

District Heating Loan Fund Evaluation

Summary Report

March 2015

Introduction

The Scottish Government has made a commitment to support the development of district heating networks in Scotland, proposing generation and householder connection targets to be reached by 2020. Since 2011, on behalf of the Government, the Energy Saving Trust has managed a programme to support scheme take up and implementation – the District Heating Loan Fund (DHLF).

The Warm Homes Fund (WHF) also offers loans and development grants to registered social landlords and local authorities to implement renewables based projects providing affordable warmth to householders. Where this funded district heating capital projects, these were included in the evaluation.

The Energy Saving Trust (EST) commissioned Databuild to undertake an evaluation comprising interviews with scheme managers and customers - to help to answer the following strategic questions:

- To what extent the funded District Heating (DH) projects are delivering/projected to deliver the carbon savings and other impacts anticipated at the outset?
- Attribution – how important was the DHLF to the projects and what would have happened without it?
- Applicant experience of, and satisfaction with, the DHLF programme.
- What issues schemes have encountered and what support – if any – could be provided to overcome these issues?
- How Scottish Government through the DHLF could encourage more or larger DH schemes and so achieve an even greater impact towards the 2020 targets?

Databuild examined 22 projects funded by the DHLF and WHF, and the findings were extrapolated to 36 projects which had loan offers approved by the DHLF Assessment Panel by the end of 2014.

This report summarises the district heating projects funded by DHLF and the WHF as well as providing the headline results from the Databuild evaluation.

This report has been produced by the Energy Saving Trust on behalf of Scottish Ministers. The views expressed in the report are those of the the Energy Saving Trust and do not necessarily represent those of Scottish Ministers.

Project summaries

Since 2011, the District Heating Loan Fund (DHLF) and the Warm Homes Fund (WHF) have received over 40 applications. By the end of 2014-15, a total of £7 million in loan funding has been committed to 33 projects (19 fully operational) by the District Heating Loan Fund, and three Warm Homes Fund projects have been awarded £2.2M

This results of the detailed evaluation cover 23 projects funded by the District Heating Loan Fund to summer 2014, of which Databuild explored 19 projects in detail:

- Covering loans of **£4.4 million** in total from £60,000 to £400,000
- Connecting **173** homes and 16 non domestic buildings
- Providing a capacity of **5 MW** (th)

A further 3 projects funded by the Warm Homes Fund were also explored by Databuild

- Covering loans of **£2.2 million** in total from £227,000 to £1.5 million
- Connecting **619** homes Providing a capacity of **3.3 MW** (th)

The annual carbon savings from the projects included in the evaluation is **4,271tCO₂** a year.

Based on the reported impact of projects surveyed, the total projected annual savings for all 36 DHLF and WHF projects funded to date is nearly **9,000 tCO₂ a year**, with **a total planned installed capacity of 12 MWth** supplying affordable low carbon heat to **850 homes**.

20 projects have applied for funding but did not proceed to the panel for funding approval. Reasons why these did not go to panel include:

- 11 proceeded with alternative solutions and did not choose to use district heating (three of these were applications put in by housing associations and eight by SMEs).
- Three local authorities proceeded with district heating using alternative funding sources (ECO PwLB).
- Three SMEs deferred or delayed their application.
- Two housing association applications have been deferred whilst they source additional funding.
- One local authority reverted to individual systems and dismantled the existing heat network.

Cost savings

The Databuild evaluation involved interviews with 17 lead contacts across 22 projects (including 5 projects that received funding in recent months and so were not operational at the time of interview). Sixteen of the projects currently have heat supply contracts in place, four plan to put one in place in the near future whilst one has an agreement supply letter with an additional end user (tenant) rather than a full contract. The remaining project is a campsite/recreation centre so the customers using the heat are temporary holiday-makers, not permanent residents so no contract is required.

Nine contacts provided information on the domestic heat delivery prices which ranged from 3.5pKWh to 9pKWh. Using this information it is possible to estimate the average fuel bill savings based on current project delivered heat price and recent Sutherland table's data on fuel switching. (Sutherland tables only cover domestic fuel prices so there is no comparator for non-domestic users).

The estimated savings on fuel bills for customers are:

- 22.5% fuel bill savings for projects switching from electric
- 44% fuel bill savings for projects switching from oil
- 40% fuel bill savings for projects switching from a combination of oil and electric (based on one project)
- 48% fuel bill savings for projects switching from liquid natural gas (LNG) and electric (based on one project)

Headline findings from interviews with project leads and householders

As part of the evaluation conducted by Databuild, the following interviews were conducted:

- Semi-structured telephone interviews with 17 lead contacts across 22 DH projects funded through the DHLF/WHF; this sample included 5 projects that received funding in recent months, on the basis that although the DH project itself may not have progressed substantially, recall of the application process would be relatively fresh in the respondent's memory.
- Shorter telephone interviews with 4 lead contacts – covering 5 projects – whereby the project progressed to the DHLF Panel but funding was not taken up, principally to understand what has happened to this project subsequently and why, if funding was offered, it was not taken up.
- Interviews with a group of householders on a DHLF-funded project to obtain further insight into resident experiences of large DH projects.
- A focus group with DH project leads/practitioners to discuss application and project delivery experiences. In particular as it was thought that a more discursive approach could encourage more openness and honesty around challenges and factors underpinning the projects..

This section outlines the key findings from these interviews.

Impact and attribution

The total *predicted* CO₂ saving impact across the funded projects included in the evaluation was calculated through predicted boiler efficiency. Actual boiler efficiencies were obtained from 14 of the 22 evaluated projects i.e. those that are operational and could provide these figures.

Amongst these 14 projects the predicted CO₂ saving impact was 2,368tCO₂ per annum/59,200tCO₂ lifetime but actual impact was 97% of this - 2,300tCO₂ per annum/57,500tCO₂ lifetime.

Assuming this will be true of all 33 funded schemes (including those not yet operational and those not evaluated), the total impact across the funded schemes would give actual savings totals of 8,625tCO₂ per annum/ 215,625tCO₂ lifetime.

It is clear that in all cases, the DHLF had an influence upon the impacts delivered by the funded DH schemes. Initially, all but one respondent to the evaluation claimed that their scheme would not have happened without the DHLF. However, exploring this in greater depth, half of respondents stated that if DHLF had not been available, they would still have taken some action, for example by accessing the required finance elsewhere. Yet where this was the case, they did state that the process would likely have been more challenging, costly and slower thus placing risk on project delivery (with perhaps the risk of projects not proceeding at all). This means that:

- For 11 of the 22 schemes explored it is likely that these would likely not have happened at all without DHLF funding;

- For the other 11 of the 22 projects, though these would still be likely to have happened (through sourcing other finance), the DHLF made these happen quicker, better and with fewer costs i.e. the remaining 44% of achieved impacts would still have been influenced by the DHLF.

In total, 834 households have been - or will be in the near future - connected to district heating from all the projects funded to date (excluding the 200 households already connected to the Wick scheme, which will benefit from additional funding provided). An additional 200 householders are also likely to be connected to the Wick scheme in the near future as a result of investment in new boiler plant funded through the district heating loan.

Satisfaction

Overall, satisfaction with all aspects of the DHLF process was high; most found the application process clear and straightforward and found the payment terms to be flexible and manageable. There was also no strong appetite from successful projects interviewed for adjustments to either the loan cap or conditions (such as interest rate). It should be noted though these were the successful projects and some projects which did not apply may have done so if the loan rate had been lower (particularly the local authorities).

Scheme issues and solutions

The key barriers and issues cited by respondents were analysed to generate a set of likely success factors for DH schemes. These included:

- Conducting in depth research into existing DH schemes in advance of project design and implementation; benefits of this included identifying existing schemes to learn from, signposting of contacts and building knowledge of technical elements (enabling better contingency planning and realistic project planning).
- Collecting baseline data on the properties involved in the scheme; this ensures the viability and impact of the technology is more accurately assessed.
- Having excellent contractors; most scheme managers either were themselves – or brought in - experienced contractors to deliver key elements of the work.
- Early and frequent customer liaison; this has helped scheme managers to build customer understanding of – and trust in – the technology, ensuring buy-in and addressing concerns.
- Restricting installation work to times of the year when good weather can be expected.

Enhancing DH scheme impacts

There would seem to be potential for encouraging more and larger DH schemes through:

- Wider marketing of opportunities like DHLF to organisations with potential to take up DH schemes such as housing associations or facilities management companies. The effect may not be immediate but these organisations may then consider DH when trigger points arise. Further research could be conducted to understand the potential for uptake amongst these large public sector bodies and what the barriers are.
- The DHLF application assessment panel driving consideration of larger schemes through – where appropriate – offering both the original amount bid for and an ‘enhanced’/‘premium’ loan offer (i.e. more money) to deliver a larger scheme where this is possible.

- Developing a DHLF best practice guide, which as well as being an excellent idea in encouraging schemes and helping organisations to design schemes in the most efficient and effective way, might also help organisations to have more confidence in developing expensive projects which could be perceived as high risk.

Finally, managers on several smaller schemes who had benefitted from district heating loan funding were concerned about smaller schemes being “drowned out” in the competition for funding through an emphasis upon large, more transformational schemes. This perhaps indicates the value of supporting both large more transformational projects as well as small scale projects which can deliver more quickly.

DISTRICT HEATING LOAN FUND 2011-12 to 2014-15

North Fish Ltd	Mid Yell	Mid Yell, Shetland	£169,986	Woodfuel
Hill of Banchory ESCo Limited	Hill of Banchory Business Park	Banchory, Aberdeenshire	£100,000	Woodfuel
West Highland Housing Association	Mull and Iona Progressive Care Centre	Craignure, Isle of Mull	£200,000	Woodfuel
Comrie Development Trust	Cultybraggan	Comrie, Perthshire	£195,811	Woodfuel
Colstoun Capital Ltd	Colstoun	Haddington, East Lothian	£178,822	Woodfuel
West Highland Housing Association	Combie Court	Oban, Argyll	£138,000	Woodfuel
North Fish Ltd	Brae	Brae, Shetland	£220,000	Woodfuel
North Fish Ltd	Blackhill	Blackhill, Shetland	£150,000	Woodfuel
Angus Biofuels	Angus College	Arbroath, Angus	£400,000	Woodfuel
Loch Ness Shores	Loch Ness Shores	Inverness, Highland	£200,000	Heat pumps / solar
Ignis Wick Ltd	Wick expansion	Wick, Highland	£226,000	Woodfuel
Colstoun Capital Ltd	Brounhill	Haddington, East Lothian	£ 58,800	Woodfuel
Ignis Wick Ltd	Wick expansion 2	Wick, Highland	£400,000	Woodfuel
John Rennie	Wester Fintry	Inverurie, Aberdeenshire	£ 60,000	Woodfuel
Colin Clarke	Camaghael (Old Blar House)	Fort William, Highland	£145,000	Woodfuel
Finnian Munro	Foulis Estate	Evanton, Highland	£291,141	Woodfuel / straw bales
HWEnergy	Strathallan School	Strathallan, Perthshire	£320,000	Woodfuel
Michael Paterson	Balgray Estate	Lockerbie, Dumfries & Galloway	£131,274	Woodfuel
Forest Homes Scotland	Piperdam	Piperdam, Dundee	£400,000	Woodfuel
Fintry Development Trust	Balgair Castle Park	Fintry, Stirling	£300,000	Woodfuel
Farmstar Polska	Stevenson Steading	Haddington, East Lothian	£112,000	Woodfuel
John Webster	Ardconnon	Inverurie, Aberdeenshire	£120,000	Woodfuel

J & AJ Thomson	Samuelston A	Haddington, East Lothian	£143,586	Woodfuel
J & AJ Thomson	Samuelston 'B'	Haddington, East Lothian	£207,750	Woodfuel
Glendoick Gardens	Glendoick	Glencarse, Perth	£100,000	Woodfuel
George Gibson	Carfrae Cottages	Haddington, East Lothian	£154,383	Woodfuel
House of Cockburn	Cockburn Farm Company	Balerno, Midlothian	£137,452	Woodfuel
Scalloway District Heating	North Fish Ltd	Scalloway, Shetland	£350,000	Woodfuel
House of Allan	Georgie Watkins	Tain, Highland	£140,000	Woodfuel
House of Cockburn (2)	Cockburn Farm Company	Balerno, Midlothian	£172,381	Woodfuel
Haswell Sykes	James Currie & Son	Peebles, Scottish Borders,	£ 90,397	Woodfuel
Tour House	Troon Textiles	Troon, South Ayrshire	£ 79,332	Woodfuel
Aberdeen Heat & Power	Beach Promenade Extension	Aberdeen	£1,053,000	Gas CHP
Total DHLF loan commitment			£7,145,166	

WARM HOMES FUND

West Whitlawburn Housing Co-operative	West Whitlawburn	Cambuslang, South Lanarkshire	£1,574,000	Woodfuel / gas
West Highland Housing Association	Dunbeg	Oban, Argyll	£400,000	Woodfuel
Castlehill Housing Association	Fettercairn	Fettercairn, Aberdeenshire	£227,000	Woodfuel
Total			£2,127,000	