Debt and Decarbonisation:

making net zero housing truly affordable

Tyndall Centre for Climate Change Research

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NB: All views contained with this report are attributable solely to the named authors and do not necessarily reflect those of researchers within the wider Tyndall Centre for Climate Change Research.

Summary

The UK needs more energy efficient low carbon social housing, but building it will increase developer costs at a time when the Regulator of Social Housing has noted that "financial headroom and capacity to absorb downside risk is reduced across the sector"[1].

We explored how far reducing the cost of finance could improve economic viability, specifically with reference to Greater Manchester's Truly Affordable Net Zero (TANZ) social housing programme, which aims to see 30,000 net zero social rent homes built in Greater Manchester by 2038.

- Based on modelling a mid-rise block of flats, we estimate that building new low carbon social homes in Greater Manchester could add up to £22k to the cost of building a flat.
- This could add up to £665m to the total cost of TANZ; but this is still less than a 10% increase in the likely total cost of building 30,000 homes.
- Finance is a significant cost to Housing Associations in Greater Manchester, with an average of almost 15% of their income going to pay interest and financing costs.
- The new National Housing Bank is well placed to drive up sustainability standards in social housing. Its £2.5bn of capital for social housing could offer additional interest discounts – or grant funding – to support housing providers in going beyond the forthcoming Future Homes Standard to meet TANZ standards.
- One model for the Bank's lending programme is the Greener Homes Alliance 2, which currently offers SME housing developers up to a 2% interest rate reduction conditional on meeting transparent sustainability standards. This model could free up millions of pounds for housing associations active in Greater Manchester, making a significant contribution to the economic viability of building low carbon homes.

[1] Regulator of Social Housing (2025) 2024 Global Accounts of private registered providers: p2.

Contents

Introduction

Housing is the UK's second largest source of greenhouse gas emissions, with 12% of all emissions in 2023[2]. UK housing is also increasingly expensive, with average house prices more than doubling relative to average earnings in the last 30 years[3].

Tackling housing's contribution to the climate crisis will involve switching to low carbon energy sources for domestic heat and power, and making homes more energy efficient. While much attention focusses on the challenge of retrofitting the UK's existing housing stock, it is vital that new homes are built to sufficiently low carbon standards. However, if building to low carbon standards costs significantly more than business as usual, it could exacerbate the housing affordability crisis.

Greater Manchester Combined Authority has decided to tackle the twin crises of housing prices and emissions with its Truly Affordable Net Zero (TANZ) homes initiative, which aims to see 30,000 'net zero' social rent homes built in Greater Manchester by 2038. Yet providers of social housing face a particular challenge, as social rent levels are set by the government (via the Regulator of Social Housing) and cannot be raised to pay for higher build costs.

Most social housing providers borrow money to help finance their new housing developments. Recent research into developers of *private* housing suggests that finance is a significant cost for them[4]. Could finance be an area where *social* housebuilders could reduce their costs?

We undertook research to look at four key questions:

1. How much does it cost to build a low carbon home in Greater Manchester?
2. How do social housing developers finance their building programmes?
3. How does the cost of this finance compare to the cost of building low carbon homes?
4. If finance *is* a significant cost, what can feasibly be done to make it cheaper, and thus help build low carbon homes that are 'truly affordable'?

To explore these questions, we analysed publicly available quantitative and qualitative data from housing providers, government bodies and the London Stock Exchange; data on recent development costs in Greater Manchester kindly provided by a regional housing association by special arrangement; and reviewed existing industry and academic literature. We also spoke to several stakeholders in the housing and finance sectors, in research interviews, and at industry and academic events.

[2] Committee on Climate Change (2025) The Seventh Carbon Budget: p159.

[3] ONS (2024) Dataset: ratio of house price to workplace-based earnings, 1997-2023. London: Office for National Statistics.

[4] Archer, T. and Cole, I. (2023) The invisible hand that keeps on taking: value extraction from large housebuilders and its impact on the UK housing system. Report, Centre for Regional Economic and Social Research. Sheffield: Sheffield Hallam University. https://www.shu.ac.uk/centre-regional-economic-social-research/publications/the-invisible-hand-that-keeps-on-taking

How much does it cost to build a low carbon social home?

While the transition to a low carbon housing sector promises long-term savings in both emissions and energy costs, it is widely estimated to require higher build costs[5][6]. The higher cost is primarily due to the need for sustainable materials, advanced technologies, and specialised construction techniques. For example, high-quality insulation, triple-glazed windows, and renewable energy systems such as solar panels and heat pumps are key components of low carbon homes.

Up to a point, social housing developers already work on this basis, spending money upfront to build homes which they then hold and rent out over the long term. However, while it seems clear that the upfront costs of building low carbon housing are higher than traditional construction methods, estimates of how much higher vary considerably. The additional cost per m^2 for building a mid-rise apartment block to similar low carbon standards were estimated at £313 by the UK Green Building Council in 2022 (a 19% uplift in cost), but only £135 by Introba for Essex County Council in 2023 (a 4% uplift)[7].

How much might TANZ cost? Recent work by WSP for TANZ[8] has estimated the cost uplift for various energy efficiency standards to be between 2.2% and 8.5%. Based on these figures, in our case study (see next page) we estimate that TANZ standard homes could cost an extra £281/m2 over a baseline good quality 'business as usual'. The Future Homes Standard Option 1, which includes rooftop solar PV as standard, and air source heat pumps, is estimated to add £119 per m^2 to build costs. These m^2 figures translate to an estimated £6k - £22k per home.

If we were to take our case study development as representative of a typical TANZ development, we would estimate the cost uplift to be between £172m and £665m. While these are substantial sums, the total cost of 30,000 homes would be almost £8bn even without any additional cost from low carbon building standards. Of course, this is a crude estimate, that does not take account of the ways in which future TANZ developments will differ from our case study – in terms of future costs and scales of development, types of housing, site characteristics etc. Nevertheless, it provides an idea of the order of magnitude of costs involved, grounded in work carried out in Greater Manchester.

We suggest drawing two conclusions from these figures: the extra cost of TANZ is not likely to be prohibitive; but nevertheless, measures to lower the total cost of development without compromising on low carbon standards would be welcome.

[5] UK GBC (2022) Building the Case for Net Zero: Closing the gap towards net zero carbon new-build homes – Technical Report. London: UK Green Building Council.

[6] Future Homes Hub (2023) Ready for Zero: evidence to inform the 2025 Future Homes Standard. London: Future Homes Hub.

[7] Introba (2023) Essex Net Zero Policy – Technical Evidence Base. Report. London: Introba.

[8] WSP (2024) Truly Affordable Net Zero Homes: Build Costs. Report to GMCA. London: WSP.

Case study: a mid-rise mixed tenure development in Greater Manchester

The design guidance for TANZ social housing specifies energy efficiency levels similar to the LETI Climate Emergency Design Guide standard[9][10]. To illustrate the potential build costs of this, and the potential savings from lower finance costs, we undertook a case study of a recent social housing development in Greater Manchester. The development was a mid-rise block that mixes social and shared ownership units. It was financed by a mix of grant funding (26%), sales of non-social housing units (29%), and debt (45%). This mix of financing strategies illustrates how housing associations have diversified their activities beyond their core business of managing and renting out existing social housing, in order to fund new developments.

We compared the actual costs of the development to the hypothetical costs of building to different low carbon standards. We used the results of the developers' own cost modelling for building to Passivhaus standards. We also made our own estimates, using a cost modeller developed for TANZ, of the cost of the two Options for the Future Homes Standard that government has consulted on[11]; and the LETI Climate Emergency Design Guide, which requires higher levels of energy efficiency than the Future Homes Options.

The results (summarised in **Figure 1**) show an uplift of between £73 and £281 per m^2. This amounts to around £22k per home to build the case study development to LETI standards, or around £11k per home for building to Future Homes Option 1. While these are simple estimates, based on applying typical cost multipliers to this specific case, they give an indication of the potential range of cost uplift associated with meeting TANZ targets.

How do these estimated extra costs compare to the cost of finance? The debt finance for the development came in the form of a loan with a headline rate of interest of 3.7%. Sales of some homes were used to repay around one third of the loan in the first year; the remaining loan is repaid with interest over 35 years. Divided by the total units in the development, the remaining loan amounts to £151k per home (see **Table 1**). We estimate the total interest cost over 35 years as £95k per home.

A two percentage point reduction in the interest rate, to 1.7%, would save a total of £51k per home over the period of the loan for this case study development (total interest payments of £44k). The saving in interest payments would be equal to the cost uplift of Future Homes Option 1 after four years, and the cost uplift of LETI after nine years. In fact, with an interest rate of 1.7%, even if the developer had to borrow £173k per home to cover the LETI cost uplift, we estimate they would still save £20k overall, compared to borrowing £152k per home at 3.7%. We estimate the impact of a two percentage point reduction in interest rate because this is what is offered by the existing Greener Homes Alliance 2 scheme (see Ways Forward for more details).

These results should be interpreted with caution. They are simple estimates, dividing total interest payments by all homes in the development (i.e. social rent and shared ownership),

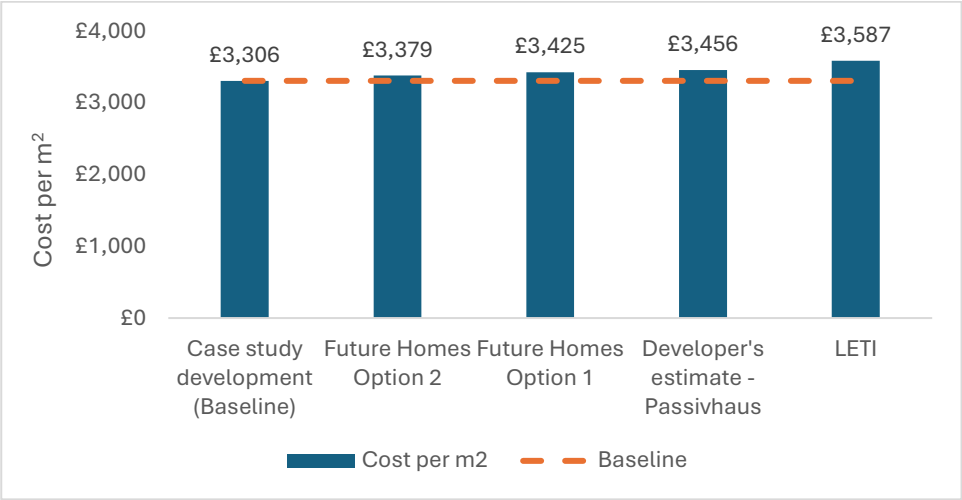
[9] GMCA, Levitt Bernstein and Etude (2025) Design Guidance for Net Zero. Report, Manchester: GMCA. Available at https://www.greatermanchester-ca.gov.uk/what-we-do/planning-and-housing/strategic-planning/places-for-everyone/net-zero-design-guidance/

[10] LETI (2020) Climate Emergency Design Guide. Available at https://www.leti.uk/cedg

[11] DLUHC (2023) The Future Homes and Buildings Standard: 2023 consultation. London: Department for Levelling Up, Homes and Communities (now Ministry of Housing, Communities and Local Government). Available at https://www.gov.uk/government/consultations/the-future-homes-and-buildings-standards-2023-consultation/the-future-homes-and-buildings-standards-2023-consultation#performance-requirements-for-new-buildings.

and not adjusting for inflation. However, notwithstanding those caveats, they do suggest that lower interest rates could make a significant impact on the economics of low carbon social housing.

Figure 1 Case study: cost estimates for building a mid-rise mixed tenure block in Greater Manchester to different standards



Note: cost estimates are for contract (building works) only i.e. excluding land acquisition and developer overheads. Calculations based on data provided for case study by regional housing association.

Table 1 Case study: estimates of different interest costs for a mid-rise mixed tenure block

Interest rate	**Loan per home**	**Interest year 1**	**Total interest year 4**	***Total saving by year 4***	**Total interest by year 9**	***Total saving by year 9***	**Total interest overall**	***Total saving overall***
3.7%	£151k	£5.6k	£21k	-	£43k	-	£95k	-
1.7%	£151k	£2.6k	£10k	*£11k*	£20k	*£23k*	£44k	*£51k*

Note: interest cost calculated on basis of 35 year loan, with principal repaid in 35 equal annual instalments. Loan per home calculated using data provided for case study by regional housing association.

Financing new build social housing

Where will the money come from, and what does it cost?

Housing associations do not make sufficient surplus on their existing rental revenue to fund new housing developments, and so need external finance to build new houses. While this finance increasingly comes from profits from the sale of new homes, its main source is still government grants or borrowing. Data on recent developments supplied by a regional housing association shows around 25% of development costs funded from sales, about 25% from grants, and the remaining 50% from borrowings.

Housing associations in England borrow money in the form of loans from banks, and by issuing corporate bonds. On average they spend just under 15% of their income on interest payments (see **Table 2** below). In total, interest payments exceed the £2.6bn in new grants received by the sector in the same year[12]. Financing costs are clearly substantial, and the Regulator has noted how they have increased in recent years, with housing associations paying an "effective interest rate" of 4.4% in 2024[13].

Table 2 Housing Association average financing costs 2022-2024[1]

Housing Associations active in…	England	Greater Manchester[2]	Scotland
Mean annual turnover	£24.1bn	£6.8bn	£2bn
Mean annual spend on new housing development	£10.4bn	£2.3bn	*not available*
Total interest and other financing costs on ALL borrowing[3]	£3.5bn	£0.9bn	£0.2bn
Total interest and other financing costs as percentage of turnover	14.6%	13.3%	10.6%
Total interest and other financing costs as percentage of spend on new housing development	33.7%	39.4%	*not available*

Notes:

1. Calculations based on housing association accounts data from regulatory reports: English Regulator of Social Housing 2025, Scottish Housing Regulator 2024. Table gives mean figures for the last three years.
2. Greater Manchester figures include several very large housing associations that provide housing across England. These figures relate to ***all*** their operations, not just those within Greater Manchester. They should not be taken as indicating the relative cost of building or borrowing in Greater Manchester, but as illustrating the financial situation of those housing associations most likely to play a key role in the TANZ programme.
3. Total interest and financing costs are interest payable plus other financing costs (arrangement fees etc), minus interest capitalised into the value of properties owned by the housing association. Please note that the figures show the cost of ALL housing association borrowing, including borrowing to fund renovation work, not just borrowing for new housing development.

[12] Regulator of Social Housing (2025) 2024 Global Accounts of private registered providers.
[13] Regulator of Social Housing (2025) 2024 Global Accounts of private registered providers.

Where does the finance money go?

While publicly available data on bondholdings is incomplete, it is clear that many millions of pounds worth of housing association bonds are purchased by institutional investors. These are typically 'asset managers' that manage savings funds, in exchange for annual fees[14]. We have analysed the London Stock Exchange Group's "Refinitiv" database to trace these financial flows. The 'big three' of BlackRock, Vanguard and State Street are all prominent in this market, as are UK-based finance companies such as Legal and General, and Aberdeen. Other significant players are occupational pension funds, whether as direct investors or investing via an asset manager. (A simplified illustration is provided in **Figure 2**).

The main banks involved making loans to UK housing associations are familiar names such as Lloyds, Nat West, and Royal Bank of Scotland. These banks are in turn owned by large financial institutions: in fact many of the same institutions that purchase bonds are also major shareholders in the banks. An exception is Nationwide, which as a building society is owned by its members i.e. its customers; although in the course of its business, it too borrows from private sector institutions on the financial markets.

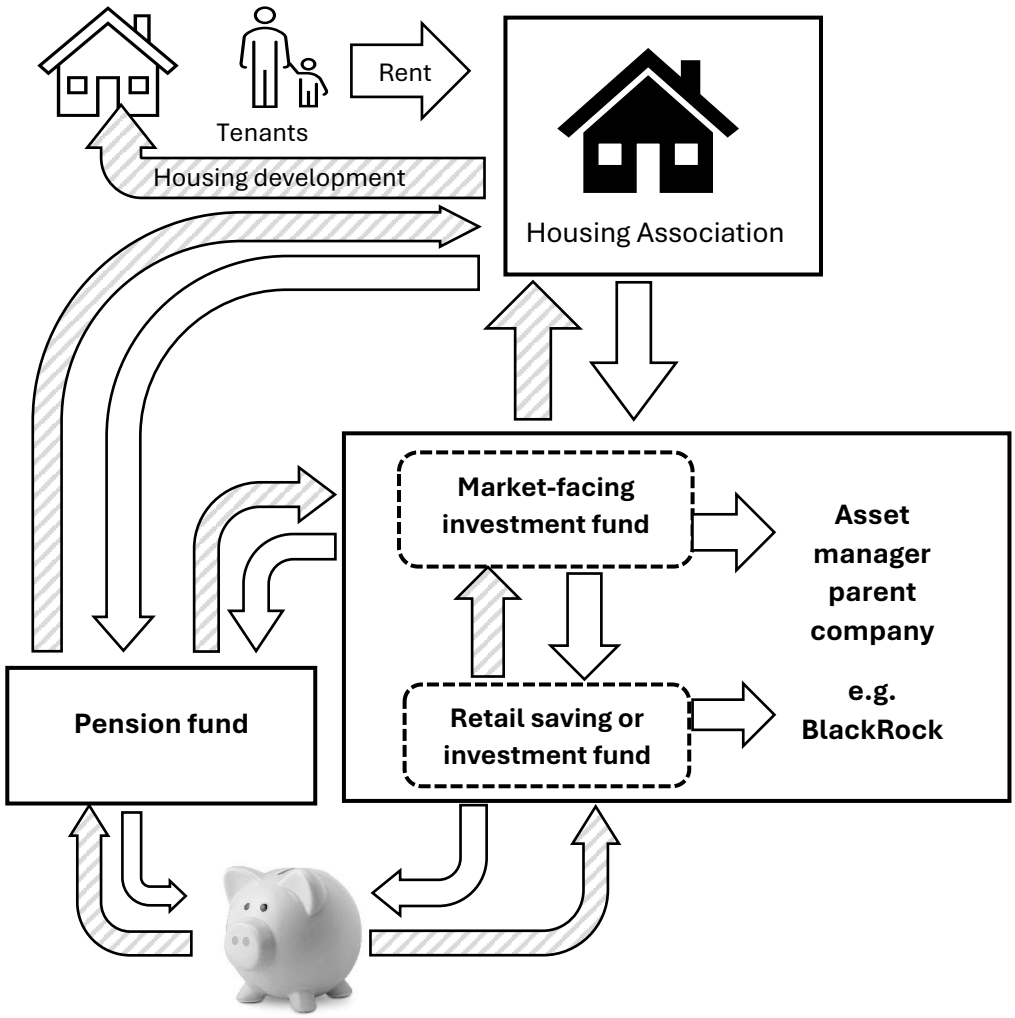
The money doesn't stop there, however. While, again, many of these financial flows are not disclosed publicly, still it is evident that substantial sums flow back through asset managers to the individuals whose savings and pensions provided the funds in the first place. National statistics suggest that the returns from pension and savings funds are extremely unequally distributed among the population[15][16]. Nevertheless, there are still millions of people whose retirement income currently depends on these funds. This significantly complicates any attempt to directly intervene in the interest rates charged for social housing lending, although ultimately it also places considerable financial power in the hands of those same millions of citizens whose savings underpin the system.

[14] We have not analysed the scale of these fees for this report, but this is another area that policymakers could explore.

[15] ONS (2025) Household total wealth in Great Britain: April 2020 to March 2022. London: Office for National Statistics.

[16] Cribb, J., Emmerson, C., and Karjalainen, H. (2025) The future of public pension provision in the UK: challenges and trade-offs. Oxford Review of Economic Policy 41:153–166. https://doi.org/10.1093/oxrep/graf008

Figure 2 Housing Association finance: illustration of finance chain for **bond** *finance*



Key

Investment Repayment

Please note: arrows are not to scale and do not reflect volume of financial flows. Housing associations also borrow money in the form of loans, which have a different structure and are not represented here.

Ways forward

In this section we explore four options for reducing the financial challenges of building low carbon social housing. Two of these are actions for government: public lending and public regulation. The other two are for the finance and housing sectors: higher valuations for low carbon social housing, and adopting energy services business models.

This is not an exhaustive list of feasible measures. The top priority for several stakeholders we spoke to was increasing the volume of low carbon social housing being built. Greater and more consistent demand for low carbon construction services and products could bring economies of scale to builders. It could also help grow the modular construction sector, which currently suffers from intermittent demand for energy efficient house parts, despite being widely seen as a promising model for more sustainable construction[17].

It has also been suggested that higher build costs for low carbon homes will be "absorbed through adjustments to land values"[18]; although others advocate for the use of statutory planning powers to ensure that land acquisition costs do not present an obstacle to new social housing[19]. The data we have on social housing development costs in Greater Manchester suggests that land acquisition may account for 10-15% of total development cost; in other words, an amount comparable to the extra cost of building to higher energy efficiency standards.

Public lending for low carbon social housing

Combined Authorities, such as GMCA, could work with central government funding bodies to provide cheaper finance for low carbon social housing. While the PWLB or National Wealth Fund are possibilities, the recently announced National Housing Bank is the most obvious partner.

The National Housing Bank will be a subsidiary of Homes England, with whom GMCA already has a strategic relationship, and will have £2.5bn to lend at low rates to facilitate the construction of social housing. As a Public Financial Institution, it is expected to mostly lend at rates that make its operations 'fiscally neutral', which in practice means lending at government bond rates or higher. However, the regulations explicitly permit lending at lower rates if this helps achieve government policy goals[20] - such as reducing carbon emissions or providing affordable housing.

It is clearly vital that the Bank's lending for newbuild social housing supports low carbon standards. While the new Future Homes Standard should improve the carbon performance of new housing across the board (see the next section), the Bank could offer additional incentives for social housing providers aiming to reach LETI or TANZ standards. These

[17] Rafa, N., and Khalid, R. (2024) Modern methods of construction (MMC) for net zero housing: Implications from the social sciences and humanities. UKERC Working Paper, London: UK Energy Research Centre.
[18] UK Green Building Council (2024) Future Homes and Building Standard (FHS) and Home Energy Model (HEM) consultations. Joint letter to the Secretary of State for Levelling Up, Housing, and Communities, 27th March 2024. Available at https://ukgbc.org/wp-content/uploads/2024/05/Joint-letter-FHS-FAO-The-Rt-Hon-Michael-Gove-MP.pdf
[19] House of Commons (2024) The finances and sustainability of the social housing sector. Report of the Levelling Up, Housing and Communities Committee. https://committees.parliament.uk/work/7406/the-finances-and-sustainability-of-the-social-housing-sector/publications/
[20] HM Treasury (2025) Government Financial Transaction Control Framework. https://www.gov.uk/government/publications/financial-transaction-control-framework/financial-transaction-control-framework-html#annex-b-benchmarking-returns-to-costs-of-financing-fts

incentives could be in the form of lower loan interest rates, or even additional grant funding, to make decarbonisation 'truly affordable'. We highlight two existing schemes which offer precedents that the Bank could build on.

Scheme 1: the Greener Homes Alliance 2

Homes England's existing "Greener Homes Alliance 2" scheme launched earlier this year, and offers significant discounts on interest rates – between one and two percentage points - on loans to SME builders whose new developments meet strict environmental criteria. Developments meeting four of the ten listed criteria get a 1.25 percentage point reduction; those meeting six criteria get a two percentage point reduction. The criteria are listed on the scheme website, improving transparency over commercial lending offers[21].

The first phase of the scheme ran for four years, and lent £150m to builders, with 40% of the homes built achieving EPC 'A' rating[22]. Expanding this model in scale and scope could offer housing associations a mix of financial support and incentives to accelerate the development of low carbon social housing.

While making new lending at lower interest rates would not affect housing associations' existing finance expenses, it could reduce them in the future, and make a significant difference to the economic viability of TANZ homes. Based on our case study figures, we estimate that this model could save up to £51,000 in interest costs on new flats, over the lifetime of the loan. This includes a saving of c£11,000 after four years of repayments, equal to more than the extra cost of building to the proposed Future Homes Standard Option 1 (see next section below); and over £23,000, more than our estimate of the extra cost of TANZ standards, by year ten.

Scheme 2: Scottish Charitable Bonds

In operation since 2014, this scheme involves the Scottish Government lending to housing associations via an intermediary, financial firm Allia CC. The funding is provided to the Scottish Government by the Treasury under the Financial Transactions regulations mentioned above. The loans are unsecured, for periods of up to 15 years, with both principal and interest only repayable on maturity. In this way it eases housing association short term cash flows, and avoids legal complications with Associations' existing secured borrowing. Additionally, the Scottish Government recycles interest payments into capital grants for further new social housing, either to the borrower or to other charitable housing organisations.

Over £500m has been lent, with over £140m of interest payments recycled into new grants, and over 5000 homes built across loan- and grant-funded developments[23]. As with Greener Homes, the individual loans are relatively small (around £10m), but the scheme provides a model that might be scaled up.

[21] FCA (2023) Review of the Sustainability-Linked Loans (SLL) Market. Open letter. London: Financial Conduct Authority.

[22] Homes England (2025) Homes England and Octopus Real Estate launch £150 million Greener Homes Alliance phase 2. https://www.gov.uk/government/news/homes-england-and-octopus-real-estate-launch-150m-greener-homes-alliance-phase-2

[23] Scottish Government (2025) Charitable Bonds housing investment reaches half a billion. https://www.gov.scot/news/charitable-bonds-housing-investment-reaches-half-a-billion/

Future Homes regulation

The obvious step for the UK government to take is to announce the long-awaited Future Homes Standard (DLUHC 2023). This Standard will upgrade building regulations for all new housing – social or private. The Standard should be clear and ambitious. Of the two Options the government has consulted on, Option 1 comes closest to the TANZ standard, as it mandates solar rooftop PV and aims for greater energy efficiency than Option 2. However, even Option 1 aims for slightly lower standards of energy efficiency than TANZ: e.g. a space heating demand target of up to 20 kWh/m^2/year for flats, where TANZ aims for 15kWh/m^2/year (and 35 kWh/m^2/year for total energy use). We therefore suggest that Option 1 should be the minimum level of ambition for the Standard.

Underlying much of the market in social housing, including its financing, is government regulation. Housing associations' access to finance is enhanced by credit ratings agencies' perception of their strategic importance to government policy goals, e.g. referring to their "strong links to the sovereign"[24]. Associations' presentations to investors stress their compliance with regulatory requirements and contribution to government policy goals.

Ultimately, housing regulation will drive market actors' behaviour. Regulation will likely be welcomed by those companies trying to lead the industry towards more sustainable practices, with a senior manager at one developer recently calling for a net zero building standard that was:

> "…both clear and ambitious. You shouldn't be able to just build something and claim it's net zero. We need to push towards real, measurable sustainability to drive better outcomes for both the environment and our communities." (Jessica Herman, Head of ESG, Caddick Group at UKREIIF 2025).

Valuation and decarbonisation

Some stakeholders suggest that higher valuations will help make the financial case for low carbon housing. Currently valuations of housing stock are based on anticipated future revenue generated by that stock; social housing valuations are therefore tied to regulated social rent levels. Some housing association stakeholders suggested to us that low carbon housing would attract higher valuations if valuation methods were able to take into account factors such as the impact of energy efficiency on tenants' disposable incomes (and therefore fewer tenants falling into rent arrears), or the 'future proofing' of housing against stricter sustainability regulation in years to come.

However, our research suggests that while higher valuations could have a positive impact on developers' financial incentives, it is likely to be a limited one. Valuations may relate to the *amount* of finance that can be raised, via 'loan to value' metrics, but it could be argued that higher volumes of debt are not what housing associations need at present. Valuations do not seem to directly influence the *cost* of finance.

[24] Fitch Ratings (2025) English Social Housing – Peer Credit Analysis. Summary available at https://www.fitchratings.com/research/international-public-finance/english-social-housing-peer-credit-analysis-28-03-2025

Energy services business models

Another possibility is for landlords to provide tenants with energy, buying energy in bulk and recovering the costs through service charges. This obligation would create extra incentives for landlords to upgrade the energy efficiency of their housing stock, to reduce their own energy purchase costs. It also gives them some scope to control their tenants' energy tariffs, potentially improving financial security for tenants.

However, many housing associations appear wary of becoming an energy supplier to their tenants. This reluctance is understandable; becoming a supplier involves negotiating the energy sector's technical and regulatory complications, and taking on new financial risks.

Partnering with an existing energy service provider may be a better option. For example, the Welsh housing association Pobl has worked with energy company Sero to retrofit a 644-home social rented estate, at a total cost of £5.1m[25]. A combination of solar panels, batteries and a customised metering and billing system has allowed all residents (not just those with roofs suitable for solar) to share in the bill savings from generating renewable energy on site.

Many other energy companies work in this field, from innovative community companies such as Energy Local, to large enterprises like Vital Energi, or council-owned companies like Energetik. Companies are running a range of business models across the UK and Europe[2627].

Conclusions and recommendations

GMCA's TANZ programme aims to see 30,000 social rent homes built to low carbon standards in the region by 2038. We estimate that building social homes to low carbon standards could require an extra £6k - £22k per home, with TANZ standard the most expensive. Revenue from social rents will not bring in enough money to social housing providers to fund large scale development of low carbon homes; external finance will be needed. Yet it is clear that the interest payments on external finance are already a significant cost to housing associations. Each year, the total interest paid by housing associations active in GMCA (including large-scale national associations) exceeds the extra cost of building 30,000 homes to TANZ decarbonisation standards.

Some suggest changing valuation methodologies to take account of the long term financial benefits of low carbon homes to tenants and landlords. However, our analysis shows that this change seems unlikely to significantly reduce borrowing costs. Energy services business models have promise, but will likely require housing associations to partner with energy specialists; and local energy companies currently face challenges in the UK's relatively large scale energy sector.

[25] Sero (2024) Powering the Penderi community with the UK's largest Energy as a Service model. Available at https://sero.life/press-room/penderi/

[26] Braunholtz-Speight, T., Sharmina, M., Pappas, D., Webb, J., Hannon, M. and Fuentes González, F. 2022. Beyond the pilots: Current local energy systems in the UK. Strathclyde: Energy Revolution Research Centre.

[27] De Tommasi L, Papadelis S, Agrawal R and Lyons P. (2024) Analysis of business models for delivering energy efficiency through smart energy services to the European commercial rented sector [version 2; peer review: 2 approved] Open Research Europe 2024, 2:131 https://doi.org/10.12688/openreseurope .15240.2

The best way forward in the short term is for the UK government to use the twin tools of regulation and finance to support low carbon social housing. This financial support for low carbon social housing from the National Housing Bank to help 'raise the ceiling' of ambition, combined with a Future Homes Standard at least as ambitious as Option 1, to 'raise the floor' of environmental standards across the entire housing sector. Such an approach can improve the viability of specific low carbon developments, and gradually, project by project, reduce the financing burden on the housing association sector. By working in partnership with local and regional authorities, such as GMCA, the government can help make net zero homes 'truly affordable' across Greater Manchester – and the UK.

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Further reading

Regulator of Social Housing (2025) 2024 Global Accounts of private registered providers: report and data files. Leeds: Regulator of Social Housing.

Scottish Futures Trust (2025) Financing and funding the decarbonisation of Scotland's social housing. Edinburgh: Scottish Futures Trust.

Scottish Housing Regulator (2024) Audited Financial Statements of All Social Landlords: complete dataset 2019-20 to 2023-24. Available at https://www.housingregulator.gov.scot/landlord-performance/statistical-information/