

Great Homes Upgrade - an investment and policy package to futureproof UK housing

Policy briefing | Chaitanya Kumar | September 2021

1. Executive summary

Upgrading our old and leaky infrastructure can bring immense benefits to the UK's public health and economy, at the same time as helping to tackle climate change. A long-term investment programme on energy efficiency and low-carbon heat can create thousands of jobs, while tackling fuel poverty and preventing thousands of premature deaths due to cold and damp homes.

Across the UK, nearly 19 million homes are in need of upgrading as they are below the energy performance certificate (EPC) rating of C, but householders do not have the necessary financial incentives and support to undertake large-scale upgrades of their homes.¹ Schemes such as the green deal and the green homes grant, aimed at tackling the finance problem, failed to deliver as they incurred a very high administrative cost and hassle for consumers with the programmes ending prematurely.² Regulation such as the minimum energy efficiency standard, introduced as a way to improve the private rented sector, has raised awareness of energy efficiency but has had little impact in cutting energy consumption, largely owing to a lack of enforcement.³

The last decade has demonstrated the severe limitations of piecemeal policies and poorly enforced regulations. Evidence from other European countries, primarily Germany, has highlighted the value of public investment, crowding in greater private capital, to cut the housing stock's carbon emissions. The Climate Change Committee (CCC) estimates spending of over £250bn until 2050 in decarbonising the UK's housing stock. Whilst a majority of it is assumed to be private capital, in the end public funding is expected to lead the way.⁴

¹ *Energy efficiency of existing homes*, Environmental Audit Committee, March 2021, <https://publications.parliament.uk/pa/cm5801/cmselect/cmenvaud/346/34602.htm>

² *Green Homes Grant Voucher Scheme*, National Audit Office, August 2021, nao.org.uk/work-in-progress/green-homes-grant/

³ Sayce, S. L. and Hossain, S. M. (2020) The initial impacts of Minimum Energy Efficiency Standards (MEES) in England. *Journal of Property Investment & Finance*. ISSN 1463-578X doi: <https://doi.org/10.1108/JPIF-01-2020-0013> Available at <http://centaur.reading.ac.uk/89549/>

⁴ *Sixth Carbon Budget*, Climate Change Committee, December 2020, <https://www.theccc.org.uk/wp-content/uploads/2020/12/The-Sixth-Carbon-Budget-The-UKs-path-to-Net-Zero.pdf>

There is no credible pathway to net zero without energy efficiency and low-carbon heating from electricity, at scale. The Great Homes Upgrade is a package of measures, to be realised in the government's 2021 spending review and the upcoming heat and building strategy, to put the UK on a rapid and credible pathway to retrofitting 7 million homes by 2025 and almost 19 million by 2030. The package includes:

- 1.1 **Committing to an additional public investment of £11.7bn over the remaining course of this parliament.** This investment combines an investment of £7bn in home insulation measures and £4.7bn in installing low-carbon heating solutions (primarily heat pumps).
- 1.2 **Create and fund a national retrofit taskforce** with the primary aim of achieving, at least, an average EPC rating of C for all homes by 2030. The taskforce will deliver an area-based retrofit programme in collaboration with local authorities and also coordinate the upskilling and retraining of a large workforce.
- 1.3 **Introduce tax changes** in the form of a fiscally neutral, variable stamp duty land tax for more efficient homes, and equalise the VAT treatment for all retrofitting works at 5%, provided the whole property is brought above certain EPC thresholds.
- 1.4 **Strengthen building regulations**, including new mandatory energy efficiency works for 'consequential improvements', and support new business models and standards to provide 'whole-house retrofits' where feasible for millions of homes.
- 1.5 Ensure domestic state-owned financial institutions such as the **UK Infrastructure Bank (UKIB) and the British Business Bank (BBB) offer cheap finance** to families and SMEs for upgrading their homes and buildings.

2. The Great Homes Upgrade package

Our Great Homes Upgrade policy and investment package aims to get the UK on track to upgrading its entire housing stock to EPC Band C by 2030, with an interim target of upgrading 7 million homes by 2025. We estimate this requires a total spend of £35.6bn over a five-year period (2020/21-2024/25), with £28.3bn on energy efficiency and £7.3bn on low-carbon heating, split equally between public and private finance.

2.1 Public investment

- The Conservative party has allocated additional public investment of £1.2bn for energy efficiency (£0.7bn) and low-carbon heating (£0.5bn) of homes till March 2022 since coming to power in 2019. The party manifesto committed a total additional investment of £6.3bn spread across the decade on retrofitting homes through the homes upgrade (HUG) scheme (£2.5bn by 2025) and the social housing decarbonisation fund (SHDF, £3.8bn by 2030).⁵ However, the HUG scheme, targeting low-income households, has only allocated £150m so far, while the SHDF has allocated £220m with a further £1bn by 2025. Furthermore, the green homes grant voucher scheme, launched in July 2020 with a budget of £1.5bn is estimated to only draw down £314m before ending in March 2022.
- Pre-existing government spending on energy efficiency is primarily through the energy company obligation (ECO) amounting to £640m a year. The government has committed to raising this up to nearly £1bn for the remainder of the ECO programme.⁶ For low-carbon heating, the only subsidy mechanism is the Renewable Heat Incentive which amounts to £110m over the course of this parliament.
- These commitments on public spending amount to £5.3bn through this parliament. Our analysis, which is informed by the Energy Efficiency Infrastructure Group (EEIG), suggests that this scale of public finance is considerably smaller than what is necessary to get the UK on track to net zero. We estimate an additional £7bn of public investment needs to be made over the next three years to considerably scale up the market for home upgrades.⁷ This spending includes an additional £3.6bn up to 2025 through a revised green home grants scheme that supports households to install retrofit measures.
- A total investment of £7.3bn over the full course of the parliament is needed for the scaling up of the low-carbon heating market (primarily heat pumps), with £5.1bn coming from public investment.

⁵ *Conservative party manifesto*, November 2019, https://assets-global.website-files.com/5da42e2cae7ebd3f8bde353c/5dda924905da587992a064ba_Conservative%202019%20Manifesto.pdf

⁶ Energy Company Obligation annual spend to rise to £1bn, Current+, February 2021 <https://www.current-news.co.uk/news/eco-annual-spend-to-rise-to-1-billion>

⁷ *Budget and spending review*, Energy Efficiency Infrastructure Group, https://www.theeeig.co.uk/media/1109/eeig_2021-budget-and-spending-review_0721.pdf

2.2 Private investment

- Public spending is also expected to crowd in private capital to rapidly scale up investment. Analysis from the EEIG estimates that an additional £17.8bn can be leveraged as private capital from private landlords, social landlords and owner occupiers for both energy efficiency and low-carbon heating measures.⁸
- Energy efficiency investments amount to £15.6bn with an additional £2.2bn coming from social landlords directly for low-carbon heating installations. Table 1 below offers a split of public and private investment for the Great Homes Upgrade.

2.3 Upskilling and retraining the workforce

- There is a considerable skills gap in retrofitting 7 million homes by 2025. A key plank of the Great Homes Upgrade is a programme of skilling up the necessary workforce. Addressing this skills gap and job requirements of this program will require a large training program. In our *Green stimulus for housing* report, we recommend that the construction industry training board be comprehensively reviewed and a reform programme instituted, including increased public funding for new retrofit focused further education courses, academic qualifications and apprenticeships.
- We estimate at least 20,000 retrofit coordinators need to be trained and employed to deliver insulation and low-carbon heating measures to a high quality.
- We recommend the setting up of a national retrofit taskforce to oversee the delivery of the Great Homes Upgrade programme and the taskforce should also be instructed to coordinate the national training and education programme.

2.4 Role of tax and regulation

Public finance is only one part of the housing decarbonisation puzzle, with tax and regulation playing an equally important role in unlocking private finance and keeping the UK on track to net zero. A range of fiscal incentives will be needed at key 'trigger points', designed to nudge renovation decisions towards energy retrofits when moving to a new home, undertaking wider renovations or changing appliances such as a faulty boiler. Although reduced VAT on retrofit-led renovations will have a cost to the exchequer, others, such as stamp duty rebates, can be made fiscally neutral.

- **Stamp Duty Rebate:** A system of variable stamp duty rates and rebates would see house buyers receive a discount if a property is above a given energy efficiency standard, or pay a higher rate if its performance is poor, encouraging new buyers to improve the energy performance of their home in a given period. Parity Projects modelling for NEF, in our 2020 report on a green stimulus for housing, estimates this mechanism could facilitate around 1.8m whole house retrofits over four years.⁹

⁸ Ibid

⁹ *Green stimulus for housing*, New Economics Foundation, July 2020, https://neweconomics.org/uploads/files/Green-stimulus-for-housing_NEF.pdf

- **Reduced VAT on retrofit-led renovation:** Normally, renovation works on an individual's private residence are subject to VAT at 20%. However, VAT of 5% already applies on commercial residential conversion work and the installation of certain energy-saving and generating measures. In order to stimulate demand for retrofit, the government could extend the reduced 5% VAT rate to cover all wider extension or renovation works under a certain cost or eligibility ceiling, provided a certain EPC rating was achieved. Contractors could therefore offer reduced quotes for wider works which include energy efficiency, driving a supply chain-led uptake. Assuming current wider renovation rates and spending, Parity Projects modelling for NEF estimates this mechanism could facilitate around 2.4m whole house retrofits over four years. In another analysis, the Federation of Master Builders (FMB) and the Royal Institute of Chartered Surveyors have found that the benefits of cutting VAT on home improvement works to 5% for the period could generate a £51bn stimulus at a £2.76bn cost to the government over the period of 2021-2025, supporting nearly 350,000 jobs.¹⁰
- **New Green Mortgages:** The existing mortgage market should be expanded with new products and altered to incentivise increased lending for retrofit measures as well as reduced rates of interest for highly efficient properties. These mortgages will largely be aimed at the able to pay, owner occupied sector, although will need careful integration with the schemes outlined above to ensure households are able to access financing appropriate to their means. To drive up the supply of these mortgages, the government should look into introducing either a national loan guarantee scheme, an interest rate offsetting scheme, or favourable capital treatments for green mortgage loans. Regulation will also play a key role through setting standards on efficiency ratings of the housing stock on banks' mortgage books. We believe the Bank of England could play a critical role in the green mortgage market through its credit guidance policy and term funding schemes.¹¹ Furthermore, necessary steps have to be taken to avoid a two-tier system of mortgages, whereby banks cherry pick borrowers with higher EPC ratings and make it harder for homeowners to switch lenders.
- **Introduce building renovation passports:** There remains a lack of knowledge surrounding the current condition of homes, the appropriate measures that could be implemented and the order in which they should be undertaken. We recommend an area-based strategy, led by local authorities, to radically improve the availability and quality of home energy data through building renovation passports, and provide a long-term (15-20 years) step-by-step renovation roadmap for a specific building, resulting from an on-site energy audit established in dialogue with building owners/occupants.¹²

¹⁰ *Cut the Vat*, Federation of Master Builders, <https://www.fmb.org.uk/asset/351216AF-A4BD-476A-AFEA9FA46F396372/>

¹¹ *The way ahead for the UK's green mortgage market*, Green Finance Institute, May 2021, <https://www.greenfinanceinstitute.co.uk/wp-content/uploads/2021/05/GREEN-FINANCE-GREEN-MORTGAGES.pdf>

¹² *Green stimulus for housing*, New Economics Foundation, July 2020, https://neweconomics.org/uploads/files/Green-stimulus-for-housing_NEF.pdf

Overall, we propose a graded funding approach to deliver the Great Homes Upgrade, with government-funded grants for those on low incomes and facing fuel poverty, zero-interest loans (especially important for the private rented sector) and means tested green mortgages for owner occupiers. These different instruments will be funded through a mix of government spending, public bank/municipal bond finance and private sector lending. These mechanisms will need to ensure that they address the fuel poverty crisis and pervasive split incentives, and fund a wider range of non-energy improvements.

Table 1: Breakdown of additional public and private investment in housing decarbonisation needed through the rest of this parliament plus cost to the exchequer of VAT cut on renovation

This excludes £6.1bn of commitments already made by the government

Measure	Cumulative investment 2022 to 2024	Details
Home upgrade grant	£2.35bn	Targeting low-income households with £150m out of the committed £2.5bn as part of the Conservative government manifesto.
Social housing decarbonisation fund	£1bn	The manifesto committed spending of £3.8bn by 2030 with £220m already allocated. We assume front-loading some of that allocation for this parliament.
Revised green homes grant voucher scheme	£3.6bn	The government made an initial commitment of £1bn but only spent £256m while scrapping the scheme from March 2022. This will cover households that cannot access other government schemes, including the local authority delivery scheme.
Clean heat grant for subsidising low-carbon heating	£4.7bn	This is from the proposed clean heat grant that the government is currently consulting on. Initial estimates suggest an allocation of £100m which is considerably lower than what is necessary for scaling up the heat pump market. The grant will fully cover the cost of heat pumps for low-income households while offering significant subsidies of up to 50% of the upfront cost.
Total	£11.7bn	
	Private Investment	
Social landlords	£3.9bn	We estimate social landlords will contribute £1.7bn for insulation measures of low-income households and

		£2.2bn for the able-to-pay sector's low-carbon heating installations.
Private landlords	£2.1bn	This investment is largely driven by minimum efficiency standards.
Owner occupiers	£11.8bn	This investment is driven by the able-to-pay sector, we expect the government to introduce existing and new incentives through public investment and policy.
Total private	£17.8bn	
Revenue foregone from VAT cuts on renovation	£1.7bn	This is based on the estimate from FMB of foregone revenue of £2.7bn over a five year period from 2021-2025

2.5 Role of financial institutions

The cost of retrofitting an average home can be expensive and range from £16,700 to £26,000, in order to reach the standards on energy use set by the Royal Institute of British Architects or the Passivhaus standard respectively.¹³ Simpler and more singular measures like cavity wall or loft insulation could cost far cheaper at under £1000 while still contributing nearly 30% of demand reduction expected by 2050, according to one scenario from the CCC's sixth carbon budget.¹⁴ Public and private financial institutions have a critical role to play in offering long-term, low-cost finance for the able-to-pay and owner occupied tenures of the housing sector.

- The UK's new public finance institutions, the UKIB, has a clear mandate on net zero and levelling up. A key focus of the bank should be to finance large-scale, area-based retrofits, particularly through its local authority lending arm. The bank can borrow at low interest rates and can offer cheap finance, as was the case with the KfW German public bank. KfW offered loans at favourable interest rates tied to performance or outcomes, such as carbon mitigation.¹⁵ The loans were coupled with qualified expert advice for consumers to make the right choices to suit their individual needs and achieve a higher standard.

¹³ *Costs and benefits of tighter standards for new buildings*, Climate Change Committee, 2019, <https://www.theccc.org.uk/wp-content/uploads/2019/07/The-costs-and-benefits-of-tighter-standards-for-new-buildings-Currie-Brown-and-AECOM.pdf>

¹⁴ *Development of trajectories for residential heat decarbonisation to inform the Sixth Carbon Budget*, Element Energy, April 2021, <https://www.theccc.org.uk/publication/development-of-trajectories-for-residential-heat-decarbonisation-to-inform-the-sixth-carbon-budget-element-energy/>

¹⁵ *The KfW experience in the reduction of energy use in and CO2 emissions from buildings*, UCL Energy Institute, November 2011, <https://sticerd.lse.ac.uk/dps/case/cp/kfwfullreport.pdf>

- The KfW example also reveals the ability of public finance to crowd in private capital. Between 2002-2009, KfW programmes had a leverage ratio of 1:10 with every €1 of public subsidy realising €9 of loans and private investment.¹⁶
- The Green Investment Bank (GIB) was instrumental in scaling up the offshore wind industry in the UK which is now one of the largest in the world and was the largest investor in the sector before being privatised. Every £1 of GIB investment attracted £3 of private capital.¹⁷
- Besides the UKIB, the BBB has another crucial role to play in scaling up retrofitting by investing in local supply chains, retraining and upskilling and supporting SMEs to also make the low-carbon transition. The BBB does not have a clear mandate on net zero and we recommend the chancellor establish that mandate and allow the bank to borrow more to meet its objectives.¹⁸
- Retail banks are gradually developing new financial products for their customers to access finance for energy efficiency, low-carbon heating, electric mobility, green mortgages etc. The commercial bank Santander for example, has set itself a net zero target by 2050, aiming to reduce the carbon emissions of not just its physical operations but of its investments across various portfolios, including the mortgage and housing sector.¹⁹ If public banks can lead the way, commercial banks will similarly follow and provide the necessary capital for decarbonising the housing stock.
- New forms of capital raising, such as the property assessed clean energy finance (PACE), should be trialled at scale.²⁰ Such financial mechanisms, deployed in the US, EU and Australia, have proven successful by allowing homeowners or local authorities to borrow against their property and repay it over a period of time through council tax. As the debt is tied to the property and not the owners, the repayment obligation switches as owners change, removing the disincentive for many householders who are unwilling to invest in retrofitting as they are unable to recoup the costs before moving out. However, the PACE scheme has also led to some predatory practices by lenders and contractors, particularly in the U.S., who have undertaken excessive and inappropriate retrofit measures on customer homes, leaving many with unaffordable property tax bills. It is critical that the scheme is well regulated and properly enforced to ensure cost effective measures are delivered for

¹⁶ Ibid.

¹⁷ *GIB Going, going, gone!*, LSE Grantham Institute, August 2017
<https://www.lse.ac.uk/granthaminstitute/news/gib-going-going-gone-the-future-of-the-green-investment-bank-and-sustainable-investment-in-the-uk/>

¹⁸ *Greening public finance institutions*, New Economics Foundation, September 2021,
https://neweconomics.org/uploads/files/NEF_Greening-public-finance.pdf

¹⁹ Santander Group, February 2021, <https://www.santander.com/en/press-room/press-releases/2021/02/santander-group-sets-ambition-to-be-net-zero-by-2050-supported-by-first-decarbonization-targets>

²⁰ *Financing energy efficiency buildings*, Green Finance Institute, May 2020,
<https://www.greenfinanceinstitute.co.uk/wp-content/uploads/2020/06/Financing-energy-efficient-buildings-the-path-to-retrofit-at-scale.pdf>

tenants and home owners.²¹ Financial institutions have a key role in developing such instruments suitable for the UK's housing stock and its governance structure.

²¹ The subprime solar trap for low-income homeowners, Bloomberg, April 2021, <https://www.bloomberg.com/news/features/2021-04-06/the-subprime-solar-trap-for-low-income-homeowners>

3. Benefits of the Great Homes Upgrade

Retrofitting UK housing will create jobs in all regions of the UK, and in sectors hit hardest by the pandemic. Studies of the macroeconomic impacts add further evidence for the benefits of energy-efficient improvements to homes.

- Multiple studies show that the multiplier effect of home energy efficiency is significantly higher than other forms of investment such as road, rail or electricity generation infrastructure, with economic benefits likely to be felt in every community. A 2014 study from Cambridge Econometrics estimated that raising every home in the UK to EPC level C would sustain at least 108,000 new jobs annually between 2020-2030.²² **Our recommended investment programme (public and private) is estimated to generate at least 190,000 direct jobs across the economy through to 2030.**²³ The construction leadership council, as part of its national retrofit taskforce highlights a much larger potential of creating 500,000 direct jobs across the economy by 2030.²⁴ Different assumptions underlie these figures but the job creation potential of upgrading our housing stock is immense.
- Improvements in energy efficiency have saved a typical UK household £290 per year between 2008 and 2017.²⁵ Our recommended investment programme is estimated to deliver savings of over £400 on an average dual fuel energy bill. In today's context of very high energy prices, such savings are invaluable for low- and middle-income households.
- Cold homes are responsible for nearly 6,000 excess winter deaths every year, costing the NHS £1.4 annually.²⁶ A large-scale homes upgrade programme can prevent these avoidable deaths and save billions for the NHS.

²² *Green stimulus for housing*, New Economics Foundation, July 2020, https://neweconomics.org/uploads/files/Green-stimulus-for-housing_NEF.pdf

²³ Ibid

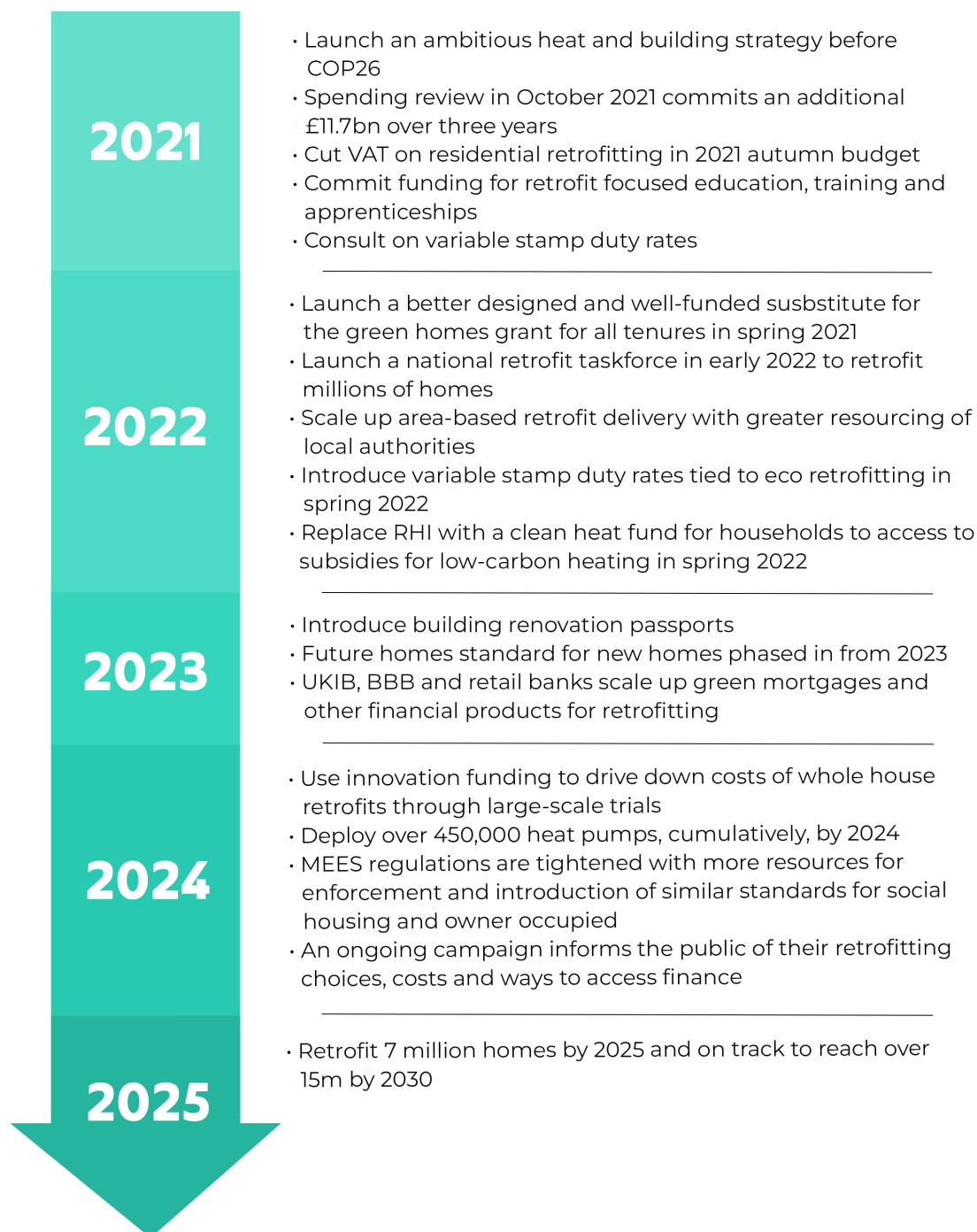
²⁴ National Retrofit Strategy, Construction Leadership Council, May 2021, <https://www.constructionleadershipcouncil.co.uk/wp-content/uploads/2021/05/Construction-Leadership-Council-National-Retrofit-Strategy-Version-2.pdf>

²⁵ *Energy prices and bills report*, Climate Change Committee, March 2017, <https://www.theccc.org.uk/publication/energy-prices-and-bills-report-2017/>

²⁶ *Greening our existing homes*, Construction Leadership Council, August 2020, <https://www.constructionleadershipcouncil.co.uk/wp-content/uploads/2021/05/Construction-Leadership-Council-National-Retrofit-Strategy-Version-2.pdf>

4. Roadmap to 2025 and beyond

The following illustration offers a rough roadmap of the key steps to be taken between now and 2025 to retrofit 7 million homes and get the UK on track to achieving the target of upgrading the entire housing stock to EPC band C by 2030.



5. Conclusion

As the UK prepares to host the COP26 climate change conference in Glasgow, it needs to show leadership in cutting carbon domestically. Our Great Homes Upgrade package of measures can set the UK on a trajectory for mitigating climate change, creating warm homes, saving on energy bills, establishing strength in key growing low-carbon industries and creating hundreds and thousands of green jobs across the length and breadth of the country. This is an incredible opportunity to highlight how acting on climate change and long-term wellbeing are two sides of the same coin.

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