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& Net Zero

Green Home Finance Innovation Fund Impact Evaluation

Final Report

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The Department for Energy Security & Net Zero commissioned Technopolis in collaboration with IFF Research, and EREDA Consultants to conduct a process, impact and economic evaluation of the Green Home Finance Innovation Fund (GHFIF) programme. This report follows on from the Process Evaluation completed in November 2021 and encompasses the final impact and economic evaluation of the GHFIF programme.



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List of Acronyms

Table 1 List of Acronyms

Acronym	Description
ATMM	Add To My Mortgage
CA	Contribution Analysis
EIP	Energy Innovation Portfolio
EPC	Energy Performance Certificate
EST	Energy Saving Trust
FCA	Financial Conduct Authority
GHFA	Green Home Finance Accelerator
GHFIF	Green Home Finance Innovation Fund
GHM	Green Home Mortgage
GLR	Green Living Reward
GHG	Greens Home Grant Voucher Scheme
HEST	Home Energy Saving Tool
HIT	Home Infrastructure Technology
LBG	Lloyds Banking Group
MBS	Monmouthshire Building Society
NZIP	Net Zero Innovation Programme
NAO	National Audit Office
PT	Process Tracing
RICS	Royal Institution of Chartered Surveyors
SME	Small-Medium Enterprise
VALUER	Valuation And Lending Underwriting Energy Reduction
VfM	Value for Money

Executive summary

The Green Home Finance Innovation Fund (GHFIF) was a programme funded by the Department for Energy Security and Net Zero, formerly part the Department for Business, Energy and Industrial Strategy (BEIS), hereafter referred to as ‘the Department’. The GHFIF programme was designed to support the development and piloting of novel green home finance products for the UK home retrofit market. It also sought to provide evidence for relevant policy teams and green finance case studies for the wider finance market.

This evaluation of the GHFIF draws upon reviews of programme and project level documents and qualitative research with internal programme stakeholders, project participants and their customers, non-applicant lenders and market experts. It follows the GHFIF process evaluation report (2022)¹. A separate state of the market review providing three snapshots in time provides the context on the overall trajectory of the market that GHFIF is aiming to influence².

The programme funded three projects, with a combined value of £1.8 million, out of an initial programme budget of £5 million:

- Add to My Mortgage (ATMM) project led by Home Infrastructure Technology Ltd. (HIT), a small/medium-sized enterprise (SME), developed an innovative online platform which allowed customers to apply for additional borrowing on top of their mortgage for energy efficiency retrofits. During the project 80 loans were delivered through the platform.
- Green Home Mortgage (GHM) project led by Lloyds Banking Group (LBG) developed a retrofit mortgage product which offered a green living reward of £500 cashback upon confirmation that the homeowner has had energy efficiency measure(s) installed. LBG partnered with Energy Saving Trust (EST) to develop an associated energy retrofit educational tool for consumers.
- The Valuation And Lending Underwriting Energy Reduction (VALUER) project led by Monmouthshire Building Society (MBS), with Sero as a project coordinator, the Royal Institution of Chartered Surveyors (RICS) and Rightmove as partners. The project investigated the differences in the market value of energy efficient homes and integrated these differences explicitly in the lending, valuation and underwriting process. VALUER built on the LENDERS³ project, that examined how energy efficiency affects borrowing.

All three GHFIF projects completed delivery by March 2022 though they all experienced delays of up to a year, predominantly caused by the effects of the COVID-19 pandemic. Despite the delays, one of the projects met and exceeded all of its objectives (Lloyds Banking Group, GHM

¹ More information at www.gov.uk/government/publications/green-home-finance-innovation-fund-evaluation

² The State of the Market Reviews have been published alongside this report.

³ The LENDERS investigated how to better reflect household energy costs into mortgage applications. It was a collaboration between Nationwide Building Society, BRE, UKGBC, Arup, Principality Building Society, the Energy Saving Trust, UCL Energy Institute and Constructing Excellence Wales. More information at www.ukgbc.org/ukgbc-work/lenders-core-report/

project) and the other two met most of their specific objectives set out in their original applications.

Summary of impact evaluation findings

The impact evaluation adopted a theory-based approach of process tracing testing seven 'pathways to impacts' which were identified during the scoping stage of the evaluation. These pathways set out the expected impact of funded projects and how they were to be achieved. Note that some pathways are only relevant to a subset of the funded projects due to differences in project aims. The following subheadings present these pathways and provide the summary findings.

Policy Learning

All GHFIF projects interacted with government officials and fed information through their quarterly monitoring reporting (and associated annexes). Regular dissemination from projects to the Department alongside their final outputs informed the development of a successor programme; the £20million Green Home Finance Accelerator (GHFA) programme under the Net Zero Innovation Portfolio.

The GHFIF programme was designed to work together with complementary Government policy instruments. This included two initial consultations which explored options for improving the energy efficiency of home in the private rented sector⁴ and those in the mortgaged owner-occupier sector⁵. The GHFIF created a push for product development with projects signalling to other lenders that green home finance products represent a viable proposition. Alongside the intervention, consulting on future policy options was expected to create a pull on the lending sector to indicate government's vision for private sector finance having a role to support and incentivise homeowners to undertake retrofits.

Energy Efficiency Product Vendor Incentives

The programme targeted lenders and the development of lending products. Only one project worked directly with energy efficiency product vendors, Add to My Mortgage project (ATMM) led by Home Infrastructure Technology (HIT). Project lead interviews highlighted that 17 vendors initially signed up to the ATMM platform. Engaging the vendors and keeping them involved in the platform has been a challenge for the project. During the project, Lloyds Banking Group (LBG) recognised the need to broaden the pool of eligible vendors and resorted to removing their requirement for all installers to be TrustMark approved.

⁴ Description available at: www.gov.uk/government/consultations/improving-the-energy-performance-of-privately-rented-homes

⁵ Description available at: www.gov.uk/government/consultations/improving-home-energy-performance-through-lenders

Lenders Knowledge and Ability of Energy Efficiency Issues

In Green Home Mortgage (GHM), LBG developed educational information for staff about energy efficiency improvements to homes which are eligible for their product, demonstrating internal improvements to lender knowledge and ability on energy efficiency within participating organisations. However, interviews with non-participating lenders suggest there is still some scepticism about the performance of green lending among lenders. This perception of a lack of consumer demand meant some lenders are not systematically educating their staff on energy efficiency.

In the Valuation And Lending Underwriting Energy Reduction (VALUER) project, Monmouthshire Building Society (MBS) developed pilot versions of the products for specific areas rather than integrating them in business as usual, hence the staff training was restricted to parts of the business rather than rolled out throughout.

Homeowners Knowledge and Ability of Energy Efficiency Issues

In GHM, LBG, working with the Energy Saving Trust (EST) also developed an educational tool for customers. The Home Energy Saving Tool (HEST) was launched alongside their Green Living Reward (GLR), the mortgage cashback product. While there seems to be an increase in the level of activity in providing information to homeowners in the lending sector, there is still no convergence towards one authoritative source of advice, as there was limited awareness during interviews of government energy efficiency advice tools⁶.

In ATMM, homeowners theoretically benefit from a platform which should reduce the friction of the customer journey for applying for retrofit finance, however, the platform currently encounters problems due to lenders taking several months to process additional mortgage borrowing applications.

Networks and Relationships Across the Energy Efficiency Value chain and Finance Sector

The three projects involved eight formal consortium partners in total. In many cases, this has resulted in ongoing collaboration and networking that has continued following project completion. There is further evidence of broadening these networks, in particular through the ATMM platform which now enrolled three of the 'Big Six'⁷ lenders plus other smaller lenders. The VALUER and to some extent the GHM have engaged with wider sector dissemination.

One notable example of new networks being formed is that one non-participating Building Society launched an Affordability Calculator, similar to the one developed by MBS, following a dissemination meeting. There are other developments where participants in GHFIF projects

⁶ Such as the tool helping the public identify ways to save energy in their home. <https://www.gov.uk/improve-energy-efficiency>

⁷ Lloyds Banking Group, Santander, Nationwide, Barclays, NatWest and HSBC and their subsidiary brands hold an overwhelming majority of Mortgages and are known colloquially as the 'big six' lenders'

are now partnering with other lenders for the successor programme (GHFA) and potentially also developing new internal projects.

There is also evidence there are new sector networks forming independently to GHFIF. Examples include the 'Bankers for Net Zero', Financial Conduct Authority (FCA) events on green lending/innovation, and the Green Finance Institute supported group bringing together mortgage brokers with interest in green finance.

Home Valuation Knowledge of Energy Efficiency

The VALUER project involved the RICS, a globally recognised professional body established to promote and enforce professional standards in the development and management of land, real estate, construction and infrastructure. The project led to a direct change in the wording of the Red Book – this sets out standards in home valuation delivery worldwide, containing details of mandatory practices for RICS members undertaking valuation services. The revised wording included important material on sustainability and environmental, social and governance (ESG) issues and explains how these influence property value.

Demonstration Impact and the Accelerated Growth of Green Home Finance Market

While green home finance has grown substantially over the lifetime of the programme and remained on an upward trajectory since, the evidence of direct influence on action by non-participating lenders is limited, with only two lenders stating they consciously reacted to a move by one of the GHFIF participating lenders.

Among the interviewed lenders, there was evidence of significant levels of awareness of the GHFIF programme and the outputs of individual projects. Although the direct effects of the programme on increased number of lenders offering green home finance products are limited to date, these are in line with the modest scale of the programme. It could be expected that a £1.8m pilot programme would have limited overall influence on the £1.3 trillion mortgage lending market by this stage. Interviews with market experts confirmed the view that a proliferation of new green home finance products have been launched since the programme began but highlighted that uptake among customers has remained low to date.

GHFIF funded some of the early movers in the green home finance space and Halifax (part of LBG) is perceived by some competitors and market experts as a market leader. This position is further evidenced by LBG registering higher levels of demand for its product than others. Consumer research indicates that the trusted relationship with mortgage advisors meant that customers were comfortable with signing up for the new product.

Contextual changes to the Green Home Finance market

The State of the Market Review conducted as part of this evaluation indicated that the number of green home finance products, as well as the number of lenders offering them, increased relatively rapidly from 30 in 2020 to 75 in 2022 and then remained relatively constant over the last 6 months. Interviews with lenders and market experts revealed that while the green

finance market is actively developing, the products remain a small part of their overall lending portfolio. The profile of products remained largely unchanged since 2021, with a focus on mortgages for highly efficient homes (i.e. EPC A/B) and mortgages for retrofits including cashback and increased loan value for more efficient properties.

While non-participating lenders continue to see green home finance products as niche and the demand insufficient across all segments, GHFIF participants reported seeing some positive signs in take-up of their lending products. Research with LBG consumers confirmed that the cost-of-living crisis and recent energy price rises may have contributed to this demand.

Summary of Value for Money findings

In order to assess whether the programme constituted good VfM, the NAO's "4Es"⁸ approach (Economy, Efficiency, Effectiveness and Equity) was adopted.

Overall, given that most of the programme objectives were achieved at a cost relatively lower than the original budget and all projects noted that their activities were additional to what would have taken place in absence of the public funding, this programme could be considered a good VfM.

Economy (Assessment: Excellent)

The Department used an open and fair competition to attract bids from both SMEs and lenders. The bids were assessed based on predefined criteria that were explicitly stated in the publicly available guidance notes. The objectives of the projects funded aligned with the aims of the programme and the level of public funds awarded were well within the overall programme budget. Overall, it is therefore considered that public spending to achieve the programme objectives and advance the development and piloting of finance products for the UK home retrofit market was kept to a minimum.

Efficiency (Assessment: Good)

The programme funded three projects to develop and pilot products and educational tools. All funded projects were able to develop and pilot products and educational tools that would not have been possible in the absence of grant funding. Going beyond outputs, most of the piloted products were well-received by customers. The project led by LBG exceeded the original GLR uptake target set out in the pilot objective.

Effectiveness (Assessment: Good)

The programme was effective in generating new evidence on green home finance to inform policy and future programme development decisions within the Department. Insights from the GHFIF informed design of a successor programme, the GHFA. The educational tools developed by GHFIF projects improved the availability of information and guidance for

⁸ www.nao.org.uk/successful-commissioning/general-principles/value-for-money/assessing-value-for-money/

homeowners considering whether to install energy efficiency measures. However, no evidence was found that proves that the customers acted on this knowledge alone.

RICS have updated their valuation guidance to incorporate energy efficiency measures. This could potentially motivate property developers to build greener homes in future and encourage homeowners to invest in energy efficiency retrofits. However, the evaluation has not analysed the extent to which this valuation guidance change has been reflected in formal valuations. The evaluation identified limited signalling and demonstration impact of the programme on non-participants to act and introduce new products.

Equity (Assessment: Good)

The programme attracted expressions of interest and bids from a wide range of organisations including SMEs, 'Big Six' lenders and smaller banks and building societies. The GHFIF objective of supporting the trialling of finance products by the private sector was by design intentionally focused towards targeting the 'able to pay' customers. The programme exists within a policy mix which offers grants to lower income and 'less able to pay' customers.

1. Introduction

The Department for Energy Security and Net Zero, formerly the Department for Business, Energy and Industrial Strategy (BEIS), commissioned Technopolis in collaboration with IFF Research, and EREDA Consultants to conduct a process, impact and economic evaluation of the Green Home Finance Innovation Fund (GHFIF) programme.

This report follows on from the process evaluation report published in March 2023⁹ and presents the impact and the value for money (VfM) evaluations. The findings in this report are based on a second wave of qualitative interviews in November 2022 – February 2023 (the first taking place in Summer 2021); the second update of the State of the Market Review (previous taking place in Summer 2021 and Autumn 2022); and consumer research (conducted in Winter 2022).

1.1. Green Home Finance Innovation Fund Programme

The GHFIF was launched in July 2019 to support the development and piloting of green home finance products marketed to consumers planning to finance home improvements with energy efficiency measures¹⁰. The GHFIF programme was designed to support three separate but interlinked policy goals:

- The Clean Growth Strategy sets out an aspiration to upgrade as many homes as possible to EPC C, where cost-effective, affordable and practical, by 2035¹¹.
- The Buildings Mission's ambition to at least halve the energy use of new buildings by 2030 and to halve the cost of renovating existing buildings to a similar standard.
- The Green Finance Taskforce recommendation for the financial sector to take a more active approach to stimulating innovation in green finance products and services.

The programme had an allocated budget of almost £5m and was funded under the Department for Energy Security and Net Zero's £505m Energy Innovation Portfolio (EIP). The specific objectives of the GHFIF were¹²:

- For lenders to develop and pilot products with customers by the end of each project.
- For lenders to create new brand value through the development and introduction of new 'green' finance products.

⁹ Green Home Finance Innovation Fund Evaluation: Process Evaluation (2023)

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1140556/green_home_finance_innovation_fund_evaluation_process_evaluation.pdf

¹⁰ Green Home Finance Innovation Fund Competition Guidance Notes, August 2019

¹¹ NB for the GHFIF, the Department recognised that some buildings cannot realistically achieve an EPC Band C due to immovable external factors (e.g. listed buildings). The aim of GHFIF was to get a good proportion of homes involved in the scheme to at least a Band C, some achieving a higher level – while others achieve the highest rating they can attain within technical and planning boundaries.

¹² The objectives are based on the review of programme documentation and the interviews.

- For lenders to develop relationships with the energy efficiency supply chain (focused on building relationships with energy efficiency service provider organisations and/or large energy efficiency service providers).
- To develop innovative green home finance products that have sustainable business models, that will incentivise energy efficiency retrofit, and which are supported and promoted effectively by the lender.
- For lenders to develop the necessary IT infrastructure to make decisions about energy efficiency investments.
- To establish the evidence base on customer demand for green home finance products, including marketing techniques, profiles of potential “green finance” customers, product design and the likely size and scope of the market.
- To contribute to the evidence base on what works for this type of financial product (exploring enablers and barriers) that can be used by industry actors to inform their product development and by the Department to further develop policy on green home finance.

The GHFIF programme was designed as an open competition providing grants for consortia that would allow lenders to develop their own innovative green finance solutions. It was designed to allow lenders to carry out the necessary research and development (R&D), and to develop the expertise, contacts, and infrastructure needed to launch, pilot, and evaluate green home finance products, with an ultimate goal of making these products viable and sustainable without government support. The last two objectives highlight the programme’s role in building an evidence base to inform Government policy.

2. Overview of Funded Projects

The Green Home finance Innovation Fund funded three projects. A short summary of each project, and their outcomes is provided in this section. A full case study of each project, including greater detail on barriers faced and their outcomes achieved is available in Annex B.

2.1. Add to My Mortgage, Home Infrastructure Technology

The Add to My Mortgage (ATMM) project sought to create an online digital platform that could facilitate additional borrowing to supplement mortgage applications. GHFIF awarded a grant of £1,065,000 to the project. The ATMM project was led by Home Infrastructure Technology (HIT), a small/medium-sized enterprise (SME). The project commenced with the lender NatWest as a formal partner but had the intention to work with other lenders throughout the project and beyond.

The main project objectives were to:

1. Build the online platform,
2. Onboard one 'Big Six' mortgage lender and 180 energy efficiency vendors onto their platform,
3. Process 1,600 applications for additional borrowing,
4. Facilitate £15 million of loans for energy efficiency measures.

The ATMM platform is now operational after a delay in the Financial Conduct Authority (FCA) regulatory approval process pushed back its initial launch. By the project's closure, HIT had three 'Big Six' lenders and 17 vendors onboarded. It has successfully delivered 80 loans for solar panel and heat pump retrofits. However, vendors have been reluctant to use the platform since project closure after some applications took several months for lenders to process. As such, the project met its first objective, partially met the second – exceeding the target for lenders onboard, but falling short on the numbers of vendors approved, and fell short of the last two objectives. The main barriers related to aforementioned regulatory approval, COVID-19 disruption to both lending and retrofit sectors, and conservativeness and slow pace of finance product approvals within the lending sector. Full reasons for this are explored in the project case study in Annex B.

HIT are continuing to iterate the service, and plan to scale up the platform by offering a bespoke loan product directly to homeowners. This offer is currently being developed using a grant from the Department for Energy Security and Net Zero's Heat Pump Ready Programme¹³.

¹³ www.heatpumpready.org.uk/

2.2. Green Home Mortgage, Lloyds Banking Group

The Green Home Mortgage (GHM) project aimed to develop a retrofit mortgage product and an associated energy retrofit educational tool for consumers. The GMH project was awarded a grant of £299,000. The project was led by Lloyds Banking Group (LBG) with one partner organisation, the Energy Savings Trust (EST), leading the development of the educational tool.

The project objectives were two-fold:

1. Raise consumer interest in and understanding of home energy efficiency improvements by introducing an engaging home energy saving tool that allows users to create a bespoke plan for improving energy performance of their home. Within this, LBG also aimed to:
 - Identify and comprehend different homeowner segments behaviour and attitudes towards energy efficiency.
 - Identify which segments are most likely to take action to retrofit their home.
 - Develop a partnership with the Energy Saving Trust to help raise consumer awareness.
2. Launch a mortgage-linked incentive to encourage energy efficient home improvements and help with the costs of retrofit solutions.

The project accomplished all stated objectives. LBG launched the retrofit mortgage product, the Green Living Reward (GLR), which offered mortgage borrowers a £500 cashback incentive when they completed one or more eligible home improvements using a TrustMark-certified provider by the end of February 2022. LBG and the EST also developed and published an online “Green Living Hub”, which included a home energy-saving tool (HEST). HEST provided customers with a retrofit ‘action plan’ and estimated savings based on details of their home. Over 8,300 action plans were created during the lifespan of the GHFIF-funded project.

This pilot assisted LBG in determining that there was customer interest in green finance products on the market. This informed LBG’s decision to so far release a further two iterations of the GLR cashback incentive for energy efficiency improvements.

Further improvements to the GLR are currently ongoing and demonstrate the sustainability of the product since GHFIF funding ended. One example is the recent introduction of an increased level of cashback incentive for the installation of heat pumps (up to £1,000).

2.3. Valuation And Lending Underwriting Energy Reduction, Monmouthshire Building Society

The Valuation And Lending Underwriting Energy Reduction (VALUER) project aimed to investigate the difference in the market value of energy efficient homes and integrate these differences explicitly in the lending and underwriting process. VALUER received a grant of £550,000. Monmouthshire Building Society (MBS) led the project, with SERO acting as a

project coordinator, and the Royal Institution of Chartered Surveyors (RICS) and Rightmove as partners. VALUER built on the LENDERS¹⁴ project, which examined how borrowing amounts can vary based on the energy efficiency of a property.

The VALUER had the following objectives:

1. To investigate the difference in house market value based on energy ratings, and their ability to support more borrowing due to lower fuel costs.
2. To pilot a green mortgage product that takes energy efficiency into account, using the value differential indicated by the tools above.
3. To develop and pilot two new tools to identify a green premium or brown discount with Rightmove.

The project successfully completed both market research and the development of green finance products. The market research, which was conducted by Rightmove, looked at the green premium on a sample of 200,000 UK homes, and found evidence of a correlation between EPC improvements and home value increases. For instance, improving a home's EPC rating from D to C was associated with a 4% increase in home value, while improving it from EPC F to C was associated with a 16% increase in value¹⁵. Work led by RICS led to updates to global guidelines for property valuation (the Red Book of RICS members). The revised wording included important material on sustainability and environmental, social and governance issues and explains how these influence property value.

The financial product launched by MBS was based on a reformed mortgage affordability calculator, integrating the energy efficiency of homes into the calculations. This product was marketed alongside the RICS-developed 'Pathway to Zero' survey that provided an overview to customers on how their homes could reach net zero carbon. These products were offered within geo-fenced areas, and on specific sites.

The piloting of the affordability calculator did not result in any loans being made and no "Pathway to Zero" retrofits were carried out. MBS experienced difficulty in engaging customers with the affordability calculator, due to challenges related to COVID-19, difficulties engaging with the pilot sites' mortgage brokers, and a perceived lack of need as many customers had higher deposit savings following the COVID-19 lockdown. The pathway to zero retrofit survey experienced low demand, even when RICS offered these surveys free of charge. This was partly due to a limited potential sample, and disruption to marketing and engagement caused by COVID-19.

Since the project closed, MBS are planning a second trial of the updated affordability calculator to generate a sample of real-world customers who have offers based on this calculator.

¹⁴ The LENDERS investigated how to better reflect household energy costs into mortgage applications. It was a collaboration between Nationwide Building Society, BRE, UKGBC, Arup, Principality Building Society, the Energy Saving Trust, UCL Energy Institute and Constructing Excellence Wales. More information available here: www.ukgbc.org/ukgbc-work/lenders-core-report/

¹⁵ The full report can be found at: <https://hub.rightmove.co.uk/content/uploads/2022/07/Rightmove-Green-Homes-Report.pdf>

Rightmove have also updated their Surveyor Comparator Tool (SCT)¹⁶ and Automated Valuation Model (AVM)¹⁷ to include energy efficiency information, and are continuing to integrate further energy efficiency considerations into several future feature releases.

Further follow-up work is being carried out by all four partners. RICS are contributing to various pieces of work around developing standards for retrofit, MBS are planning a re-launch of their affordability calculator, and SERO and Rightmove are discussing future collaborations in this space.

¹⁶ The SCT provides data to surveyors on similar properties and various features to support surveyors judgements, it is used over 200,000 times a month

¹⁷ AVM is a tool which provides an estimated value of a property based on an algorithmic calculation.

3. Evaluation Methodology

3.1. High-level evaluation questions

The Department for Energy Security and Net Zero commissioned a process, impact and economic evaluation of the GHFIF programme, in order to answer:

1. To what extent, and in what ways, have the activities and outputs of the three funded consortia translated into progress through the six outcome pathways and four impact pathways?
2. To what extent, and in what ways, have the outcomes generated by the GHFIF programme translated into wider impacts on green finance for the energy efficiency industry?
3. Has the GHFIF programme and the projects supported been implemented as intended, and was their design and implementation appropriate to achieving the intended objectives?
4. To what extent have the projects and the programme overall demonstrated value for money?

3.2. Overview of the evaluation approach

The evaluation takes a mixed-method theory-based approach, employing Contribution Analysis and a Process Tracing framework to test the programme's contribution claims. This approach is complemented by an economic Value for Money (VfM) analysis. The evaluation has three main interlinked components:

- **Process evaluation (Published in January 2023):** to help determine the effectiveness and efficiency of programme management and delivery processes, and identify any ways in which delivery processes may be improved in order to provide lessons for future programming. At the interim stage, the Process evaluation report¹⁸ provided insights into the progress of the programme's delivery to date.
- **State of the Market Review (Published alongside this report):** to determine the evolution in scope and details of the offerings of UK lenders for homeowners to invest in energy efficiency of their domestic dwellings. The purpose of this work was to provide information on the context within which the GHFIF was delivered and a summary of the UK's lenders market in terms of the features of such products. The approach consisted of an online search of existing financial products and qualitative primary research with non-participating lenders and market experts.
- **Impact evaluation (Presented in this report):** to assess the extent to which GHFIF has met its intended objectives and intended short-term outcomes and pathways to

¹⁸ Accessed at: www.gov.uk/government/publications/green-home-finance-innovation-fund-evaluation

long-term impacts, based on Contribution Analysis and Process Tracing, alongside a qualitative economic evaluation assessing the programme's value for money. The impact evaluation also incorporates case studies and an overall synthesis and review of the GHFIF Theory of Change (ToC).

Data collection

The document draws on the following sources of information which were triangulated to arrive at the findings:

- **Document review:** Review of all programme-level documentation from information relating to programme design, through to expression of interests (Eols) and applications, quarterly monitoring reports for all projects and final reports.
- **Interviews:** Thirty semi-structured interviews with a range of programme stakeholders covering programme and policy leads from the Department, monitoring officers from engineering consultancies, all project leads and partners, non-applicant lenders and green home finance lending experts.

Table 2. Key Stakeholder Interviews

Stakeholder group ¹⁹	Initial target number of interviews	Achieved
GHFIF DESNZ programme delivery team (former and current) Includes programme leads, and MOs	5	3
GHFIF DESNZ policy team	2	2
Competition winners (Senior reps within the lead project developer firm)	5	5
Representatives from each consortium members involved in GHFIF projects (project developer wider consortium partners)	6	5
Staff from organisations submitted an expression of interest but did not participate in the programme or non-applicants	10	10
Mortgage/Energy efficiency/Green finance market sector experts	5	5
Total	33	30

- **State of the Market Review:** EREDA Consultants led a review of financial lenders who provide mortgage and refinancing products to UK homeowners. It covered all products that were on offer as of August 2021, and was then updated at two points in time - August 2022 and again in February 2023. The review used an online search to identify

¹⁹ The original scoping plan included interviews with Point of Sale Finance for Green Vendors and Mortgage advisors. Research with both of these groups was planned but issues with access to sample and permissions to conduct research with green vendors involved in ATMM and mortgage advisors in GHM did not result in any interviews.

relevant products available from the UK Finance Association and four other lenders who were not a member of the association. All available products were then described and classified according to a set of features.

- Consumer Research:** IFF Research led a qualitative interview strand of the evaluation, which aimed to understand the role of green finance products in driving energy efficiency and/or low-carbon heating upgrades amongst consumers. The research aimed to explore consumer perceptions and experiences through semi-structured qualitative interviews. To access consumers, IFF were reliant on securing buy-in from the three project leads. Despite establishing strict data sharing agreement protocols and strategies to mitigate risks related to data sharing it was only possible to approach customers of one of the lenders involved in one of the three GHFIF projects. These efforts resulted in 16 consumer interviews, relating to specific products resulting from the Green Home Mortgage (GHM) project led by Lloyds Banking Group (LBG), as summarised in the table below. Findings from the consumer research is presented in the Appendix to Annex B.

Table 3. GHM project Consumer Research interviews

Interviewee type/exposure to project outputs and outcome	Completed
Total	16
Used Home Energy Saving Tool (HEST) - made improvements	2
Used HEST - no improvements	1
Used Green Living Reward (GLR) - made improvements	14
Used GLR - no improvements	2

Data limitations

While Technopolis, EREDA and IFF Research working with DESNZ made every effort to collect representative and high-quality data, there were some limitations to the primary and secondary data used in the evaluation. The primary data collection in the form of qualitative semi-structured interviews captured views across the stakeholder groups outlined above and achieved interviews with all project lead and project partner organisations. Consumer research was only successful in case of one of the projects, reasons for which are outlined in more detail in Annex A.

Secondary data used in the evaluation consisted mainly of monitoring information collected by the Department through quarterly and final reports and annually collected self-reported key performance indicators (KPIs). Each of these data sources has some inherent limitations and

reliance on self-reported data by the projects which is then quality assured by monitoring officers and programme leads.

The main limitation of the VfM analysis was that it primarily relied on qualitative data and subjective judgement about the value for money delivered by the programme. Also, the VfM analysis did not consider downstream benefits of each project funded by GHFIF such as energy and carbon savings. This is mainly due to limited data on the retrofit installations and the high level of uncertainty embedded in the assumptions when modelling respective energy savings.

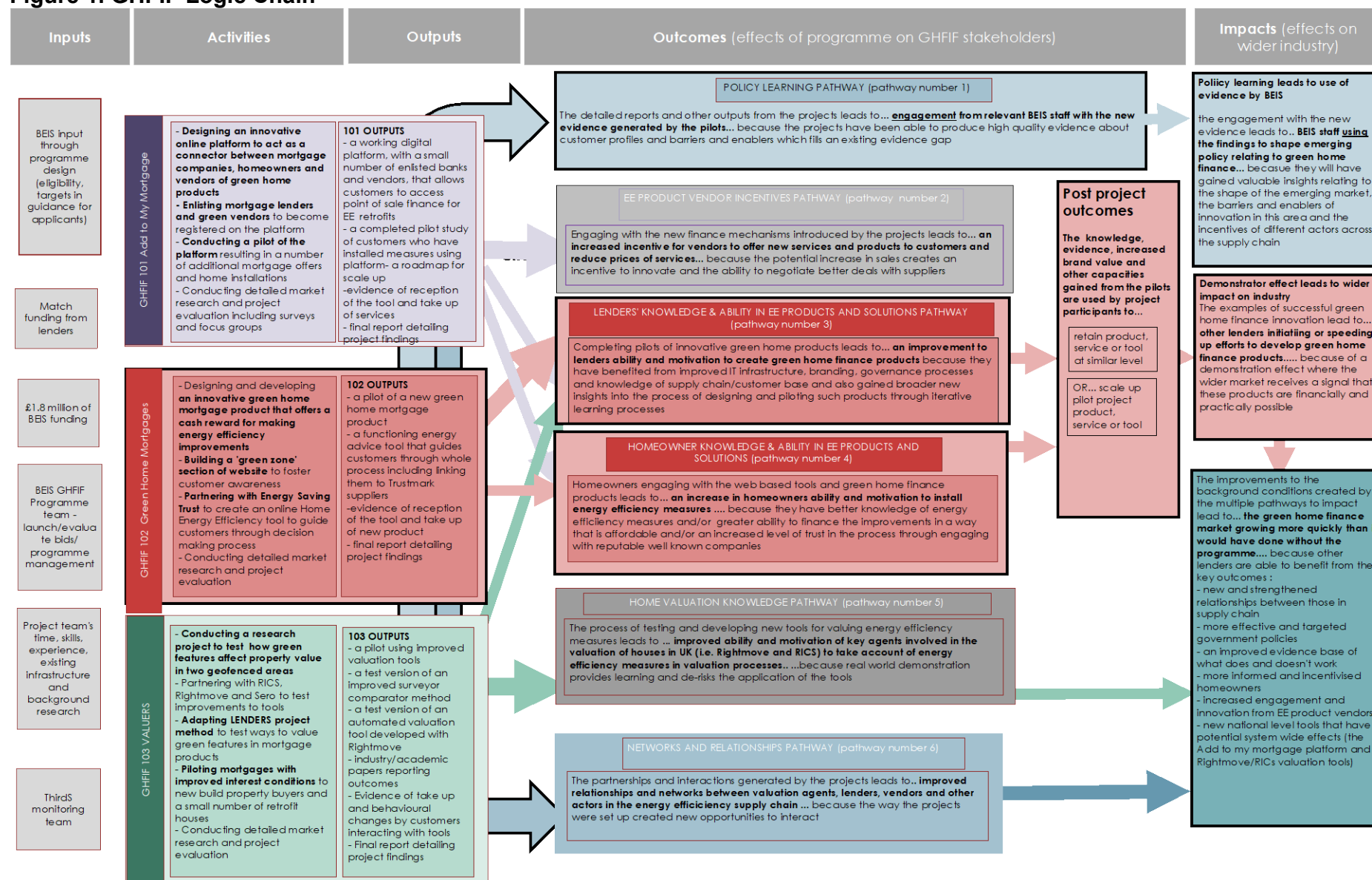
3.3. Updated Theory of Change and causal pathways

This section provides the overall Theory of Change (ToC) for the GHFIF programme that was developed during the scoping phase of the evaluation.

Our approach to the ToC is designed to fit with a Contribution Analysis, and the specific nature of the programme and projects that have been funded under it. The diagram below provides a logic chain. It also demonstrates and differentiates different outcome and impact pathways within the overall logic chain. The aim is to show that there are six distinct 'outcome' pathways from outputs through to outcomes, to show the distinct ways in which the three different projects contribute to the overall outcomes of the programme. In addition, we identified four distinct 'impact pathways' to describe how the outcomes influence the final intended impacts of the programme. These outcome and impact pathways formed the basis for the development of the contribution claims that were tested as part of this evaluation.

Figure 1 summarises the logic chain along with the six outcome and four impact pathways in the GHFIF programme. The assumptions and key external influences on each stage of the logic chain and each identified key pathway are outlined in a narrative of the Evaluation Methodology in Annex A.

Figure 1. GHFIF Logic Chain



Note. Due to the Machinery of Government changes announced in February 2023, the name of the Department responsible for the GHFIF and this evaluation changed from the Department of Business, Energy and Industrial Strategy (BEIS) to the Department of Energy Security and Net Zero.

4. Impacts of GHFIF

The outcome and impact pathways from the Theory of Change (ToC) were translated into a set of contribution claims to be tested and refined through the contribution analysis-process tracing framework. For each contribution claim in the theory of change, several process tracing tests were developed. These tests were used to assess evidence on the extent to which GHFIF and external factors have contributed to expected outcomes. As referenced in the table there are different types of process tracing tests (e.g., smoking gun, straw in the wind), each holding the evidence to a different standard of confidence in the causal relationship between the intervention and the outcome. For a detailed description of each type of test, refer to Annex A.

Across the data gathered, there was clear evidence of significant changes in the green home finance market since 2019, with evidence of GHFIF contribution to changes against five of six contribution claims assessed. Table 4 provides a high-level summary of this analysis²⁰.

Given the initial objectives of the GHFIF and its envisioned focus, the most significant pathways for the evaluation are those that focus on the lenders capacity and development of lending products, and impact on the wider green finance ecosystem as well as those related to policy learning. These are bolded below to highlight their significance.

Table 4. Summary of Process Tracing Analysis

Key outcome/impact pathway tested by Contribution Claim	Number of tests passed/ conducted for programme hypothesis (Types of passed tests)	Overall level of support to programme contribution/ Programme hypothesis	Level of support for contribution of external factors/ Alternative hypothesis
Policy Learning Pathway	4/4 (2x Hoop test, 1x Smoking gun and 1x Double decisive)	Strong support	Strong support
Energy Efficiency Product Vendors Incentives Pathway	1/4 (1x Hoop test)	No support	Inconclusive
Lender's Knowledge and Ability in Energy Efficiency Pathway	3/4 (2x Hoop test and 1x Smoking Gun)	Moderate to strong support	Strong Support
Homeowner Knowledge and Ability in Energy Efficiency Pathway	2/3 (Hoop test and Straw in the wind)	Moderate Support	Not Assessed

²⁰Note this table only includes process tracing tests related to the programme impact, and not the Alternative hypothesis relating to external factors, for details of these tests please see Annex C: Process Tracing Framework.

Key outcome/impact pathway tested by Contribution Claim	Number of tests passed/ conducted for programme hypothesis (Types of passed tests)	Overall level of support to programme contribution/ Programme hypothesis	Level of support for contribution of external factors/ Alternative hypothesis
Networks & Relationships Pathway²¹ <i>(including Home Valuation Knowledge)</i>	3/3 (Hoop test, Smoking gun and Straw in the wind)	Strong support	Not Assessed
Demonstration Effect & Accelerated Growth of Green Home Finance Market	3/5 (2x Hoop test and Smoking gun)	Moderate support	Strong support

Note: The above table is a summary of the Contribution Analysis - Process Tracing results, which are fully described in the CA-PT Framework annex. For each claim a rounded judgement is made, based primarily on the types of test passed in the framework and the evidence used to define the test but also considering any evidence that may not be captured by the PT tests. An explanation of the meaning for each test type (e.g., hoop test, smoking gun) can be found in Annex A.

While there is evidence of GHFIF making some contribution in each of these outcome/impact areas, there is a variance in the level of contribution and the extent of observed changes.

For the ‘Policy Learning Pathway’, there is evidence that lessons learnt and evidence from GHFIF directly informed decisions on the design of and need for the Green Home Finance Accelerator (GHFA), a programme funded by the Energy Innovation Programme’s (EIP’s) successor, the Net Zero Innovation Portfolio. In all other outcome/impact areas, GHFIF was not a primary driver of the significant changes observed in the sector, with external factors making a greater contribution relative to GHFIF.

The following section presents the impacts of the GHFIF in the six outcome pathways and the demonstration impact pathway. For each outcome/impact pathway, the report first presents the contribution claim or hypothesis being tested alongside the assessment of contribution., before providing a detailed account of observed changes in the green home finance sector since the launch of the GHFIF in 2019. This account provides detail of relevant changes to the sector both that GHFIF has contributed to and those that were driven by other factors. A summary of the contribution of GHFIF, and external factors tested through alternative hypothesis is located within Annex C: Process Tracing framework.

²¹ Within the CA-PT framework, the Home Valuation Knowledge Pathway was assessed within the networks and relationships pathway based on the level of evidence available.

4.1. Policy Learning Pathway

Contribution Claim being tested: GHFIF produces useful evidence for policymakers, and engagement with new evidence by relevant Department of Energy Security and Net Zero staff leads to specific findings, evidence and learning being used to shape emerging policy relating to green home finance.

Relevant Projects: Add to My Mortgage (ATMM), Green Home Mortgage (GHM), and Valuation And Lending Underwriting Energy Reduction (VALUER)

Overall Assessment: There is strong support for this claim. Department of Energy Security and Net Zero staff have received and engaged with evidence across all three projects and taken specific learning based on these changes. These lessons have fed into specific decisions to shape the design of the subsequent Green Home Finance Accelerator (GHFA).

Changes observed: A continued signal from government

Since the launch of GHFIF, there has been continual policy development and government action to improve energy efficiency and reduce the carbon intensity of the housing stock. In this policy area, there have been several key related policy developments since the launch of GHFIF, these include:

- Consultations on options to improve the energy performance of privately rented²² and mortgaged owner-occupied homes²³.
- Launch and subsequent closure of the **Green Homes Grant Voucher Scheme**²⁴ (GHG), which offered grants for homeowners installing green home improvements.
- Publication of the **Heating and Buildings Strategy**²⁵, which sets the government vision for net zero policy ambition within the built environment sector.
- The delivery of **The Home Decarbonisation Skills Competition**²⁶ which is part of the Department's strategy for boosting numbers of trained installers of retrofit measures and improving householder access to qualified tradespeople.
- Launch of the **Boiler Upgrade Scheme**²⁷, a £450 million scheme which provides grants to individuals installing heat pumps.

²² Consultation available at: www.gov.uk/government/consultations/improving-the-energy-performance-of-privately-rented-homes

²³ Consultation available at: www.gov.uk/government/consultations/improving-home-energy-performance-through-lenders

²⁴ Further information available at: www.gov.uk/guidance/apply-for-the-green-homes-grant-scheme

²⁵ Available at: www.gov.uk/government/publications/heat-and-buildings-strategy

²⁶ Further information available at: www.gov.uk/government/publications/home-decarbonisation-skills-training-competition

²⁷ Further information available at: www.ofgem.gov.uk/environmental-and-social-schemes/boiler-upgrade-scheme-bus

- **The Launch of the Great British insulation scheme**, an obligation on energy suppliers to provide support to low income and vulnerable households with energy efficiency improvements
- Launch of **Heat Pump Ready**²⁸, a £60 million innovation programme aimed at reducing the barriers to heat pump installations and broader heat pump retrofits.
- Launch of the **Green Home Finance Accelerator (GHFA)**²⁹, a £20 million grant funding programme, acting as a successor to GHFIF, that supports the design, development and piloting of finance propositions which encourage domestic energy efficiency and microgeneration.

This consistent development and launch of new strategies and interventions since the launch of GHFIF in 2019 have given a continued signal from government to the finance sector that energy efficiency retrofits of UK homes are a government priority.

A strong theme across all interviews with lenders and market experts was that this policy signal had set a general direction of travel, but stakeholders also highlighted some uncertainty and a need for greater detail on how regulation and policy around retrofit and green finance will be delivered in the medium to long term.

“The policy is going to evolve, it’s very uncertain and new at the minute, it ... all weighs down on [green home finance product] investment cases” (Non-Participating Lender).

Discussion of GHFIF and external contributions to changes: Learning from GHFIF to improve future green home finance innovation programming

The primary contribution of GHFIF within this shifting policy environment was to the development of the GHFA. Department for Energy Security and Net Zero stakeholders explained in interviews that the delivery of the GHFIF and the outputs from the projects had increased the effectiveness of the Department in engaging with the high street lenders. Relevant policy teams described direct changes to the design of the GHFA as a result of specific lessons learnt during GHFIF, including:

- Engaging the finance sector earlier and more extensively prior to launching the call for applications for GHFA – this was a direct learning from the short application period for GHFIF leading to a low number of applications received.
- Allowing non-lenders to lead bids for the GHFA, given policy officials viewed Home Infrastructure Technology’s (HIT’s) and SERO’s contributions to GHFIF projects positively.
- There is a specific objective of the GHFA to ‘develop partnerships between lenders, investors, energy efficiency, low carbon heating and property value supply chains’. Policy leads within this space highlighted that this was influenced by the work of the

²⁸ Further information available at: www.gov.uk/government/publications/heat-pump-ready-programme

²⁹ Further information available at: <https://programmes.carbontrust.com/ghfa/programme-overview>

projects engaging extensively with the wider supply chain: the Monmouthshire Building Society (MBS) VALUER project and HIT's Add to my Mortgage (ATMM) project.

- The GHFA business case has a specific focus on the programme “unlocking complex innovation” beyond mortgages, such as green equity release and unsecured renovation loans, recognising that the mortgage products developed in GHFIF no longer represents the home retrofit product category which could benefit most from exploration and innovation.

This new knowledge was reflected in the Heat and Buildings Strategy, where learnings fed into sections on domestic energy efficiency finance. The strategy also highlighted specific details of what had been achieved in GHFIF and introduced the development of GHFA. Though it is important to note that there is no evidence that GHFIF was a major driver factor of the wider policy environment for home finance or home retrofit.

GHFIF made a direct and substantial contribution to GHFA, though evidence of other contributing factors were also uncovered. Of particular significance was the engagement undertaken by policy stakeholders with lenders and market experts, such as the Green Finance Institute as part of scoping for the GHFA, to gather further evidence and opinions on scope. It was viewed that GHFIF contributions provided different and distinct learnings from these other external contributions.

4.2. Energy Efficiency Product Vendor Incentives

Contribution Claim being tested: The financial mechanisms developed through GHFIF encourage energy efficiency product vendors to innovate, producing new products, offerings and reducing prices because of the financial mechanisms providing a means to pay for energy efficiency measures, which increases consumer demand.

Relevant Projects: Add to My Mortgage (ATMM)

Overall Assessment: There is no support for this claim. As of yet the number of retrofit loans made across all three products is relatively small compared to the overall level of retrofits. As a result, there is yet to be any clear evidence of GHFIF impacting energy efficiency product vendors to innovate.

Changes observed: Still an area in need of development

In the GHFIF theory of change, there was an anticipation that the increased availability of finance for retrofit would encourage energy efficiency product vendors (i.e., tradespersons who offer installations of energy efficiency home retrofits) to improve their services or decrease their prices to compete for any unlocked demand for Green Home Finance. This impact pathway was less direct than the other outcome pathways, as it focuses on stakeholders not directly funded through the programme and ATMM was the only project which has direct engagement with energy efficiency product vendors. As such, it would be expected to take longer to realise.

Project leads, partners, non-participating lenders, and customer research with Lloyds Banking Group (LBG) Green Living Reward (GLR)³⁰ customers all highlighted the issue that homeowners have been experiencing difficulty over the last several years in finding tradespersons to supply and install retrofit products - particularly tradespersons that have been certified through TrustMark. This lack of installer capacity was exacerbated during the GHFIF projects by COVID-19 disruption, resulting in a long backlog of construction work and a subsequent increase in demand. Supply chain disruption for construction materials, due to exiting the EU and compounded by the pandemic, were also mentioned as contextual barriers in consumer research. However, labour capacity issues are rooted in long-term skills shortages that have been well documented, including by the Greens Job Taskforce³¹, Energy Systems Catapult³² and the evaluation of the Green Homes Grant Voucher Scheme³³.

LBG in Green Home Mortgage (GHM) project initially followed the example of the Green Homes Grant (GHG) scheme to screen for TrustMark-verified installers. However, based on customer feedback on a shortage of TrustMark installers available to complete works during the scheme timelines, LBG dropped this requirement to be eligible for the cashback for subsequent promotions of the GLR following the project's closure. At the time of project delivery, the requirement to use TrustMark was viewed as both pushing up home improvement costs, limiting the numbers of locally available tradespeople, making consumers have to work harder to find an appropriate trader.

“There’s only a certain amount of [trades]people part of [TrustMark], and they had a backlog coming out of Covid.” (GLR customer)

Discussion of GHFIF and external contributions to changes: Low sales of GHFIF products limited GHFIF impact

Alternative Hypotheses tested:

1. Market pressures, from competition between vendors encourage green vendors to launch new products and services
2. Changes in subsidies, such as the Green Homes Grant, leads to energy efficiency vendors changing their product/service offering and their prices as a result

Comments on Alternative Hypothesis: Green vendors not interviewed during sample, meaning that there wasn’t sufficient data to fully assess alternative hypothesis.

When the evaluation team defined this pathway, there was an expectation that the products developed under the programme would have a higher level of take-up than was realised. However, as the total number of products sold during the programme delivery stage reached

³⁰ Green Living Reward is the £500 cashback available to Green Home Mortgage customers upon completing eligible energy efficiency installations at their property.

³¹ Green Jobs Taskforce Report, Available At: www.gov.uk/government/publications/green-jobs-taskforce-report

³² Foresighting Skills for Net Zero homes, Available at : <https://es.catapult.org.uk/report/foresighting-skills-for-net-zero-homes/>

³³ Available at: www.gov.uk/government/publications/green-homes-grant-voucher-scheme-evaluation

250 installations in total, these are unlikely to have had a substantial impact on installers. Household Energy Efficiency Statistics indicate that in 2021, there were over 450,000 installations of energy efficiency upgrades through various government schemes alone³⁴. Project leads and market experts were sceptical that this scale of change would encourage any change of behaviour/offers from the energy efficiency product vendors in the near future.

While not mentioned directly by the lenders, project partners or market experts interviewed during the evaluation, it is important to note that there is wider government activity to boost the number of tradespeople who are available to carry out retrofit. One of the key interventions in this area is the Department's aforementioned Home Decarbonisation Skills Competition, which provides training to increase the overall volume of tradespeople trained in relevant skills.

4.3. Lender Knowledge and Ability in Energy Efficiency Issues

Contribution Claim being tested: Involvement in GHFIF provides project leads and partners with the knowledge, evidence, learning, capability, motivation, brand value, and other capacities that they use to retain the products, service, or tool at a similar or scaled up level.

Relevant Projects: Green Home Mortgage (GHM), and Valuation And Lending Underwriting Energy Reduction (VALUER) and to a lesser extent Add to My Mortgage (ATMM)

Overall Assessment: There is moderate to strong support for this claim. All three project leads and formal partners were able to highlight specific knowledge or capacity in GHFIF, relating to energy efficiency. LBG are retaining their GLR, while MBS are undertaking a second trial of their affordability calculator.

Changes observed: Clear improvements in lender's knowledge and ability to work with energy efficiency aspects of homes

The theory of change anticipates that through the development of green lending products by Monmouthshire Building Society (MBS) and Lloyds Banking Group (LBG), and through the Add to My Mortgage (ATMM) project's engagement with lenders, there would be improvements in knowledge around home energy efficiency. LBG and MBS reported that there had been a significant increase in their organisation's knowledge of home energy efficiency, including increasing numbers of dedicated staff, and increasing staff training which had influenced ongoing work. This was demonstrated in several ways:

- **New tools:** MBS and LBG both developed tools to enable the successful delivery of their pilots. This included a spreadsheet-based tool to calculate the new affordability test

³⁴Available at: www.gov.uk/government/statistics/household-energy-efficiency-statistics-detailed-report-2021

with MBS, while LBG made system developments to embed the registration process for the GLR, and have continued to build on these developments since.

- **Retained products:** As noted in the case studies (Annex B), the LBG Green Living Reward (GLR) is being retained³⁵. Currently, MBS haven't adopted their updated affordability criteria as standard operating procedure, but are arranging a second trial of their updated affordability criteria with a new site³⁶.
- **New Knowledge:** LBG and MBS have both gained considerable knowledge around customer interest and demand for green finance products.
- **Operationalising and dispersing knowledge:** Both LBG and MBS learned from their GHFIF projects and have fed insights into decisions around their Environmental Social Governance strategies and propositions. LBG have also been offering training to their staff to increase understanding of government schemes and eligible measures under the GLR, improving internal capability.

While MBS and LBG retaining their products was an anticipated outcome of the GHFIF, an unexpected observation related to this outcome pathway has been Home Infrastructure Technology (HIT) commencing the development of their own bespoke green loan product. HIT entered this project as a technology company, but since project completion they have also decided to design and pilot a loan product that they can offer to customers directly. HIT have been awarded a grant by the Department for Energy Security and Net Zero's Heat Pump Ready Programme to further develop this product. If they are successful in securing finance to scale-up such an offering following the Heat Pump Ready trial, HIT will enter the market as a highly specialised lender with considerable knowledge of energy efficiency and direct links with installers.

Discussion of GHFIF and external contributions to changes: GHFIF as an accelerator

Alternative Hypotheses tested:

1. Taskforce of Climate-Related Financial Disclosures, Green Finance Institute (GFI) and other actors provide information to banks that improves knowledge and capacity of lenders to engage in GHFIF
2. Decisions by lenders to launch green finance products were taken prior to GHFIF demonstrators taking place.

Comments on Alternative Hypothesis: The propositions for the LBG Green Living Reward (GLR) and MBS affordability calculator had started development prior to GHFIF. Lenders highlighted multiple reasons for their growth in capacity in energy efficiency, such as

³⁵ The LBG product is launched as a periodic, time limited promotion. There has so far been a further two iterations of the GLR since the end of this project.

³⁶ As no real world customers took used the affordability calculator during the VALUER project MBS are not yet in a position to launch it as business as usual.

increasing prominence of narratives around environmental social governance agendas within banking.

GHFIF contributed to increased knowledge and product retention decisions in the following ways:

- LBG's decision to so far release a further two iterations of the GLR was based on the registrations of **interest and demand for the product during the GHFIF-supported pilot.**
- MBS's experience with the affordability calculator has fed into decisions to their current Environmental Social Governance strategy, in which they plan on developing further green finance propositions for the domestic sector, including their decisions on which customer segments to focus on.

Both MBS and LBG had some organisational knowledge of home energy efficiency related to their financial products prior to the launch of GHFIF. LBG had begun to develop propositions for the product that eventually became the GLR, and MBS were already exploring the integration of energy efficiency into affordability calculations. Representatives from these lenders reported they would have likely developed and launched a similar proposition without the GHFIF, but that funding accelerated and led to the decision to integrate ancillary services and expand partnerships, which were key components of added value on their projects (e.g., Rightmove and RICS involvement; Energy Saving Trust's development of the home energy saving tool (HEST)).

Consequently, the additionality of GHFIF is not in the mere existence of products launched, as there is a high likelihood some of these would have been developed without funding. Instead, the additionality is in the level of sophistication of the products and knowledge gained in working in larger collaborative partnerships. These projects accelerated and deepened this development and allowed for the introduction of ancillary services which strengthened the propositions and had the potential to create a more attractive and commercially successful product.

4.4. Homeowner Knowledge and Ability in Energy Efficiency

Contribution Claim being tested: The web-based tools and green home finance products that GHFIF develops leads to homeowners' having increased capability, opportunity, and motivation to install energy efficiency measures, because these tools and products provide consumers with increased information of energy efficiency measures, increase affordability of finance for improvements, or increase levels of trust in the process through engaging with reputable well-known companies.

Relevant Projects: Add to My Mortgage (ATMM), Green Home Mortgage (GHM), and Valuation And Lending Underwriting Energy Reduction (VALUER)

Assessment: There is moderate support for the contribution claim overall. There is significant evidence to support the claim that GHFIF products and tools increased the availability of information and incentives to retrofit homes. However, there is only very limited, anecdotal evidence that this is contributing to increasing consumers' motivation or likelihood to undertake retrofits.

Changes observed: Greater availability of information

Since the launch of GHFIF, several developments have occurred in the green finance sector to increase homeowner knowledge of and capacity to undertake home energy efficiency retrofits:

- **Increasing incentives in finance products:** The green products developed through the GHFIF and by other lenders (e.g., Progressive Building society, Leeds Building Society, Nationwide) since the launch of GHFIF, provide various incentives to homeowners for retrofitting their property (e.g. cashback; reduced interest rate).

Many stakeholders noted there had been a general increase in homeowners' interest in energy efficiency. However, there were mixed views on whether this was leading to increasing demand for energy efficiency retrofit, with the majority of stakeholders having a perception that there is a low willingness to carry out a retrofit amongst consumers, even after displaying initial interest in retrofitting.

There was a general perception amongst the different stakeholders (lenders, project partners, market experts), that consumers' knowledge around retrofit was growing, but the level of knowledge was still quite low and led to confusion amongst homeowners around which schemes they could apply for or what measures they should get.

Discussion of GHFIF and external contributions to changes: Energy price rises and climate change concerns driving greater awareness

Alternative Hypotheses tested: Alternative hypothesis not assessed, due to lack of specific data on improvements delivered through the financial products.

LBG Green Home Mortgage (GHM) in particular, through the Home Energy Saving Tool (HEST), attempted to improve customer knowledge around retrofitting by developing information products. This had significant engagement with consumers, with over 8,300 action plans produced.

The consumer research conducted by IFF suggested that those who used the LBG HEST and GLR already had a high motivation to install new energy efficiency measures and that their motivation didn't change as a result of engaging with the GLR or HEST. Interviews with consumers revealed that GLR and HEST in some instances linked them with other government schemes through which they could gain grants, and made them aware of other measures they may want to install at the same time as planned measures.

LBG were the first bank to engage Energy Saving Trust (EST) to present the HEST on their website, however, EST noted that this was not a particularly bespoke tool, and they had developed several versions of the tool previously that were also available online. The evaluation has not seen any direct causal evidence to suggest that other lenders engaged EST based on this work with LBG, or where they did so, this had been done independently.

However, it was viewed by stakeholders that consumers' knowledge and awareness of energy efficiency had been brought into sharper focus by increasing awareness of home energy efficiency as a climate change issue and more significantly, by the large spikes in energy prices over the last year and accompanying media attention.

Some stakeholders suggested there was a need for a reliable point of contact for retrofit solutions. Several suggested a 'one-stop-shop' for trusted retrofit advice was needed in order to provide verified trustworthy information to customers, and that lenders could signpost people to this. Some stakeholders suggested such a scheme could be provided by a government service to enhance trust in the information, but had not been aware of the recent action by the Department to provide such services, for example the Department's online and phone service³⁷ related to home energy efficiency and plans to launch hubs for regional advice.

4.5. Home Valuation Knowledge of Energy Efficiency

Relevant Projects: Valuation And Lending Underwriting Energy Reduction (VALUER)

Summary of contribution³⁸: The VALUER project has made significant contribution to raising the profile and knowledge of energy efficiency within the Home Valuation process, as detailed below, however it is unclear from the evaluation the impact this is having on the actual valuations homes are receiving from surveyors.

Green Home Finance Home Valuation outcomes

Through VALUER, GHFIF had been expected to contribute to increasing the prominence and integration of energy efficiency considerations within the home valuation process. Several key tools that are used in this process have been updated since the launch of the GHFIF³⁹:

- **Surveyor Tools:** Rightmove collaborated with RICS through the VALUER project to update their surveyor tools (notably the Surveyor Comparator Tool⁴⁰), in order to include more information on; EPC data, green features (i.e. energy efficiency and microgeneration improvements) and brown features (i.e. energy inefficient features).

³⁷ www.gov.uk/improve-energy-efficiency

³⁸ The contribution in this pathway was assessed as part of the Networks and relationships pathway due to the overall scope of the evaluation, though the specific outputs and outcomes related to valuation are reported on here.

³⁹ Surveyors, estate agents and other home valuation stakeholders had direct involvement in the project but the evaluation did not collect insights from these types of stakeholder. As such this section presents information gathered through research with projects, non-participating lenders and market experts

⁴⁰ See Annex B: VALUER Case study for further details.

- **Rightmove Auto-Valuation Model:** Rightmove updated their Automated valuation model to include the property's EPC history and other green features, such that those with green features will see a 'green premium' added to their price.
- **Rightmove EPC research findings confirming green premium:** Rightmove conducted a study as part of VALUER on 200,000 properties in the UK, and found that improvements in a property's EPC likely leads to a green premium in the price of the home, accounting for other fluctuations in the market. In the case of an EPC improving from band F to band C, a property is expected to increase its value by 16%. This research has been subsequently developed into a publication on Rightmove's website, the 'Green Homes Report'⁴¹.

GHFIF Contribution Spotlights – VALUER used to expand surveyor guidance for valuations.

Using the learnings from the project, RICS have updated their Red Book⁴² guidance to surveyors, strengthening sections around energy efficiency, and are currently building on this by developing more tailored energy efficiency surveys and contributing to various groups developing standards around retrofit. These updates will impact how homes with green and brown features are valued. As an example, under the new guidance, a heated swimming pool may be considered a 'brown' feature and in certain cases might lower the home's valuation as a result.

All of these outputs of VALUER have a substantial potential to, in the first instance, lead to higher valuations of energy efficient homes, and consequently stimulate decisions of homeowners to invest in energy efficiency improvements to their homes. While these concepts and aspirations were noted by stakeholders involved in the projects, the evaluation found no evidence on the extent to which they had actually stimulated demand for energy efficiency improvements to date. These shifts may be realised over longer periods of time, particularly if wider contextual factors affecting high energy costs persist.

⁴¹ Available at: <https://hub.rightmove.co.uk/content/uploads/2022/07/Rightmove-Green-Homes-Report.pdf>

⁴² The Red Book sets out standards in home valuation delivery worldwide, containing details of mandatory practices for RICS members undertaking valuation services.

4.6. Networks and Relationships Across the Energy Efficiency Value Chain and Finance Sector

Contribution Claim being tested: The partnerships and interactions generated by the GHFIF projects lead to improved relationships and networks between valuation agents, lenders, vendors, and other actors in the energy efficiency supply chain because the way the projects were set up created new opportunities to interact.

Relevant Projects: Add to My Mortgage (ATMM), Green Home Mortgage (GHM), and Valuation And Lending Underwriting Energy Reduction (VALUER)

Assessment: There is strong support for the contribution claim. We have observed strong continuing relationships between the eight formal consortia partners, and new partnerships beyond these consortia based on work directly related to projects, even after projects have formally ended.

Changes observed: New partnerships created and maintained

Through the eight formal partnerships established in the initial project consortia, there has been a strengthening of networks across the energy efficiency value chain.

Home Infrastructure Technology (HIT) developed new relationships with lenders, onboarding three of the 'Big Six' and several small lenders, as well as 17 product vendors. These lenders and energy efficiency product vendors still work with HIT and are live on the Add to My Mortgage (ATMM) platform, despite the platform's low volumes of loans at the current time (with only one loan made to date).

Lloyds Banking Group (LBG) developed a relationship with Energy Saving Trust (EST) for the project that has since been strengthened, with EST now providing an advice line on home energy efficiency for LBG customers. Furthermore, EST have continued to develop relationships with other lenders, building tools similar to the Home Energy Saving Tool (HEST). LBG has since teamed up with retrofit suppliers to support customers with the installation of their home improvements.

SERO, Monmouthshire Building Society (MBS), Rightmove and RICS all worked closely together on the VALUER project and expressed interest in continuing to work together as opportunities arise. SERO and Rightmove have been awarded further funding through the GHFA and will continue to build on the work of the VALUER project.

Outside of the projects, there have been several further partnership building activities and networks formed around this green finance issue. One market expert highlighted the creation of the group 'Bankers for Net Zero'⁴³ network, and another noted that a member of senior

⁴³ Bankers for Net Zero have published to relevant retrofit reports since their launch, which can be found at: www.bankersfornetzero.co.uk/wp-content/uploads/2022/12/Bankers-for-Net-Zero-Retrofit-report.pdf and www.bankersfornetzero.co.uk/wp-content/uploads/2022/05/Retrofitting-report_v5-1.pdf

management had recently attended a Financial Conduct Authority event focusing on energy efficient home lending. Meanwhile, the Green Finance Institute has launched a mortgage “Broker’s Handbook”⁴⁴ and is supporting the Mortgage Climate Action Group, which provides information on climate action to mortgage intermediaries⁴⁵.

Discussion of GHFIF and external contributions to changes: GHFIF facilitates new partnerships

Alternative Hypotheses tested: No specific alternative hypothesis was tested.

Comments on external contribution: The SERO-Monmouthshire partnership would have likely gone ahead in some form without the project as they were already planning on working with each other.

Prior to GHFIF, MBS had been in discussions with SERO and were planning on working together on the integration of energy efficiency into mortgage affordability criteria. In all other cases, the consortia delivering the projects were brought together in reaction to the GHFIF programme. As such, the partnership between EST and LBG, as well as Rightmove and RICS's partnership with SERO and MBS can be linked explicitly to the GHFIF, and would unlikely have occurred otherwise.

The ATMM platform had a limited investment case without public sector funding to de-risk the project (See Annex B). Therefore, the partnerships and knowledge transfer that HIT undertook can largely be considered as additional and a contribution to the GHFIF project.

The wider groups and networking activity were brought together by a motivation to focus on corporate social responsibility within the sector and other contextual changes, largely independent of the work done within the GHFIF. These networking activities were often facilitated by key actors within the sector, with the Green Finance Institute being particularly prominent in networking activity. While the broader networking cannot be attributed to GHFIF projects, these prominent players in the space were aware of the efforts of GHFIF participants and associated the Halifax brand (under LBG) to be a leader in the space.

⁴⁴ Available at: www.greenfinanceinstitute.co.uk/programmes/ceeb/brokers-handbook/

⁴⁵ For more information on the mortgage climate action group, please see <https://greenmortgageadvice.uk/>

4.7. Demonstration Impact and the Accelerated Growth of Green Home Finance Market

Contribution Claim being tested: The successful completion of GHFIF projects by lenders and increased knowledge of customers leads to both increased uptake by other lenders and/or increased demand from customers for these types of products.

Relevant Projects: Add to My Mortgage (ATMM), Green Home Mortgage (GHM), and Valuation And Lending Underwriting Energy Reduction (VALUER).

Assessment: There is moderate support for the contribution claim. There is evidence that GHFIF and outputs of supported projects have contributed to some specific decisions within lenders to undertake green home finance product development. However, there is strong evidence that external factors (*e.g. the Lenders Consultation, work by the Taskforce on Climate Related Financial Disclosures*) made much more significant contributions to the growth of the green finance market.

Changes observed: Large increase in number of green products on the market, driven by traditional mortgage products

In the UK lending market, there have been two significant changes related to green home finance since the launch of GHFIF in 2019. Firstly, there has been an increase in the number of lenders offering green finance products and the number of products on the market overall. Secondly, there has been a related increase in the awareness and effort and focus on green home finance and energy efficiency by lenders.

The State of the Market Review undertaken by EREDA Consultants for the evaluation highlights a significant change in the provision of green home finance for energy efficiency retrofits. Of the 84 lenders reviewed in August 2021, around a quarter (26%) had a Green Home Finance product available, but by February 2023 this had grown to almost a half (48%)⁴⁶. Most lenders have one or two relevant products in their offering but there are some notable exceptions, such as Ecology Building Society which has eight distinct products meeting the definition used in the State of the Market Review⁴⁷. The vast majority of the products on the market are relatively similar and fall into one of three product archetypes:

1. Small interest rate discounts on mortgage rates for EPC A and B-rated homes.
2. Small interest rate discounts on additional borrowing loans, where funds are used for a specified set of home energy efficiency improvements.
3. Mortgage or additional borrowing products that offer cash back rewards for high-rated EPC properties or homeowners that install energy efficiency measures (~£250-£1000).

⁴⁶ Out of 82 lenders included in the review in February 2023.

⁴⁷ Please see the full report for more detail on the definition used, and the exact breakdown of which products included various design features, such as the mortgage rate discounts or cashback rewards.

It is important to note that these products, while more available, are still a niche product category representing a small fraction of the overall market. To contextualise this rise, while 76 green lending products were identified as part of this review it was estimated that there were over 4000 mortgage products available in the UK during August 2022⁴⁸.

All lenders and market experts interviewed recognised increasing awareness or focus within either their organisation or the broader sector since 2019. In some organisations, this included the development of strategies for providing access to finance for de-carbonising UK housing stock and being part of the solution to achieving Net Zero.

Several market experts and lenders were sceptical that these products could unlock significant demand in the sector. These stakeholders didn't see these products as particularly innovative and were sceptical that they could 'move the dial' on a significant number of homeowners retrofitting their property.

"There's not been a major step change in the availability of products that are properly bespoke for this application... the product might be badged as retrofit or home improvement loans, but they're mortgage extensions or other existing financial product that's fundamentally secured against the property" (Market Expert).

"I can't pinpoint a lender that has done something that where we say 'That's ground-breaking'" (Non-Participating Lender).

Several factors holding back further development of green home retrofit finance products were identified by lenders and market experts. The most significant of these is the perception of low customer demand. Two market experts and one lender felt there was a consumer demand for retrofit finance that hadn't been unlocked yet. Although the overwhelming majority of interviewees in the sample felt that there is either low or very low customer demand for the products.

"We would happily lend far more money than we're currently lending on all of these initiatives. If the demand was [there] to meet it" (Non-participating Lender).

"If there was an enormous sort of upswelling demand for [green home finance product], I think lenders could figure it out... Asking the lenders to ... shoulder the burden of increasing demand on their own... is a little bit backward" (Market Expert).

There are other perceived barriers to large-scale adoption of green home finance products. These relate to the retrofit advice and the retrofit verification process. The State of the Market Review in Phase One highlighted that lenders were concerned about the liability risk of encouraging or providing advice around retrofit. Lenders continued to raise issues around the

⁴⁸ Available from: MoneyFacts Group PLC, Mortgage Trends Treasury Report 2022.

need for caution in providing advice relating to green home finance products and noted that it was not within their role as mortgage lenders.

“People will say to us mainly it’s a good idea, but ‘where do I start with it’? And of course, we lend money, but we don’t have the knowledge, skills and experience to go and look at their property and say, ‘tell you what, first of all, I’d put some insulation in. Secondly, I would do your windows. Thirdly, I’d put a new heat pump in and that that will take your property from an EPC D to an EPC B’” (Non-participating lender).

“It is even more important that consumers understand what they’re going to achieve as a result of borrowing the money. And lenders and brokers are not able to give that advice and then they’re not going to skill up to the level required” (Non-Participating Lender).

Lenders interviewed who had developed retrofit products have decided against verifying retrofit products using EPCs. These lenders believed that EPCs were not reliable indicators of energy or carbon savings and more broadly not suitable for verifying a retrofit, due to EPCs not needing to be updated on a regular basis. Some lenders are considering looser rules, or the development of bespoke methods, while others are waiting, expecting an updated standard or new form of certification.

Consultations with lenders and market experts flagged a concern of not knowing how to deal with the additionality in carbon savings delivered by green home finance products. Firstly, if the green home finance product is simply targeting new energy efficient homes which would be built anyway, there may be limited or no case for additionality. Secondly, it may not be clear in all cases that green home finance is facilitating a new or deeper retrofit, and in many cases may simply be used to fund retrofits which were likely to be carried out using non-bespoke finance. These issues fed into an overarching concern that green products could be considered greenwashing if additionality proves lower than expected.

“I mean £500 [the reward] is not to be sniffed at, but if you’re thinking of doing [a retrofit] anyway, why would you not do it? Whether it really makes [someone] jump out of bed and think, ‘I definitely wasn’t going to do [a retrofit], and I am now’ - is another point” (Non-Participating Lender).

Discussion of GHFIF and external contributions to changes: A large shift in wider context.

Alternative Hypotheses tested :

1. Other lenders not aware of the GHFIF projects but responded to the market signal of the Department of Energy Security and Net Zero launching the GHFIF programme, by developing green finance products.
2. Decisions by non-applicant lenders to launch similar green finance products were taken prior to GHFIF demonstrators taking place.

Comments on Alternative Hypotheses: Few lenders who'd released new products had begun development of them prior to the launch of GHFIF. The wider shifts in prominence of environment and climate change agendas with lenders, signposting of future regulation in the sector and other policy decisions, notably the Lenders consultation, were seen as more significant drivers of the growth of the market.

On GHFIF explicitly, there is sporadic evidence of direct contribution to the wider market trends. These include multiple pieces of specific evidence pointing towards isolated cases where project outputs have or may have contributed towards the decisions of lenders to respond to GHFIF:

- Two Lenders of the ten interviewed described detailed knowledge of the Lloyds Banking Group (LBG) product available via Halifax. These two lenders indicated that it influenced the development of their thinking and green home finance products. One market expert also highlighted LBG as a leader in this area.

"I think with TrustMark, we've seen that they were doing stuff with the Halifax... we noticed they're doing some verification with them" (Non-Participating Lender).

"We sort of picked something we knew worked in the existing market. So it's also a kind of mirror image of what Halifax and Community Building Society are doing" (Non-Participating Lender).

- There were high levels of awareness of GHFIF projects and/or their developed products by non-participating lenders throughout both phases of the evaluation. However, of those interviewees, only a subset had knowledge of explicit details of the projects.
- Monmouthshire Building Society (MBS) has disseminated VALUER findings widely amongst other lenders, including one-to-one dissemination with building societies and through the Building Society Association. At least one building society has changed their affordability calculator to include greater consideration of energy efficiency following one-to-one dissemination with MBS.

However, the most common motivation for developing lending products, mentioned by five lenders and two market experts, was a social purpose drive within organisations, with a focus on Environmental Social Governance. When referencing these commitments, interviewees often mentioned either individuals or a group of people within the company, particularly board members and senior management, who were leading this agenda.

As initially mentioned in the process evaluation report, the Taskforce on Climate-Related Finance Disclosure (TCFD) stress tests and the Lenders Consultation have made lenders more aware of the stranded asset risks posed by inefficient properties. Market experts indicated this had been particularly influential in moving the sector.

Based on the evidence available overall, there is likely to be some contribution of the GHFIF programme, in specific instances, to the wider market shift. However, interviews with lenders and market experts felt this shift was primarily attributed to the increasing prominence of Environmental Social Governance within the lending sector and a response to the stranded

asset risk raised by the TCFD and Lenders Consultation. This minor contribution should be considered in the context of the GHFIF being a relatively modest size programme, trying to promote a shift in a sector which currently manages £1.7 trillion in outstanding mortgages.

Remaining barriers to impact realisation

The evaluation research covered reflections on remaining barriers to the realisation of the long-term impacts of the programme. These barriers are summarised below.

- **The gap between interest and actual uptake/demand for green home finance:** Levels of interest in energy efficiency features of homes as well as interest in green home finance has grown since 2019. However, the demand and uptake of products remain relatively low in comparison to the overall size of residential debt finance.
- **Installer capacity:** The relatively low number of qualified installers of energy efficiency retrofits was mentioned as creating a barrier to the uptake of green home finance products in the consumer research. Similar findings were presented in the evaluation of the Green Homes Grant Voucher Scheme (GHG) evaluation which found that installers had some capacity issues in participating in the scheme. The evaluation also found that supply chain actors were willing and able to scale up to meet the demand for certification in response to the GHG, which suggests similar can be applied to large-scale lending products.
- **The scale of decarbonisation required in UK housing stock:** Debt finance products were seen to form part of the mix of solutions but these would have to be complemented with other instruments, such as grants which subsidise the cost or regulatory requirements.

5. Value for Money Assessment

5.1. Introduction

Value for Money (VfM) is a balanced judgment about finding the best way to use public resources to deliver policy objectives (HM Treasury, 2022).⁴⁹ This section of the report provides the findings of the analysis of the VfM delivered by the Green Home Finance Innovation Fund (GHFIF) using the 4Es approach.

5.2 4Es approach

Due to the public good nature of the GHFIF, it is difficult to precisely quantify and monetise the outcomes and impacts of the programme. This rules out the possibility of using quantitative approaches such as the cost benefit analysis to assess the VfM delivered by the program. However, HM Treasury (2022)⁵⁰ encourages the use of qualitative data in cases where benefits cannot be monetised. In view of this, to assess the VfM of GHFIF the evaluation used the 4Es approach, commonly used by the National Audit Office⁵¹ to assess the VfM of government spending, and compatible with the approach to VfM analysis previously adopted by the Department for International Development (DFID), now part of the Foreign, Commonwealth & Development Office (FCDO)⁵². This approach involves developing definitions of what acceptable / good / excellent VfM looks like, in the context of each specific project. It offers a systematic and transparent method for making informed assessments using a wide range of evidence encompassing quantitative data and qualitative narratives (King and OPM, 2018).⁵³ The assessment is made along four dimensions:

- **Economy:** Are inputs of the appropriate quality procured at the right price?
- **Efficiency:** How well does the programme convert inputs to outputs?
- **Effectiveness:** How well are the outputs from an intervention achieving the desired outcomes and impacts?
- **Equity:** What is the extent to which the programme is available to and reaches all people that they are intended to?

While this approach provides a conceptual framework for assessing the VfM of the GHFIF, its main limitation is that each aspect of the 4Es had to be operationalised by developing statements that align with the objectives of the GHFIF drawing on the theory of change

⁴⁹ Available at: www.gov.uk/government/publications/the-green-book-appraisal-and-evaluation-in-central-government

⁵⁰ www.gov.uk/government/publications/green-book-supplementary-guidance-value-for-money

⁵¹ Available at: www.nao.org.uk/successful-commissioning/general-principles/value-for-money/assessing-value-for-money/

www.gov.uk/government/publications/dfids-approach-to-value-for-money-vfm

⁵³ www.opml.co.uk/files/Publications/opm-approach-assessing-value-for-money.pdf?noredirect=1

(expected outputs, outcomes and impacts). We then applied a RAG rating with statements based on a set of indicators and predefined criteria.

5.3 Findings

The programme was judged to have been delivered economically as it met the majority of the criteria used to assess the economy, with the assessment of efficiency, effectiveness and equity each presenting a more mixed picture. The indicators were rated as follows:

- Green indicates the criteria has been met.
- Amber indicates the criteria has been partially met.
- Red indicates that the criteria has not been met.

Economy

The department attracted bids that aligned with the programme objectives at a cost lower than what was originally budgeted for. This is partly due to a low number of applications, reducing the total number of funded projects but also lower average size of proposed project. In addition, as can be seen from the actual project spending profiles in Table 6, underspending by Add to My Mortgage (ATMM) and Valuation And Lending Underwriting Energy Reduction (VALUER) projects led to an overall underspend of 12.4% compared to expected costs in project applications.

Table 5. Assessment of the extent to which inputs of the right quality were economically sourced.

Criteria used to assess and judgement of success	RAG Rating	Justification for RAG rating
Actual project spending aligned with the budget included in the original project proposal	Green	Actual project grant spending is lower than the budgeted amount in the original budget in the proposal.
Any variance observed between actual and proposed costs is documented and justifiable	Green	Budget reduction documented in the quarterly reports, despite projects not significantly reducing their scope. Meaning projects were able to deliver as intended with reduced costs.
The Department selected projects using a fair, open and transparent competition	Green	The Department used an open competition process to attract bidders and select projects. The competition guidance note was published in an open and accessible format on the Gov.uk website more than four weeks before the application windows opened. The guidance note clearly outlines the objectives, scope, eligibility criteria, pre-defined assessment criteria and timescales.

Criteria used to assess and judgement of success	RAG Rating	Justification for RAG rating
The Department assessed, scored, and selected projects based on a set of pre-defined criteria that include assessment of bid quality and cost	Green	The assessment was based on the predefined criteria in the guidance note covering five main elements including bid quality and cost.
The scale and budget of project bids are in line with those expected in the programme business case	Amber	Total budget allocated to the three projects was significantly less than the programme budget of £5m. Linked to process evaluation findings published in March 2023 ⁵⁴ .
The programme was able to award funding because sufficient quality bids were received.	Green	The three successful bids scored the minimum threshold of at least 60%. The scores ranged from 70.5% to 83.25%. The one unsuccessful bid scored less than 60%.
Projects were selected using all the budget originally allocated to the programme	Amber	As per the programme business case, at least 3 projects were awarded funding. However, actual spending only constitutes about 35% of the original budget. If the appointed projects had the potential to achieve the same outcomes as defined in the business case at a relatively lower cost, then this would constitute a high value for money.
All programme objectives are covered by the projects being funded	Green	All programme objectives are covered by funded projects.

Table 6. Variance between forecasted and actual grant funding

Project	Forecasted (£)	Actual (£)	Variance (£)	Variance (% of forecasted)
ATMM	1,064,960	976,590	88,370	8.2%
GHM	300,000	192,619	107,381	35.8%
VALUER	552,542	545,544	6,998	1.3%
Total	1,917,502	1,714,753	202,749	10.6%

Efficiency

The programme was able to deliver most of the expected outputs. Specifically, six products and tools were developed and marketed to customers using various marketing strategies. Most of the products and tools that were marketed have been well received by customers, as

⁵⁴ Green Home Finance Innovation Fund Evaluation: Process Evaluation (2023)
www.gov.uk/government/publications/green-home-finance-innovation-fund-evaluation

evidenced by the number of customers that have been registered and pre-qualified. However, there was no take-up of the green mortgage products developed by the VALUER project. Table 8, 9 & 10 provide a summary of the piloted products and tools for the three projects.

Table 7. Assessment of the efficiency of the scheme

Criteria used to assess and judgment of success	RAG Rating	Justification for RAG rating
GHFIF enabled financial products or tools to be developed and piloted	Amber	<p>Five products and tools were developed: in ATMM, Green Lending Platform; in GHM, Green Living Reward (GLR) and the Home Energy Saving Tool (HEST); and in VALUER, the updated affordability calculator and the green home mortgage.</p> <p>Most of them were piloted as planned but some such as the MBS product under VALUER project were not tested by real world customers.</p> <p>Details of the products/tools are summarised in Table 8, 9 and 10.</p>
Products and tools were marketed to homeowners	Amber	<p>All products/tools were marketed using various marketing strategies with the purpose of reaching a large number of homeowners.</p> <p>The score for this is amber because data collected on it is limited, however it is possible to deduce that the GHM and ATMM projects both achieved this goal since they experienced high numbers of applications.</p>
Products and tools piloted have been well received by homeowners.	Amber	<p>Products were trialled with a much smaller number of customers then envisioned in the business case. Most of the products and tools were well received by homeowners, except for limited marketing and uptake of green mortgage products developed and piloted by VALUER project.</p>

Table 8. Summary of piloted products and educational tools (Add to My Mortgage, Home Infrastructure Technology)

Product/ service/ tool	Product/ educational tool marketed?	Marketing strategy	Number of customers' product was marketed to	Product/educational tool uptake	Volume of loans	Installations
Green point of sale lending platform	Yes (only to vendors and lenders)	Direct approaches or via third parties who have strong existing relationships	No data provided	<p>20 green vendors recruited and onboarded</p> <p>Signed agreements with 12 mortgage lenders e.g., Lloyds Banking Group, Nationwide and Barclays (three of the “Big Six”)</p> <p>991 potential consumer applicants were pre-qualified</p> <p>80 lending applications are being commenced</p>	80 loans, average loan amount of approx. £ 9- 10,000	All loans were for Heat Pumps and Solar panels ⁵⁵

⁵⁵ HIT mentioned in the final report that a handful of measures have been fully installed.

Table 9. Summary of piloted products and educational tools (Green Home Mortgage, Lloyds Banking Group)

Product / service/ tool	Product/ educational tool marketed?	Marketing strategy	Number of customers' product was marketed to	Product/ educational tool uptake	Volume of loans	Installations
Green living reward (GLR)	Yes	Customer emails and online presence	No data provided		80 applications approved,	60 customers have implemented 80 measures as of July 31st 2021. There has been an increase in registrations for the product during the current promotion, though the total number of rewards that will be claimed from these registrations is not yet known.
Home energy-saving tool (HEST)	Yes	Customer emails and online presence	No data provided	>8,000 action plans	NA	NA

Table 10. Summary of piloted products and educational tools (Valuation And Lending Underwriting Energy Reduction, Monmouthshire Building Society)

Product/ service/ tool	Product/ educational tool marketed?	Marketing strategy	Number of customers' product was marketed to	Product/educational tool uptake	Volume of loans	Installations
'Green' mortgage product	Yes	Directly with the customers	No data provided	No uptake	NA	NA
'Green' further advance product		Direct mail marketing offering	150 candidates			

Effectiveness

Overall, most (80%) of the expected outcomes and impacts were fully or partially achieved by the GHFIF projects, as indicated in Table 11 below. As effectiveness is essentially an assessment of the achievement of outcomes and impacts, this section draws on and summarises the evidence presented in the first part of this report.

The programme successfully generated new findings on green home finance that provided valuable input for the Department's policymaking and shaped the design of the Green Home Finance Accelerator (GHFA). These insights also enhanced the capacity of some the participating institutions to sustain the provision of the piloted products, and to develop and market novel products and services, after the end of the programme.

The educational tools created as part of the programme helped enhance the accessibility of information and advice for homeowners who were contemplating the installation of energy-efficient measures. Nevertheless, there is no evidence that suggests that customers acted solely on this knowledge. This is because their motivation to install energy efficiency measures was already high due to the cost-of-living crisis.

The evidence shows the programme had limited impacts on non-participating institutions and the wider industry. For instance, the market review (2023 update) revealed that some new products have been launched since 2021 but these remain a small part of the overall lending of the organisations interviewed. That notwithstanding, the subsequent incorporation of energy efficiency into Royal Institution of Chartered Surveyors (RICS) valuation guidance has showed signs of early influence, with Rightmove enhancing their valuation tools to account for EPC ratings in estimating property values. This action was partly influenced by the research conducted by the VALUER project, which corroborates the positive correlation between EPC ratings and property values. By analysing 200,000 pairs of property transactions, they discovered that enhancing a home's energy from one EPC band to another correlates with a specific rise in resale value above market trends.

Table 11. Assessment of the effectiveness of the scheme

Criteria used to assess and judgment of success	RAG rating	Justification for RAG rating
GHFIF generated new evidence on green home finance that is of interest to the Department than would not have been the case in the absence of GHFIF.	Green	All three projects' quarterly and final reports contain information on lessons learnt which are policy relevant to stakeholders at the Department.
The Department staff use the findings from the GHFIF to shape emerging policy and future programs relating to green home finance.	Green	The design and scope of the GHFA considered some of the lessons learnt from the GHFIF.

Criteria used to assess and judgment of success	RAG rating	Justification for RAG rating
GHFIF has increased the incentives for vendors to offer new services and products to customers and reduce the prices of services	Red	This pathway was anticipated to be driven primarily by ATMM: The project lead of ATMM acknowledged in interview that the platform is very unlikely to be providing any incentive for energy efficiency vendors to launch new products and reduce prices, due to the current low volume of trade (approx. 1 per month).
GHFIF improved participating lenders' ability and motivation to create green home finance products	Green	The knowledge acquired and lessons learnt have improved the ability of the participating institutions to continue to offer these products at the same scale and/or develop and commercialise new products and services. ATMM project will continue to develop the platform and create complementary lending products e.g., the Green Homeowner Loan, while GHM project extended the GLR to a wider audience and increased the cashback for heat pump adoption to £1,000.
GHFIF led to an increase in homeowners' capability, opportunity, and motivation to install energy efficiency measures.	Amber	The educational tools developed and piloted provide more opportunities for homeowners to install energy efficiency measures. Amongst consumers that installed measures, motivation to do so prior to engagement with the products was already high, partly due to the cost-of-living crisis. Thus, we do not have evidence that shows that GHFIF did increase their motivation. GHM project increased homeowners' knowledge about new measures through the HEST and in some cases led to financing installation of these measures. However, according to the IFF customer research, the initial GLR cashback wasn't enough to be considered affordable.
GHFIF improved the ability and motivation of key agents involved in the valuation of houses in the UK to take account of energy efficiency measures in valuation processes	Green	VALUER project enabled Rightmove to enhance their existing valuation tools to consider EPC data. The enhancements to the existing tools are however limited to EPC ratings. RICS have updated their valuation guidance to take into account energy efficiency.
GHFIF improved the relationships and networks between valuation agents, lenders, vendors, and other actors in the energy efficiency supply chain	Green	The programme brought together different actors across the energy efficiency supply chain. ATMM project collaborated with lenders and vendors, and VALUER project is a partnership between building society, a property developer, valuers and working with real estate agents. This relationship is expected to continue given that some of the products/tools are being sustained. These relationships are also being taken forward into new projects on the GHFA.

Criteria used to assess and judgment of success	RAG rating	Justification for RAG rating
GHFIF has enabled non-participating lenders to initiate and speed up efforts to develop green home finance products	Red	Findings from the state of the market review suggest that the GHFIF had a limited effect on non-participating lenders. While some lenders were aware of the programme and even some of its outputs (e.g., presentation of VALUER findings at RICS event and of Halifax GLR) from GHM, there is little or no evidence that the programme influenced non-participating lenders/actors to act.
The green home finance market has grown quicker than it would have done without the GHFIF	Amber	The green finance products and tools developed as part of the programme would not have been possible without the GHFIF, as acknowledged by the project leads. The knowledge generated by the VALUER project motivated RICS to update their valuation guidance. One industry expert acknowledges that there has been some sort of proliferation of green lending products since the programme although their uptake is small (with the exception of some positive signs of demand from the GLR).
GHFIF has led to an increase in the number of energy efficiency retrofits	Amber	The main evidence on installations relates to programme participants. The market research conducted by IFF suggests that customers who took the loans were already planning to make improvements to their homes. About 80 measures were installed under GHM which could not have gone ahead without the programme.

Equity

The evaluation of the programme's equity yielded mixed outcomes. The programme attracted interest from a wide range of industry players including SMEs⁵⁶ and lenders outside of the traditional 'Big Six' mortgage lenders⁵⁷. While several building societies expressed interest in the program, only one of them submitted a bid.

However, the products/tools developed may not be accessible to all households, with the focus of this programme being toward creating products for 'able to pay' customers in the private sector. For example, the price of some GHF products (e.g., affordability calculator) may not be affordable to all homeowners. Also, the state of the market review found that some lenders have increased the interest rate of their green mortgage products because of the rise in the Bank of England base rate. This could possibly render some of the GHF products unattractive.

⁵⁶ As defined in the General Block Exemption Regulation, Annex 1 Article 2 – Small Enterprise: fewer than 50 employees and turnover or balance sheet total does not exceed EUR 10M; Medium Enterprise: fewer than 250 employees and annual turnover not exceeding EUR 50M and/or balance sheet total not exceeding EUR 43M. www.legislation.gov.uk/eur/2014/651/annexes

⁵⁷ Data available at www.ukfinance.org.uk/data-and-research/data/largest-mortgage-lenders

Table 12. Assessment of equity of the programme

Criteria used to assess and judgment of success	RAG	Justification for RAG rating
The Department attracted bids from a range of organisations, including SMEs	Green	50% of the bidders were SMEs and not part of the 'Big Six' mortgage lenders.
The products/tools developed are accessible to a broad range of customers, including low-income households	Amber	No breakdown of customer profiles were provided by projects. By design the products developed in the GHFIF are focused toward 'able to pay' consumers and may not be suitable to all households. However, the projects each targeted homeowners at different stages of the finance journey (cashback for mortgage holders, new mortgages/remortgaging, adding to mortgage), proposing that the products were available to homeowners with differing preferences for engaging with finance for green home improvements.

Table 13. Type of organisations that expressed interest in the program.

Organisation	Is the organisation an SME?	Part of the 'Big Six' mortgage lenders?
EOI1	No	No
EOI2	No	Yes
EOI3	Yes	No
EOI4	Yes	No
EOI5	Yes	No
EOI6	No data available	No
EOI7	Yes	No
EOI8	No	No
EOI9	Yes	No
EOI10	No	No

Table 14. Type of organisations that submitted bids.

Project	Is the organisation an SME?	Part of the 'Big Six' mortgage lenders?
ATMM	Yes	No
GHM	No	Yes
VALUER	Yes	No
GHFIF 104	No	No

6. Conclusions

There are several levels at which impact evaluation conclusions can be presented. At the highest level, there are the seven original programme objectives, then there are four high-level evaluation questions which assessed the outcome and impact evaluation pathways defined in the Theory of Change (ToC). This section presents a summary of findings at both levels.

The programme had seven high-level objectives linked to its outcomes. Table 15 below outlines that the programme met in full three objectives and the remaining four were met to some extent. There were no objectives that were not met at all.

Table 15. Assessment of achievement against original programme objectives

Objective	Rating	Comment
For lenders to develop and pilot products with customers by the end of each project	Met to some extent	All projects developed products/solutions but only two extensively piloted products with customers by the project end.
For lenders to create new brand value through the development and introduction of new 'green' products	Met to some extent	All projects have partners who present themselves and are therefore associated with sustainability. However, only one of the two lenders leading the GHFIF projects have sustainability listed among their core values and kept their green home finance product on the market. Several non-participating lenders and market experts recognised Halifax as one of the market leaders.
For lenders to develop relationships with the energy efficiency supply chain (focused on building relationships with energy efficiency service provider organisations and/or large energy efficiency service providers)	Met to some extent	The two lender-led projects formed deeper relationships with project partners: GHM with the EST, and VALUER with RICS, Rightmove and SERO, the latter also disseminating research findings widely to other lenders. ATMM was wholly designed around the premise of bringing lenders closer to the energy efficiency supply chain by reducing the transaction costs and friction between the two providers of finance and installers of retrofit measures.
To develop innovative green home finance products that have sustainable business models, that will incentivise energy efficiency retrofit, and which are supported and promoted effectively by the lender	Fully met	In the case of GHM project, the lender retained and expanded the relevant product teaming up with retrofit suppliers. In the case of ATMM project, the platform for bringing together lenders and EE vendors/installers is live and running. In the case of VALUER project, the lender does not market the product widely on their website but plans a second pilot of the product.
For lenders to develop the necessary IT infrastructure to	Met to some extent	Systems developed were add-ons that allow administering the schemes but monitoring of execution of energy efficiency retrofits relied on

Objective	Rating	Comment
make decisions about energy efficiency investments		manual reviews of invoices for retrofit works. The data monitored did not capture actual improvements in energy efficiency performance. The green home finance sector to a large degree relies on EPC data which has well-documented shortcomings.
To establish the evidence base on customer demand for green home finance products, including marketing techniques, profiles of potential “green finance” customers, product design and the likely size and scope of the market	Fully met	The two projects led by lenders (GHM and VALUER) showed levels of demand and effectiveness of some trialled marketing techniques. ATMM project established evidence based on demand by lenders to be involved with the Add-to-My-Mortgage platform.
To contribute to the evidence base on what works for this type of financial product (exploring enablers and barriers) that can be used by industry actors to inform their product development and by the Department to further develop policy on green home finance.	Fully met	GHFIF fed evidence into the policymaking process and strategic business case for the Green Home Finance Accelerator.

The impact evaluation was driven by four high-level impact evaluation questions that were addressed in the main sections of the report. These are summarised below, along with a RAG-rated logic chain of outcomes and impacts.

1. To what extent, and in what ways, have the activities and outputs of the three funded consortia translated into progress through the six outcome pathways and four impact pathways?

All three funded projects concluded activities and resulted in outputs relevant to the six outcome and four impact pathways. Completed activities and resulting outputs translated to achieving three of the six outcome pathways, as illustrated in the logic chain in Figure 2 below.

2. To what extent, and in what ways, have the outcomes generated by the GHFIF programme translated into wider impacts on green finance for the energy efficiency industry?

There were major contextual changes in the green home finance space during delivery of GHFIF, including increasing discourse around climate change, the rise in energy prices and the establishment of working groups in this area, as well as proposed regulatory changes with the potential to affect lenders. These changes took place alongside a substantial growth in green home finance provision in the UK.

The extent to which these positive market developments can be attributed to the GHFIF are modest. GHFIF was a small programme with projects allocated £1.8 million, not all of which was eventually claimed, and therefore this effect is in line with its relatively small scale.

3. Has the GHFIF programme and the projects supported been implemented as intended, and was their design and implementation appropriate to achieving the intended objectives?

Despite a small number of applications, GHFIF funded three diverse projects all aiming to test a distinct product. All three projects were delayed and negatively affected by the Covid-19 pandemic, but their design and implementation were conducive to achieving the intended objectives. There were some opportunities to enhance their impact, in particular through extended marketing and broader dissemination of findings.

4. To what extent have the projects and the programme overall demonstrated value for money?

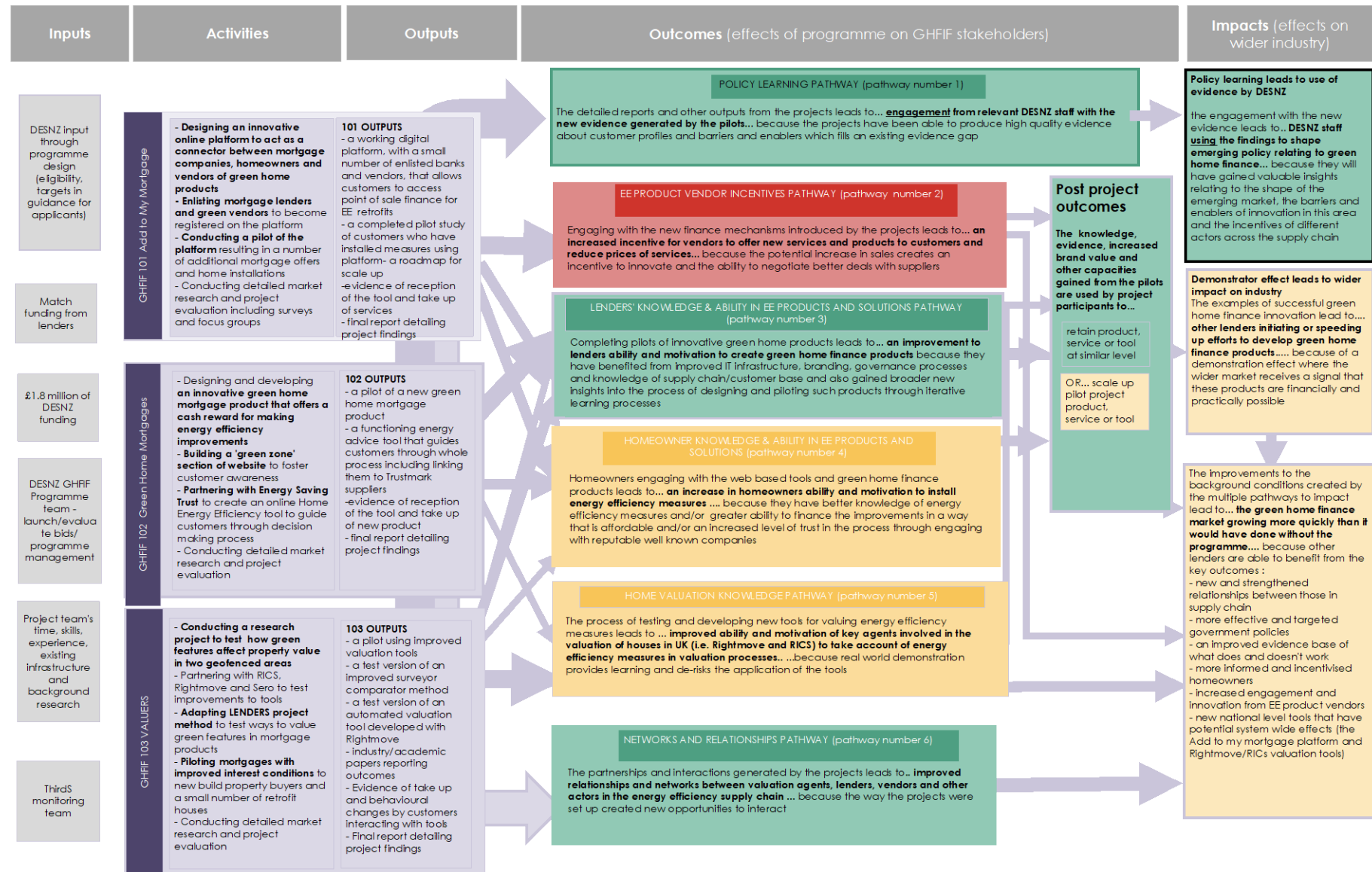
Given that most of the programme objectives were achieved at a cost relatively lower than the original budget, this can be considered good VfM overall. as detailed in Table 16 below. These summary judgements have been decided based on criteria adapted from King and OPM (2018)⁵⁸, for detailed descriptions of the criteria refer to the technical annex.

Table 16. Overall judgement of VfM

Element	Judgement	Justification
Economy	Excellent	All the criteria used to assess the economy elements of the indicators were met which indicates that the programme was delivered economically.
Efficiency	Good	The programme achieved majority of its expected outputs
Effectiveness	Good	Most of the desired outcomes and impacts were partially or fully met.
Equity	Good	The programme supported SMEs alongside established incumbents and thus was fairly equitable.
Overall judgement of VfM	Good	The programme was delivered in a manner that was economical, reasonably efficient, moderately effective and fairly equitable.

⁵⁸ www.opml.co.uk/publications/assessing-value-for-money

Figure 2 GHFIF Logic Chain (RAG rated)



Source: Technopolis. (Green = Significant contribution, Amber = Limited contribution, Red= no or very limited evidence of contribution)

This publication is available from: www.gov.uk/government/publications/green-home-finance-innovation-fund-evaluation

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