

# HOMES FIT FOR THE FUTURE: THE RETROFIT CHALLENGE

How will we finance the decarbonisation of homes in Wales to support our net zero ambitions?

## Technical Summary



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## Overview

Climate change is one of the biggest challenges facing current and future generations. Wales has made world-leading pledges to significantly decarbonise housing stock by 2030, which will support the goal to be net zero by 2050. The Future Generations Commissioner has highlighted that developing an economic stimulus package which leads to job creation and supports the decarbonisation of homes, should be a priority for Welsh Government as part of a Green Recovery to the pandemic.<sup>1</sup>

Overcoming levels of fuel poverty that remain stubbornly high (12%) sits at the heart of Wales' decarbonisation and social justice objectives, and the decarbonisation of homes must be seen as a fundamental part of a green and just recovery from the pandemic in Wales.

### **Managed well, a retrofit programme could be a gamechanger for the Welsh economy.**

Not only meeting decarbonisation and fuel poverty objectives whilst reducing needless energy costs, but creating new industries, skills and jobs, based on local supply chains and supporting the foundational economy.

Decarbonisation is a challenge, and an opportunity, for organisations and communities across Wales. Decarbonising our housing stock at the scale needed will require significant investment along with increased coordination of all actors in the system. Welsh Government needs to lead the way but will be unable to 100% grant fund the programme.

The challenge of funding this shift must be

balanced across the UK Government, Welsh Government, housing associations, local authorities, landlords and homeowners, with many other organisations playing their part.

This is a Technical summary of a [longer report](#) which builds on previous work, including the Better Homes, Better Wales, Better World report, the work of the Welsh School of Architecture<sup>2</sup> (WSA) and the Altair report commissioned by Community Housing Cymru (CHC).

### **The purpose of our work is to estimate the total funding needed for the decarbonisation of homes in Wales, identify funding gaps and suggest approaches to addressing these gaps.**

We have worked closely with a number of organisations in forming our report. Due to importance of social housing sector in Wales, we have worked particularly closely with CHC. We also recognise the importance of the Welsh Government's Optimised Retrofit Programme (ORP) in seeding and testing approaches to the decarbonisation of homes. The ORP recommends that properties are improved as far as possible, considering the current solutions available and the likely costs of the works. A detailed understanding of the works and likely costs of these (through building renovation passports) is the likely first step in this journey.

In December 2020 we held two workshops (the first focusing on the private rented and owner-occupied sectors, the second focusing on social housing) and have continued dialogue with many organisations and stakeholders throughout the drafting of the report.

# 1) Key findings, overarching messages and recommendations

## Key findings

**Investment in optimised retrofit across Wales' housing must be seen against the backdrop of significant benefits to well-being, cost savings in services and local economic growth.**

Investment in millions of homes has the potential to generate large economic returns as well as reducing our emissions and levels of fuel poverty.

- A Welsh housing decarbonisation programme would create £19.32bn in additional GDP, a £3.54bn of net tax benefit and 26,500 new jobs in Wales by 2030, helping to offset the economic impact and job losses of the recent pandemic.
- The programme would also save £8.3bn in energy bills and create £4.4bn in health and environmental benefits by 2040 helping to put more money back into local economies across Wales and reducing the strain on health and social care services, particularly during the winter.
- Delivering these benefits will require minimum energy efficiency standards (MEES) / Energy Performance Certificate (EPC) regulations across all tenure types and income levels.

There are significant opportunities for creating skills and jobs for the future through a national retrofit programme but investment must be planned for the long-term, along with prioritising apprenticeships and reskilling the workforce in necessary trades, in order to take advantage of this.



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## Key findings

We estimate this programme will require **£14.75bn of investment to 2030**: £5.5bn for social housing, £4.8bn for homes in fuel poverty, and £4.4bn for homes in the owner occupied and private rented ('able to pay') sectors respectively.

- Total government investment required is around £5.3bn over 10 years, of which £3.6bn should come from UK and £1.7bn from Welsh Government, with 64% of total investment coming from private finance, energy companies or self-funding by property owners.
- Based on existing investment plans and policy proposals there are currently large funding gaps for social housing (£2.7bn) and fuel poverty (£3.9bn) to meet the level of EPC "A" by 2030.

To address these gaps, we propose:

- **Social housing**

A combined £108m/year Social Housing Decarbonisation Grant and £158m/year Energy Performance Contract financing delivered through low interest loans to housing providers, delivered by a new Welsh Energy Service Company (WESCO) to coordinate and support decarbonisation in the social housing sector, partially repaid via energy bills.

- **Fuel poverty**

Up to 2030 we propose doubling the Welsh Warm Homes Programme (£732m); supplementing with an allocation of the Shared Prosperity Fund (£1000m); and grants for people on low incomes which would be available through a UK Government (Low Carbon) Infrastructure Fund (£2,493m) or equivalent increase in Wales' block grant. Much of this investment will need to be front loaded for the early 2020s.

- **Homeowners who are able to pay**

For the 1.1. million homes in the private rented or owner occupied sectors demand will be driven by Minimum Energy Efficiency Standards (MEES) at EPC "C" for all private dwellings no later than 2030. At which point a ban on new fossil fuel heating systems should also be introduced. Finance for measures will be available through Government low interest or equity release loans or other mechanisms.

We propose either the Development Bank of Wales (DBW) or a new actor fulfil a coordinating role, capitalised by a combination of Financial Transaction Capital (FTC) or UK Green Sovereign Bonds, with lending at very low interest rates (<1%) over 25 years or more.

We propose the Development Bank of Wales trial and support a new suite of financing mechanisms including:

- Low interest /Equity Release Loans,
- Property Assessed Clean Energy (PACE) finance repaid on council tax,
- Green Mortgages.

## Key messages and recommendations

**1. The decarbonisation of homes has to be a shared endeavour, with Welsh Government playing a leadership and coordination role, bringing all sectors together in a shared mission.**

**The challenge of financing decarbonisation is not for Welsh Government to undertake entirely, or for housing associations, local authorities and private households to be expected to bear alone.**

**This has to be a shared endeavour with shared innovation and risk, and a focus on collaboration and learning at every stage.**

Welsh and UK Government must work together to use all the financial levers available to them to fund the retrofit challenge.

Welsh Government should play a key leadership and co-ordination role with support and collaboration required from UK Government, local authorities, housing associations as well as education, training and the private sector to ensure concerted action across social housing, homes in fuel poverty and those in the private rented and owner-occupied sectors.

### **Welsh Government should:**

- Lead the way by setting clear long-term commitments and targets for Wales' housing stock in the second Low Carbon Plan;

- Fully recognise the interconnected challenges of the decarbonisation of homes and tackling fuel poverty and reflect these across the new programme for Government including linking policy action on skills, finance, foundational economy and health.
- Prioritise investment in this area and emphasise the importance of this agenda for the people of Wales, when negotiating with the UK Government about post EU funding such as the Shared Prosperity Fund.

### **Housing associations and local authorities should:**

- Consider how they can access private finance to supplement Government grant funding for the decarbonisation of their housing stock.
- View Renovation Maintenance Improvement (RMI) spend and investment in decarbonisation measures as interconnected with opportunities for further integration over time.
- Building on the successful ways of working under the Optimised Retrofit Programme, prioritise collaboration and continuous learning in the approaches taken to decarbonisation of their housing stock.

## Key messages and recommendations

### 2. There needs to be a longer term plan for funding

**There is a clear need for a longer-term pathway to the decarbonisation of homes, if we are to meet decarbonisation targets, at the very least until 2030. This needs to illustrate the shared commitment between Governments, housing associations, local authorities and other players to develop a long-term pathway to the decarbonisation of homes, providing certainty and clarity about funding arrangements, anticipated job creation, procurement routes and skills pipelines.**

But this long-term investment plan cannot be achieved alone or within current mechanisms. It will require new and innovative ways of leveraging other sources of funding and investment and potentially utilising the capacity of the Development Bank of Wales to develop a new Wales Energy Service Company to coordinate and support funding decarbonisation in the social housing sector.

### For social housing sector & homes in fuel poverty, Welsh Government should:

- Double fuel poverty funding to £732m by 2030 and supplement with grants for people on low-incomes which would be available from UK Government's national infrastructure funding, with the aim of eradicating fuel poverty by 2030.
- Commit to a new £108m/year Social Housing Decarbonisation Grant, conditional on measured performance & cost reductions.
- Work with UK Government to offer £158m/year low interest loans to housing providers through the 'Welsh Energy Service Company' (WESCO) via Energy Saving Performance contracts.

### Welsh and UK Governments should:

- UK Government should commit to allocating an additional £2.6bn of infrastructure investment funding and £1bn allocation of the Shared Prosperity Fund which is needed by 2030 to tackle decarbonisation of low-income homes and address fuel poverty in Wales. These sources would be equivalent to other infrastructure programmes (e.g. road, rail, power) recognising the significant fiscal benefits of a retrofit programme to the UK Exchequer.
- Welsh Government should increase its use of Financial Transaction Capital for retrofit and UK Government should facilitate access to the new Green Sovereign Bond market, to enable around £6.3bn of private investment in the Welsh housing stock by 2030.
- Welsh Government should work with the UK Government Financial Conduct Authority (FCA) to stimulate £100m/year Green Mortgage market by requiring disclosure of how energy efficient a house is at "decision in principle" stage.

**For the private rented / owner occupied (able to pay) sector, Welsh Government should:**

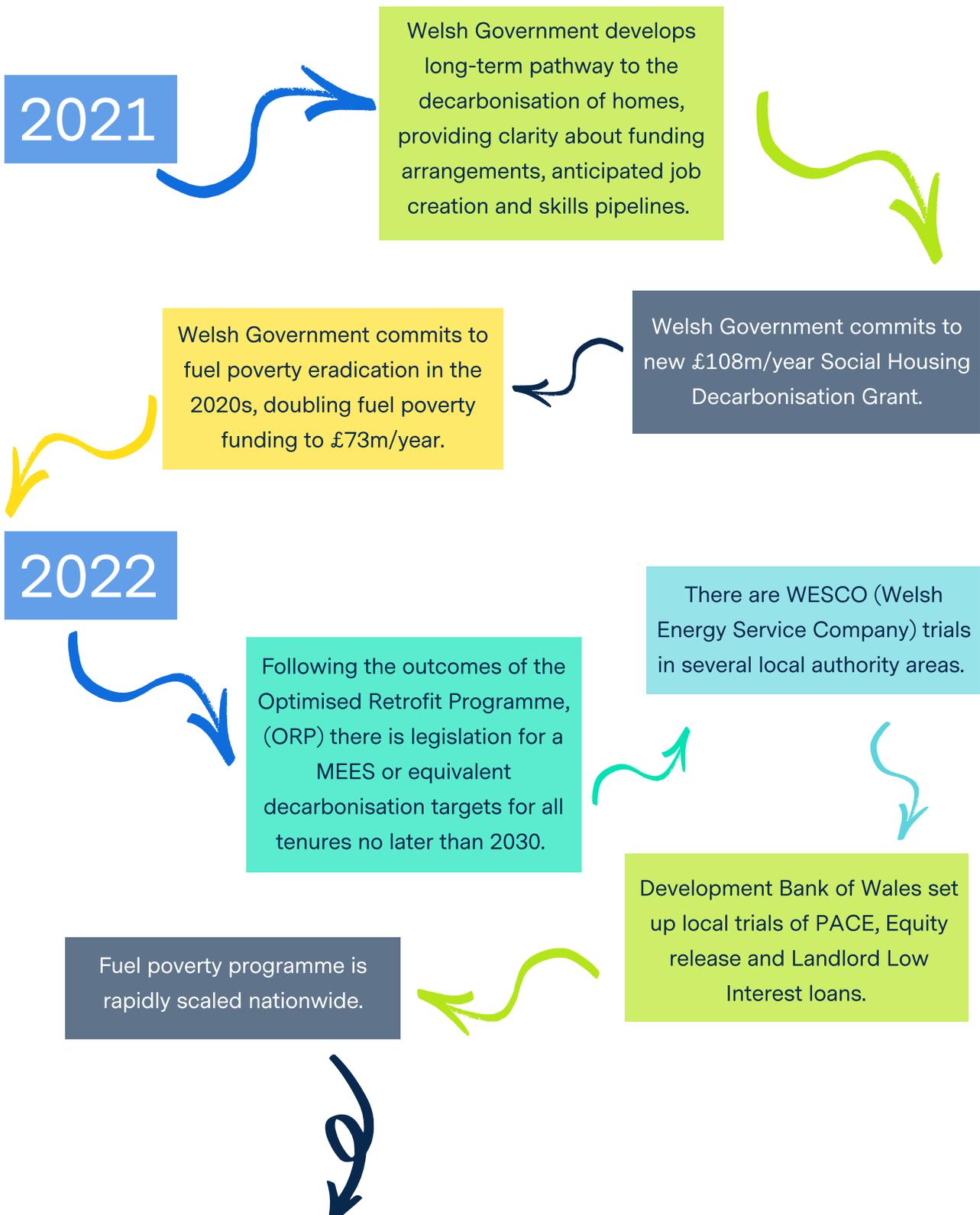
- Work with Local Authorities to trial the Property Assessed Clean Energy (PACE) mechanism, through a levy on council tax. PACE is a means of financing retrofit measures which attaches the debt to the property rather than the individual, secured by a property tax bill.
- Work with the Development Bank of Wales to trial equity release models and low interest loans to landlords for retrofit finance.



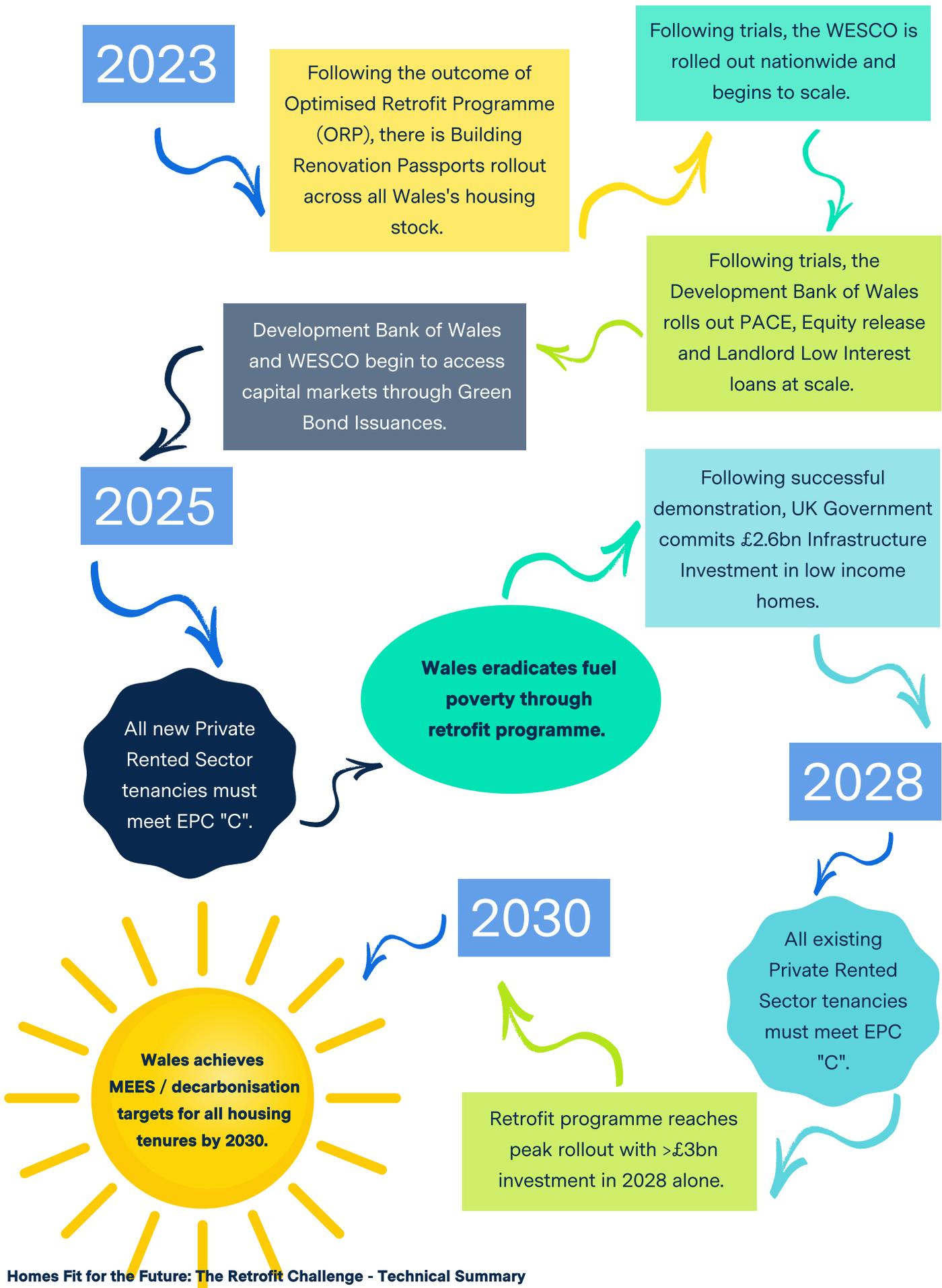
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## Roadmap to 2030

This Roadmap outlines which are immediate funding decisions and policy actions and those and which should happen over the next ten years. Our modelling assumes a staggered S-curve deployment of investment over the 2020s peaking in 2028, leading to a total capital investment of £14.75bn by 2030 (see Section 8).



## Roadmap to 2030



## Key messages and recommendations

### 3. Our ambition to decarbonise must be strengthened

**Currently Welsh Government is encouraging the housing sector to work towards the decarbonisation targets set out in the 'Better Homes, Better Wales, Better World' report. However 1.1 million (or 70%) of Wales' housing stock falls under the owner occupied or private rented sectors which currently lack (or have very weak) targets along with appropriate levels of investment or financial incentives.**

Given the huge challenge of decarbonising homes, and the potential benefits of a Wales wide long-term programme, we need to ensure delivery at pace and scale.

If cross-sector concerted action is going to achieve these targets they need to be statutory and enforced through minimum energy efficiency standards (MEES) across all stock.

#### Welsh Government should:

- Determine an ambitious Minimum Energy Efficiency Standard (MEES) or decarbonisation target for the social housing sector, based on learning from the Optimised Retrofit Programme, then prepare a timetable to legislate for this target if needed.
- Work with the UK Government to legislate for a Minimum Energy Efficiency Standard (MEES) of EPC "C" or equivalent decarbonisation target for all homes in the private rented sector and ban the installation

of new fossil fuel heating for all homes, no later than 2030. This will require local authority enforcement of proposed and existing MEES which should be strengthened and properly resourced.

- Build on the work of the Optimised Retrofit Programme to develop a cost model and 'building renovation passports' for the entire Welsh housing stock. Properties will need to be improved, as far as possible, considering current solutions available and the likely costs of the work. Building renovation passports will provide a more detailed understanding of relative costs and the scale of work needed for different types of homes.

#### To support this, UK Government should:

- Ensure the full devolution of Building Regulations powers to Wales;
- Cut VAT on all retrofit related measures to 5%.



## Key messages and recommendations

### 4. The scale of the challenge means new institutions are needed and there will be new roles for existing organisations.

As the scale of the challenges and opportunities of the decarbonisation of homes are realised, there will be a need for new roles and approaches.

For example, we suggest a key role for the Development Bank of Wales (DBW) in the coordination of funding for the private rented and owner-occupied sectors, and the development of a Wales Energy Service Company (WESCO) to manage energy performance contract financing for the social housing sector.

#### Welsh Government should:

- Establish a central role for the Development Bank of Wales (DBW) or a similar coordinating actor to facilitate lending of around £1bn/year. This would need to be paired with an appropriate, area-based advice and retrofit procurement service to offer a 'one-stop-shop' to households.
- Explore the establishment of a new Wales Energy Service Company (WESCO) to coordinate and support decarbonisation in the social housing sector. A WESCO would combine loans and grants into a single performance contract with guaranteed savings repaid on the energy bill, securing debt-finance on its balance sheet on behalf of housing associations.

### 5. Wales should target the worst homes first in order to maximise the benefits of reducing fuel poverty and addressing decarbonisation.

Many Welsh homes remain in a dire state and thousands of households live in 'severe fuel poverty' requiring over 20% of their income to maintain a satisfactory heating regime.

While the Welsh Housing Quality Standard, Arbed and Nest programs have made significant inroads in reducing it, 155,000 (12%) of Welsh homes remain in fuel poverty.

20% of the Private Rented Sector, 11% of owner occupiers and 9% of social housing tenants live in fuel poverty. Any decarbonisation programme must target these worst performing homes first as a matter of urgency.

#### Welsh Government should:

- Ensure that their long-term pathway reflects the phasing needed to prioritise funding and support for decarbonising social housing and homes in fuel poverty first, considering what further regulation may be needed for homes in the private rented and owner-occupied sectors.

## Key messages and recommendations

### SKILLS FIT FOR THE FUTURE

**Welsh Government will also need to address the skills gaps, both in numbers and diversity, which exist for retrofit jobs.**

Currently there is a risk that Wales will lose the benefits of job creation because there are not enough people who are qualified to undertake retrofit work. This needs to be addressed urgently if we are to maximise the multiple benefits of investment in housing decarbonisation.



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#### Welsh Government should:

- Urgently develop a skills pipeline for a Welsh Retrofit workforce**

Investing in, and developing a long-term pathway, to decarbonise all homes in Wales will provide long-term commitment and security to enable development of skills pathways and employability programmes which will support new jobs that could be created in our foundational economy. Building on the momentum and investment in the Optimised Retrofit Programme, proposals such as the Retrofit Academy for Wales should be supported and scaled up across Wales.
- Adopt a Retrofit Plus approach - broadening the Retrofit programme to support community involvement and neighbourhood regeneration**

Investment at scale in Welsh homes should look beyond new boilers and towards innovative solutions to improve communities within the broader ambitions of the Well-being of Future Generations Act. Opportunities should be sought to expand the decarbonisation programmes by greening communities, creating spaces for nature, local food growing and culture.

## 2) Benefits of a Welsh retrofit programme

**A programme of optimised retrofit across Wales' housing throughout the 2020s has the potential to contribute to many of our national well-being goals as well as generating a large return on investment.**

**Numerous studies show that, although small in scale at an individual level, investment in millions of homes has the potential to generate large economic returns from energy savings, increased wages and construction job creation, growth in regional supply chains and spill-over effects in the wider economy contributing to a more Prosperous Wales.**

Investment in millions of homes has the potential to generate large economic returns as well as reducing our emissions and levels of fuel poverty.

Recent research by NEF<sup>3</sup> indicates that a commensurate programme would save Welsh residents an average of **£418 per year** on their energy bills annually, a total of **£8.26bn** by 2040. Using a methodology developed by the UK Energy Research Centre<sup>4</sup> we estimate the undiscounted environmental and health benefits, at the Wales level. Contributing to a Healthier, Prosperous and Resilient Wales with benefits continuing through the 2030s, we estimate the benefits by 2040 to be:

- **£2,569m** for avoided CO<sub>2</sub>,
- **£1,249m** in health and comfort,
- **£569m** in improved air quality

**This is a combined total of £12.65bn by 2040 (undiscounted).**

**Investment in homes leads to a positive economic impact on industries supplying the construction sector with energy efficiency products.**

Recent bottom-up modelling by NEF and the cooperative Retrofitworks estimates that this programme would create and sustain an average of 15,144 construction jobs and 11,344 indirect jobs through the 2020s, a total of **26,500 new jobs in Wales.**

However securing these jobs for Welsh people can only be achieved by guaranteeing long-term commitment and investment linked to prioritisation of apprenticeships targeted at those most in need, and reskilling the existing, as well as a future, workforce in necessary trades to address the skills gap.

**Lower energy bills also mean households have more spare income to spend on other activities, leading to local economic growth.**

Based on a review of GDP multipliers for retrofit developed by Cambridge Econometrics<sup>5</sup> and the University of Leeds<sup>6</sup> we expect this<sup>5</sup> programme of investment<sup>6</sup> in housing decarbonisation to increase Welsh GDP by **£19.32bn by 2030**, versus the no retrofit scenario.

Retrofit investments have a powerful multiplier effect and would help offset the economic impact and job losses of the recent pandemic.

## 3) The scale of the challenge – decarbonisation targets and estimated costs

### Decarbonisation targets

**Wales has some of the oldest and least efficient housing in Western Europe. Wales also has the lowest gross disposable income per head of the UK regions.**

**The combination of these demographic and housing stock factors combines to make Wales' decarbonisation goals some of the most challenging and important in the UK, and perhaps Western Europe.**

In this report we follow the recommendations of the 'Better Homes, Better Wales, Better World'<sup>7</sup> report which recommends that:

- All homes in Wales should be brought to EPC "A" by 2050.
- This target should be brought forward for all social housing and homes in fuel poverty by 2030.
- We are also proposing an interim EPC "C" (or equivalent) target for all homes in Wales by 2030.<sup>8</sup> As a minimum, all fuel poor households regardless of tenure should meet EPC "C" by 2030 in order for the Welsh Government to at least match equivalent ambitions by the UK Government for fuel poor homes in England.
- In addition, we propose ban the installation of new fossil fuel heating for all homes no later than 2030.

#### What are Energy Performance Certificates?

Similar to the multi-coloured sticker on new appliances, Energy Performance Certificates (EPCs) tell you how energy efficient a building is and give it a rating from A (very efficient) to G (inefficient). They tell you how costly it will be to heat and light a building, and what its carbon dioxide emissions are likely to be.

At the time of writing Welsh Government's Optimised Retrofit Programme is undertaking a detailed analysis of the costs and optimal route for residential decarbonisation. This is likely to include a revised assessment of the preferred target for meeting Net-Zero, which may diverge from the EPC based targets outlined in this summary. These issues are explored in our main report.



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## Decarbonisation estimated costs

Building on data from the Welsh School of Architecture, the table below outlines the total investment needed to achieve these 2030 targets for each tenure of home.

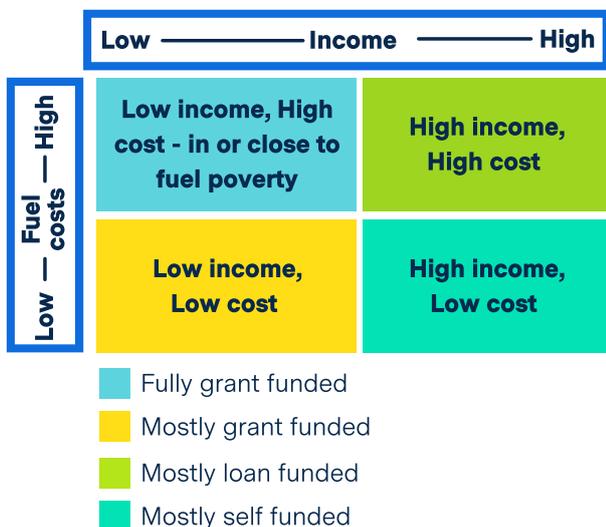
Tenure/status	EPC target	Number of units	Assumed cost reduction by 2030	Total investment	Average investment required per home
<b>Social Housing</b>	"A" 2030	230,000 (~21,000 are in fuel poverty)	20%	£5,520,000,000	£24,000
<b>Fuel poor housing</b>	"A" 2030	155,000 (~21,000 are socially rented)	10%	£4,821,890,361	£35,984
<b>Private rented sector</b>	"C" 2028	180,000 (~36,000 are in fuel poverty)	10%	£676,800,000	£4,700
<b>Owner Occupier</b>	"C" 2030	924,000 (~99,000 are in fuel poverty)	10%	£3,733,125,000	£4,525
<b>Total</b>	-	-	-	<b>£14,751,815,361</b>	-

Table 1: Estimated investment needed per property tenure, to achieve 2030 targets.

### Key principles for fairness and affordability

Delivering on the decarbonisation of Welsh homes will require an unprecedented level of investment and we believe in a 'worst first' approach – a focus on improving the homes of the most vulnerable to an exemplary standard first.

As the diagram below shows, we adopt the principle that for those with the lowest incomes and highest fuel costs, this work should be mostly grant funded. For the majority of households, loan finance will play the largest role, with those on higher incomes able to self-fund some of the lower cost measures.



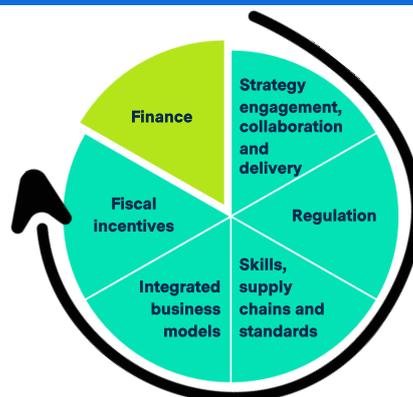
The eventual funding mix may therefore be a blend of loans and grants depending on a household's financial circumstances and the homes current condition. Further, it is crucial is that this funding mix is designed to avoid a 'cliff edge' for those at the threshold of fuel poverty and is properly coordinated to avoid the complex, fragmented and piecemeal funding environment of the past.

Figure 1: Funding matrix applying the principles of fairness and affordability

## 4) Finance is key, but only one piece of the puzzle

While the focus of our report is on securing the **finance** needed to deliver the decarbonisation of homes, it is clear that financing alone will not deliver change at the pace and scale that is needed. We see five other policy areas as crucial to this programme's success:

- **Strategy, engagement, collaboration and delivery:** such an ambitious programme will require strategic direction from Government, with high levels of collaboration and integration across Government departments, local authorities, housing associations and many other organisations.
- **Regulation:** the foundation of this strategy must be a regulatory approach that ensures all homes are brought up to a decent standard. This will include staged minimum energy efficiency (MEES), carbon or EPC standards for the social, private rented and owner occupier sectors as well as an eventual ban on new fossil fuel heating in all homes.
- **Skills, supply chains and standards:** work on homes will need to be undertaken to the highest standards by properly trained and trusted contractors. This will necessitate a nationwide training programme based on an increasingly professionalised industry. It will also be important for local supply chains to be prioritised, delivering benefits for the Foundational Economy and potential to create thousands of new jobs.
- **Integrated business models:** an optimised retrofit strategy will require



'one-stop-shop' business models which appeal to broader motivations than financial savings.

- **Fiscal incentives:** a range of incentives will be needed at key 'trigger points' such as when moving to a new house or undertaking wider renovation work.

### The role of local government

Whilst the majority of this report focuses on action and investment needed at the national (Wales) and UK levels, the role of local government is also fundamental to delivering decarbonisation in Wales.

Local authorities should play a more proactive role in supporting local area-based retrofit initiatives alongside the national support available nationally through Nest and Arbed. As local leaders they are well-placed to develop trusted partnerships and support the development of local supply chain opportunities. They also have an important role to play in ensuring enforcement of standards, particularly in the private rented sector. However, we recognise that current resource is limited and would need to be increased to enable them to play a more proactive role as well as ensuring enforcement where needed.

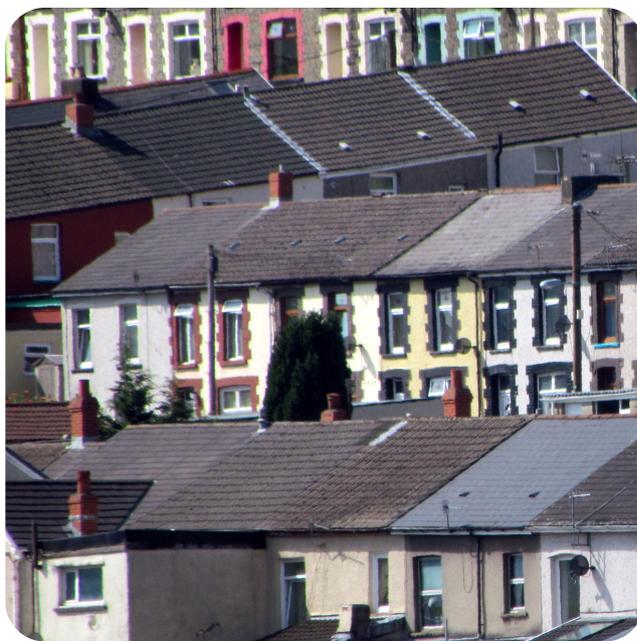
## 5) How this could be funded: SOCIAL HOUSING

### Social housing: what are the costs and how much is the gap?

Social housing is a key focus for Wales' wider decarbonisation goals.

Since 2002 the Welsh Housing Quality Standard (WHQS) has improved the condition of all social housing in Wales to a SAP rating of 68 - a high end of the range EPC "D". However, assuming a 20% cost reduction based on likely economies of scale that will be achieved, the EPC "A" target would require a further £5.5bn investment by 2030.

The table below outlines our best estimate as to the existing sources of funding currently committed to through the 2020s, leaving a ~£2.67bn funding gap.



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<b>£2,704m</b>	<p><b>Housing Associations: Expected Renovation Maintenance and Improvement (RMI) spend</b></p> <p>The anticipated RMI spend from housing associations is based upon figures from the Welsh School of Architecture (WSA).</p>
<b>£100m</b>	<p><b>UK Government funding: ECO and successors</b></p> <p>Historically the UK has delivered the majority of its energy efficiency funding through the energy supplier obligation schemes – most recently ECO3 (Energy Companies Obligation 3). Uptake of this funding in Wales has been fairly low, due in part that it is only available for homes with a very low efficiency rating.</p>
<b>£50m</b>	<p><b>Small programmes</b></p> <p>Other programmes such as Welsh Government's ORP (Optimised Retrofit Programme) will make a modest contribution to the capital cost.</p>
<b>£2,666m</b>	<p><b>Funding gap</b></p> <p>Our best estimate of the funding gap for EPC "A" (based on currently committed funding) is £2,666m to 2030.</p>

Table 2: Estimated sources of existing funding for the decarbonisation of social housing

## 5) How this could be funded: SOCIAL HOUSING

### Social housing: what are the options for financing this gap?

**The key issue that emerged from this work is the ratio of finance secured through loans versus Government grant funding.**

New Economics Foundation (NEF) economists undertook detailed financial modelling to explore the question: what is the minimum share of Government grant that can meet the EPC "A" target, based on different assumptions:

1. The interest rate on 25-year debt between 0-12%;
2. The impact on different house types;
3. The share of savings kept by the tenant (including both 50% share and 75% share);
4. The impact of different levels of grant vs. loan scenarios on a notional 10,000-unit housing association.

Our findings showed:

1. The % of interest on debt has a big impact on the level of grant required.
2. There is a large variation in costs based on house type, suggesting a fixed grant would cause issues.
3. A higher share of savings kept by tenants reduces bills but increases the costs of programmes substantially.

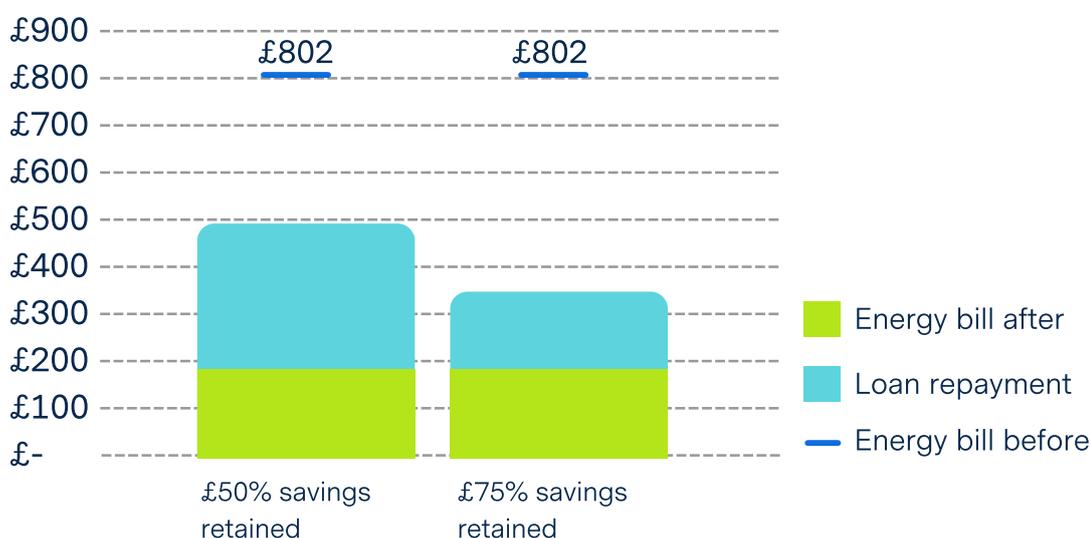


Figure 2: Average household energy bill at EPC "A"

## 5) How this could be funded: SOCIAL HOUSING

### Social housing: what are the options for financing this gap?

Our central “no losses” scenario sees a 19% average contribution from a new Welsh Government decarbonisation grant with debt at 1% interest, assuming tenants keep 50% of savings and zero capital cost to the housing association.

This equates to an average bill saving of £307/year once loan repayments are factored in.

At a Wales wide level this would equate to **£1.08bn in new grants and access to £1.58bn of low cost (1%) 25-year debt through the 2020s.**

By guaranteeing that tenants always keep 50% of the projected savings, this model could ensure affordability and fuel poverty aims were front and centre of the programme. These new and existing sources of funding are summarised in the table and chart below.

<b>£1,082m</b>	<p><b>Welsh Government: New Social Housing Decarbonisation Grant £1,082m (over 2020s)</b></p> <p>A new ringfenced decarbonisation grant allocation to housing providers should focus on decarbonisation, following the success of the Wales Housing Quality Standard model.</p>
<b>£1,584m</b>	<p><b>Energy Performance Contract loan £1,584m (over 2020s)</b></p> <p>In an Energy Performance contract, an Energy Service Company (ESCO) implements a retrofit and provides an energy performance guarantee and a commitment to maintain the assets under the contract for a given period</p>

Table 3: Suggested sources of new funding for the decarbonisation of social housing

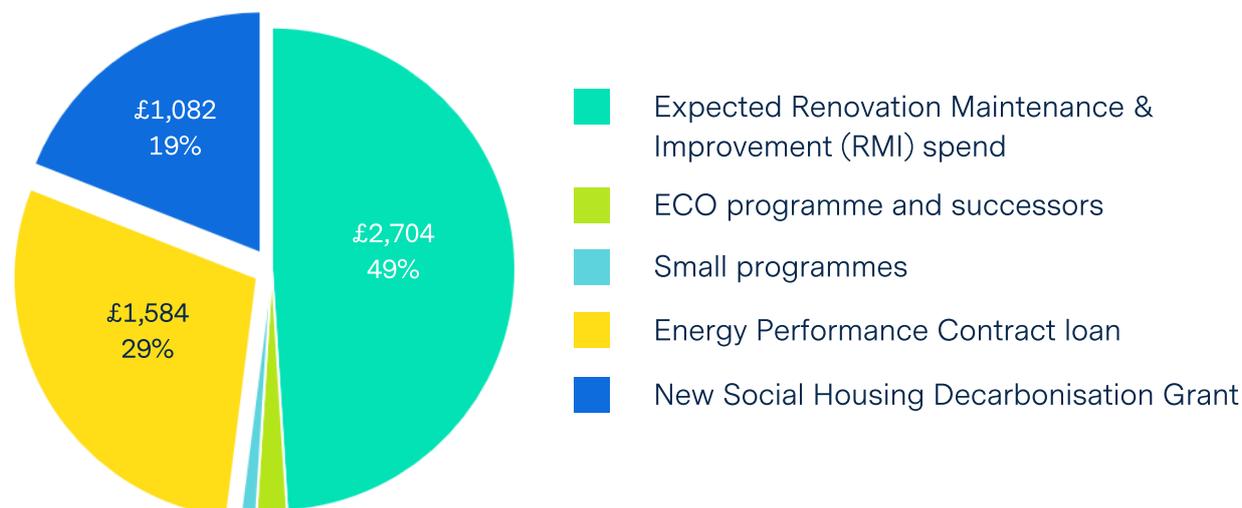


Figure 3: Suggested sources of funding for the decarbonisation of social housing (£millions)

## 5) How this could be funded: SOCIAL HOUSING

### Social housing: proposed delivery model

A key finding from our workshops was that if tenants are expected to repay an element of the retrofit, it must be guaranteed that they save energy overall.

Supported by recent work by the Green Finance Institute on Metered Energy Savings,<sup>9</sup> we recommend this should be achieved through [Energy Saving Performance Contracts \(ESPC\)](#). ESPCs involve a guaranteed energy savings contract, which can be taken off the balance sheet of the housing provider to create secure cashflows for finance providers.

Various trials of ESPCs for social housing have been undertaken in Europe<sup>9</sup>, while Bridgend county borough council are currently trialling a municipal ESCO<sup>11</sup> along similar lines, which could be scaled up Wales-wide.

#### **Bridgend County Council Energy Service Company**

Building on its work on low carbon heat Bridgend county borough council is looking to develop a Town Heat Network project, which will supply heat and electricity and will inform a wider plan to extend the network across Bridgend town. As part of the project the Council has agreed to create an energy service company ('ESCO') 100% owned by the council to enter into the contracts for the design, build, operation and maintenance of the Network.

The Council is also working in partnership with the Energy Systems Catapult as part of the Caerau project which will consider community low carbon heat generation and a heat as a service offer to help residents better understand and engage with the decarbonisation agenda and hopefully lower energy bills.

The first stage will be deployed on a single estate in Caerau with a view to expanding to other areas in the community. Retrofit will form part of the offer but the project is in early stages so the scale is to be determined.

**Our proposed social housing delivery model is based on the establishment of a new Wales Energy Service Company or 'WESCO' who would combine loans and grants into a single performance contract with guaranteed savings, repaid on the energy bill.**

25-year debt financing would be secured on the WESCO's balance sheet and come from a government guaranteed source such as existing financial transaction capital, green sovereign bonds or municipal / community bonds.

We see the WESCO program covering funding for all social housing, including those in fuel poverty.

## 5) How this could be funded: SOCIAL HOUSING

### Creating a Welsh Energy Service Company (WESCO)

Practically, the WESCO would combine grants and loans into a single performance contract for homes. This would fund improvements to tenants homes, and would be paid back via their energy bill. Tenants would keep a proportion of the energy savings (we are suggesting 50%.)

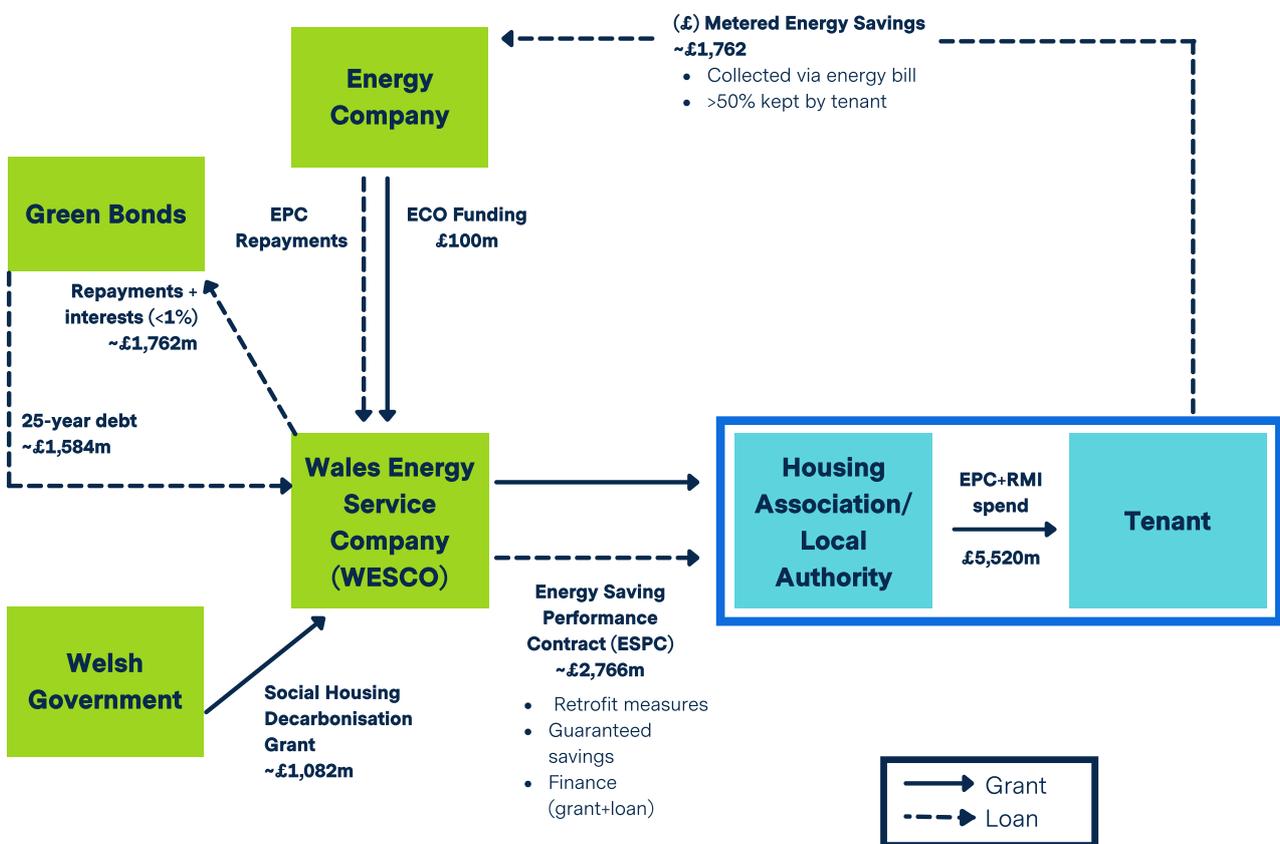


Figure 4: The financial model of a Wales Energy Service Company (WESCO)

## 6) How this could be funded: FUEL POOR HOUSING

### Fuel poor housing: what are the costs and how much is the gap?

The reduction of fuel poverty in Wales can be seen as an ongoing, if incomplete, success story. Since 2009/2010 Welsh Government has invested over £366m in fuel poor housing and has more than halved rates of fuel poverty. However, as of 2018, 12% (155,000) of Welsh homes remain in fuel poverty.

The 'Better Homes, Better Wales, Better World' report recommends all fuel poor housing in Wales is raised to EPC "A" standards by 2030 (recognising that not all homes can meet this standard).

Building on the Welsh School of Architecture (WSA) work,<sup>12</sup> we estimate this would require investment of **£4.82bn by 2030**, excluding homes in social ownership. As set out earlier in this report we are suggesting that **Welsh Government should target the worst homes first** (i.e those that have the highest rates of fuel poverty) in order to maximise the benefits of reducing fuel poverty and addressing decarbonisation.

Based on discussions with industry experts including National Energy Action (NEA) we estimated the existing funding available below, leaving a large **funding gap of ~£3.6bn**.

<b>£96m</b>	<b>UK Government funding: Energy Company Obligation (ECO)3</b> The ECO3 programme is currently the most significant funding source for fuel poverty across the UK, although evidence suggests Wales does not capitalise on its share of approximately £32 million a year.
<b>£200m</b>	<b>UK Government funding: Energy Company Obligation (ECO)4</b> Plans for a continuation and increase of UK ECO funding (£1bn/year) have been announced, through a new funding round from 2022 – 2026.
<b>£5m</b>	<b>Other UK Government funding</b> The proposed Clean Heat Grant and the replacement domestic Renewable Heat Incentive are expected to make a relatively small contribution.
<b>£366m</b>	<b>Welsh Government funding: Warm Homes Programme</b> Since the start of the Warm Homes Programme in 2009/2010, to March 2020, more than £366m has been invested through the scheme to improve more than 61,400 homes. Here we assume this funding is continued through the 2020s.
<b>£270m</b>	<b>Private Landlords contribution</b> A substantial amount of funding is likely to result from the Minimum Energy Efficiency Standard EPC "C" requirement in the private rented sector from 2028. There is a significant risk that without access to credit for landlords, this policy may shift this funding burden onto tenants through increased rents.
<b>£25m</b>	<b>Owner occupiers: Repairs Maintenance and Improvement spend</b> Clearly owner occupiers in fuel poverty are amongst the least likely group to invest in RMI works, however we optimistically assume through a 2030 EPC "C" target for all homes in Wales, the natural churn of home sales could ensure these homes receive 50% of the average spend.
<b>£3.869m</b>	<b>"Funding gap": required to achieve EPC "A"</b>

Table 4: Estimated sources of existing funding for the decarbonisation of fuel poor housing

## 6) How this could be funded: FUEL POOR HOUSING

### Fuel poor housing: what are the options for financing this gap?

**The funding gap for the fuel poverty EPC “A” targets is much larger than the social housing segment and our research suggests it may be much harder to address. Given the scale of this challenge, we argue that meeting these targets will not be achievable by Welsh Government alone. Whilst the total amount of funding will be blended, measures for fuel poor households across private tenure should be 100% grant funded.**

We see the funding for this gap coming from three main sources. First a doubling of the existing Welsh Warm Homes Programme; second, Wales to draw down a significant share of the Shared Prosperity Fund and channel it into fuel poor and low-income housing decarbonisation; and third a UK level low carbon infrastructure fund or a commensurate increase in Wales’ block grant. Whilst significant this infrastructure spend would represent only ~10% of the planned investment in the Wylfa nuclear power station. We appreciate the challenges that will continue to exist in relation to post-EU funding and how this is spent in relation to Wales, but suggest addressing fuel poverty and the decarbonisation of homes should be considered a priority.

These new and existing sources of funding are summarised in the table and chart below.

<b>£732m</b>	<p><b>Welsh Government funding: Warm Homes Programme</b></p> <p>We suggest as a minimum Warm Homes grant funding doubles to £732m for the remainder of the 2020s, with this investment front loaded for the first half of the decade.</p>
<b>£1,000m</b>	<p><b>UK Government funding: Shared Prosperity Fund</b></p> <p>Whilst this fund could make a ‘shovel ready’ and substantial contribution to tackling fuel poverty, we recognise that there are likely to be multiple, competing demands for funding.</p>
<b>£2,493m</b>	<p><b>UK Government funding: Low Income Infrastructure Fund</b></p> <p>This third source would be by far the largest and would be in recognition of the significant fiscal benefits of an optimised retrofit programme to the UK Exchequer, commensurate in scale with other infrastructure programmes in road, rail and the power sector in the coming decade.</p>

Table 5: Suggested sources of new funding for the decarbonisation of fuel poor housing

## 6) How this could be funded: FUEL POOR HOUSING

### Fuel poor housing: what are the costs and how much is the gap?

Fuel poor housing - funding to meet EPC 'A' by 2030 (£million)

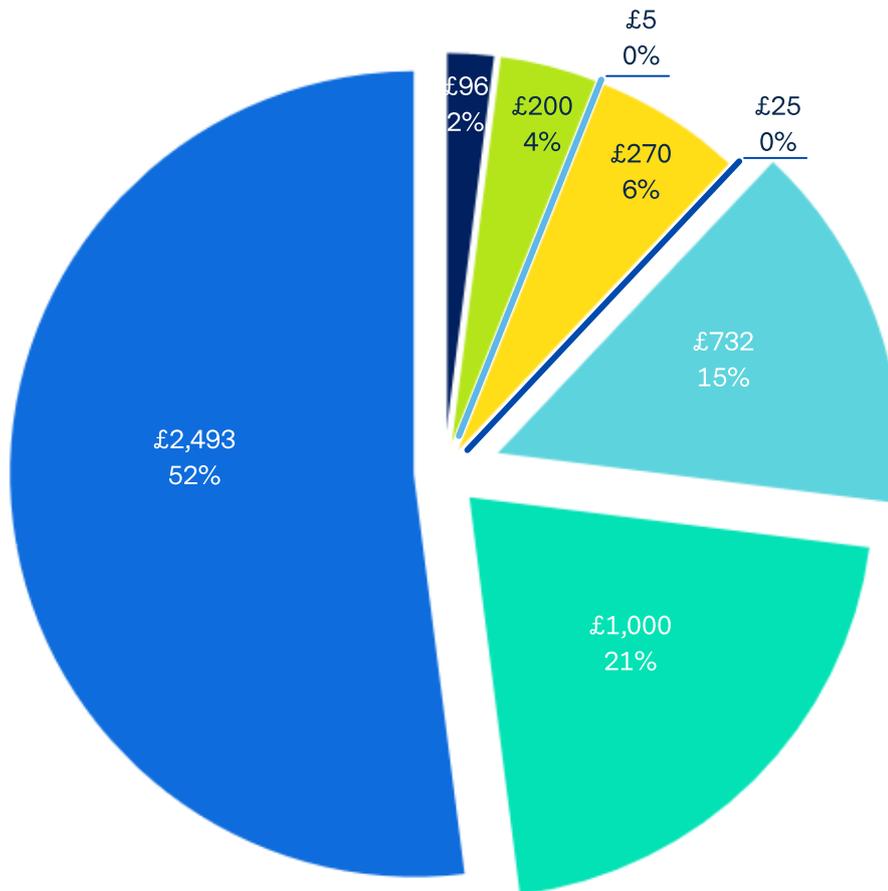


Figure 5: Suggested sources of funding for the decarbonisation of fuel poor housing

- Doubling of Wales' Warm Homes Programme
- Shared Prosperity Fund
- UK Low Income Infrastructure Fund
- UK Government funding: Energy Company Obligation (ECO) 3
- UK Government funding: Energy Company Obligation (ECO) 4
- Small programmes
- Owner Occupiers: Repairs Maintenance and Improvement (RMI) spend
- Private landlord contribution

## 7) How this could be funded: ABLE TO PAY HOUSING

### Able to pay housing: what are the costs and how much is the gap?

**There are 1.1 million homes in Wales in the private rented (PRS) or owner occupied (OO) sectors who are considered to belong to the “able to pay” segment.**

**For this majority of homes, we are proposing Wales targets a minimum of EPC “C” (or equivalent target), with the funding largely from debt financing.**

**Investment required per home to meet EPC “C” is lower than the “A” target for social housing (PRS £4,700 and OO £4,525) at £4.4bn up to 2030.**

While still significant this represents **only 23% of the wider RMI spend** expected this decade. In 2019 households in Wales spent close to a quarter of this - £1.02bn - on general renovation maintenance and improvement (RMI) works, an average of about £723 per home<sup>13</sup>

We also expect many homes to require additional lending with the proposed new cost cap of £10,000<sup>4</sup> for private rented sector homes to achieve Minimum Energy Efficiency Standards of EPC “C” along with the increased adoption of heat pumps and solar, with the UK Government targeting 600,000 heat pumps a year by 2028<sup>15</sup>

Work by University of Leeds, NEF and Parity Projects suggests a 2030, net-zero compliant trajectory, with a 25% penetration of heat pumps and significant rooftop PV, would require investment of £8,112 per household or ~£8.42bn in Wales.

Clearly then, any financing options should allow for greater lending for those who wish to go further.



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## 7) How this could be funded: ABLE TO PAY HOUSING

### Able to pay housing: what are the options for finance?

Building on research by the Sussex Business School,<sup>16</sup> our work considered a number of alternative finance mechanisms of which three we felt were the most promising:

- **Government Low interest /Equity Release Loans**

Government Equity Release Loans involve low-cost loans provided by central government or public development bank. With Equity Release Loans the debt is only repayable on a properties sale and can be a good solution for asset rich cash poor owner-occupied households. Scotland and Germany already have similar schemes in place.

- **Property Assessed Clean Energy (PACE) finance**

Developed in the USA, PACE allows municipalities to fund retrofit through attaching the debt to the property rather than the individual. PACE financing is secured by a lien (a form of security) on the property tax bill (i.e., council tax). This can remove the split incentive between landlords and tenants or those looking to sell their home.

- **Green Mortgages**

Some mortgage providers offer a range of green, or energy efficiency mortgage products designed to provide lending specifically for retrofit. These models are seen as an important route for driving investment at key trigger points when a property changes hands or when major renovations or extensions are planned.

The feasibility of the above mechanisms, across the different tenures is denoted below with simple feasibility denoted in **green**, moderate feasibility **orange** and challenging feasibility in **red**. As shown in the table below our workshops highlighted how different mechanisms were likely to be suitable for different tenures, suggesting a menu of options may be best for Wales.

	Private Rented Sector	Owner Occupiers
<b>Government Low interest / Equity Release Loans</b>	Orange	Green
<b>Property Assessed Clean Energy (PACE) finance</b>	Orange	Orange
<b>Green Mortgages</b>	Orange	Green

## 7) How this could be funded: ABLE TO PAY HOUSING

### Able to pay housing: proposed delivery model

**Recognising that different funding mechanisms and levels of grant vs loan will be required, the currently highly fragmented funding environment is not fit for purpose.**

We argue Wales' housing decarbonisation programme would be best served by a [central coordinating actor](#), or “one-stop-shop” (Fig 6 shown overleaf) who would fund the entire retrofit target across the private rented and owner occupied sectors rather than households having to integrate multiple disparate funding streams and sources.

We propose either the Development Bank of Wales (DBW) could fulfil this role, or a new institution could be created.

#### Debt

Financial Transactions Capital (FTC) is funding allocated by the UK Government and may only be deployed as a loan to, or equity investment in, a private sector entity.

Currently the Development Bank of Wales has access to the Financial Transactions Capital allocation. We initially propose an increase in this capacity to cover lending to both private and social housing retrofits. Assuming cross tenure Minimum Energy Efficiency Standards targets are introduced, lending through this channel

would increase to >£1bn/ year – a 10-fold increase on historical FTC allocation.

One key area to capitalize this lending could be the Green Sovereign Bond being launched by the UK Treasury, providing access to tens of billions of low-cost private capital. We also see Green Mortgages playing a significant role of around £100m over this period.

#### Grants

We propose the new fuel poverty grants could adopt the existing delivery route but with a beefed-up role for local authorities in-coordinating area based retrofit programmes alongside the scaled-up Nest and Arbed programmes.

Under recent announcements we expect the Shared Prosperity Fund to be centrally coordinated and therefore local authorities and area-based programmes need to be proactive in securing this funding.

Local authorities should also be seeking opportunities to link this work with wider well-being objectives for their area such as tackling poverty, improving health, and supporting local jobs and skills in the foundational economy, although they will require additional resourcing to achieve this.

## 7) How this could be funded: ABLE TO PAY HOUSING

### Able to pay housing: proposed delivery model

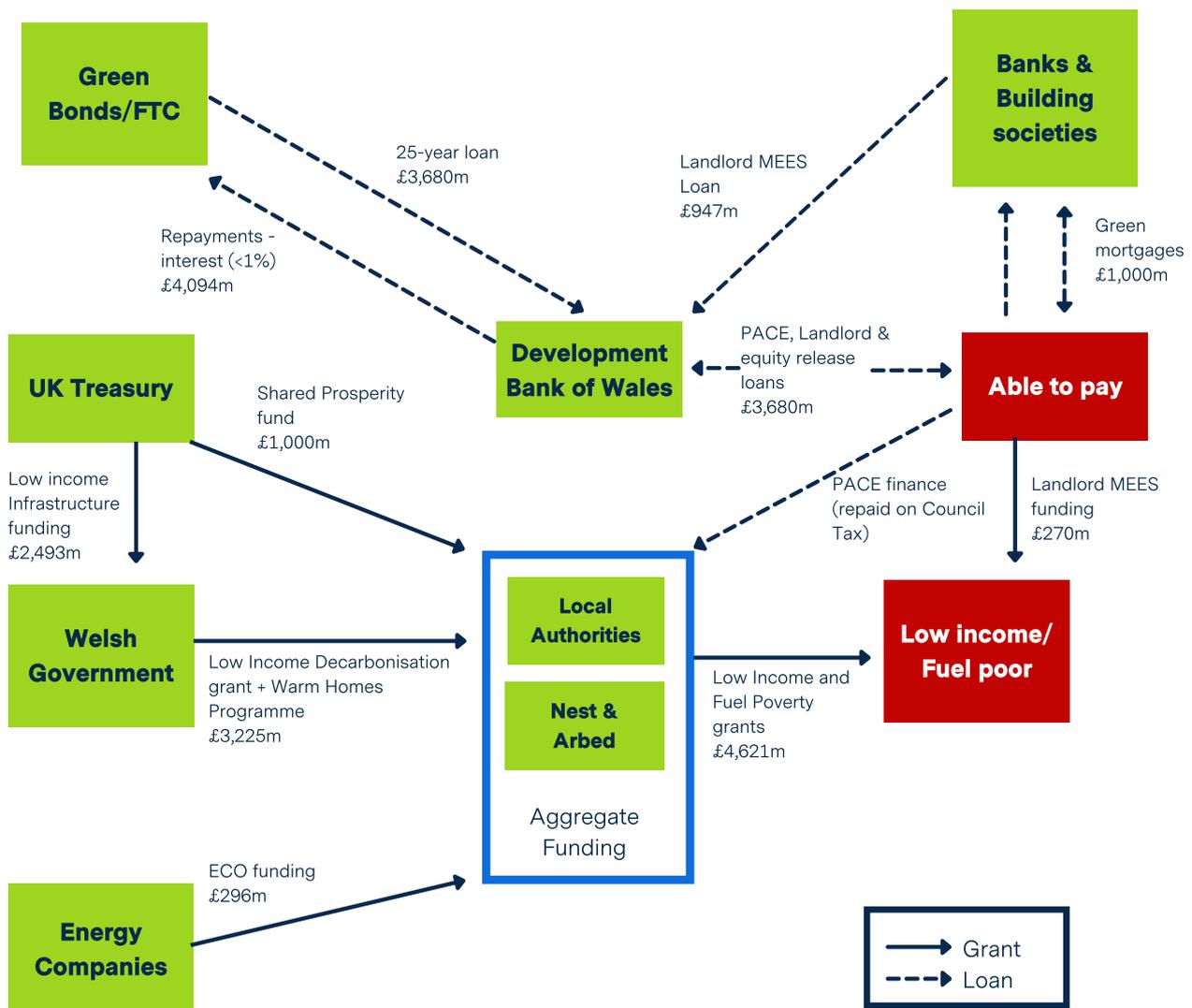


Figure 6: Proposed delivery model for financing the decarbonisation of able to pay housing

## 8) Wales fiscal impact

As shown in the figure below, our modelling assumes a staggered S-curve deployment of investment over the 2020s peaking in 2028<sup>17</sup>, leading to a total capital investment of £14.75bn by 2030.

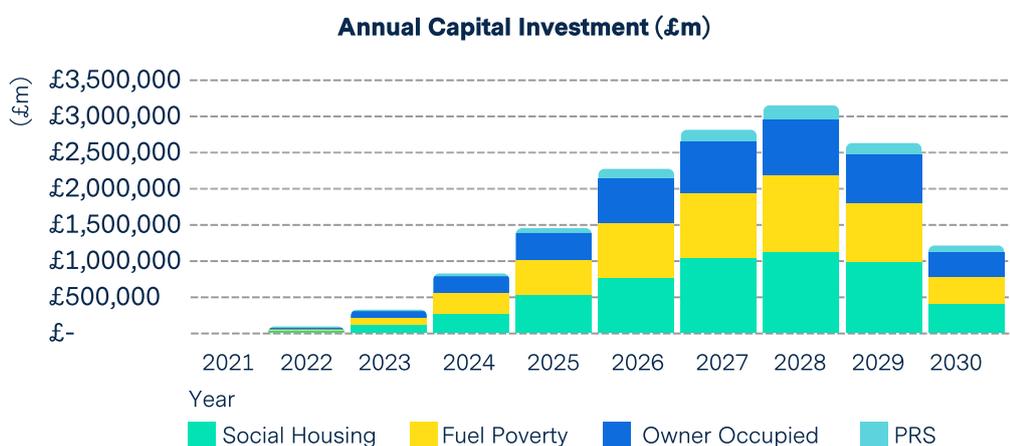


Figure 7: Annual capital investment until 2030

Following the same trajectory, we see total government investment also peaking in 2028 with a **cumulative government spend of £5.3bn**, of which £3.5bn comes from UK and £1.8bn from Welsh Government. We therefore expect 64% of total investment to come from private finance, energy companies or self-funding by property owners.

We also explored two scenarios relating to the inclusion of an energy efficiency target of EPC “C” (or equivalent) for the private rented and owner-occupied sectors (Scenario A) and a scenario with no private housing Minimum Energy Efficiency Standards (i.e. fuel poverty & social housing targets only) (Scenario B). As shown in the figure below Scenario A generates a net tax benefit of £3.54bn (£8.85bn gross) based on the £14.75bn capital investment. Without these regulatory measures for private homes, Scenario B creates a tax benefit of only £0.90bn (£6.2bn gross) with only £10.34bn capital investment - **highlighting the importance of 2030 able-to-pay Minimum Energy Efficiency Standard (MEES) or equivalent targets for the government balance sheet.**

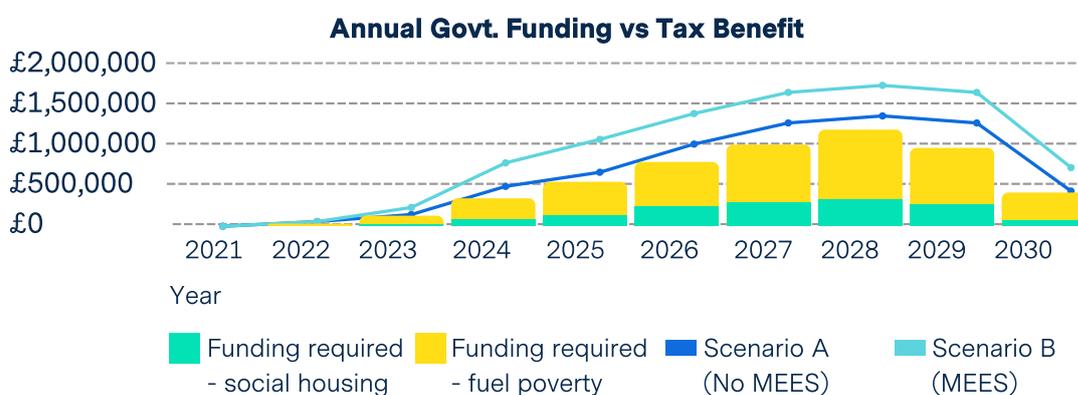


Figure 8: Tax benefits of different MEES (Minimum Energy Efficiency Standards)

## Conclusion

**This work has demonstrated the level of infrastructure investment needed to improve (retrofit) homes in Wales' – this will not only address our climate crisis but will also reduce fuel poverty, improve health outcomes, create thousands of new jobs and support the development of local supply chains to support the foundational economy.**

A national programme should be an urgent priority for the new Government to support a green, equal and just recovery.

In depth research has shown how much funding is needed up to 2030, the potential sources of funding for different sectors as well as models for delivery.

Recommendations for UK and Welsh Government as well as other key players show that this can be achieved with long-term commitment supported by a long-term programme which should be put in place urgently.

**Wales has the ambition, and the vision, our focus now has to be action.**

***"This is immensely difficult but entirely possible"***

Chris Jofeh, Chair of Decarbonisation Implementation Group for Welsh Government



This work has been developed by the Office of the Future Generations Commissioner for Wales in partnership with New Economics Foundation.

The full report and this technical summary have been written by Dr Donal Brown from the Sustainable Design Collective, with support from:

Christian Jaccarini and Chaitanya Kumar (New Economics Foundation)

Cathy Madge and Eurgain Powell (Office of the Future Generations Commissioner for Wales)

Thank you to all of the stakeholders who have attended workshops and commented on drafts of this work.

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[17] Assuming future programmes for the decarbonisation of the wider stock we might expect deployment and jobs to continue through the 2030s.