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The UK's Warm Homes Plan:
Options for public loan schemes

Policy insight

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Summary

The UK Government has allocated £5 billion of 'financial transactions' to the Warm Homes Plan – in effect, a lending budget to sit alongside its capital spending budget – exploiting the flexibility offered by its new balance sheet fiscal target.

Our review of different potential loan models for households purchasing heat pumps suggests there is no silver bullet, with important trade-offs across different models. Simpler options have further reach, but more targeted income-contingent loan terms could provide better value for taxpayers' money, and awareness is needed of costs that would squeeze the Department for Energy Security and Net Zero's already tight day-to-day budgets. A package of models that address the needs of different households might work best.

Importantly, no model can address the fundamental challenge posed by electricity being far more expensive per unit of energy than gas. Even so, to meet the Government's own net zero targets, the speed of heat pump deployment must increase rapidly and subsidised loans can play an important role in driving this, within a broader package of reforms.

Decarbonising domestic heating, responsible for nearly one-fifth of the UK's national greenhouse gas emissions, is one of the most challenging components of the country's transition to net zero (National Audit Office, 2024). Heat pumps are the primary low-carbon alternative to fossil fuel heating and are central to the electrification of the sector. The UK market share remains among the lowest in Europe at around 4%, compared with 30% in Ireland and 31% in the Netherlands – two countries that the Climate Change Committee (CCC) cites as appropriate comparators (CCC, 2025b).

Loans have been central to accelerating heat pump rollout internationally, particularly when paired with grants and regulatory mandates. In Germany, the KfW development bank offers concessional loans with partial write-offs when efficiency targets are met, reducing the upfront burden for households and businesses. In the Netherlands, the *Nationaal Warmtefonds* provides low-interest loans for energy upgrades, with households below a set income threshold eligible for interest-free loans. The UK's comparative underperformance can be attributed to a range of factors: most significantly, high electricity prices relative to gas, which neutralise the cost benefits of electrification, but also the lack of clear long-term policy direction and the absence of concessional loan finance to complement the availability of grants that cover part but not all of the upfront cost of installation.

Recent years have seen progress in uptake, nonetheless. Approximately 98,000 heat pumps were installed in 2024, a 56% increase on the previous year (CCC, 2025b). Uptake was supported by government grants such as the Boiler Upgrade Scheme (BUS), which offers up to £7,500 per household. Supply-side incentives such as the Clean Heat Market Mechanism, introduced in 2024, are also beginning to drive change. However, installation rates remain far below the Government's target of 600,000 per year by 2028 and the Climate Change Committee's pathway towards 1.5 million annual installations by 2035 (CCC, 2025a).

Barriers to uptake

Multiple factors continue to constrain growth in the heat pump market. These include high upfront costs (the average cost of an air-source heat pump installed under the BUS since its inception is £13,000 [CCC, 2025b]) and the domestic disruption caused during the installation process, but also potential running cost disadvantages. The latter are due to the fact that electricity costs so much more than gas per unit of energy, in part due to the burden of regressive policy levies that act as taxes

on electricity bills. Heat pumps are around three times as efficient as a gas boiler per kWh of energy used, but electricity is around four times more expensive than gas in the UK. Without action to remedy this imbalance, the greater energy efficiency of heat pumps will not translate into energy bill savings, leaving little incentive for consumers to take out a loan to switch from a gas boiler to a heat pump. The market for heat pumps and the manufacturing supply chain remain immature, too, with limited installer capacity and lack of consumer trust and awareness.

Subsidy schemes like the BUS provide essential support but are fiscally costly so are unlikely to be sustainable at large volumes of installations. If it continued at £7,500 per installation, BUS costs could reach £3.4 billion a year by 2030 to support CCC-advised deployment levels of 450,000 retrofits by 2030 (Resolution Foundation, 2025). Without complementary measures, these schemes risk high levels of 'deadweight' support for households that would have installed heat pumps without subsidies.

Fiscal and policy opportunity

The 2025 Spending Review allocated £5 billion of public 'financial transactions' capacity to the Warm Homes Plan, alongside £8.2 billion in grant funding. Under current fiscal rules well-designed loans can be close to neutral for the fiscal targets: loan assets offset upfront cash outlays for the balance sheet target (loan assets net off under the 'public sector net financial liabilities' metric), and interest receipts can cover financing and operational expenses for the current balance target. Even heavily subsidised loans are cheaper than grants, combining a loan element and a spending/subsidy element. This creates scope to deploy repayable finance to bridge the remaining affordability gap – i.e. helping to cover installation costs not met by the BUS or other grant-based subsidies – without generating pressure on fiscal targets. A key assumption of this report is therefore that these loans are additional to and combined with existing grant or subsidy support. Other models would, of course, be possible – for example, focusing high fiscal cost grant funding on low-income households and lower fiscal cost loan funding on higher-income households. Indeed, with both tools available, one would expect the balance to shift from grants to loans as the heat pump market became more established – and particularly so if electricity prices can be lowered relative to gas to reduce heat pump running costs.

Loan-based approaches

Three primary loan models are explored to address different dimensions of the affordability barrier:

- Interest-free loans: Households repay only the principal, with government covering foregone interest. This removes the cost of borrowing and can be made available universally or targeted to lower-income households. It is straightforward to communicate and to deliver. Fiscal costs arise from interest subsidies and potential defaults. There are higher risks of deadweight effects if offered universally but also greater scope to promote larger-scale deployment. Interest subsidies would hit departments' resource budgets, which are particularly constrained. For households, the appeal lies in being able to spread the cost over time without paying more than the installation price in loan repayments. (Loans could also be offered at low rather than zero interest rates, reducing fiscal costs but also reducing the financial incentive for households to take them up.)

- Payment holiday loans: Repayments are deferred for a set period (e.g. three to five years), with interest accruing at the Government's borrowing rate plus an appropriate risk premium. This removes upfront costs without requiring ongoing interest subsidies. Indeed, on some models, there could be no accrued costs at all, meaning fiscal targets and departmental budgets would face no additional pressure. These could also be universal or targeted. A key risk might be that defaults could increase if repayment starts during periods of financial strain – and the risk that 'free' money for an extended period could prompt abuse of the system. For households, the attraction is that installation can go ahead without any immediate financial outlay, allowing time to plan for repayments before they begin, though ultimately, they would repay more than under an interest-free loan. This would be particularly attractive if the relative price of electricity versus gas were lower, so that energy bill savings would build up.

- Income-contingent loans: Many approaches would be possible, but the most directly income-linked could be modelled on the English student loans system, with repayments tied to household income above a threshold, lower interest rates for low-income borrowers and

outstanding balances written off after a set period. This is more progressive in design, targeting support to those least able to afford heat pumps, but would be complex to implement. Linking repayments to household income would require new administrative systems and potentially a dedicated delivery body. For households, the value comes from the reassurance that repayments would always remain affordable by being explicitly linked to their income.

In any of these loan models, getting the design right requires careful trade-offs and policy considerations. Policymakers must face a fundamental policy tension **between maximising aggregate impact and minimising deadweight to achieve value-for-money**. Aggregate impact is greater with universal schemes, but they risk wasting taxpayers' money on subsidised lending to those who do not need support. That deadweight can be minimised by setting eligibility terms that target lending towards lower-income groups most in need of support, but at the risk of limiting aggregate impact. In addition, policy design must navigate the choice **between household versus individual lending**. Determining whether the loan is tied to the property, the household or an individual affects repayment mechanisms, portability and administration. Ultimately, choices made in respect of these trade-offs materially influence both the fiscal costs and policy impact of any loan-based intervention.

Pathways to scale

Loans alone will not deliver the scale of heat pump deployment required. A necessary precondition of any successful loan model is that it sits within a wider policy package that further improves the economics of heat pumps for households. That must include continued and well-targeted grant support for households most in need, with public engagement to improve awareness, trust and consumer readiness. Possibly most important of all, the Government must take action to lower electricity prices relative to gas to make running costs competitive relative to gas boilers (CCC, 2025b; Nesta, 2025). This would need to be coupled with supply chain investment to expand installer capacity and reduce costs. If electricity prices cannot be reduced relative to gas prices, subsidies to achieve electrification and emissions reductions would need to continue over the long term.

Assessment and recommendations

Mobilising the £5 billion in financial transaction capacity presents a timely opportunity to integrate repayable finance into the UK's clean heat strategy – a policy tool that has been underused to date:

- **Interest-free loans** are simple and well-understood, but provide only modest levels of subsidy and put pressure on already-tight departmental resource budgets (and potentially the current balance fiscal target if they are funded through additional spending).

- **Payment holiday loans** are also relatively simple, though ultimate repayment terms are harder to understand and the subsidy is more modest than is the case for interest-free loans. But they are the most efficient in terms of departmental budgets and the fiscal targets – potentially being fully neutral for both.

- **Income-contingent loans** are the most targeted option, focusing support where it is most needed, but are administratively complicated and may not be viable within the timeframes necessary for meeting deployment targets.

The ideal approach may to be bring together different features within an overall loan offer. Rather than fully income-contingent repayments, more generous terms can be offered to lower-income households. And the fiscally neutral nature of payment holidays can be exploited to ease initial costs for higher-income households, especially if electricity prices can be lowered through wider reforms.

More broadly, the addition of loans to the overall policy toolkit would give the Government more options to manage deadweight, value-for-money and aggregate impact, for example by focusing high-fiscal-cost grant funding where it has the greatest incremental impact, while lower-fiscal-cost loan funding aims to boost deployment volumes.

1. Introduction and context

This report reviews different potential loan models for households purchasing heat pumps in the UK against the backdrop of the UK Government having allocated £5 billion of 'financial transactions' to the Warm Homes Plan.

Fiscal context

The new UK government set revised fiscal targets in its first Budget in October 2024. From the perspective of public investment and loan schemes, the most important revision was to change the balance sheet target from 'public sector net debt' (PSND), which had featured in most fiscal targets since they were first introduced in the UK in 1997, to a broader metric: 'public sector net financial liabilities' (PSNFL).

One consequence of this reform was to make space for more conventional public investment (largely due to different treatment of the existing flow of student loans[1]). This space was deployed in aggregate in the October 2024 Budget and allocated to departments in the June 2025 Spending Review.

Another consequence was to make more space for public financial investments (predominantly loans or equity stakes in private sector entities), which are essentially unconstrained under the new balance sheet target. The 2025 Spending Review saw the first major use of this freedom:

- £9.6 billion of additional financial transactions were added to the aggregate envelope, providing a medium-term fiscal boost via flows that are not constrained by the fiscal targets[2]
- The British Business Bank's overall financial capacity was increased to £25.6 billion[3]
- A National Housing Bank was established with £16 billion of financial capacity (MHCLG, 2025)
- £5 billion of financial transaction capacity was allocated to the Warm Homes Plan – the focus of this report – such that the manifesto commitment of £13.2 billion is now met via £8.2 billion of spending and £5 billion of lending (or other financial transactions).[4] This additional lending capacity was backloaded, with the majority allocated to 2028–29 and 2029–30.

The Spending Review commitment to £5 billion of financial transaction capacity within the Warm Homes Plan also stated that: "The government will work with the UK's expert public finance institutions, including the NWF [National Wealth Fund], to support the delivery of the Warm Homes Plan. Further details will be confirmed by October." In this report, we have therefore drawn on some aspects of the NWF's strategic priorities to consider options for using that lending capacity.

The Government published a statement on the NWF's strategic priorities in March 2025 (HM Treasury, 2025). From the perspective of using loans within the Warm Homes Plan, key features include:

[1] A key difference between the PSND and PSNFL metrics is that loan outlays generate financial assets that net off PSNFL but not PSND. The largest existing government lending programme is the student loans system, which accounted for around £18-20 billion a year of difference between growth in PSND and growth in PSNFL in the October 2024 Budget forecast (see Table A.11 of the Office for Budget Responsibility's October 2024 *Economic and fiscal outlook*).

[2] See Table 5.2, Spending Review 2025 ('*Of which: increase in Financial Transactions*').

[3] See Table 4.1, Spending Review 2025.

[4] See paragraph 5.95, Spending Review 2025.

- The **triple bottom line**: "helping deliver the government's growth and clean energy missions, generating a return for the taxpayer and crowding in private capital"; and

- Proactively exploring **blended finance** solutions, which mean financial products (like loans and equity investments) can be combined with grants or subsidies from government departments to expand the range of tools available to meet government objectives. The cost of any grant or subsidy element to its interventions must be met by departments rather than the NWF.

The policy context for heat pump rollout

Decarbonising domestic heating is one of the most challenging elements of the UK's net zero transition, accounting for nearly one-fifth of national emissions (NAO, 2024). The largest single challenge is to replace around 23 million gas boilers with low-carbon heating technologies – i.e. those that use electricity generated from renewable sources rather than gas.

Heat pumps are the primary tool for low-carbon heating and are central to the sector's electrification. Although well-established internationally, the proportion of households in the UK with a heat pump is among the lowest in Europe. Indeed, the Climate Change Committee (CCC) recently noted that "The UK's heat pump market share remains low at around 4%, significantly behind comparable countries such as Ireland (30%) and the Netherlands (31%)" (CCC, 2025b).

Government subsidies have formed the backbone of much of the heat pump rollout in the UK to date. The principal initiative at the moment is the Boiler Upgrade Scheme (BUS), which offers grants of up to £7,500 to fund home retrofits. In 2024, the BUS supported 43% of heat pump installations,(CCC, 2025b). The BUS is expected to be extended through to 2030 and beyond, drawing on the £8.2 billion in grant funding allocated to the Warm Homes Plan. Supply-side market measures complement subsidy support. These include the Clean Heat Market Mechanism, which came into force this year and obliges boiler manufacturers to increase heat pump installations and invest in supply chain growth.

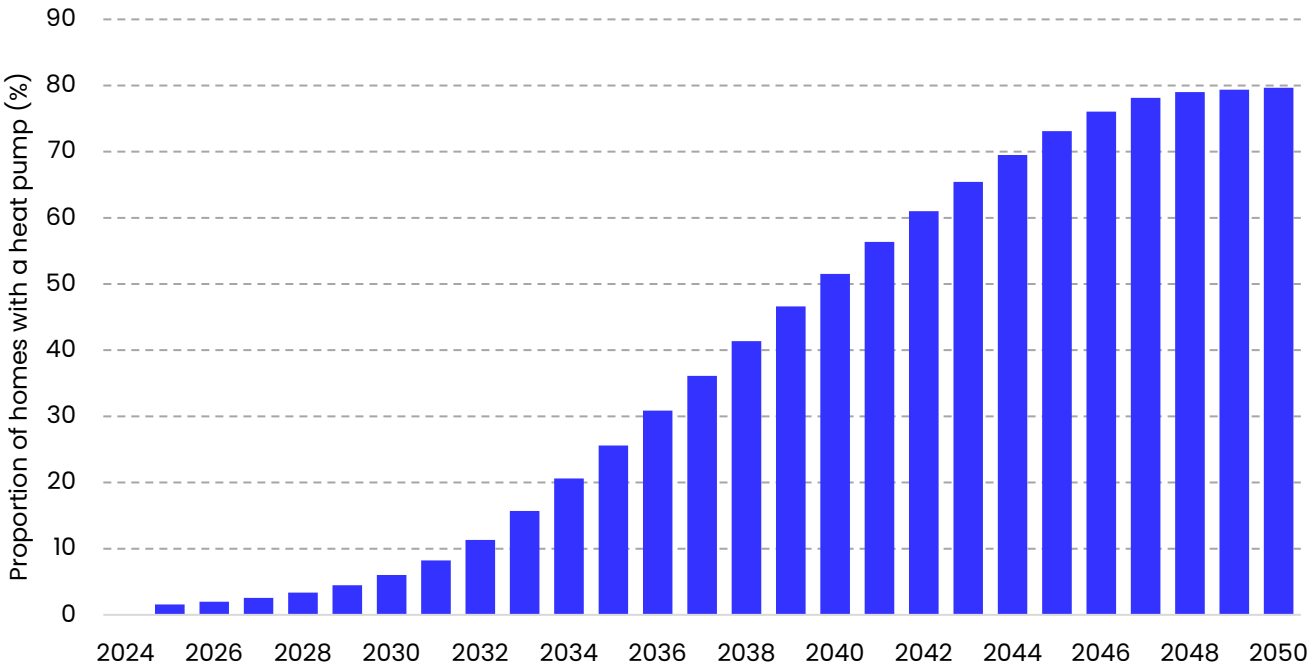
To an extent, these incentives are working. Around 98,000 heat pumps were installed in 2024, an increase of 56% on the previous year (CCC, 2025b). Yet uptake remains well below the Government's target of installing heat pumps into 600,000 properties a year by 2028. Most homes in the UK continue to rely on fossil-fuel heating – primarily gas boilers. In the near term, the UK's heat pump market will need to expand rapidly to remain on track for legally binding carbon budget targets and net zero by 2050. Uptake will need to accelerate sharply to meet the CCC's net zero pathway (see Figure 1.1), which is somewhat lower than the Government's existing target in the near term, envisaging 450,000 installations a year by 2030 and 1.5 million installations a year by 2035. This would take the share of homes with a heat pump from under 2% today to 6% by 2030 and around 50% by 2040 (CCC, 2025a).

The urgent need to scale up deployment confronts a domestic market that is not yet self-sustaining and has been stifled by an uncertain long-term policy trajectory and the high price of electricity relative to gas. Subsidy models, the Government's preferred policy intervention to date, will come under increasing pressure within a challenging fiscal context as clean heat scales up. By way of illustration, BUS grants at the existing rate of £7,500 would cost £3.4 billion a year by 2030 if all 450,000 installations in the CCC's advice received the subsidy (Resolution Foundation, 2025).[5] That would be equivalent to roughly double the annual grant budget allocated to the Warm Homes Plan in the 2025 Spending Review.

At present, it is unclear how the £5 billion allocated for financial transactions in the Warm Homes Plan will be deployed. Existing supply-side penalties for missing targets are unlikely to be strong enough to incentivise market shifts at the scale required. Critically, low-carbon heating suppliers face an absence of clear policy signals at the very moment at which supply chains must scale up rapidly.

[5] The cost would be around £1.5 billion if the share of installations supported by the scheme remained at the 43% level recorded in 2024 (CCC, 2025b).

Figure 1.1. Proportion of homes with a heat pump (under the CCC's net zero balanced pathway)



Source: Climate Change Committee (2025a, Figure 7.2.4)

Several fundamental barriers have interacted to dampen demand for heat pumps for many consumers. By far the most significant blocker to the clean heat rollout is the high cost of buying, installing and running a heat pump. Upgrading homes is capital-intensive and disruptive. A typical installation costs roughly £13,000, far exceeding the costs of replacing a gas boiler. This is compounded by low public trust in clean heating products and processes, with the typical consumer experience characterised by confusion, complexity and a lack of trusted information (Nesta, 2021).

Once installed, the high price of electricity relative to gas in the UK cancels out the far greater energy efficiency of the technology. Heat pumps are around three times as efficient as a gas boiler per kWh of energy used, but electricity is around four times more expensive than gas in the UK, with policy costs that fund renewables subsidies like Contracts for Difference and support for low-income households adding £490 a year to bills for a typical household with a heat pump (CCC, 2025b). Indeed, in some circumstances opting for a heat pump could *raise* energy bills by an estimated £30–£50 a year (Resolution Foundation, 2025). This imbalance could pose an insurmountable challenge to mass-market uptake. Without policy action to rectify this, the price of running a heat pump will not reach parity with a gas boiler until 2035 (CCC, 2025b) (see also Box 1.1 below).

Access to heat pumps is currently uneven and characterised by equity gaps. Heat pumps are disproportionately the preserve of more affluent segments of the population: 45% of those in use are situated in neighbourhoods in the top third of the income distribution, with only 19% in the poorest third of places. Government support is also skewed towards wealthier households, with nearly 60% of BUS recipients having a household income of £57,000 or above – well above the UK-wide average of £36,700 (Resolution Foundation, 2025). Analysis by the Department for Energy Security and Net Zero (DESNZ) suggests that two in five households with a heat pump would probably have installed one regardless of the subsidy (DESNZ, 2024). If this is a reasonable guide to the extent of deadweight in existing subsidies, it illustrates both the potential costs if much larger numbers of installations are subsidised each year and also the potential savings from better targeting at groups unable to afford large outlays without government support.

The Government now faces the challenge of accelerating delivery at scale while maintaining affordability and public support to meet its net zero targets. Financing options such as interest-free loans can expand the types of support that are available. They present a means of easing the remaining outlay by reducing the upfront cash barrier and spreading residual costs over a longer time period in a way that could be proportionate to income. Introducing affordable financing routes for

heat pumps alongside government subsidies could unlock uptake across a wider range of income groups, moving beyond early adopters to the point where the market becomes self-sustaining.

While loan models are likely to be a necessary part of the solution, financing alone is not a silver bullet. To achieve meaningful mass market uptake, loans must come in conjunction with wider systemic reforms, including:

- Refining the subsidy system
- Rebalancing the levies (taxes) applied to electricity and gas so that heat pumps generate running cost savings relative to gas boilers
- Investing in supply chain capacity and expanding the installer workforce
- Coordinated public engagement that improves consumer awareness, understanding and trust in low-carbon heating.

Box 1.1. Comparison of installation and running costs of heat pumps vs. gas boilers

Nesta has outlined the installation and running costs of heat pumps versus gas boilers by house size (Nesta, 2022; see table below). Under existing costs, policies, and electricity and gas prices, heat pumps are more expensive both to purchase and to maintain. At a minimum they cost around £670 more per year for a small home. Although Nesta's analysis was produced using 2022 prices, it is likely to remain broadly representative today. For example, the CCC reports that the average cost of an air source heat pump installed under the BUS since its inception is £13,000 (CCC, 2025b). This provides a baseline against which we model the loan options to indicate the impact per household of installing a heat pump and the aggregate fiscal cost if the heat pump fiscal targets are met.

Table 1.1. Nesta's comparison of lifetime costs of heat pumps vs. gas boilers in 2022

	Nesta's estimated whole life cost for installing an air source heat pump in 2022 Upfront costs in 2021 £s, running costs as capped rates (Ofgem), excluding any grants						
	Heat pump	**Gas boiler**	**Heat pump** *SPF 2.71*	**Gas boiler** *Efficiency 85%*	**Heat pump** *15-year lifetime*	**Gas boiler** *12-year lifetime*	**Relative price difference**
Property type	Upfront cost (£ total)		Running cost (£ per year)		Whole of life cost (£ per year) including running cost		
Smaller home[1]	£9,100	£1,500	£790	£560	£1,440	£770	Heat pump **£670 more**
Medium-sized home[2]	£10,100	£1,800	£1,170	£810	£1,880	£1,040	Heat pump **£840 more**
Large home[3]	£13,100	£2,200	£1,730	£1,190	£2,640	£1,450	Heat pump **£1,190 more**

Note: 1. Flats - medium (50-100m²) (excl. converted flats; maisonettes); 2. Terrace/converted flat/maisonette (100-150m²); post-1950s bungalow/semi-detached (<150m²); 3. Detached - large (150-200m²).

Source: Reproduced from Nesta (2022)

2. Accounting for public sector loans under the new fiscal targets

Before turning to options for using the £5 billion 'financial transactions' budget allocated to the Warms Home Plan, this section reviews the statistical accounting treatment of different types of loans. This includes how they affect the two fiscal metrics that the Government targets: the current budget deficit (CBD) and public sector net financial liabilities (PSNFL), and how the latter contrasts with treatment under public sector net debt (PSND), the previous balance sheet fiscal target.[6] We also consider where any subsidy element of 'blended finance'-style loans might score under the Treasury's administrative spending aggregates, 'Resource' and 'Capital' departmental expenditure limits (RDEL and CDEL).

Table 2.1 provides a stylised summary of how different loan-related cash and accrued flows 'score' against different fiscal metrics (see next page). By way of simple comparison, it also shows how conventional current or capital grant spending affects these metrics – with capital grants like the Boiler Upgrade System raising all but the current budget deficit.

The rest of the section sets out the treatment in more detail to capture nuance in different types of loans and how their impacts can differ over time.

Financial transactions

Loan outlays and repayments are termed 'financial transactions' in the UK's fiscal accounting. That means they have cashflows associated with them, but no direct effect on accrued spending or revenue. This reflects the fact that, under certain conditions, in particular the absence of predictable expected write-offs, the cash outlay on a loan generates a financial asset of equal value.

As Table 2.1 shows, loan outlays and repayments affect different fiscal aggregates in different ways:

- Under **PSND**, the previous fiscal target, loan outlays added to the measure of debt but loan assets did not net off. This meant that even though loans should be a fiscally cheaper approach to incentivising a chosen activity, they have tended to be underused.[7] (Loans leave PSND higher until they are repaid, in effect converting the loan asset back into a cash asset or, in reality, reducing public debt – the types of asset and liability that are captured by PSND.)

- Under the **PSNFL** and **current budget** fiscal targets, loan outlays are fiscally neutral. For PSNFL, that is because the financial liability associated with the cash outlay (e.g. gilts issued by the Debt Management Office) is offset by the financial asset represented by the loan. For the current budget, the loan outlays are excluded from accrued revenue and expenditure.

This treatment differs for loans where a material proportion is expected to be written off. In these cases, only the portion that is expected to be repaid is treated as a financial transaction that generates a financial asset, while the remaining portion that is not expected to be repaid is treated as a capital

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[6] To be precise, the previous target was 'public sector net debt excluding the Bank of England', a metric that abstracted from the uneven path of loan outlays and repayments associated with the Bank's Term Funding Scheme. For simplicity, we refer throughout to PSND.

[7] As reported in King and Jameson (2024), the UK has been an outlier relative to its peers in terms of its low usage of financial instruments (see Figure 6.2 in that report).

transfer (i.e. public spending) at the point of outlay. At present, this only applies to income-contingent student loans, but the Office for National Statistics (ONS) plans to bring more loan products into this category, given the greater emphasis on appropriate treatment of loan assets under a PSNFL fiscal target (ONS, 2025).[8]

Table 2.1. The impact of different loan-related financial flows and subsidies on fiscal metrics

		Public sector net debt (PSND)	**Public sector net financial liabilities (PSNFL)**	Public sector net borrowing (PSNB)	**Current budget deficit (CBD)**
Loan outlay	Financial transaction	Increases	**Neutral**	Neutral	Neutral
Loan repayment	Financial transaction	Reduces	**Neutral**	Neutral	Neutral
Interest on gilts financing the loan	Current spending	Increases	Increases	Increases	Increases
Interest paid on loan balance	Current receipts	Reduces	Reduces	Reduces	Reduces
Write-offs (larger, expected)	Capital spending	Neutral*	Increases upfront	Increases upfront	Neutral
Write-offs (smaller, unpredictable)	Capital spending	Neutral*	Increases at time of write-off	Increases at time of write-off	Neutral
Interest subsidy	Current spending (RDEL?)	Increases	Increases	Increases	**Increases**
Principal subsidy (i.e. expected write-offs)	Capital spending (CDEL?)	Neutral*	Increases	Increases	**Neutral**
Memo: conventional grant spending					
Current grants	Current spending (RDEL?)	Increases	Increases	Increases	Increases
Capital grants	Capital spending (CDEL?)	Increases	Increases	Increases	Neutral

Note: *Initial impact; ultimately write-offs add to PSND via lower repayments. RDEL= Resource departmental expenditure limit; CDEL= Capital departmental expenditure limit.
Source: Authors, drawing on various ONS, OBR and Treasury classification sources

[8] The ONS notes the Start Up Loan scheme operated by the British Business Bank and its devolved equivalents as an example of a loan scheme where there is material upfront credit risk from expected non-repayments.

Accrued spending and revenue

For loans to be truly fiscally neutral, their implications for accrued spending and revenue beyond the narrow cashflows must be taken into account. This includes the interest received on the loan and the interest paid on the debt issued to finance the loan, but also write-off costs and any subsidies.

Interest payments on financing (government payments to gilt holders)

The accounting for interest payments on debt financing is the same whether the debt is issued to finance a loan or for any other purpose. Cash and accrued interest on conventional gilts score at roughly the same time, while accrued interest on index-linked gilts (where the principal value of debt as well as the coupon is linked to inflation) scores upfront and the associated cashflows can take place many years into the future.

Interest received on loan assets (interest accruing on students' loan balances)

For the most part, accrued interest received on loan assets scores at the same or a similar point in time to the associated cashflow. For some loans, notably student loans, interest accrues each year from the initial loan outlay but is typically repaid much later. Moreover, for the proportion of student loans that are expected to be written off at maturity, no interest accrues in the public finance statistics even though it continues to accrue in individuals' student loan accounts. This reflects the fact that write-off assumptions are made from the top down rather than applied to particular loans within the portfolio.

Write-offs

When the recipient of a loan cannot repay, the lender seeks to recover as much as possible before writing off any balance that remains. In the public finances, these write-offs are treated as capital spending – a transfer of assets from the lender to the borrower.

There are two main approaches to recording write-offs:

- For most loans, capital transfers associated with write-offs are recorded in the year in which they occur. At this point, PSNFL and public sector net borrowing (PSNB) would increase by the value of the write-off, while CBD would be unaffected because the transfer is treated as capital rather than current spending. This can be several years after the loan outlay, so in the intervening period, the loan would be fiscally neutral from the perspective of these metrics. If the expected cost of future write-offs is reflected in the interest rate charged on the loans, they would be fiscally neutral over their lifetime (and probably modestly fiscally favourable in the short term).

- For loans where material write-offs are expected at the time of outlay (i.e. student loans at present, and potentially more loans in future), the capital transfer associated with *expected* write-offs is recorded at the time of loan outlay, raising PSNFL and PSNB (though not CBD, given the capital/current spending distinction). This means only the 'true loan' portion is treated as a financial asset while the rest is treated as capital spending from day one.

Subsidised loans

Subsidised loans are not fiscally free but will generally be much cheaper than grants since the subsidy will typically be only a small fraction of the initial outlay. But in a constrained fiscal environment, it is important to understand where different potential subsidies will score in terms of key statistical and administrative aggregates.

The Government can in theory subsidise any component of a loan to mean that total repayments are less than a true loan on fair terms. Different approaches have different fiscal implications (see Table 2.2):

- Low or zero interest loans reduce the amount of cash interest received on a loan. In accruals terms, rather than appearing as lower interest received, part of that accrued interest received would be paid for by a current transfer from government to the borrower (i.e. government pays some of the borrower's interest rather than forgoing some revenue). In terms of the administrative spending aggregates, this would be Resource DEL (i.e. departments' current spending budgets). In terms of the fiscal targets, it would hit both PSNFL and CBD.

- Loans on generous terms that create material expected non-repayments reduce the amount of cash repayments relative to outlays beyond a normal degree of write-offs. As described above, in accruals terms, write-offs are treated as capital transfers from government to borrowers, with the timing determined by whether expected write-offs at the point of outlay are particularly large and predictable. In administrative terms, this would be Capital DEL. In terms of the fiscal targets, it would hit PSNFL but not CBD (except via knock-on consequences to interest received, which only accrues on the true loan portion of total cash outlays).

- Payment holidays have a potentially interesting accounting treatment. If a payment holiday delays but does not reduce lifetime repayments on a loan (i.e. if interest accrues and is added to the loan balance during the payment holiday), then it would have no impact on accrued spending or revenue. This would mean no impact on departmental budgets or the fiscal targets, either. However, if there were also no interest during the period of the payment holiday, that would be accounted for in the same way as zero-interest loans described above – since it would essentially be a temporary or time-limited zero-interest loan.

The allocation of £5 billion of financial transactions budget for the Warm Homes Plan alongside £8.2 billion of conventional capital spending budget, but with no dedicated resource or current spending budget, means there is value in studying the pros and cons of different potential subsidised loans for heat pumps. These would complement rather than replace other policies. The lack of a dedicated resource envelope for the Warm Homes Plan means that current spending subsidies will be particularly challenging.

Table 2.2. The impact of three different loan models on fiscal metrics

		Public sector net debt (PSND)	**Public sector net financial liabilities (PSNFL)**	Public sector net borrowing (PSNB)	**Current budget deficit (CBD)**
Interest-free loans	Financial transaction + current spending	Increases	Increases	Increases	Increases
Payment-holiday loans	Financial transaction	Increases	Neutral	Neutral	Neutral
Income-contingent loans	Financial transaction + capital spending	Increases	Increases	Increases	Neutral

Source: Authors, consistent with Table 2.1.

3. Heat pump loans: design options

The design and implementation of any loan-based policy intervention must address several recurring challenges to ensure both economic efficiency and practical feasibility. Two key issues emerge in the context of energy transition financing in the deployment of heat pump technologies. Ultimately, trade-offs between fiscal cost and the pace of heat pump rollout will require political judgements. This section sets out the pros and cons of different subsidy models.

Common challenges in designing loan models for policy implementation

1. Maximising aggregate impact and minimising deadweight to achieve value-for-money

Loan schemes (and subsidies more broadly) must navigate between two positions:

i. **Aggregate impact is greater** with universal schemes, but they risk wasting taxpayers' money on subsidised lending to those who do not need support. As noted above, perhaps two in five heat pumps installed with the support of grants would have been installed anyway. That deadweight can be minimised by setting eligibility terms that target lending towards groups most in need of support, but at the risk of limiting aggregate impact. This is likely to be most relevant in the initial phase of heat pump deployment, when part of the policy aim is to catalyse the market.

ii. **Deadweight can be minimised** via careful targeting and screening of loan applicants. Highly targeted schemes – focusing on specific socioeconomic groups – can improve value-for-money per pound of subsidy by directing funds to those most in need and least likely to invest without support. But as noted, these will, by design, support fewer installations in aggregate.

Policymakers must weigh up the benefits of scale against the efficiency of targeted interventions.

2. Household versus individual lending structures

A central design consideration is whether loans should be tied to a household or an individual. This decision has significant administrative and practical implications. For example, in cases where the borrower relocates, it is necessary to determine whether the loan obligation transfers to the new property occupant or remains with the original borrower. This choice influences the operational design of repayment mechanisms and interacts with institutional processes such as data matching within HM Revenue and Customs (HMRC). A household-linked approach may enable better alignment of repayment obligations with the circumstances of the beneficiaries of the financed asset, whereas an individual-linked approach may provide greater simplicity in credit risk assessment but complicate asset transfer scenarios. There are examples from existing heat pump loan schemes in other countries where the loan is linked to the property: i.e. the loan stays with the home when ownership is transferred, rather than staying with the owner at the time the loan was extended.

Other approaches could be possible. For example, as a heat pump is integral to the home, the loan could be linked more explicitly to the value of the home. For mortgaged households, this could in effect become a second charge on the home. For outright owners, of which many are pensioner households, this could facilitate access to loan finance for asset-rich, income-poor households. These possibilities are not pursued further in this report but illustrate the breadth of design options available.

Implications for policy design

In sum, effective loan model design requires careful calibration across these dimensions. Choices about the unit of lending and the balance between maximising aggregate impact and minimising deadweight will significantly influence both the fiscal cost and policy impact of any intervention.

Given the many different types of household that will need to switch to a heat pump to meet the legislated emissions targets, it is likely that a suite of support measures will be necessary rather than a single intervention being sufficient. This means different trade-offs can be made. For example, interventions targeted at lower-income households can be more generous but subject to stricter eligibility checks. Mass-market interventions can be less generous so that fiscal costs per loan – and therefore the costs associated with deadweight – are lower; and so on.

In the discussion that follows, we consider different loan models under the assumption that loans are used to cover the remaining cost of a heat pump installation after a Boiler Upgrade Scheme (BUS) grant. This assumes an average cost of heat pump installation of £13,000 and a BUS grant of £7,500, giving an average loan of £5,500 and meaning just over 900,000 loans could be issued within a financial transactions budget of £5 billion. (Of course, the Government may choose to direct some loans to companies or social housing landlords rather than households, but this framework provides a useful illustration of the potential costs of different subsidy models with a £5 billion lending envelope.)

The assessment of different models against different criteria is summarised in Table 3.1 and detailed in the remainder of this section.

Table 3.1. Summary assessment of different heat pump loan models

Assessment criteria	Interest-free loans	Payment-holiday loans	Income-contingent loans
Fiscal costs/scoring	Largely neutral for PSNFL, with the only impact being the cost of the interest subsidy. If the outstanding loan balance reached £5 billion and the subsidy was 7%, this would create an RDEL cost of around £350 million a year, which would only put pressure on fiscal targets if financed through additional borrowing.	Broadly fiscally neutral for PSNFL, PSNB and the CBD as accrued interest offsets gilt financing costs. The main risk is higher non-repayment or adverse selection during the payment holiday, which could increase write-off costs and fiscal exposure. If interest does not accrue in the holiday, fiscal costs apply.	Treated partly as lending and partly as capital spending (the non-repaid portion). This limits upfront fiscal costs to the subsidy element. If 20% of £5 billion in loans were expected to be written off, the PSNFL impact would be £1 billion in capital spending.
Deliverability	Simple; avoids the complexity of other subsidies. Delivery through existing intermediaries or a public vehicle could be rolled out efficiently at scale. No additional challenges beyond 'common problems' if universal.	Similar to the interest-free option, this model could operate in the same way using either existing financial intermediaries or a new or existing government body. No additional challenges beyond 'common problems' if universal.	Likely to be difficult to deliver in practice, especially if based on household income, which is administratively complex. Administering the loan may require the creation of a dedicated Student Loans Company-style delivery body. The retrofit market and

			household circumstances are complex.
Fairness/impact	Trade-off: impact on heat pump deployment would be greatest if applied universally, but perceived fairness is greater if it is targeted towards low-income households. Addresses credit constraints by offering government-backed finance to households that may not be eligible for commercial lending.	Same trade-off on deployment impact vs. targeting. Addresses immediate affordability challenge by postponing repayments until households may be in a better financial position.	Route to overcome upfront affordability barriers in a more progressive way than conventional loans. This is because it ensures support is targeted at lower-income households and proportionate to a household's ability to pay.
Consumer attractiveness	Allows households to spread the upfront cost of a heat pump without financing costs, a material subsidy. However, take-up may be limited by repayment concerns among lower-income households, and the fact that high electricity prices mean running costs can exceed those of gas boilers despite higher efficiency.	Offers households breathing space by delaying repayment, but higher financing costs later. Attractiveness therefore depends more strongly on lowering the electricity-to-gas price ratio to generate heat pump running cost savings.	Flexibility makes it an attractive model to consumers. Repayments reflective of earnings which protects households from unaffordable debt while removing upfront cost barriers. Familiar, proven model in the UK, which increases likelihood of consumer trust.

Interest-free loans

How they would work

Households would be offered an interest-free loan to cover the residual upfront cost of a heat pump installation not covered by a BUS grant. The household would repay only the principal over time, with the Government in effect paying the interest on their behalf. This would further reduce the lifetime cost of a heat pump and improve the efficacy of the BUS by expanding the number of households that can afford to access it, removing any upfront cost barrier to installation. If the price of electricity relative to gas were brought down in line with CCC recommendations, it would also mean savings on households' overall energy bills could contribute to repaying the loan.

To use the Warm Homes Plan financial transactions budget, the loans would need to originate in government – either DESNZ itself or an existing or new public financial institution like the National Wealth Fund. So long as government retained full economic control of the scheme, it could be administered by either a public or private sector entity (e.g. processing loan applications, disbursements and repayments). It would not be possible to guarantee loans extended by private sector financial intermediaries using a financial transactions budget, though this would be possible via alternative fiscal interventions. The loan could also be designed so that repayment of any outstanding balance is triggered upon the sale of the property, ensuring recoverability. In effect, this would secure

the loan on the value of the property, though this may have implications as a second charge on mortgaged properties.[9]

The scheme could be designed as either a universal offer or targeted towards lower-income households. A universal approach would maximise uptake and impact, particularly by addressing one of the main barriers to heat pump installation: upfront cost. However, it would also result in a larger fiscal outlay and raise concerns about offering low-finance subsidies to higher-income households who may not need them. A targeted scheme could be based on income, council tax band or benefit status, and would reduce the fiscal cost but could lower overall uptake and risk excluding households that are above the eligibility threshold yet still unable to afford the upfront costs. It may also raise difficult questions around affordability assessments and the appropriateness of government lending to households that might struggle to repay, increasing the likelihood of defaults and write-offs (issues that are likely to be more acute than under universal models).

Fiscal impact

Providing an interest-free loan constitutes a current spending subsidy and would be scored as RDEL, reflecting the cost to the department of covering the interest income foregone. This subsidy is calculated as the equivalent of the Government's borrowing cost (gilts rate) plus an appropriate risk premium, applied to the outstanding loan balance each year. To illustrate the maximum potential cost, if the outstanding loan balance were to reach the full £5 billion and the subsidy calculated relative to gilts plus 2 percentage points, the RDEL cost would be around £350 million a year.[10] This maximum would only be reached after several years, given the volume of heat pump installations it would entail. Perhaps more importantly, it would only feed through to pressure on the fiscal targets if the cost of the interest subsidy were met through additional borrowing. If it were funded from within DESNZ's existing RDEL budget, other uses of that budget would need to be scaled back, so there would be no impact on the fiscal targets. A low-interest option, rather than zero interest, would operate in the same way but require a lower subsidy per pound of lending. This would make it more attractive from a fiscal perspective, but less attractive from the perspective of households' financial outlays.

In cases where borrowers default and loans are written off, the associated cost is recorded as a capital transfer and scored against CDEL. If this spending is additional, it raises PSNFL but does not affect the current balance. If it came from within DESNZ's existing CDEL budget (or indeed the £8.2 billion Warm Homes Plan CDEL budget), it would displace other spending rather than raising PSNFL. It seems likely that write-offs would be relatively modest. For example, at a write-off rate of 1% a year, the cost would not exceed £50 million a year even if the loan balance were at the full £5 billion. The extent of loan write-offs will depend on whether the scheme is designed for universal access or targeted support based on borrower characteristics. Higher write-offs will result in larger capital transfers and greater use of the CDEL budget (or pressure on PSNFL if they were met through additional spending).

Targeting loans towards lower-income households, from which full repayment is less likely, would deliver more support through capital rather than current spending – in effect, turning support from loans into grants for those that cannot repay. It would require a judgement by the ONS as to whether the extent of targeting and expected write-offs meant those capital transfer costs should be recognised upfront or only recorded as and when they happen (as described in Section 2).

Assessment

The simplicity of an interest-free loan is one of its major strengths. It avoids the complexity and confusion that often accompany other financial products or energy subsidies. Importantly, it addresses credit constraints by offering government-backed finance to households who may not be eligible for commercial lending. Through existing intermediaries or a dedicated public vehicle, the

[9] A related issue is the extent to which the value of a heat pump is reflected in the price of a property. It seems plausible that the greater the credibility of a future ban on the installation of new gas boilers, the greater the value that homebuyers will attach to a property already having made the necessary investment in a heat pump and associated retrofit costs.

[10] This is based on March 2025 forecast of gilt rates by the Office for Budget Responsibility (OBR), which sees rates rise from 4.5% this year to 5.1% in 2029-30 (OBR, 2025). Gilt rates plus 2 percentage points result in an interest rate of around 7%, income from which is foregone in this model.

scheme could be delivered efficiently and at scale. Optional features, such as triggering repayment upon sale of the property, could reduce write-off rates, thereby improving the recovery of the outlay.

From a household perspective, the main attraction lies in being able to spread the high upfront cost of a heat pump over time without incurring the additional burden of financing costs. Government-backed interest-free loans represent a materially better offer than is currently available on the market. For example, Octopus Energy's heat pump finance carries an interest rate of 9.9%.[11] It would also compare favourably to the (unsuccessful) Green Deal loans that were offered by the Government between 2013 and 2015 for home energy efficiency improvements, which carried interest rates of 7 to 10% and saw a very limited take-up of only around 14,000 households (NAO, 2016).

However, even without interest, loans must still be repaid, which may deter lower-income households from taking them up; and subsidised lending cannot overcome the fundamental challenge posed by electricity prices being around four times higher than gas prices at present, so that even with much greater efficiency a heat pump will, in many cases, cost more to run than a gas boiler. Also, within the constraints of a tight fiscal framework and fixed departmental spending envelopes, the requirement for interest costs to be funded from resource spending might prove challenging. That said, the interest subsidy on £5 billion worth of loans is not huge compared with broader spending plans and the available fiscal space against the current budget fiscal target.

Ultimately, while an interest-free loan is a useful tool to increase uptake, its effectiveness depends on careful design to limit deadweight. A hybrid approach that combines universal access to loans with more generous terms, like interest subsidies, for lower-income households could help balance fairness, uptake and fiscal cost.

Payment holiday loans

How they would work

Under a payment holiday model, households would be offered a loan to cover the upfront cost of a heat pump installation, with repayment deferred for an initial period (e.g. three to five years). In a pure payment holiday variant of this model, with no additional subsidy, during the period of the holiday no repayments are required but interest accrues on the balance at a rate equivalent to the Government's cost of borrowing (gilts) plus a risk premium. After the holiday period ends, households begin repaying both the principal *and* the accrued interest.

This structure addresses the immediate affordability challenge of the upfront cost by postponing repayments until households may be in a better financial position, including if savings on energy bills were to materialise (i.e. if electricity prices can be brought down relative to gas prices). Unlike an interest-free loan, a payment holiday on its own would not involve the Government subsidising the cost of borrowing, making the fiscal impact lower in terms of direct subsidy, while still eliminating the upfront cost barrier for households. If interest were not to accrue during the payment holiday, there would be an element of government subsidy, although it would be smaller than for a fully interest-free loan. Similar to the interest-free option, this model could operate in the same way using either existing financial intermediaries or a new or existing government body.

Fiscal impact

The cashflows associated with this type of loan would be treated as a standard financial transaction in the public finances, raising PSND initially and reducing it later as loans are repaid. It would, however, be essentially fiscally neutral throughout the lifetime for the loan for the accrued measures of PSNFL, PSNB and the CBD. This is because, during the payment holiday interest would accrue and be recorded as interest receipts, offsetting the debt interest spending associated with issuing gilts to finance the loans. The precise impact on the fiscal targets would depend on how the net interest earned on the loans (at a modest premium over gilts) compared with the realised write-off costs, so could be positive or negative in outturn (though by small and probably fiscally negligible amounts).

[11] See Octopus Energy, *Finance your heat pump* (web page).

One risk would be that the deferral period increases the risk of non-repayment materially (either due to changing circumstances or greater risk of fraud). The risk of adverse selection may also be greater if the households most likely to take up a payment holiday were more vulnerable to financial difficulties. This could increase the possibility of a payment holiday loan scheme being associated with a higher fiscal cost in outturn than expected, an issue that would need to be managed through the terms of loans, the policing of applications and monitoring once they had been extended.

Assessment

The payment holiday loan model offers a fiscally efficient approach to tackling the upfront cost barrier to heat pump adoption. By deferring repayments, it helps households transition to low-carbon heating without immediate financial burden, potentially increasing uptake among those unable to access other forms of credit.

From a public finance perspective, the model is cost-effective (because it is less generous over the lifetime of the loan than, say, offering an interest payment subsidy) and is particularly attractive from the perspective of fiscal targets and departmental budgets due to the subsidy being entirely a cashflow timing effect that does not alter than path of *accrued* spending.

However, the design is not without risks. The accrual of interest during the deferral would require higher subsequent repayments for households once the payment holiday ends. This could make it unattractive to consumers, particularly if the electricity-to-gas price ratio is not reduced to the extent that heat pumps generate energy bill savings relative to gas boilers. There is also an increased risk of non-repayment if borrowers' circumstances deteriorate during the holiday period. This may lead to higher default rates, particularly among lower-income households or in times of economic weakness.

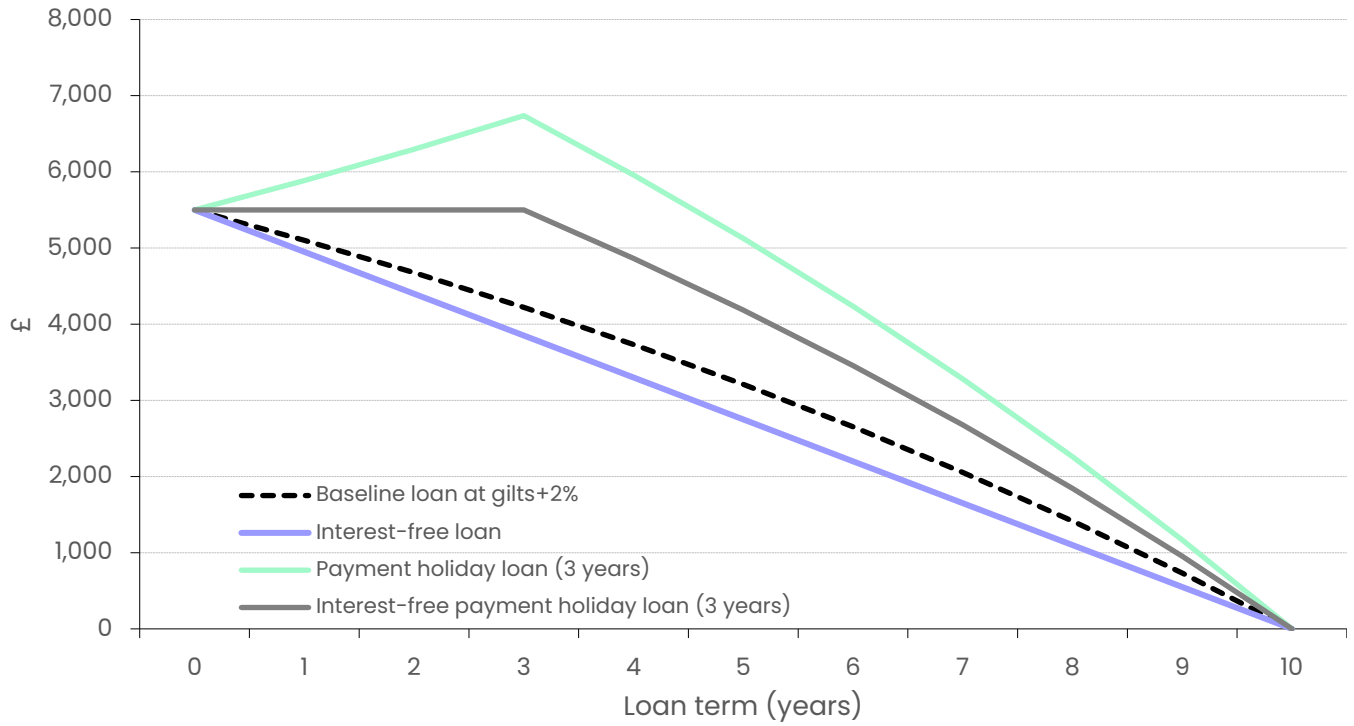
From a household perspective, the main benefit of a payment holiday is the breathing space it provides, allowing time to adjust and plan for future repayments without the immediate pressure of servicing a loan. But the model becomes far less attractive if switching to a heat pump results in higher running costs due to high electricity prices. In that case, households would face the added burden of repaying the loan as well, creating a potential double hit of higher bills and additional loan costs. The success of this model would therefore depend heavily on progress in narrowing and correcting the electricity-to-gas price ratio, which could restore the prospect of bill savings and make repayments more manageable.

On balance, payment holidays strike a credible compromise between encouraging uptake and maintaining fiscal discipline – in particular, avoiding pressure of departments' resource budgets. With appropriate safeguards in place, it could play an important role in accelerating heat pump adoption while limiting direct government expenditure.

Summary of overall costs to borrowers of the interest-free and payment holiday loans

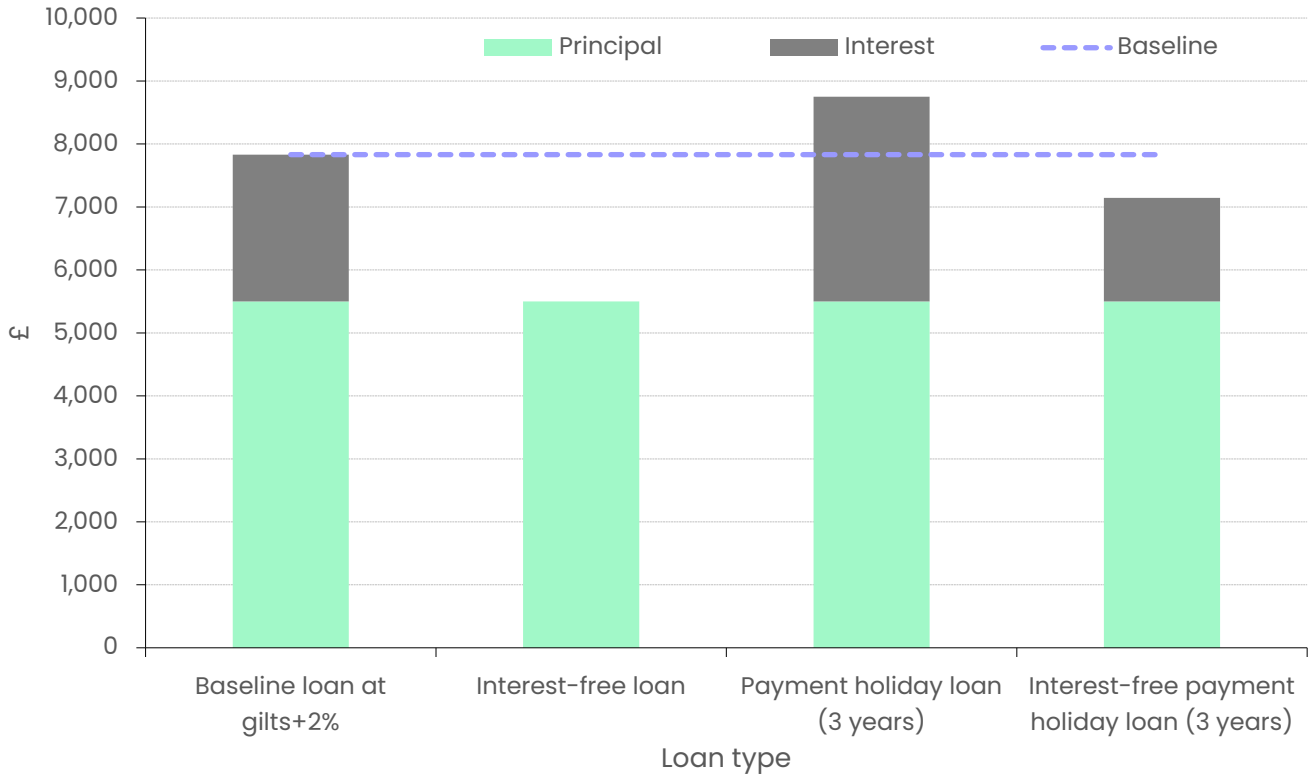
To illustrate the choice for borrowers of the interest-free and payment holiday options, Figures 3.1 and 3.2 show the paths of the outstanding loan balance and the total repayment associated with a 10-year repayment loan for £5,500 under different terms. The baseline is a simple repayment loan at a 7% interest rate. The interest-free loan provides the largest subsidy, saving borrowers £2,331 in interest over 10 years. The payment holiday with no interest subsidy would cost £921 *more* overall, but nothing for the initial three years. It would therefore only be attractive for borrowers who expected either substantial income gains or significant energy savings to offset those higher costs. A time-limited interest-free period during the payment holiday would sit between these two options.

Figure 3.1. Outstanding loan balance for a 10-year £5,500 loan under different terms



Source: Authors' calculations

Figure 3.2. Total repayments for a 10-year £5,500 loan under different terms



Source: Authors' calculations

Income-contingent loans

How they would work

There are several ways of structuring a loan so that repayments are somehow contingent on income. These could include income-related eligibility for the zero interest or payment holiday options set out above or temporary support with repayments triggered by income-related events. But it would also be possible to structure a truly income-contingent scheme along the lines of student loans in England (i.e. the Plan 2 and Plan 5 repayment plans – see Box 3.1), building on a proven framework.

In this model, repayments would be determined by income, constituting a percentage of income over a given threshold. For example, this could be 5% of taxable household income above £45,000. Interest could accrue at gilts+0% for low-income groups (e.g. those on Universal Credit or while household income is below £30,000), rising linearly to gilts+3% for higher earners (e.g. those earning more than £60,000). Loans could be written off after 15 or 20 years, matching the average lifetime of a heat pump.

Box 3.1. Case study: 2019 student loan accounting changes

Reforms to the student loan repayment structure in England illustrate how their design can interact with fiscal targets. Student loans were originally treated as financial assets in the public finance statistics. Loan outlays were recorded as lending, adding to public sector net debt but with no cost scored under the accrued measure of public sector national borrowing (PSNB) until they were written off decades later. This obscured the true fiscal costs of the loans, given the high proportion expected to be written off. From 2019, a hybrid accounting model was adopted which splits loans into a portion that is expected to be repaid (which continues to be treated as lending and a financial asset) and a portion that is expected to be written off (which is treated as spending rather than lending and scores against PSNB). After these accounting changes, the Plan 5 repayment plan was introduced. Relative to its predecessor, Plan 2 loans, Plan 5 set a lower repayment threshold and an extended repayment window to 40 years, and was designed to reduce the subsidy component that scores as upfront spending (OBR, 2022). Up until the accounting rules were changed, there had been a period during which the subsidy element of loans increased materially without affecting fiscal targets.

This demonstrates the importance of accounting treatment that reflects the true fiscal cost of a loan product – i.e. if there is a large subsidy element, that should be recognised upfront. It also shows how the terms of loans can be designed to achieve a desired level of subsidy.

Loans could be open to owner-occupiers only, or extended to private landlords, too, with tenure-specific criteria developed for social landlords. Consumers seeking to purchase a heat pump would engage an accredited installer, who would log a quote for the work with the intermediary body. The loan could be capped at £5,500 to meet the residual cost of an average heat pump after the BUS. The consumer would need to pass soft credit checks (i.e. bankruptcy; council-tax arrears). Once upgrades are installed, the intermediary body would administer 100% of the invoice to the installers.

The loan could be delivered through Great British Energy or a bespoke intermediary body modelled on the Student Loans Company (SLC). This would be wholly in public ownership, meaning its assets and liabilities would form part of the public sector balance sheet. DESNZ would set the terms on which loans were offered (maximum amounts, interest rates, etc.) and receive regular valuations for consolidation in its departmental accounts (as is the case with Department for Education and the SLC).

Funding would be provided by DESNZ from the Warm Homes Plan financial transactions budget to the intermediary body at gilt rates plus a small margin to cover operational expenses, with expected losses recorded as capital spending by central government (as is the case with student loans). If the model fully replicated the student loans approach, repayments would be collected via the PAYE tax system for employees and via Self-Assessment for the self-employed, as these are the only systems where income and loan balance can be reliably linked.

Depending on how the loan is structured, the mechanism for repayment might need to be via households rather than individuals, making it potentially significantly more complex to develop than the student loan equivalent. To be delivered via HMRC, a linking-mechanism would need to be created within HMRC systems to join up taxpayers within households (a barrier that has been noted in other contexts, for example the debate around social energy tariffs or the targeting of the high-income child benefit charge and access to free childcare hours).

It could alternatively be deployed using a household income approach similar to mortgage lenders, with the property's owner(s) as the beneficiary. Government could explore additional flexibilities such as early repayment without penalty or an opt-in mechanism to transfer the loan to the new buyer when a property is sold (in effect, capitalising the value of the heat pump and the associated loan balance into the price of the property).

Fiscal impact

This loan would be treated partly as a financial transaction and partly as a capital transfer in the public finances, as is the case with student loans. Fiscal impacts would be managed through the 'RAB-charge' structure that has effectively been replicated in statistical metrics used for the fiscal targets.[12] Under this approach, departments score the estimated write-off portion in their departmental accounts, while the ONS records a broadly equivalent capital spending item for the portion of loan outlays that is not expected to be repaid. This leverages existing Treasury experience and established processes by aligning with practices for student debt, limits upfront fiscal costs to a subsidy element that is within its control, and focuses fiscal subsidies on those with lower incomes while higher-income households repay in full.

For illustration, if 20% of loan balances were expected not to be repaid, and total loan outlays averaged £1 billion a year until they reached £5 billion, the capital transfer cost would be £0.2 billion a year and their impact on PSNFL would reach £1 billion when £5 billion of loans had been issued. In accounting terms, this would be £4 billion of financial transactions and £1 billion of capital spending. There would be further knock-on impacts due to interest revenue only accruing on the lending portion of outlays, such that interest paid on debt could exceed interest revenue accruing (depending on the margin over gilts being charged on loan balances and the portion of loans expected to be written off).

Assessment

By design, an income-contingent loan model presents a route to overcome upfront affordability barriers in a more progressive way than conventional loans. This is because it ensures support is targeted to lower-income households and proportionate to a household's ability to pay. This flexibility makes it a potentially attractive model to consumers, with repayments reflective of earnings which protects households from unaffordable debt while removing upfront cost barriers. It is, moreover, a familiar, proven model in the UK, albeit at an individual rather than household level. The UK's student loan system, introduced in 1998, has been pivotal in expanding access to higher education, with uptake rates at around 1.5 million students per year.

This model could therefore broaden access by unlocking a long-term, predictable financing route for households deterred from investing in a heat pump even with the existing BUS subsidy. Fiscal impacts would be substantial, but still less then outright grants because they are limited to the subsidy element. Those fiscal costs would be capital spending, so could be absorbed within the £8.2 billion of conventional capital spending budget allocated to the Warm Homes Plan. The model could largely follow the well-established HMRC process used for student loans.

However, the model is likely to be difficult to deliver in practice. The home retrofit market is markedly more complex than the higher education context. Calculating combined household income would require a new linking mechanism within HMRC, which is administratively complex. Administering the loan may require the creation of a dedicated SLC-style delivery body which would require time and resources. There is a risk that certain household models – for example, 'informal' households with non-

[12] The 'RAB' charge is an expected write-off charge incorporated in departmental accounts, originally under the 'Resource Accounting and Budgeting' or 'RAB' framework.

traditional or frequently changing structures – would complicate reporting and reduce the accuracy of repayments.

For the income-contingent loan model to be expanded beyond the initial government intervention, financial infrastructure must be established to originate and service loans, monitor repayments and manage long-term liabilities. Existing banks or social lenders could play this role, but this would require risk appetite and confidence in the viability of repayment streams linked to household income. Many private lenders may view income-contingent repayment – particularly with long deferral periods and partial write-offs – as commercially unattractive without government guarantees or outright subsidy.

Given the administrative complexities of a fully income-contingent repayment model, simpler income-contingent terms might be more attractive. For example, eligibility for more generous terms, such as subsidised interest rates or grants for associated retrofit costs, could be linked to household income.

Box 3.2. Income-contingent loans in the international context

Income contingent loans have become a well-established instrument in the higher education sector globally. Originating with **Australia's Higher Education Contribution Scheme (HECS)** in 1989, the model is now in operation in countries including the UK, New Zealand, Hungary, South Korea and Ethiopia. The model has proven replicable at scale in different contexts, balancing fiscal sustainability with borrower protection and proportionality.

Beyond the education sector, nationally implemented, fully income-contingent loans are rare. **The Netherlands, through the National Heat Fund (*Nationaal Warmtefonds*),** offers **low-interest loans for energy upgrades, with those on incomes below €45,014 eligible for loans at 0% interest. This model has underpinned rapid deployment, with Dutch heat pump installations rising to over 170,000 units in 2023, a market share of more than 40% in new buildings.**

Some initiatives, such as **Canadian provincial Pay-As-You-Save (PAYS)** on-bill financing pilots, have added income-responsive elements. These include extended repayment terms or reduced monthly charges for households demonstrating lower income after retrofit. This was based on a manual application for relief, rather than tying repayment systematically to earnings through the tax system. While effective on an individual basis, international examples suggest administrative challenges have reduced the deliverability of nationwide income-contingent loan schemes outside education.

4. Assessment and recommendations

Mobilising the £5 billion in financial transaction capacity presents a timely opportunity to integrate public loan finance into the UK's clean heat strategy – a policy tool that has been underused to date. But there are pros and cons to each of the consumer-focused loan models explored in this paper.

The pros and cons include:

- **Interest-free loans** are simple and well-understood, but provide only modest levels of subsidy and put pressure on already-tight departmental resource budgets (and potentially the current balance fiscal target if they are funded through additional spending).
- **Payment holiday loans** are relatively simple, though ultimate repayment terms are harder to understand, and they are the most efficient in terms of departmental budgets and the fiscal targets – potentially being fully neutral for both. But they may not be sufficiently attractive to borrowers as they do not provide material subsidy over the lifetime of the loan.
- **Income-contingent loans** are the most targeted option, enabling ex-post rather than ex-ante targeting to focus support where it is most needed, but they are administratively complicated and may prove too costly or unworkable. This is particularly the case for a full student loans-style model, which could create administrative and potentially legal complexity in monitoring, verifying and linking incomes across multiple loan beneficiaries. This may prove a show-stopper, given the urgency of increasing uptake of heat pumps to meet ambitious deployment targets.

This assessment suggests the ideal approach may be to bring together different features within an overall loan offer. Rather than fully income-contingent repayments, more generous terms could be offered to lower-income households. And the fiscally neutral nature of payment holidays could be exploited to ease initial costs for higher income households. This becomes attractive to consumers if electricity prices can be lowered through wider reforms so that there is an economic case for switching to heat pumps to secure bill savings. Such targeted subsidised loans could strike a better balance between feasibility and equity. As well as basing the generosity of loan subsidies on household income at the loan application stage, it would also be possible to factor in Energy Performance Certificate (EPC) ratings, or receipt of Universal Credit or other means-tested benefits.

Such models would combine elements of current spending subsidy for below-cost interest rates that would need to be met from the constrained DESNZ resource budget and elements of capital spending subsidy for write-offs that could be met from the £8.2 billion Warm Homes Plan capital budget. If they were entirely met from within DESNZ's budget, they would not put additional pressure on the fiscal targets (since those budgets are already reflected in existing forecasts). But even so, it is worth noting that interest subsidies put pressure on both the current balance and PSNFL targets, while write-off subsidies only put direct pressure on PSNFL – and that pure timing benefits through payment holidays do not affect either fiscal target (unless write-offs are higher as a consequence of the holiday). These features of different loan products will be relevant to other uses of financial transactions budgets as the Government continues to look for ways to make the most of its fiscal resources.

In all cases, it is clear that loans alone cannot solve the heat pump deployment challenge. That will need a concerted effort across more than just upfront installation costs. The electricity-to-gas price imbalance needs to be addressed so that the greater efficiency of heat pumps translates into ongoing energy bill savings, and broader investment is needed in supply chains and installer capacity.

But the allocation of a £5 billion lending budget for the Warm Homes Plan to sit alongside its £8.2 billion capital spending budget will allow the Government to add subsidised loans – an underused tool – to its arsenal. These can play an important role in supporting heat pump deployment – but for real success they will need to be adopted within a broader package of reforms.

References

Climate Change Committee (2025a) *The Seventh Carbon Budget – Advice for the UK Government.* https://www.theccc.org.uk/wp-content/uploads/2025/02/The-Seventh-Carbon-Budget.pdf

Climate Change Committee (2025b) *Progress in reducing emissions – 2025 report to Parliament.* https://www.theccc.org.uk/wp-content/uploads/2025/06/Progress-in-reducing-emissions-2025-report-to-Parliament.pdf

Department for Energy Security & Net Zero (2024) *Evaluation of the Boiler Upgrade Scheme – 2024 Interim Report.* https://assets.publishing.service.gov.uk/media/679129c5119e3470fd1e26c7/bus-evaluation-2024-interim-report.pdf

HM Treasury (2025) *Statement of Strategic Priorities to the National Wealth Fund.* https://assets.publishing.service.gov.uk/media/67daabfa1a60f796430283fd/Strategic_Steer_to_NWF_-_final.pdf

King A and Jameson D (2024) *Designing a UK fiscal framework fit for the climate challenge.* London: CETEx. https://cetex.org/wp-content/uploads/2024/07/Designing-a-UK-fiscal-framework-fit-for-the-climate-challenge.pdf

Ministry of Housing, Communities and Local Government [MHCLG] (2025) *Over 500,000 homes to be built through new National Housing Bank.* Press release, 17 June. https://www.gov.uk/government/news/over-500000-homes-to-be-built-through-new-national-housing-bank

Office for Budget Responsibility [OBR] (2022) *The fiscal impact of student loans reforms*. https://obr.uk/box/the-fiscal-impact-of-student-loans-reforms/

Office for Budget Responsibility [OBR] (2025) *Economic and fiscal outlook, March 2025*. https://obr.uk/efo/economic-and-fiscal-outlook-march-2025/

Office for National Statistics [ONS] (2025) *Looking ahead – developments in public sector finance statistics: 2025*. https://www.ons.gov.uk/economy/governmentpublicsectorandtaxes/publicsectorfinance/articles/lookingaheaddevelopmentsinpublicsectorfinancestatistics/2025

National Audit Office [NAO] (2016) *Green Deal and Energy Company Obligation*. https://www.nao.org.uk/reports/green-deal-and-energy-company-obligation/

National Audit Office [NAO] (2024) *Decarbonising home heating - Department for Energy Security & Net Zero*. https://www.nao.org.uk/wp-content/uploads/2024/03/Decarbonising-home-heating-HC-581.pdf

Nesta (2021) *Decarbonising homes: Consumer attitudes towards energy efficiency and green heating in the UK.* https://media.nesta.org.uk/documents/decarbonisinghomes.pdf

Nesta (2022) *How to reduce the cost of heat pumps*. https://media.nesta.org.uk/documents/How_to_reduce_the_cost_of_heat_pumps_v4_1.pdf

Nesta (2025) *How to make electricity cheaper*. https://www.nesta.org.uk/report/how-to-make-electricity-cheaper/

Resolution Foundation (2025) *Turning up the heat – Making the home heating transition work for low-income households*. https://www.resolutionfoundation.org/app/uploads/2025/04/Turning-up-the-heat.pdf