Department for
Business, Energy
& Industrial Strategy

Green Home Finance State of the Market Review

Report 1

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Executive Summary

The State of the Market Review (SotMR) aimed to understand the range of products being offered for investing in the energy efficiency of UK owner-occupied dwellings, the view that providers had of both the products and the current market, and also an estimate of the potential for those products more widely among UK owner-occupied households.

The objective of the market review was to determine the scope and details of the current offerings of UK lenders for homeowners to invest in energy efficiency of their property.

The SotMR comprised a desk-based review of all existing financial products available to owner-occupied households available as of July 2021, a set of exploratory interviews with nine stakeholders from across the retail banking sector who offer investment products to households, and an estimation of the size of the owner-occupied market for investing in energy performance based on ownership structure and financial asset conditions.

Market Product Review

The **number of products in the UK for lending for energy efficiency investment in new and existing homes are not insignificant**. The **UK lenders appear to have a strong offering of products** geared towards those looking to purchase or to improve the energy performance of their homes. Although no two products are the same, there are some similarities in the approach, which is to provide discounted rates on the standard rates (fixed or variable), or to offer cashback to more standard mortgage products.

There are **limitations in the offerings** in terms of there being f**ew products having clear requirements on energy performance** levels attained. Those lenders that did have energy performance requirements used the Energy Performance Certificate (EPC) as the standard measure, while several others used Passivehaus. Nor do many lenders offer much description or flexibility in the eligibility criteria of borrowers aside from standard practice requirements on stress tests - most offer reduced rates based on loan-to-value rates.

There **is scope to increase the available products that would see some form of reduced rate at higher loan-to-value ratio** for those who are purchasing with the intention of investing in improving the energy performance. In such cases, the mortgage holder would need extra allowance but would currently be subject to the stress test that would limit borrowing capacity, despite the potential energy cost savings for the home.

Market Stakeholder Interviews

The interviewees expressed a **range of concerns and interests towards green home finance products** and the potential for the market to mature, along with its risks. Although the **lenders interviewed** had not participated in the Green Home Finance Innovation Fund, all of

them were **very much cognisant of Government's priority to improve the energy efficiency of homes**. They perceived a definite risk for their businesses in failing to engage with the energy and carbon impact of their home lending, arising from future policy in the short and long term, and from media and investor scrutiny.

However, whilst risk was perceived, lenders views on opportunity were less cohesive. A few within our small sample were positive about the market potential for green home loans, but many remained very sceptical about current customer demand for energy efficient home improvements. **Lenders and experts questioned which types of financing were appropriate for retrofits** and how these might best be fitted to different home purchaser/owner needs (e.g. mortgages, loans, or grants). There was feedback that **other financial incentives could be more effective**, such as adjustments to VAT or stamp duty, to encourage homeowners to seek investment in energy efficiency, and that mortgage lenders were not by default the prime mover.

Significant immediate barriers to action were also **raised** by our interviewees, covering issues from **assurance of outcomes, concerns of liability for energy efficiency installations, adaptations to systems and working practices, and reliance on third parties**, such as brokers, for the delivery and promotion of products. **Lenders** were particularly **wary of direct provision of energy or carbon saving advice**. Longer term, there were fears that a two-tier market might emerge that meant certain houses were not viable for most lending products if there was a high actual/perceived carbon risk. This may be heightened in areas that have limited loan activities, depressed housing markets, or insecure economic conditions. Lenders indicated that the consequences of a drive to improve housing efficiency focused on home lending and EPC ratings could have complex and unexpected consequences that required thorough understanding.

Finally, there was an expression that **more information on what forthcoming planning from Government** would be to which lenders could respond with better targeted products. The ability for lenders to push products is predicated on a stable regulatory environment. There was overall a **view for more holistic planning** and that, whilst lenders were keen to act, enabling conditions and incentives were needed as "lenders alone cannot do it".

It was notable that all lenders, were actively investigating the energy efficiency of their loans, and keen for information to help them progress. Lenders were all aware of the consultation on EPC and more clarity on ways of improving and using EPCs were felt to benefit the market.

Market Conditions

The analysis found that the average mortgage for a typical owner-occupied dwelling was around £56,000, while the average purchase price of a home is £140,740, however households believe that their house value is on average 34% higher at £214,460. This could be thought of as their expected sale price.

The average cost of investing in improving the energy performance of the dwellings, according to the EHS is around £16,300, which brings the average dwelling from an EPC D to an EPC B.

The **EPC improvement investment compared to mortgage costs are on average around 10% of the dwelling asset value**. However, when looking at the **EPC investment to mortgage value, the range is much higher with an average of around 40%**.

The market conditions for lending to owner occupier households to improve the energy performance of their dwellings appear to be capable of absorbing additional loan costs. However, with the **mean cost of improving dwellings from an average EPC D to B at almost £17,000 and around 10% of dwelling value is a considerable sum for many households** and could add significantly to their borrowing costs.

Green Home Finance State of the Market Review – Report 1

The Green Home Finance Innovation Fund programme (GHFIF), funded under the £505m Energy Innovation Programme (EIP), aimed to support the development and piloting of green finance products marketed to consumers planning to finance home improvements with energy efficiency measures. Launched in July 2019, the GHFIF funded three projects to develop their own innovative green finance solutions.

As part of the GHFIF evaluation[1], this State of the Market Review was conducted to determine the scope and details of the current offerings of UK lenders for homeowners to invest in energy efficiency of their domestic dwellings. The purpose is to provide information on the current state of the UK's lenders market in terms of the features of such products. It provides insights into how the market might be incentivised to offer compelling and attractive investment products with an appropriate balance of risk.

The State of the Market Review involved an online search of existing financial products from a range of small and large UK lenders; interviews with lenders and green finance sector experts; and finally, a market size estimate for green mortgage products. The review was undertaken during June to August 2021 and will be updated in future phases of the GHFIF, using the same methodology to ensure consistency and comparability of results.

Market Product Review

This section presents the results of a review of financial lenders who provide mortgage and refinancing products to UK households. It covers all products that were on offer as of 25th June 2021. The review included products available from retail high-street lenders in the UK based on their being active in the market and identifying relevant financial offerings. It reviewed products that were available as early as start of 2018 (and still active) as a measure of recent activities in available lending products.

The primary source for identifying lenders for the review is from UK Finance, which is the association for the UK banking and financial services sector representing nearly 300 firms, and several other relevant lenders. The review focused on the top lenders by size of lending along with several other lenders identified via internet-based searches. 84 lenders were identified and reviewed based on their lending size, portfolio and products.

Over 50 green home finance products were identified from across the 84 lenders as being of relevance to this review. The review classed the products according to their target market and

[1] GHFIF Process evaluation https://assets.publishing.service.gov.uk/media/6405f76dd3bf7f56f5e075a3/green_home_finance_innovation_fund_evaluation_process_evaluation.pdf

detailed specific requirements of the products on offer in terms of amounts, interest rates, fees, eligibility, and some conditional requirements.

In the following section we provide details of the review, the products, and the findings.

Method and approach

The review used an internet desk-based approach to identify relevant products available from the UK Finance and four others not a member of the association. All available products were then described and classified according to a set of features (described below). The full product list is provided to accompany this report.

Sources of the review

The review made use of the UK Finance members list to identify relevant lenders. The UK Finance is an association for the UK banking and financial services sector representing nearly 300 firms and contains the vast majority of lenders active in the UK. Several notable exceptions to membership of the UK Finance that were subsequently included were: Halifax, BNP Paribas, and Ulster Bank[2], though this is not a definitive list.

The UK Finance Largest Mortgage Lenders 2020 ranking lists were used for searching existing products. The objective being that lenders in the largest groups would cover the majority of both lending activities and also the type of products being offered to the market. This does mean that very small lenders and their products are not included in this review.

The four UK Finance 2020 annual ranking lists by value were:

- By value of mortgages outstanding (inc. 78 firms)
- By value of gross lending (inc. 78 firms)
- By value of Buy-To-Let (BTL) mortgages outstanding (inc. 64 firms)
- By value of BTL gross lending (inc. 64 firms)

In total, 84 mortgage lenders were included in the review, which included 81 unique lenders from the four UK Finance ranking lists.

To conduct the review, the website for each of the 84 lenders was searched for products using key terms including: *green*, *energy efficiency*, *retrofit*, *sustainable*, and *eco*. Each term included a wildcard (*) in order to ensure broad inclusion.

In addition, a search of products that included the terms "*green*" or "*energy efficiency*" mortgage and was conducted via Google UK and Google UK News search. The news search also helped to add further information regarding product date and other features not described by the source lender.

[2] Note this is not a definitive list, but a list based on cross-reference to known lenders via the internet search for products.

Products were defined as those with different names and funding objectives (e.g., purchasing or retrofitting), having different interest rates, initial periods, Loan-To-Value (LTV) percentage, and energy performance criteria. If any products were identified through the different search strategies (i.e. company website or UK Google) that were described using different wording/names but included the same features as another similar product with a different name, these were considered as the same product and only one was included.

All products included in the review were active on/before 25th June 2021.

Findings

In total, the review identified 51 green finance products from 34 lenders (40.5% of 84 lenders in the review). The key findings were that among the 34 lenders:

- 26.2% (22 out of 84) of lenders currently have green home finance products on the UK market.
- 14.3% (12 out of 84) of lenders have expired, piloting, under-planning, or non-UK-market products.
- Eight firms have 2 products, Dudley BS has 3 products and Ecology BS has 8 relevant products.

The 51 identified products are categorised into 6 types:

- Green mortgage – generic for homes
- Green mortgage – generic for other properties[3]
- Green mortgage – specific for retrofit only for owner-occupier
- Green mortgage – specific for retrofit only other properties
- Other – including service, cashback only, under-planning products

Figure 1 below shows the range of products on offer across the lenders categorised by product purpose.

There is no data to show which product offering might be more sought or commonly secured by mortgage holders, though if number of products is an indicator, retrofit and additional borrowing are among the top. These types of products may have an advantage that they will be securitized against the built-up asset value of the home and therefore perceived as lower risk.

The next group are new building, existing building, and products with cashback. For these, they imply a new purchase and are more likely affected by the mortgage holder's ability to service a loan overall and will be subject to mandatory stress-tests that may reduce the

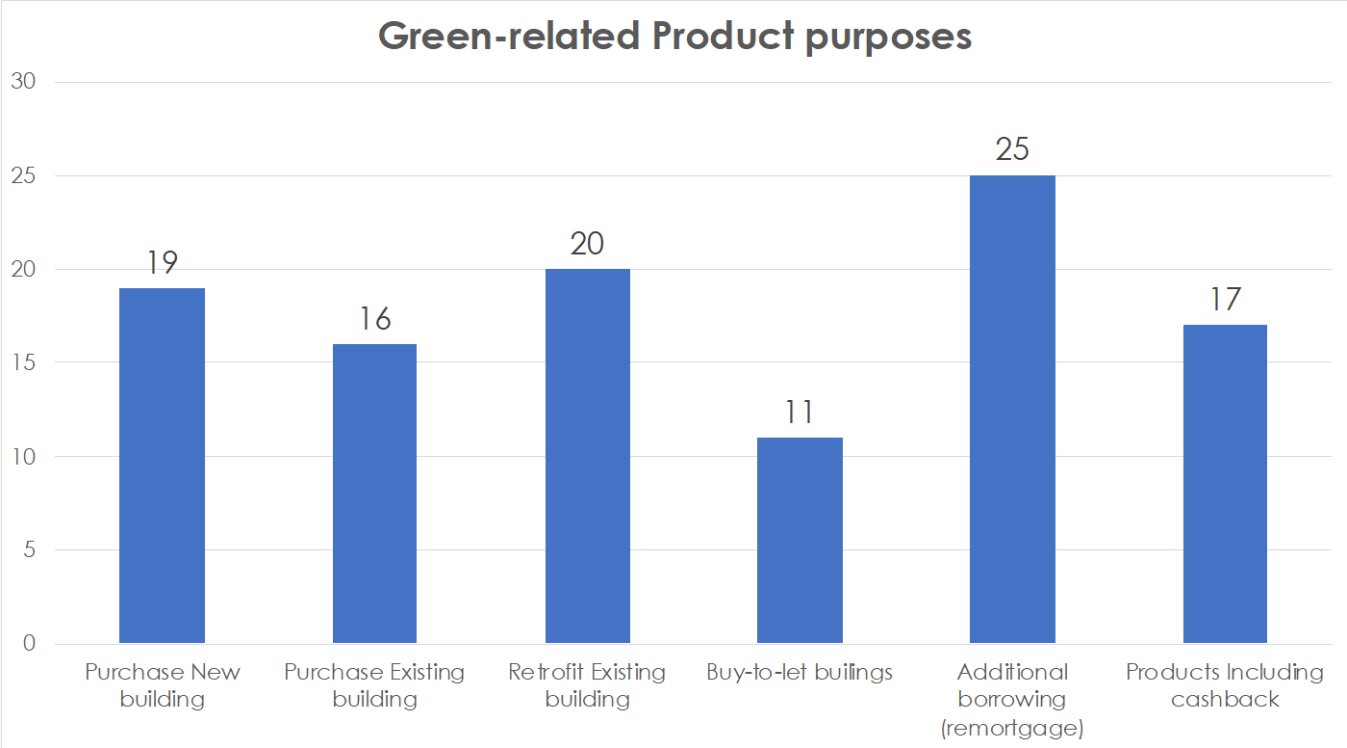
[3] Other properties includes Buy-to-Let properties, second homes, and investment properties.

number of eligible consumers for these products if additional green borrowing is not separated from the stress test. No products described their stress-test conditions in detail.

The review found that no two products are exactly alike and, where explicitly mentioned, each has varying eligibility and requirements around the performance levels sought/achieved.

Most of the products (38) are in a fixed discounted rate for 2 to 5 years, but some products (5) were in a variable discounted rate for 2 to 5 years. No particular trend emerged in additional fees, penalties (early repayment charges (ERC)) and insurance requirements. Only 15 green products need EPC band B or above for new home purchasing and 8 need at least EPC band C for retrofit.

Figure 1 - Market review green mortgage product focus



Of the 18 Green mortgage – generic for homes, but excluding retrofits, the offerings included Barclays's mortgage for first-time or existing customers with a 0.1% below the standard rate (depending on customer loan-to-value ratio), or Ecology with a varying (increasing) discount rate based on the performance standard sought - 0.5% discount for EPC band B (SAP88+) or 1.25% for Passivehaus. While Melton Mowbray Building Society offers a discount of 0.6% from the standard variable rate for 36 months.

Some retrofit mortgages limit the percent of money spent on improvements (e.g., Nationwide, Newbury BS), some of them ask for the approved EPC ratings (e.g., L&G Home Finance), and some use EPC ratings as criteria of interest rates (e.g., Ecology, Landbay Partners Ltd). Other lenders only have green products in their countries outside of the UK but not for the UK branch

(e.g., Santander in Spain, Bank of Ireland and Ulster Bank in Ireland, Danske Bank in Denmark, Pepper Money in Australia). However, the review identified some European lenders (e.g., BNP Paribas) who provide green mortgages in Europe as cooperating with UK energy providers (e.g., E.ON UK) in piloting innovative Green Mortgage product under European Energy Efficient Mortgage Action Plan (EeMAP). It is not clear whether lending access to European bonds is affecting mortgage offerings.

The perspectives of market stakeholders

This section presents the findings of ten interviews conducted with eight lenders and two experts in the UK mortgage market, reflecting on current offerings for homeowners to invest in the energy efficiency of their properties. It covers only lenders who were not funded by the Green Home Finance Innovation Fund, as GHFIF participant views were captured through the evaluation. The interviews are designed to complement the other State of the Market work, by providing the opportunity to understand lenders' views and progress in developing and deploying their own green lending products, and their views of the overall market. The interviews with market experts were intended to access a wider-angle perspective on market developments. Together, the findings of these ten interviews offer initial insights around the scope and scale of current products, the incentives for them, and of perceived challenges to further development, or indeed suggested solutions.

Method and approach

With only ten interviews, a representative sample is not possible, however, size (based on mortgage balance and market share in UK), type of institution (bank or building society), and type or extent of financial products offered were taken into consideration when the sample was purposively selected. This included lenders who had yet to launch specific green lending products, as well as some who already had a range of offerings. Interviewees likely to have direct experience of these products, or their development, were targeted. The two market experts were selected based on their individual expertise in this area, but also considering the activity of their two organisations in catalysing green lending.

The interview guide was prepared in a semi-structured format, and tailored to allow for alternative approaches depending on whether the lender had already launched green products, or was still developing them. The questions were focussed around:

- Awareness of the GHFIF
- Current green lending products and reasons for developing these
- Views on current market for green lending products
- Practicalities and any challenges of developing these products
- Perspectives on future developments
- A second guide was prepared for market experts, and covered:
- Views on current market for green lending products
- Reflections on key performance issues for the products
- Perspectives on future developments

The interviewees were invited personally via email in late June and early July 2021, and interviews completed in July and early August 2021. The interviews were all carried out remotely via video call. Most of the interviews were with one employee at the lending

institution, but in the case of two lenders, more than one individual was interviewed during the call. The interviews were all recorded and transcribed verbatim.

Due to the commercially sensitive nature of product development and performance, the research design emphasised informed consent from the participants and the anonymisation of their contributions. Material from the interviews has been fully anonymised in this report, with company names, individual names, and job roles removed. For ease of reference, the lenders and market experts have been simply numbered 1-8 and 1-2 respectively. The initial email to potential participants explained the evaluation and its background, and further explanation of the treatment of the insights and personal data, as well as the right to withdraw at any time, was also given at the beginning of the interview. However, it was noted during several calls that the interviewees were in fact keen to participate in the expectation of the evaluation providing findings that would be useful to them, and this is discussed at the end of this section. The following sections present the findings emerging under each of the interview themes.

Key themes arising from the interviews

Awareness of the Green Home Finance Innovation Fund

Interviews began by asking about lenders' awareness of Government's priority to stimulate lending for green home improvements, and then specifically about the GHFIF. Although lenders were aware of Government's priority in general, some lenders were not aware of the GHFIF specifically. Others had heard of it but had decided not to bid for it. Reasons given for choosing not to bid included practical constraints on time and resource. For instance, Lender 3 explained that "it didn't reach the top of the agenda" as there were many other pressing issues to maintain business-as-usual. Another lender had feared the bid would absorb too much staff time to compensate for the small level of funding on offer, and another indicated that the window for application was too short, suggesting a rolling funding opportunity would have suited them better. Another reason given was that the lender did not feel ready to take on green lending at that point in time, as it was too early in their thinking.

Other policy initiatives did appear as a stronger influence on action. Government's consultation on "Improving home energy performance through lenders" was frequently mentioned, particularly in relation to the disclosure of portfolio Energy Performance Certificate (EPC) data, and any possible targets to improve these[4]. Lenders felt that, if they were to be "assessed" on EPC ratings, then this would provide a powerful – if not necessarily welcome – incentive to target EPC ratings. The other policies mentioned, although with less emphasis, were the Minimum Energy Efficiency Standard (MEES), both in its current form and possible extensions to it, and the Green Homes Grant Scheme.

Current green lending products and motivations for developing these

The eight lenders interviewed were at varying stages of product development, and also varied in the type of products they were either already offering or developing. Three of the lenders had been on the forefront of green lending, having launched products several years ago, and some of these were now actively considering how to develop these further. Three lenders had

[4] Note that these interviews were carried out prior to the publication of Government's Heat and Buildings Strategy

very recently launched lending products. Two lenders had not yet launched any green offerings. However, the majority of lenders spoke about green lending products in novel terms, and were still actively gathering learnings from their products, even where they had been active in the space for two or three years.

Interviewees noted a wide range of motivations for developing green products. The key difference between lenders was a variation in how confident they had been in entering the green lending space, and, when they had entered it, the extent or type of product scope. This aligns with the findings from the review of green finance products on offer presented in Section 1, which describes significant variation in the types of product related to green home improvements in the UK market overall, but may partly be due to the purposeful selection of a varied sample. The lenders and experts interpreted a wide range of offerings as falling under the broad categorisation of green home finance. These included mortgage products, targeted at energy efficiency through either new or additional borrowing for retrofit, or mortgages on new-build properties. In these cases, a discount was often offered on the standard rate of borrowing for properties meeting the requirements. However, cash back rewards were also mentioned. Three lenders were also offering products with an educational element, ranging from training for their staff, to factsheets and app-based material aimed directly at homeowners. One lender was targeting specific types of home energy efficiency improvements. Finally, both homeowners and buy-to-let landlords were covered.

One key motivation for launching products was lenders' urge to keep up with activity amongst their competitors. One of the market experts characterised this as lenders' fear of their organisations falling behind peers, with one lender describing how they felt increasingly pressurised by internal management to justify why their organisation had not yet entered the space. However, this view is balanced by financial caution:

> *"Actually in the banking sector, quite often institutions want to see that a product has been successful and has a proven track record before they enter that space."*
>
> *Expert 2*

Nevertheless, interviewees did perceive a definitive and recent market acceleration. This had prompted some lenders to test demand and the concept of green lending through a cautious product launch. As noted above, moving into green lending was still a relatively recent move for most, and the products mostly remained niche offerings. In some cases, lenders were more cynical, suggesting that their products might be more of a public relations boost, aimed to assuage the need to be seen to have done something, or a way of testing the water:

> *"We were very clear that launching a product was actually a very small step in this whole journey, because the level of awareness and education of our customers was particularly low and we use that as a proxy for the market."*
>
> *Lender 5*

More profoundly than this, and as can be seen in the quotation above, a significant level of scepticism was apparent around the extent of the demand for green lending products. The

need for customer education to prepare the ground for products comes across very strongly. The main doubt – frequently expressed – was that customers are not interested in the energy efficiency of their properties. Therefore, it was not, in the opinion of the interviewees, the availability of finance stopping customers taking action:

> *"Do I think tens of millions of homeowners are chomping at the bit to replace their boilers at their own cost? I would say no."*
>
> *Lender 2*

The interviewees were also prompted to discuss the potential financial case for green lending, such as possible better payback rates, or loan-to-value (LTV) ratios. One expert and two of the lenders reacted positively to this, raising evidence of lower default rates on green loans. One of those lenders also believed that the installation of green measures helped to protect the capital value of the property:

> *"Intuitively we have a belief that the work that's done by the consumer around green will not increase the value of their property, but it will protect the value of their property and stop it eroding."*
>
> *Lender 5*

However, the majority of lenders did not perceive a clear financial case for lending products targeted specifically at green homes, and some were very sceptical of the available evidence. The two experts were more optimistic about the potential market: lenders overall tended to consider that the products launched so far have very limited take up, and that the market is far from proven.

Another motivation to develop green lending products that appeared frequently, but was unrelated to market demand from homeowners, was reporting pressures. Shifts in the corporate reporting landscape in the UK appeared to have reframed green products as one means to address concerns about the emissions-intensity of lenders' mortgage portfolios, and to respond to the increasingly influx of investors', and other stakeholders', questions on Environmental, Social and Governance (ESG) issues. As such, this acts in a similar fashion to the potential disclosure of EPC data previously mentioned, encouraging several of the lenders to analyse their portfolio efficiency, but was felt to be an increasing trend beyond legislation:

> *"We track green content in our investor meetings on a regular basis, and over the last 18 months, the investor interest in everything, from [our] risk management approach to our propositional approach to transition, it's an ongoing, constantly increasing theme. And we're starting to see, from the people that hold our capital instruments, it's gone from a box tick exercise probably 18 months, two years ago, to they have some real specialist expertise and knowledge now… I guess that's… probably driving us at a faster pace at the moment than the regulators are, I think their expectations are moving a lot faster in terms of what we do, what we offer, what we disclose in particular."*

Lender 3

Language such as “stranded assets” and “transition” risks emerged quite strongly from the interviews, although lenders were still coming to terms with it:

“We are fairly new in our understanding of stranded asset risk, I’ll be honest.”

Lender 6

Once again, competition between lenders emerged, but this time in terms of disclosure.

What is particularly interesting about this is the apparent contradiction between lack of conviction in the financial case for green lending and the apparent concern over stranded assets. However, there is some evidence that lenders thought this was more about protecting the business from transition risk, as indicated in the quote from Lender 5 above, rather than a positive opportunity to make profit. There also appear to be strategic, rather than financial, reasons for pursuing green lending and attending to portfolio energy profiles, as both these increasingly feed into corporate greenhouse gas reduction targets, notably Net Zero commitments and Science-Based Targets, which are very visible externally and therefore put lenders under scrutiny:

“If we don’t have a greener mortgage proposition that evolves over time we will have a reputational issue. For customers and with shareholders, and ratings agencies”.

Lender 4

Customers for current green lending products

As already discussed, where lenders did already have green lending products, these were often very new offerings, niche offerings, or both. As such, there was little quantitative data on lending outcomes, such as financial performance or energy savings, nor had a typical customer profile been established (or at least lenders did not feel confident in sharing these details). A few lenders indicated they were undertaking market research to attempt to understand more about prospective green lending customers. However, many felt that data on the nature and extent of potential demand was seriously lacking, and would clearly welcome it. Only one lender felt very positively about the market potential, when considering single measure energy efficiency improvements, where they perceived a large market gap for financing.

The main barrier, as already noted, was a perceived lack of awareness or interest in energy efficiency amongst homeowners. This was mentioned in almost every interview:

“I think the key piece in the puzzle is how you create the demand for green finance rather than the availability of green finance.”

Lender 3

Lenders argued that finance is already there for those who want to improve their homes' efficiency. Thus, the barrier to retrofit is not necessarily availability of credit, but, lenders believed, the lack of customer knowledge and interest in energy efficiency. Lenders questioned whether the EPC – or indeed energy at all – was the best the way to engage potential customers. Some thought that other issues might resonate more, such as flood resilience (again, it should be borne in mind that these interviews were carried out before media headlines around rising energy costs began to emerge).

Many barriers were felt to underlie this lack of customer momentum. For instance, customers, it was claimed, do not know who to call or what order to do things when considering energy efficient or low carbon renovations. For others, it may seem like an "optional extra" that may never get actioned. Furthermore, some lenders thought that customers were unlikely to tolerate the disruptions of retrofits. Some lenders thought that customers were waiting for government to allocate grants in the future, rather than putting aside their own funding. The lack of a convincing financial case for homeowners was also noted by interviewees. With mortgage rates currently very low, lenders felt that rate discounts for greener properties were not attractive enough to customers. Payback periods for retrofit were held to be too long, rendering capital expenditure undesirable. This was exacerbated by the relatively frequent rotation of property ownership. For the fuel poor, with a more urgent need to consider energy costs, the interviewees felt that the provision of lending is unsuitable, and indeed potentially unethical.

Some interesting issues were raised around the nature of relationships with homeowners. Lenders noted that customer trust can be low, in particular around installers of energy efficient or low carbon technologies. They believed that customers were also likely to take a dim view of any perceived "cross-selling" by lenders of these technologies or installation services. Furthermore, one lender pointed out that customers in the UK are not typically loyal, as they rotate through lenders looking for the best rates. Thus the lenders' opportunity to influence customer choices is restricted, there is less opportunity to develop a personal relationship between lender and customer, and advice is correspondingly harder to give. One lender who did provide mortgages for non-standard "higher risk" low carbon properties revealed that despite efforts put into building up relationships with their customers, which are necessary to understand the nature of the property being lent on, the customers often left once they were able to move to a more generic, and cheaper, mortgage. For lenders keen to improve the average efficiency of their portfolio the potential loss of any improved properties is a disincentive. This indicates that costs and benefits may not arise evenly or predictably from expanding green home lending.

Reflections, practicalities, and challenges for green lending products

Lenders revealed a number of challenges to developing and deploying green lending products, in addition to the issues with demand noted above. Assurance of energy efficiency outcomes appeared as a very significant issue. For volume lenders, asking additional questions or adding

assurance steps increases cost, which their margins cannot absorb (raised for example by Lender 3), or indeed which customers might not accept. Additionally, volume lending at low rates has a huge pool of potential customers in the UK. Thus, they have no immediate commercial need to chase harder-to-reach new business.

Concerns over proving the "additionality" of lending were also raised. Combined with the difficulties of assurance, this raised a risk of greenwash accusations and an inability to assess the energy efficiency benefits accruing to the mortgage portfolio:

> *"When we release the funds, we have no means of checking what the customer then goes on to use those funds for. They could go and buy a diesel car with those funds, they could buy a plane ticket around the world, and no large volume lender is able to validate how those funds are spent at the moment."*
>
> *Lender 1*

Lenders therefore felt in a bind: wanting to confidently assure assets as "green" but not willing or able to bear the cost. Longer term, lenders would like to be able to securitise green debts, but in order to make this viable, the volume of lending needs to be much higher (one lender suggested a minimum figure of £200m), and high-quality assurance is essential.

Related to this, concerns with EPC data were raised. Firstly, EPCs are not available for many properties, and when they are, they are not held to be reliable (several lenders quoted research indicating their inaccuracies). Nevertheless, they are the tool that is most widely available, as there was not held to be a feasible alternative. The availability of an EPC was one reason given for lenders to tailor products to new build or new purchases, rather than retrofit. Many lenders have had to interpolate the EPCs on a high percentage of their loans to cover the missing data, and they felt that this compromised their ability to assess the energy efficiency of their lending portfolio.

A further concern to arise frequently, and with some emphasis, was liability. Lenders viewed the provision of energy efficiency advice as problematic. They operate in a sector where financial advice is very highly regulated, and they clearly feel comfortable when within their own realms of expertise. Lenders felt correspondingly exposed on the unfamiliar topic of energy efficiency. They feared being targeted by claims companies, allegations of mis-selling (citing the history of financial scandals), and liability for botched installations:

> *"I'd use the word 'guidance' rather than 'advice'. I think when you start using the word 'advice' you stray into a world where you open yourself up to claims."*
>
> *Lender 1*

Long term policy consistency was also raised as an issue here, with fears that if policy were to change, the advice given to customers might no longer hold. Potential competition issues in recommending particular suppliers were also raised as risks. For one lender, the issue of liability had led to a deliberate emphasis on "traditional measures", such as double-glazing or boilers, which were perceived as being reliable. One suggestion was for the establishment of

an equivalent to the Energy Technology List[5] as a tool to assess reliable home energy efficiency measures and hence provide "pedigree" (Lender 7). Overall, the role of advice was held to be difficult: lenders felt that customers need advice to catalyse them to action; but that giving this advice was risky and removed from their expertise. Lenders were somewhat divided on the second aspect as the extent to which they wished to distance themselves from advice, as illustrated by Lender 5's mixed feelings, who reported being "fearful about stepping into that void and doing something that is not our natural skill" but also that:

> *"We're expecting our staff, who might not necessarily have a passion or knowledge about it [energy efficiency], to speak with customers…. we need to be sure that we're not giving advice, but we can have informed conversations. And that was really important to us, to be able to do that and support our customers."*
>
> *Lender 5*

Related to these concerns was the role of third parties. Lenders felt that understanding and appreciation of green factors in other organisations in the supply chain can be a problem. For instance, they wondered if crucial players such as estate agents and valuers understand, and therefore price-in, energy efficiency impacts on housing values. For some lenders, the majority of mortgages come through intermediaries (brokers), from whom they thought "greenness" would not be considered an important factor. In terms of access to reliable contractors to perform energy efficiency installations, Trust Mark was the favoured solution. Although one expert raised concerns about having enough trained contractors, pointing out that accreditation can be costly for SMEs. As a result of this, many of the interviewees indicated a space for independent advice that they would like to see filled. The Green Finance Institute's Green Home Finance Principles, Building Renovation Passport, and demonstrator projects were mentioned several times – particularly in terms of the usefulness of having agreed principles to define a "green" loan (most often), advice, or even advice sharing (less frequently):

> *"We're very much behind the Building Renovation Passport idea that has been raised by the Green Finance Institute, and we would love that to come in, because that would really help us to understand the trajectory that the borrower is on. So we could have a more informed discussion with them."*
>
> *Lender 8*

Both lenders and experts also raised practical difficulties. Adding sources of "friction" in the form of additional time and steps for the customer to complete in relation to the green terms and conditions of the loan was held to be difficult, as the mortgage process is for customers is already "stressful…with loads of touchpoints" (Lender 2). Lenders also worried about the cost and time involved in adapting their embedded – and frequently complex - IT systems. One

[5] The Energy Technology List (ETL) is a government list of energy efficient plant and machinery. In order for a product to be listed, it must meet the ETL's robust energy saving criteria - typically set at the top 25% of products in the market.

expert suggested that these adaptations could disproportionately penalise smaller lending institutions lacking depth of staff and infrastructure resource.

Overall, green lending products' combination of high effort, low margins, and low volume did not add up to a definitive business case. Stepping back and looking at the wider organisational context, a strategic imperative to act was also missing for some lenders. For instance, one lender noted their corporate commitment to Net Zero, but suggested that decarbonising higher carbon-intensity lending than residential property is more likely to be employed to meet this organisational priority:

> *"We think that, again back of the envelope, our footprint of emissions in mortgages is probably about 35 times lower than it would be in the energy sector, so it's a fairly material difference. So, we think we would probably get a bigger bang for buck by tackling energy first and mortgages later."*
>
> *Lender 6*

Nevertheless, lenders were aware that long term, if barriers could be addressed, there was "value in unlocking this market because there is a significant amount of finance that needs to be provided over the coming decades" (Lender 3) in order to meet UK's Net Zero objectives. This leads to the final selection of insights around future developments.

Perspectives on future developments

In the final section of the interviews, views on long term developments in the market were discussed. For instance, if MEES increased the required EPC level this could be a major shift, added to any requirement for portfolio EPC disclosure. Some lenders had concerns around inefficient properties becoming "stranded assets". Focussing on the absolute EPC rating, some suggested, could cause a two-tier market:

> *"You're going to end up with a load of people who are effectively going to become mortgage prisoners because you're not going to want that liability on your books and you could see it from a retention perspective, everybody is going to want to retain A, B, C rated properties. You might want to hive off your lower rated ones."*
>
> *Lender 2*

This theme of "mortgage prisoners" was raised in these precise terms in four separate interviews. One lender also observed that because retrofit cost is to a certain extent fixed, this would disproportionately hit less prosperous areas with a worse LTV. One lender suggested that taken to its logical extent, they would have to choose between optimising credit risk or "greenness" when evaluating long-term lending criteria. Instead, lenders preferred solution tended to be for an incentive to measure improvement in EPC ratings rather than the absolute end result.

As both lenders and experts felt that changing the efficiency of properties in the UK was not just a question of mortgage availability, some advocated the deployment of other financial mechanisms that might be more attractive to consumers, such as adjustments to stamp duty for energy efficient properties, or lower VAT rates on home efficiency improvements. The two market experts interviewed were particularly supportive of this, believing that mortgages are too slow and bureaucratic to create enough impetus for change. Moreover, mortgage lending was not deemed suitable for small-scale interventions:

> *"There may be solutions for customers, quick, easy wins that do not need mortgage finance. They might need some kind of finance, but mortgage finance over the long term can be expensive, more expensive than unsecured finance in the short term. For example, if someone is going to insulate their loft, I would very much guard against putting that on your mortgage."*
>
> *Lender 4*

There were suggestions from experts and lenders that grants are needed, especially for the fuel poor, or for those whom mortgage and stamp duty changes would not affect. There are sections of the population (one lender quotes 20%) who may struggle to meet lending credit checks, or whose property is not suitable for lending. Another lender suggested government subsidies to lending, such as an interest rate offset by which government funds the initial months of interest payments. Some disappointment around the demise of the Green Homes Grants was noted, as they were deemed a potential catalyst that had failed to gain traction.

A final message from the interviews was that lenders were unlikely to "do it on their own" (Lender 2), as large-scale change needed other parties to act too. There was a desire for holistic planning, consistent policy, and common definitions. The latter linked very much to the expressed need for independent advice and reliable assurance of what is "green" and what is not, as also advocated by experts:

> *"A consistent and clear way to kind of mitigate greenwash concerns around, you know, labelling a product as green."*
>
> *Expert 1*

A roadmap for each property – such as the Building Renovation Passport – would be valuable – and could be complemented by training for installers to understand holistic solutions:

> *"There's very few installers, I think, that are able to have a proper end-to-end discussion with a customer as to, "This is your property; this is what you need to do in these orders to get from A to Z." All they're focused on is coming back with single measure sales."*
>
> *Lender 7*

However, there was felt to be a role for government, for example in regulating installation quality and improving assurance data, and in providing consistent standards for energy

efficiency (such as a MEES extension for owner-occupiers). Government's role in the education of customers to counter the perceived lack of demand was often referred to:

> *"We can provide the finance. We can provide the finance today…But … – customers have to understand it and want to do it. Now we can play our part in that and have products, and have content on websites, and encourage, but it has to be halfway. We have to create the demand and satisfy it. We can satisfy it. I think the government have a real duty to create the demand."*
>
> *Lender 4*

More generally, there was a hope that government could create the conditions to "normalise" the green mortgage market (Expert 2), by situating it in a wider landscape of other incentives pulling in the same direction, and through consistent policy signals. One lender described this as creating a "glide path" to Net Zero.

During the process of the interviews, it was notable that several lenders wanted or needed information on the topic of green lending and current activity in the UK market, and that indeed this was part of their enthusiasm for participating in the evaluation. Some were already conducting their own market research because they felt a gap existed in knowledge. Several mentioned that they did not know where to go for good data. Sharing "market intel", the lenders remarked, is usually difficult between competitors, but could be explored here, in view of what they felt was a largely untested green market. As a result of this lack of data, lenders sometimes felt insecure about their own progress in the deployment of green products, and the assessment of their portfolios, and unclear about how they compared to others. This uncertainty is therefore in itself a barrier to further development.

Market Conditions

This section presents analysis on the potential market size for investment in energy efficiency in English households based on their existing mortgage holding and energy efficiency performance levels and expected costs. The aim of the analysis was to identify the existing financial conditions of English properties in terms of their existing financial conditions that help inform the potential lending conditions for green home financing. The analysis focused on loan and investment metrics for residential owner occupiers in England.

Method and approach

The approach used the 2018-19 English Housing Survey[6] as the basis for the analysis with a focus on owner occupiers. Although the survey is not designed to be representative of English mortgage owners, it has been developed to broadly represent the English housing stock and households therein. The analysis constructed a table of owner-occupiers and their corresponding energy performance levels, along with the values related to the cost of upgrading the home to a potential improved energy performance level as defined in the EHS.

Three different metrics were considered:

- Mortgage to asset value: the measure of the total outstanding mortgage value to the value of the home. This estimate is made by the homeowner during the EHS interview and is not specifically verified.
- EPC cost to mortgage value: The cost of the EPC calculated improvements over the total outstanding mortgage value. EPC improvement costs are based on the EHS post-interview analysis and using reduced standard assessment procedure (rdSAP) assumptions, which calculates the notional energy performance of UK dwellings.
- EPC cost to asset value: The cost of the EPC calculated improvements over the total estimated value of the homes.

The objective is to use the above metrics to characterize the market conditions that could impact on the potential for green home financing.

Findings

The analysis found that average mortgage for a typical owner-occupied dwelling is £56,000, while the average purchase price of a home is £140,740, however households believe that their house value is on average 34% higher at £214,460. This could be thought of as their expected sale price (see Table 1).

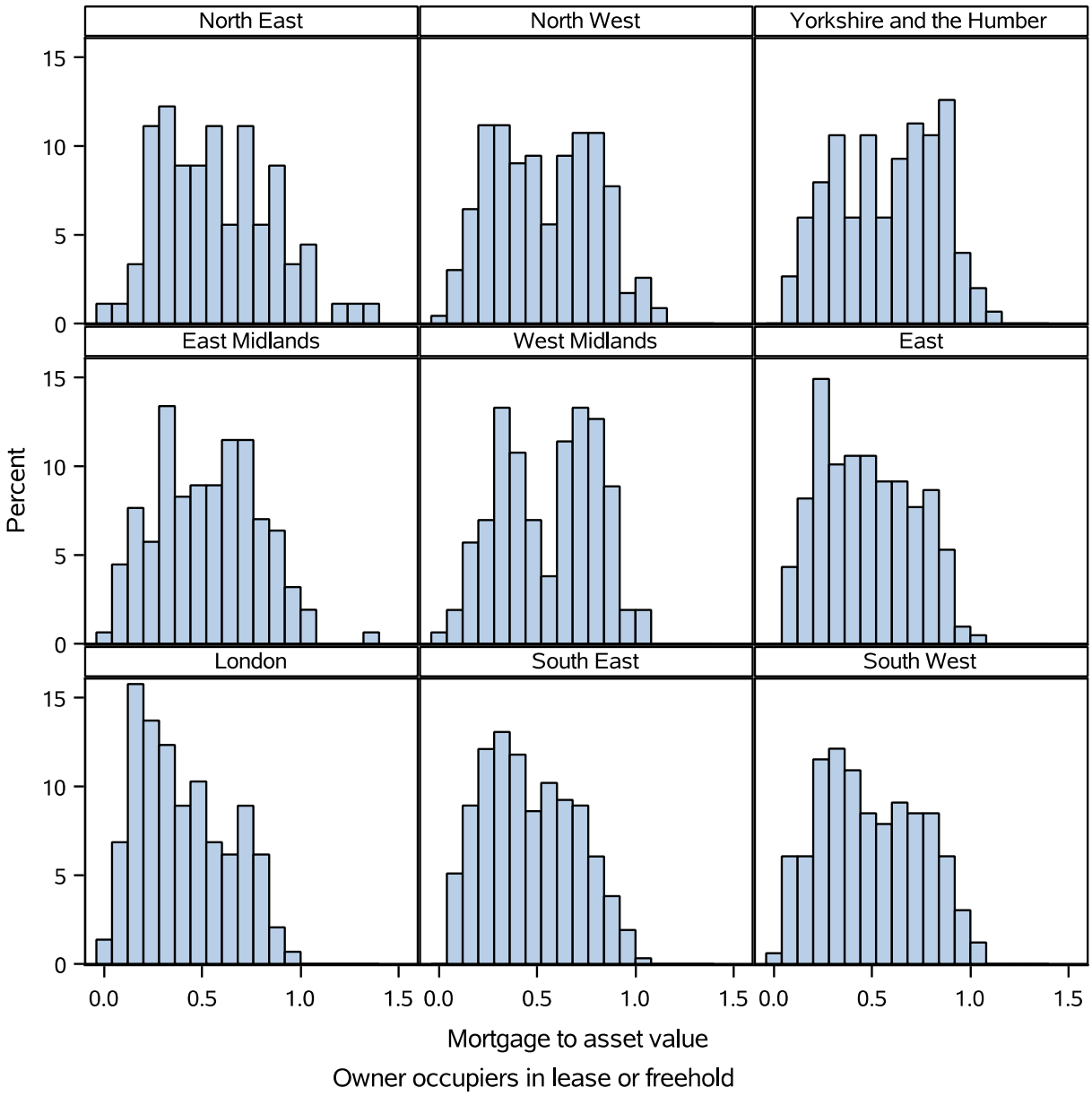
[6] A more recent EHS was made available after the commissioning of the SotMR. It is not anticipated that the more recent data is likely to show different results. A subsequent update will be performed using the latest data.

The market conditions show that there is a high level of borrowing among English households and that the mean mortgage to asset ratio is around 0.5 overall and across SAP bands (Table 1). Mortgage to asset ratio may be even higher depending on the market (see Figure 2). The mortgage to asset ratio is a measure of the amount of borrowing of a homeowner for their property in the form of a mortgage over the value of the home. If a dwelling has a high mortgage to asset ratio, i.e. between 70-90%, then the potential for additional borrowing is potentially limited depending on the borrowers financial conditions. A highly leverage asset (i.e. high mortgage to asset value) would require high earnings or additional collateral for further borrowing. The implications are that additional borrowing for those above 0.7 may be limited as banks could see this as a risk if the borrower's ability to pay were affected.

Table 1 – Mortgage costs and dwelling value among owner occupied dwellings in England

Owner type	Energy efficiency rating band (SAP 2012)	Number	Current mortgage - original amount	Householder's view on property value	Mortgage to asset value
Freehold	B	12,676	£210,787	£474,577	0.48
	C	1,026,558	£128,224	£256,431	0.59
	D	2,338,311	£118,883	£273,278	0.5
	E	782,009	£132,472	£310,322	0.49
	F	109,005	£143,009	£377,904	0.41
	G	19,378	£123,841	£231,408	0.49
Leasehold	B	44,012	£95,360	£197,624	0.57
	C	238,383	£93,809	£202,934	0.56
	D	225,766	£119,057	£255,822	0.49
	E	47,161	£101,084	£216,137	0.55
	F	6,150	£43,589	£199,620	0.20

Figure 2 – Mortgage to asset value among owner occupied dwellings in England



The average cost of investing in improving the energy performance of the dwellings, according to the EHS, is around £16,300, which brings the average dwelling from an EPC D to an EPC B. The EPC improvement investment compared to mortgage costs are on average around 10% of the dwelling asset value. However, these vary considerably, from as low as 2% among EPC B dwellings, to around 12-14% among EPC E and F dwellings (Table 2). When considering the EPC investment to mortgage value, the range is much higher, with EPC D freehold owner-occupied dwellings being above 60%, but the average being around 40%.

The conditions for additional borrowing among English households may be constrained for those where mortgage to asset value is above 80%, this would imply addition risk and reduce

the capacity of the borrower to take on more borrowing costs. The number of owner-occupied dwellings above 80% borrowing are estimated to be around 17% of the total market.

In addition, if the EPC costs to mortgage value is a significant amount, e.g. over 20%, this could imply a household may be unlikely or unwilling to take on more costs. Finally, the EPC cost to asset value could imply the potential for borrowing against built up capital. However, if the percentage is high, e.g. over 20% there is a higher risk that the required investment amount is too high to the asset value and therefore would be unable to recuperate its loan if the property were sold. In the instance of a high EPC cost to asset value it may also be the case that local housing conditions will not realize the investment asset value increase in resale and therefore place downward pressure on the market for investment.

The market conditions for lending to owner occupier households to improve the energy performance of their dwellings appear to be capable of absorbing additional loan costs. However, with the mean cost of improving dwellings from an average EPC D to B at almost £17,000 and around 10% of dwelling value is a considerable sum for many households and could add significantly to their borrowing costs.

Table 2 – Mortgage and EPC investment costs among owner occupied dwellings in England

Owner type	EPC	Number	Current mortgage	Householder's view on property value	Energy upgrade cost - all upgrades (£)	EPC loan to asset value	EPC loan to mortgage value	Pre-retro fit EPC	Post-retrof it EPC
Freehold	B	12,676	£210,787	£474,577	£6,198	0.02	0.05	82.09	86.77
	C	1,026,558	£128,224	£256,431	£12,112	0.08	0.17	72.94	84.39
	D	2,338,311	£118,883	£273,278	£17,055	0.09	0.68	63.15	81.33
	E	782,009	£132,472	£310,322	£23,282	0.12	0.34	51.56	80.79
	F	109,005	£143,009	£377,904	£26,032	0.1	0.3	38.17	76.97
	G	19,378	£123,841	£231,408	£24,116	0.13	0.32	27.4	68.59
Leasehold	B	44,012	£95,360	£197,624	£540	0.01	0.01	82.08	83.12
	C	238,383	£93,809	£202,934	£4,499	0.03	0.11	75.57	80.98
	D	225,766	£119,057	£255,822	£13,459	0.08	0.22	64.38	78.38
	E	47,161	£101,084	£216,137	£17,671	0.13	0.25	52.43	77.96
	F	6,150	£43,589	£199,620	£25,027	0.14	0.72	33.25	85.7
All		4,849,409	£122,148	£272,790	£16,296	0.09	0.44	63.4	81.59

Notes: Pre-retrofit EPC is the rdSAP level of the existing dwellings and denotes their current energy performance (with higher better). The post-retrofit EPC is the predicted rdSAP level following a notional retrofit.

Annex A: Green lenders included in product review

These lenders include all those apart of the product review. Lenders included in the interviews are not identified for the purpose of anonymity.

- NatWest
- Barclays
- Saffron Building Society
- Paragon Bank
- Nationwide
- The Mortgage Works
- Virgin Money
- Ecology Building Society
- Newbury Building Society
- Just Group
- Kensington Mortgages
- Foundation Home Loans
- RBS
- BNP Paribas
- Monmouthshire Building Society
- Halifax
- Santander
- Keystone Property Finance
- LendInvest
- Lloyds Bank
- TSB
- Landbay Partners Ltd
- Dudley Building Society
- Bank of Ireland
- Principality Building Society
- Legal & General Home Finance
- Danske Bank
- Pepper Money
- Progressive Building Society
- Melton Mowbray Building Society
- Scottish Building Society
- Tandem Money Ltd
- AIB UK
- Ulster Bank

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