills	LCBP-1 LCBP-1(2a) LCBP-1(2b) LCBP-1c	Contractor: EST Grants: £24m Admin: £4.3m	**G**rant commitments 20,000 grants allocated Applicant resources - Application helpline - Programme website - Guidance documents	15,241 household grants under LCBP-1/1e (£20.7m) 151 grants under LCBP-1(2a) (£2.9m) 17 grants under LCBP-1(2b) (£2.9m) 82 grants under LCBP-1c (£1.3m)	Estimated 80MW of electrical & thermal microgeneration installed Breakdown of all grants by value was: - Solar PV 51% - GSHP 21% - Solar thermal 17% - Wind turbines 5% - Biomass/wood boilers/pellet 5% - ASHP 1% - Hydro (less than 1%) Total lifetime carbon savings: not known at this stage (see LCBP 2006-2011 Final Report) MCS accreditation system: volume of installations placed quality and standards on industry agenda Increased awareness and interest - especially for non-domestic sector	Microgeneration powering a variety of sites through a range of technologies Laid foundation for FIT Accelerated growth of solar industry, but more limited impact for other technologies Improved quality of installation and increased consumers confidence in technologies
	LCBP-1e	Contractor: EST Grants: £3.7m Admin: 0.7m				
	LCBP-2	Contractor: BRE Grants: £35.9m Admin: £1.6m		2,749 grants (£61m)		
	LCBP-2e	Contractor: BRE Grants £25m Admin £1.2m				
	Total - Core Programme	**Grants £89.5m Admin: £7.7m**				
	Dissemination programme	Contractor: Carbon Trust £4.4m	Detailed monitoring of 17 LCPB-2 exemplar projects	Holistic projects bringing together energy efficiency and		Facilitated improved design, installation,

Context	Phase	Inputs	Outputs	Outcomes	Outcomes cont.	Long-term impacts
	Test Equipment & Hotwater	£1.2m (contractors: TUV/NEL £0.8m for wind trials; EST: £0.2m for solar thermal field trials and £0.2m for heat pump trials)	A range of publications, videos and other resources that disseminate lessons and good practice for specific technologies Field trials for wind turbines, solar thermal and heat pumps.	microgeneration Increased understanding of all aspects of the installation and management of microgeneration Actual performance data		operation and maintenance standards
	Fuel poverty (4 regional projects)	£3m (contractors; WAG, 1NE, Yorks 1st; EAA)	Limited evidence means outputs are unknown	Limited evidence means outcomes are unknown	Limited evidence means outcomes are unknown	Limited evidence means long term impacts are unknown
	Total spend	**£105.9m**				
	Grants allocated but not taken up	£28.3m				
	Budget cut (May 2010)	£3.0m				
	Total Allocated Budget	**£137.2m**				

APPENDIX 2: Methodology

Ipsos MORI conducted 65 in-depth interviews with a range of stakeholders and grant applicants. All interviews were conducted by members of the Ipsos MORI project team. The interviews lasted between 30 and 60 minutes depending on how much each respondent had to say. Respondents, apart from those working within Government, were sent a cheque for £25 to thank them for their time.

- 38 interviews were conducted with **grant applicants**:

    - Phase 1: **23 interviews in total**
        - 12 with householders
        - 3 with community applicants
        - 2 with medium-scale applicants
        - 2 with large-scale
        - 4 with householders who withdrew from the scheme and did not take up their grant
    - Phase 2: **15 interviews in total**
        - 11 with non-domestic applicants
        - 4 with applicants who withdrew from the scheme and did not take up their grant

  Across these interviews we contacted applicants who had applied for grants for the following technologies (N.B 4 applicants had applied for multiple technologies):
    - 10 x solar thermal hot water
    - 9 x wind turbine
    - 8 x ground source heat pump
    - 7 x solar PV
    - 5 x biomass
    - 2 x air source heat pump
    - 1 x hydro

  Across these interviews there was also a spread across the following factors:

    - Regions
    - Grant application dates
    - Grant values
    - Type of non-domestic applicants (where applicable) e.g. school, charity, community group etc.

  These interviews were conducted over the telephone between 23rd May and 6th June. The sample of grant applicants was supplied by BRE and EST. Ipsos MORI supplied selection criteria to ensure the leads generated for recruitment were selected at random. The BRE and EST applicant databases were stratified and selected through the following process:

    - Ordered by type of technology
    - Ordered within each technology type by date of application
    - 1 in n contacts selected to provide required number of leads (allowing selected contacts to fall naturally across a range of dates)

- 13 interviews were conducted with **internal stakeholders**, that is representatives of the policy and finance team in DECC, and the **delivery teams** at EST, BRE and The Carbon Trust.

- 14 interviews were conducted with **industry stakeholders.** These were spread across trade associations, installers and manufacturers in different sectors of the microgeneration industry.

The interviews with internal, delivery and industry stakeholders were conducted either face-to-face or by telephone between 19th May and 22nd June. The interviews with core members of the DECC project team were held first and acted as scoping interviews to help understand the LCBP in greater detail. The sample for these interviews was provided by DECC, BRE and EST.

The discussion guides used to direct these interviews are provided in Appendix 2.

CAG Consultants led a comprehensive desk review of documentation related to the LCBP. The documents they reviewed included contextual information (e.g. on developing Government policy and the microgeneration industry), administrative and financial data for the whole programme and detailed information on each of the LCBP streams. The desk review framework is provided in Appendix 3.

APPENDIX 3: Research materials

3a. In-depth interview discussion guides

Discussion guide for in-depth telephone interviews with grant applicants

Primary Objectives

To look at experiences of LCBP applicants to Phase 1 and Phase 2 and the extension schemes. More specifically to explore:

- Motivations for take-up of microgeneration technologies
- Motivations for take-up of LCBP
- Experience of the application process
- Experiences of the microgen measure(s) installed (for grant recipients)
- Impact of the measure(s) installed (for grant recipients)
- Advocacy towards the LCBP and microgen technologies in general
- Reasons for not taking up the scheme among applicants who withdrew from LCBP and did not take up their grant

Timing

- The interviews will last for 45 minutes (35 minutes for withdrawn grant applicants).

Note to interviewers

- Sections 1-4 and 9 should be asked to all participants.
- Sections 5-7 should be asked only to participants who took part in the scheme.
- Section 8 should be asked only to participants who withdrew their grant application.

Information on LCBP

The Low Carbon Buildings Programme (LCBP) was a Government-led grant programme to stimulate an infrastructure for the manufacturing, supply and installation of small-scale Microgeneration renewable between 2006 and 2011. The programme has provided financial assistance for the **purchase** and **installation** of solar photovoltaics (solar PV), solar thermal, micro hydro generators, wind turbines, ground source heat pumps, air source heat pumps, wood-fuelled boilers and biomass boilers. It has operated at both a domestic household level and across the non-domestic sector including schools, business, charities, the public sector and non profit-making organisations.

Overview

Discussion sections	Notes	Approx timing
1. Introductions	This section orientates the participants and prepares them to take part in the interview. It also warms the respondent up and provides contextual information.	**2 mins**
2. Awareness of the LCBP	This section explores awareness of microgen technologies in general and of LCBP in particular.	**5 mins**
3. Motivation for making the LCBP application	This section provides information about the factors, which lead to the uptake of the LCBP grant.	**5 mins**
4. Experience of the LCBP application process	This section explores the LCBP application process experience for customers as well as views on the information provision related to the application process.	**10 mins**
5. Experiences of the installation process (grant recipients only)	This section explores the process customers have been through to have the microgen measures installed. It gathers feedback on the ease of the installation and any issues with it.	**10 mins**
6. Impact of the microgen technology installed (grant recipients only)	This section looks at what impact the installation has had on customers in terms of their household or organisation, and whether the microgen measure has met their expectations.	**5 mins**
7. Withdrawn grant applicants section	This section explores the reason behind withdraw of successful applicants from the scheme.	**10 min**
8. Advocacy towards microgen and LCBP	This section explores the extent to which customers would be advocates for the LCBP and the microgen measures.	**5 mins**
9. Other financial incentives schemes	This section explores awareness of other financial incentives schemes.	**5**
10. Summary	Bringing the discussion to a close and allowing participants' to raise any issues which have not been covered.	**3 mins**
	Total: 50 mins	

Discussion area	Notes	Time (mins)
1. Introductions **Interviewer introduction** ▪ Moderator introduce self, Ipsos MORI (including role – independent research agency), and client, Department of Energy and Climate Change. ▪ Explain main aim of the discussion – to understand your experience of the Low Carbon Building Programme, including the application process; reasons for participation / withdrawal; views on the impact of the grant (where applicable); as well as views on the installation process, and impact of the micro-gen measures (where applicable) . ▪ The discussion will last for approximately 45 minutes (35 minutes for withdrawn grant applicants) ▪ Reassure respondents of confidentiality and anonymity – information will not be personally attributed. ▪ Gain permission to record for transcription purposes (start audio recording). **Participant introduction – warm-up and context** ▪ FOR PRIVATE HOUSEHOLDS: First name, brief description of household composition/tenancy/ type of property, length of time living in accommodation and the LCBP microgen measure(s) installed. FOR NON DOMESTIC APPLICANTS: First name, role within the organisation, brief description of purpose of building/type of building/when built, the LCBP microgen measure(s) installed.	This section orientates the participants and prepares them to take part in the interview.	**2 mins**
ASK ALL **2. Awareness of the LCBP** When did you first consider installing a microgen technology? How did this come about? Why did you decide to have the microgen measures installed? Why this measure(s) in particular? What difference did you expect this would make? Where, if at all, did you look for information on microgen? What sort of information did you get hold of? Which organisation(s) did you contact or speak to? How did you first hear about the Low Carbon Building Programme (LCBP) grants? • Who / where did you receive this information from? PROBE: ○ Your gas or electricity supplier? Which company is this? ○ An installation company (for microgen technology) ○ Energy Saving Trust? ○ Building Research Establishment? ○ Housing Association? ○ Council / Local Authority?	This section explores awareness of microgen technologies in general and of LCBP in particular.	**5 mins**

What did you first hear about them?
 	
Did you receive information about it or did you request it?
• What type of information was this?
  ○ Micro-generation technologies
  ○ LCBP
  ○ How to apply
  ○ Installation
  ○ Eligibility
 	
• To what extent was it in line with your expectations? Why / why not? Was this helpful or not? Why / why not?
 	
• Did you talk to someone about it? Who? What did you talk about?
 	
ASK ALL
 	
3. Motivation for making the LCBP application
 	
Now I would like to ask you about applying for the grant through LCBP *specifically*.
 	
From what you remember when did you submit the application? How did you submit it (Online or paper?)
 	
Why did you decide to go through LCBP? What were the main reasons to apply through LCBP? PROBE FULLY
 	
THEN PROMPT:
• Financial grant/didn't have to pay full cost for the technology and installation
• Information advice received
• Received direct offer/approach
• Timescales
• Confidence in the organisations that offered it/were involved
• Quality guarantees – accredited installers and products
 	
What proportion of the total project cost was covered by the LCBP grant? How important or not was it that you didn't have to pay the full price for the project?
 	
COMMUNITY PROJECTS ONLY: Did you receive funding from any sources? If so, which ones and how much? How important was the LCBP funding? Why?
 	
How likely or unlikely do you think you would have been to purchase and install the technology if you had to pay the full price?
 	
Could you have applied for installing microgen through different channels? What were they? Why did you decide not to apply through them?
 	
And why did you choose to apply through LCBP? *(recap on advantages over other possible financing options)*
 	
Would you have considered installing a microgen technology if you had not been offered a financial grant through LCBP? Why? Would you have applied elsewhere? Where? Did you apply elsewhere before you applied for the LCBP grant?
 	
What would you have done if your application was rejected?
	This section provides information about the factors, which lead to the uptake of the LCBP grant.	**10 mins**

ASK ALL **4. Experience of the LCBP application process** Now, I would like us to talk about the LCBP application process. Can you talk me through the main stages you had to go through to apply? How did you find the application process as a whole? Did you find it easy or difficult? Which stages in particular? Why? What was easy and what did you find more difficult? PROBE FULLY Did you need more information **during** the application process? What was it? Did you manage to get this information? How? Where? And following the submission of the application what, if any, additional information did you need? Did you speak to someone regarding any queries or help with the application? Which organisation was this? What was this about? Did you find this helpful or not? Why? Were you aware of the application information tools? • FAQs • Guidance • Call centre • Website Did you use any of these? Which ones? How useful did you find them? As a whole, how could the information tools for the application process have been improved? Is there anything you wanted to know but couldn't find any information? WITHDRAWAL APPLICANTS GO TO SECTION 7	This section explores the LCBP application process experience for customers as well as views on the information provision related to the application process.	**10 mins**
ASK ONLY PARTICIPANTS WHO HAVE TAKEN UP THE SCHEME **5. Experiences of the installation process** When did you have the LCBP microgen measures installed? How did you have the measure installed? Who installed it? How did you find the installer? PROBE: was it through the approved list (Microgeneration Certification Scheme)? Was it easy finding an installer to use? How did you go about selecting an installer? What criteria were most important to you? Did you have many installers to select from? Would you have tried to install the technology yourself if that was an option? And how would you describe the installation process? PROBE: Did it run smoothly or was it a difficult process? Did it cause any disruption? What? What did you like about it? Was it completed within the deadline? As a whole, what do you think of the quality of the installation? Why do you say this? How, if at all, could the installation process have been improved? Have there been any operational issues with the measure since its installation? What were these? Did you try to resolve these? How? Did you contact someone?	This section explores the process customers have been through to have the microgen measures installed. It gathers feedback on the ease of the installation and any issues with it.	**10 mins**

ASK ONLY PARTICIPANTS WHO HAVE TAKEN UP THE SCHEME **6. Impact of the microgen technology installed** *(Recap)* Before you had the measure installed, what difference did you expect this would make? Why did you think that? What difference, if any, has the installation of [microgen measure] made to your home/building? What impact, if any, has the [microgen measure] had on your household/organisation? PROMPT • Energy use • Bills • Attitudes towards energy efficiency • Reducing carbon footprint/impact on environment • Improve home/building • Improved corporate reputation (organisations only) • Financial returns by selling energy back to the national grid [interviewer note: some non-domestic properties would not be eligible to retain their grant and receive payment from feed-in tariffs] And what have the benefits been for your home/building, if any? PROBE: Why do you say this? In what ways have you benefited? What has been the greatest benefit of having the measure installed? What has been the greatest downside of having the measure installed? Would you say that you are **more** or **less** satisfied with your home/the building as a result of the installation of the measure(s)? PROBE: Why? Would you say the installation of [microgen measure] has met your expectations or not? In what ways? Are you likely to have more microgen measures installed? And what about any other energy efficiency measures? PROBE FOR EXAMPLES Have you considered any other measures to live / work more sustainability as a result of installing the measures, e.g. measures to reduce waste or water use e.g. rainwater harvesting? What are they? PROBE FOR EXAMPLE Have you got any firm plans in place to do this?	This section looks at what impact the installation has had on customers in terms of their household or organisation, and whether the microgen measure has met their expectations.	**5 mins**
ASK ONLY TO PARTICIPANTS WHO HAVE WITHDRAWN FROM LCBP **7. Withdrawn grant applicants section** Can you explain to me why you decided not to take up the grant and withdraw from the scheme? How did you weigh up the benefits versus the disadvantages? What concerns did you have? PROBE FUULY THEN PROMPT: • Concerns about disruption to household members'/organisation's normal daily activities – related to which microgen measures specifically? What has prompted you to feel concerned? Probe on role of information • Information given about the installation process, end result, impact? • Concerns about the reliability and trustworthiness of the workers who install the measures – what has prompted you to feel concerned? Probe on role of information • Concerns about the reliability and trustworthiness LCBP – what has prompted you to feel concerned?	This section explores the reason behind withdraw of successful applicants from the scheme.	**10 mins**

• Financial concerns? • Concerns about what the changes will look like? • The manner in which you were approached / offered measures – what impact did this have, why? • The emergence of Feed-in-Tariffs / prospect of Renewable Heat Incentive • Missed deadline to claim grant offer (unable to get matched-funding in time, other elements of projects over-ran, supply issue for technology parts, bad weather) How do you think the withdrawal process from the programme was handled? What if anything would have convinced you to have claimed your grant? Did you go on to install any microgen measures anyway? For what reason? What impact has this process had on your interest in microgen technologies? What about on your likelihood of taking it up in future?		
8. Advocacy towards LCBP and microgen What did you **like** about the LCBP? What did you **not like** about the LCBP? Why do you say this? PROMPT ON: ○ list of accredited suppliers and products ○ requirements for application (e.g. size of technology, level of grant, eligibility criteria, deadline for accepting offer) ○ obtaining multiple installation quotes How, if at all, have you spoken about your experiences of the LCBP to others? PROBE: And why have you said this? Do you know what impact your views have had? Do you know of others who have looked into the LCBP on your recommendation? Who? What can you tell me about their experience? How, if at all, have you spoken about your experiences of microgen to others? Who have you spoken to? How has this come about? [interviewer note: these prompts are important to understand whether there property is acting as a beacon / exemplar within the community] PROBE: And why have you said this? [non-domestic properties] What steps, if any has your organisation taken to promote its use of micro-generation measures? Do you know what impact your views / any promotion has had? Do you know of others who have looked into measures LCBP on your recommendation? Who? What can you tell me about their experience?	This section explores the extent to which customers would be advocates for the LCBP and the microgen measures.	**5 mins**
9. Other financial incentive schemes (if not already covered) ASK ALL Have you heard about other financial incentives schemes? Which ones? PROMPT • Feed-in-tariffs • Renewable heat incentives What do you know about them? Have you / do you intend to apply for either of	This section explores awareness of other financial incentives schemes.	

these schemes? How do you think they will impact you?		
ASK ALL **10. Summing up** • Finally, is there anything else that you would like to add? THANK AND CLOSE. CONFIRM ADDRESS FOR DELIVERING INCENTIVE TAKE DETAILS FOR CHEQUE PAYMENT	Bringing the discussion to a close and allowing participants' to raise any issues which have not been covered.	**3 mins**

Discussion guide for in-depth telephone interviews with installers/manufacturers

Primary Objectives

To look at the experiences of manufacturers and installers of Microgeneration technologies in relation to the LCBP. More specifically to explore:

- If and how it impacted on their business
- If and how it impacted on the industry more widely
- Their view towards how it was managed / implemented
- How it linked with other Microgeneration policies

Timing

- The interviews will last for 45 minutes

Note to interviewers

- It will be important to phrase the questions, and to use the right probes, depending on whether the organisation is an installer, manufacturer or both. Please clarify this early in the interview and use your judgement in the way you ask the questions.

Information on LCBP

The Low Carbon Buildings Programme (LCBP) was a Government-led grant programme to stimulate an infrastructure for the manufacturing, supply and installation of small-scale Microgeneration renewable between 2006 and 2011. The programme has provided financial assistance for the **purchase** and **installation** of solar photovoltaics (solar PV), solar thermal, micro hydro generators, wind turbines, ground source heat pumps, air source heat pumps, wood-fuelled boilers and biomass boilers. It has operated at both a domestic household level and across the non-domestic sector including schools, business, charities, the public sector and non profit-making organisations.

Overview

Discussion sections	Notes	Approx timing
1. Introductions	This section orientates the participants and prepares them to take part in the interview. It also warms the respondent up and provides contextual information.	**3 mins**
2. Understanding / involvement with LCBP	This section aims to assess the level of knowledge the individual has on the LCBP and what they think its aims were	**5 mins**
3. Impact of the LCBP on their business	This section explores views towards how the LCBP impacted on their business	**10 mins**
4. Views towards delivery/management of the LCBP	This section explores views towards the way in which the LCBP was implemented and whether any barriers hindered its implementation	**10 mins**
5. Awareness of LCBP / marketing / promotion of it	This section explores views towards public awareness of the LCBP	**5 mins**
6. Wider impact of the LCBP	This section explores views towards any wider impacts of the LCBP	**10 mins**
7. Summary	Bringing the discussion to a close and allowing participants' to raise any issues which have not been covered.	**2 mins**
	Total: 45 mins	

Discussion area	Notes	Time (mins)
1. Introductions **Interviewer introduction** ▪ Moderator introduce self, Ipsos MORI (including role – independent research agency), and client, Department of Energy and Climate Change. ▪ Explain main aim of the discussion – to understand views towards the Low Carbon Building Programme (LCBP) ▪ The discussion will last for approximately 45 minutes ▪ Reassure respondents of confidentiality and anonymity – information will not be personally attributed, or to their company. ▪ Gain permission to record for transcription purposes (start audio recording). **Participant introduction – warm-up and context** First name, role within the organisation, brief description of the organisation's background: ▪ size (no. employees) ▪ age of the company ▪ which technologies involved with ▪ whether manufacture, install or both	This section orientates the participants and prepares them to take part in the interview.	**3 mins**
2. Understanding / involvement with LCBP • How familiar would you say you are with the LCBP? • Where have you received most of your information about the LCBP? (PROBE: Trade associations, trade press, EST, grant applicants, word of mouth within the industry) • What would you say were the main things the LCBP set out to achieve? • Was the microgen industry consulted in the development of the LCBP? If so, how? - Could more have been done?	This section explores awareness of the LCBP and how involved they have been with it. N.B. we will ask about whether the objectives were met later in the discussion	**5 mins**
3. Impact of the LCBP on their business • What would you say the impact of the LCBP has been on your business? Are you able to quantify this?		**10 mins**

PROBE: • Would you say that the LCBP has impacted on the size of your business? (IF RELEVANT: is this the same across different technologies?) • Since 2006 what proportion of your turnover has been related to LCBP? Has this fluctuated over time? • Did the LCBP change the profile of your customer base at all? E.g. domestic vs. non domestic • How would you say your business would have fared (since 2006) without LCBP? • Over the lifetime of the LCBP, did the number of companies entering the market change at all? How? Did this differ by the technology type? • Was there any impact on the levels of training / skills / quality in the Microgeneration industry?	*All information will be kept strictly confidential* *Make sure attempt to assess whether views on how it affected their business are based on evidence or a gut feeling*	
4. Views towards delivery/management of the LCBP • How well would you say the LCBP was managed / implemented? Why do you say that? • Did anything hinder the implementation of the scheme? If so, what and why was this? • Did the allocation of grant funding impact across all technologies in the same way? Why do you say that? PROBE: level of grant / take up by applicants / promotion by each technology sector • Did government policy on Microgeneration impact on the success of the LCBP in any way? IF NECESSARY PROMPT: • e.g. announcements about FITs and RHI • funding available to applicants • grants being scaled up and down to enable funding to meet demands	N.B. Refer back to the level of knowledge they have of the LCBP	**10 mins**

• How able was your company to meet demand for manufacture / installation of Microgeneration technologies via LCBP? PROBE: To what extent has your LCBP delivery been constrained by supply chain issues, and if so how? (probe re different types of measures and delivery routes) IF SAY THAT THEY WERE AFFECTED BY/HEARD OF SUPPLY CHAIN ISSUES: could issues of supply have been predicted better? By who? Could anything have been done to prevent it or reduce the impact?		

5. Awareness of LCBP / marketing / promotion of it
 	
• How would you characterise public awareness of the LCBP? Why do you say this?
  • PROBE: Has this changed over the lifetime of the LCBP at all? IF YES: Did the LCBP itself increase public awareness of Microgeneration? (or would this have happened without the LCBP?)
• And what about public acceptance/confidence of the technologies?
  • PROBE: Did this change over the lifetime of the LCBP at all? IF YES: Did the LCBP itself increase public acceptance of Microgeneration? (or would this have happened without the LCBP?)
• How was the programme advertised/promoted to potential applicants? Did this differ depending on whether towards domestic or non-domestic audiences?
• Can you give us an overview of how you planned for, marketed and delivered LCBP grants to customers (prompt re different types of applicants e.g. domestic / non-domestic, and different types of measures)
 	
• Have you given any advice to potential applicants about when it would be best to apply for a grant? (IF NEEDED: e.g. based on when they knew funds would be available, advice they gave about FITs/RHI)
	This is likely to differ between manufacturers and installers	**5 mins**

6. Wider impact of the LCBP • What are your experiences of the accreditation scheme? Are they positive? PROBE as whether referring to initial accreditation scheme or to the MCS IF RELEVANT: Is this any different for manufacturers / installers? • What would you say the impact of the MCS has been for the industry?	The MCS began in 2008 but was preceded by the REAL Assurance Scheme	**10 mins**

• What would you say the impact of the MCS has been for customers? • IF NOT ALREADY COVERED: What do you think the overall impact of LCBP has been on the Microgeneration industry? PROBE: Positive? • IF NOT ALREADY MENTIONED: Do you feel any groups, in terms of grant applicants, particularly benefited from the programme? • Do you feel any groups, in terms of people/companies from within the industry, particularly benefited from the programme? • One of the aims of the LCBP was to see a reduction in the cost of microgen products (by the end of the programme in 2011, compared to 2005). Do you think this objective was achieved? IF YES: To what extent did the LCBP drive this? IF NO: What prevented this from happening? • What do you think the legacy of the LCBP will be? PROBE: has it generated sustainable growth in installation/manufacture of microgen technologies? • Has the LCBP been affected at all by FITs? • And what about RHI? PROMPT: What about the timings of their launch? • How would you say the Microgeneration industry looks for the immediate future? • Do you think there should be any lessons learnt from the LCBP for any future policies on Microgeneration?	N.B. It is important we are clear about whether these impacts are because of the LCBP or whether people believe they would have happened without the LCBP	
7. Summing up • Finally, is there anything else that you would like to add about the LCBP? • TRADE ASSOCIATIONS ONLY: CONFIRM IF THEY ARE OK FOR US TO USE THEIR QUOTES IN REPORTING. EITHER: ▪ ATTRIBUTED (e.g. “GSHP Trade Association”) ▪ ONLY LISTED AS “Trade Association” ▪ ANONYMOUS (e.g. “Industry representative”)	Bringing the discussion to a close and allowing participant s’ to raise any issues which have not been covered.	**2 mins**

3b. Desk review framework

This document sets out the proforma and questions that will be used to frame the desk review element of the LCBP Evaluation, and how they will be used to answer the evaluation objectives.

1. Logic Model Template

[See evaluation objective 1a and 1b]

This will be used to capture key information from the desk review against the logic model.

For each element of the programme, we will complete the following high-level template to map out the key inputs, outputs, outcomes and impacts of the programme.

Separate template to be completed for:

- Overall programme management (including financial management)
- Phase 1 and 1e (may need to separate)
- Phase 2 and 2e (may need to separate)
- Fuel Poverty work
- Carbon Trust dissemination work
- Technology trials
- Other minor funding streams

Logic Model Map		
[insert name of LCBP element e.g. Phase 1]		
Context	*In each section, insert high level information to map out the key elements for each step of the logic model. Include source of information.* *Where possible, highlight any evidence of where actual outputs/outcomes/impacts have differed from the expected outputs/outcomes/impacts (as set out in the LCBP Evaluation Scoping Workshop report)*	*Highlight the source(s) of information used, including page numbers if relevant, so that it can easily be referred back to for analysis and report-writing*

Inputs (including resources, activities and costs)		
Outputs (including data on grants, measures installed, costs of products, MCS data)		
Outcomes	*Note: it will be more difficult to map out outcomes and (in particular) impacts from the desk research alone.*	
Impacts		

2. Review checklist and proforma

Below we set out the checklist / proforma that will be used to capture the key findings from the desk review.

Overall programme management (including financial management)

- Phase 1 and 1e (may need to separate)
- Phase 2 and 2e (may need to separate)
- Fuel Poverty work

- Carbon Trust dissemination work
- Technology trials
- Other minor funding streams

We expect some of these questions to be difficult to answer from the literature alone. For example, questions about the relative strengths and weaknesses of the programme might be better answered through the stakeholder interviews.

Question	Source
Context Outline any important contextual information highlighted in the literature	
Insert relevant key findings from the literature reviewed	*Highlight the source(s) of information used, including page numbers if relevant, so that it can easily be referred back to for analysis and report-writing*
Objective 1. Did the programme achieve its objectives?	
What were the objectives of this element of the programme, as set out in the literature?	
Map out the main inputs, outputs, outcomes and impacts highlighted in the literature (insert findings into the Logic Model Map)	
Does the literature highlight any constraints and challenges for the programme? What were they?	

Objective 2. What was the LCBP's relationship with wider Government policy?	
From the literature reviewed, to what extent, and how, did this element of the programme contribute to the Government's wider renewables and microgeneration policies?	
From the literature reviewed, how was the delivery of this element of the programme affected by Government policies and strategies as they evolved over time, and what effect did these have on the programme outcomes?	
Objective 3. Programme management	
What does the literature tell us about how was this element of the programme was set up and managed? *Include, where possible, a consideration of whether the programme constructed with: a clear ministerial mandate; an effective project team; clear reporting structures; adequate financial management skills; appropriate contractor management procedures; and effective risk management and mitigation procedures.*	
What does the literature tell us about the strengths and weaknesses of the way in which the programme was set up and managed?	
What evidence is there that the learning from the initial phases of the programme was used to inform this element of the programme? (e.g. how was the learning from phase 1 used to inform phase 1e?)	
Objective 4. Contractor performance	

What were the KPIs for this element of the programme?	
What was the performance of the contractor against these KPIs?	
What evidence is there for why the contractor achieved (or did not achieve) the KPIs?	
Objective 5. Impacts	
Does the literature highlight any longer-term impacts or effects as a result of the programme? If so, are these positive, how wide ranging are they and who has been affected?	

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