UK2070 COMMISSION

A Just Transition: How improving the energy performance of social housing can help mitigate the impact of climate change on disadvantaged communities by reducing fuel poverty, improving quality of life, and creating a new industry.

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The following Think Piece has been submitted to the UK2070 Commission in response to its Call for Evidence. The views expressed are those of the author, and not the Commission.

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Report

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Response to call for evidence
Turner & Townsend

making the **difference**

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Subject

A Just Transition: How improving the energy performance of social housing can help mitigate the impact of climate change on disadvantaged communities by reducing fuel poverty, improving quality of life, and creating a new national industry.

1 Introduction

The UK2070 Commission is an independent inquiry into spatial inequalities in the UK. It has examined the factors that have contributed to those inequalities over the past 50 years, and proposed a policy framework for addressing and reducing them between 2020 and 2070.

In its second interim report – *Moving Up The Gears: The Seven National Priorities for Action* – the Commission has produced a series of recommendations to address what it considers to be specific societal challenges and the opportunities they may present, with an emphasis on policy solutions which also help to reduce spatial inequalities.

These Seven National Priorities for Action begin with a reference to the impact of climate change:

Embedding Spatial Justice into Tackling Climate Change: *The First Report highlighted the inextricable link between climate change and inequality – what has been referred to as a 'double-headed crisis'. The cost of climate change is being borne by those who least benefit from economic growth, whether that is in terms of pollution, health, waste or workless-ness. The national goal of moving to a carbon zero economy must avoid an 'unjust transition' which merely reinforces the existing patterns of spatial inequality. 'Spatial justice' must become embedded in the UK's contribution to the global response to climate change.*

The Commission carries out a detailed examination of the relationship between the impact of climate change and spatial inequality in Section 2 of its second interim report, pointing out that the future risks will vary across the UK, and that environmental costs related to energy, for example, will impact most heavily on disadvantaged communities. It also says that those areas of the UK where development and economic activity is most heavily concentrated – most notably London and the South East – may face significant environmental and resource challenges.

It also suggests that the opportunities related to the transition to a zero-carbon economy – such as new products – should be harnessed in a way that supports a more balanced economic geography.

It concludes that risks should be mitigated and opportunities exploited in an integrated UK-wide strategy which seeks to protect those most at risk socially and economically whilst encouraging the development of new industries in regions or communities most in need of growth.

This submission examines the role that deep whole-house retrofit could play in addressing the carbon zero agenda, the mitigation of climate risk amongst those in the existing social housing stock, the consequential benefits in terms of health and quality of life, and the opportunity it presents to encourage the growth of a new industry likely to need substantial numbers of semi-skilled and skilled workers.

It seeks to demonstrate not only that retrofit is consistent with the aims of the UK2070 Commission, but that the breadth of the opportunity is such that government should consider a range of policy frameworks, fiscal incentives and financial support that opens up a pathway from early stage innovation – where active pilots will identify improvements and efficiencies from scheme design to on-site delivery – through to commercial viability and roll-out at scale.

We make specific reference to one such initiative: the Greater London Authority/Mayor of London's Retrofit Accelerator for Homes (RAH), where we are the lead delivery partner. This is part of an integrated strategy devised by City Hall in London to both reduce the carbon emissions of the capital's existing social housing stock and to improve the quality of life of tenants.

2 The Policy Background

The need to take concerted, coherent action to address the poor thermal performance of the UK's residential housing stock is supported by a substantial body of data and numerous cross-cutting policy imperatives. It is not only the least energy efficient stock in Europe, contributing a significant proportion of UK greenhouse gas (GHG) emissions, figures suggest it is also a factor in poor quality of life, poor health and even excess winter deaths.

According to the think tank E3G, of the 32,000 excess winter deaths in the UK each year, *"…approximately 3,200 excess winter deaths are linked directly to people experiencing fuel poverty, that is when low incomes and high, or relatively high, energy bills combine to make a warm home unaffordable."*

In London, a quarter of homes that have received an Energy Performance Certificate (EPC) since 2009 have the worst ratings (D-G). Londoners are spending around £3.5bn a year heating and powering their homes according to the GLA estimates, pushing almost 12 per cent of them into fuel poverty.

The National Institute for Health and Care Excellence (NICE) has acknowledged that addressing excess mortality from cold homes could not only improve public health, but save the NHS £1.36bn a year in England alone. This figure comes from a commonly cited Age UK report, 'The Cost of Cold', which also references research carried out into the impact of a retrofitting project in Northern Ireland. This shows that for every £1 spent on retrofitting, the NHS would save 42p. Based on the longevity of more recent and comprehensive retrofit solutions like Energiesprong, these figures may be conservative estimates (the research calculations were based on a 15-year retrofit lifespan; Energiesprong guarantees performance over 30 years).

On their own, these numbers provide a powerful argument for reconsidering the status of energy efficiency spending such as the Mayor of London Retrofit Accelerator because of the quality-of-life gains and the potential for a consequential significant cost-offset to the public purse.

But the bigger picture is the challenge presented by the UK Government's commitment to achieve net carbon zero emissions by 2050 to help combat the impact of climate change - a phenomenon whose impacts are likely to be felt on an historic and unprecedented societal scale.

3 UK Policy Performance

Net carbon zero is an ambitious, stretching objective made necessary by international agreements on addressing climate change and UK statutory commitments to achieve a specific target.

However, recent BEIS Select Committee examination of existing energy efficiency policy suggests that ambitions and outcomes are currently diverging, with the Government due to over-spend on its fourth and fifth carbon budgets into the 2020s; in some areas, market progress has gone into reverse as 'low-hanging' opportunities to reduce emissions (home insulation, for example) have dwindled.

Some 19% of UK GHG emissions come from homes and those emissions have been rising, not falling. The emissions figure for London is higher still, with 36% of the capital's GHGs generated by homes.

The Committee's report, published in July 2019, suggests that without major policy intervention this drift off-course will not be reversed, with the ambition to retrofit homes even to EPC 'C' standard by 2035 highly unlikely to be achieved. Indeed, this may be an unwise investment whose limited environmental impact necessitates further costly intervention at a future date – placing further pressure on target attainment. The Committee concludes:

"A major upgrade of the energy performance of the UK's entire building stock will be a fundamental pillar of any credible strategy to reach net zero emissions, to address fuel poverty and cut energy bills.

"The recommendations we set out, if taken forward, will help put the Government on the path to meeting its own rhetoric on energy efficiency. These include: confirming energy efficiency as a national infrastructure priority, underpinned by sufficient and sustained central Government funding; placing local authorities in the driving seat to deliver fuel poverty schemes; employing a comprehensive package of incentives and finance mechanisms for the 'able to pay' market; implementing robust regulation; and the provision of local energy advice and sufficient quality assurance standards…"

Significantly, the Committee's report makes a clear call for energy efficiency spending to be re-classified in order to help kick-start market investment:

"Treating energy efficiency as a national infrastructure priority is more than just signalling. It can transform the mind-sets of policymakers and position energy efficiency as a public good that requires clear, coherent, coordinated governance arrangements, targets a long-term action plan as well as sustained Government funding.

"It would ensure that energy efficiency is consistently classified as investment rather than expenditure in Government accounting, allowing for appraisals that put it on a level playing field with other infrastructure projects. It is crucial to overcoming a disjointed policy landscape and would signal to the market that energy efficiency is a wise long-term investment."

The retrofit model we outline in point 5 below overcomes the dangers of low-impact/low-value interventions by delivering a substantial and guaranteed reduction in residential emissions in a single step. This presents a powerful argument for retrofit being classified as a national infrastructure priority.

4 The Retrofit Accelerator Homes Programme

- Retrofit Accelerator Homes aims to transform the way London retrofits its ageing and energy-inefficient housing to create warm, affordable, ultra-low carbon homes.
- The programme will provide London boroughs and housing associations with the technical expertise they need to kick-start whole-house retrofit projects across the capital.
- It will also help build the supply chain and business case to accelerate the retrofit revolution for private homes.

Whilst there has been much emphasis on the sustainability performance of new build, the GLA estimates that around 80% of London's current buildings will still be standing in 2050. On that basis, the Mayor of London has put a premium on energy efficiency retrofitting via the Retrofit Accelerator, part of the comprehensive, coordinated Energy for Londoners strategy.

Under the EfL banner, this sits alongside existing energy efficiency programmes such as Retrofit Accelerator Workplaces (public building energy efficiency, formally known as RE:FIT) and presents a coherent strategy intended to help the capital reduce GHG emissions from 30.3 megatons of CO2 (GLA LEGGI, 2017) to near zero by 2050. Specifically, the 12.2 megatons currently emitted by London's housing stock will need to fall to around one megaton a year.

These targets cannot be achieved without an innovative approach to significantly ramping up the number of homes retrofitted with a deep whole-house solution [Detailed in point 4 below].

This programme in London is intended to be a pathfinder for a transformational UK market solution at scale, and that requires conditions that enable that market to gain momentum as it moves from initial innovation to a point of self-sustaining commercial viability:

- **Financial support for initial market innovation (similar to that successfully provided by Government for offshore wind).**
- **Regulation that enables housing providers to charge appropriately for investment in warmer homes with renewable energy.**
- **Measures to mitigate the financial risks to housing providers associated with retrofit investment in properties which are subject to Right-To-Buy discounts.**
- **Clarity over the levels of VAT on energy efficiency solutions.**
- **Recognition in Government EPC targets that deep whole-house retrofit is a one-step-to-2050 proposition better suited to net carbon zero attainment than interim solutions.**

As the BEIS Select Committee report observed, classifying energy efficiency measures as an infrastructure priority would also help to drive a necessary step-change, not only in energising a major new market, but in accelerating the point at which the huge upfront investment in a decarbonised grid (central cost assumptions for UK heat decarbonisation range from £120bn-£300bn) becomes effective by reducing demand, reducing emissions and driving the target. In policy terms, this would amount to a consistent and coherent strategy towards achieving net carbon zero, with cross-cutting support from key Government departments.

The strategic and commercial potential of the deep whole-house retrofit proposition is reflected in the way Retrofit Accelerator's delivery has been structured, with the assembly of a private-sector led technical assistance team that has technical and commercial expertise in the journey from innovation to market-making.

Through an area-based approach, the team is providing intensive end-to-end advice and support to partners (including local authorities, housing association and universities) to enable the design, development and delivery of projects; adaptation of the solution to local market conditions; and feeding learning into the creation of enhanced models successively more attractive to housing providers, supply chain partners and funders.

5 The Deep Whole-House Retrofit Model

The Retrofit Accelerator solution suggested by delivery partners centres on Energiesprong, which creates a net zero energy home in a single step, and is particularly suited to the social housing target prioritised by the Mayor of London's Retrofit Accelerator. It is a proven model, already delivered at scale in the Netherlands, based on combining a super-insulated (but appropriately ventilated) shell around a property with a solar PV roof (capable of generating all the energy the property consumes) and an energy management hub which connects services to the grid.

On an annualised average, the Energiesprong model reduces a home's energy demand from the grid by up to 80% (exporting excess PV energy to the grid during summer, drawing from the grid in winter), with a commensurate drop in emissions. These are net zero homes.

Estimates have suggested that on a national roll-out, fitting this solution to 11m homes would reduce peak domestic energy demand by more than 40% - illustrating how it could contribute to reducing the cost of decarbonising the UK's energy supply.

It is also consistent with government clean growth objectives, outlined in its Modern Industrial Strategy:

"The move to cleaner economic growth – through low carbon technologies and the efficient use of resources – is one of the greatest industrial opportunities of our time. By one estimate, the UK's clean economy could grow at four times the rate of GDP. Whole new industries will be created and existing industries transformed as we move towards a low carbon, more resource-efficient economy"

The nature of a repeatable, scalable model is also aligned with Government ambitions to help 'level-up' and rebalance the UK economy via investments which benefit regional economies such as the Midlands and the North; support for the growth of new industries which build skills, capacity and economic opportunity; and the development of more attractive living conditions (ambitions articulated in the recently announced Towns Fund). As a new industry, retrofit could be oriented towards the significant concentrations of social housing in the North and the Midlands, for example.

For the UK, this deep whole-house retrofit solution would be a new model, with typically higher 'start-up' costs than traditional piecemeal measures (such as insulation). But the Netherlands experience shows that these delivery costs would fall dramatically once the solution secures widespread adoption, as its technological model offers significant potential to manufacture offsite at scale (prefabricating facades and roofs) and speed-up onsite delivery through integrated components (combining electronics, pumps, batteries and vents into a single unit).

The first Energiesprong trials in the UK in Nottingham cost £75,000 per property. If 5,000 homes were retrofitted a year, Energiesprong estimates the unit cost would drop to £50,000. This would be the point of commercial viability, helping to drive further cost reductions as volumes of component production (integrated energy control hubs, for example) gather momentum.

The UK energy efficiency products sector is already worth nearly £14bn a year, a level which supports 100,000 jobs. It has been estimated that a large-scale retrofit programme could add another £11bn by 2030, supporting tens of thousands of new jobs whose location could be aligned with ambitions to rebalance the economy.

6 The Human Factor

The Government's commitment to achieve a target of net carbon zero emissions by 2050 is ultimately a response to the threat posed by climate change. But this has to be supported by policies and programmes that have the capacity to meet that target. Evidence from the BEIS Select Committee suggests that the UK has not yet reached that stage.

The Mayor of London Retrofit Accelerator provides a mechanism to help achieve that target by drastically reducing emissions from one of the most prominent sources - homes whose thermal performance is so poor that they are both significant emitters of GHGs and responsible for a poor quality of life that can have notable and costly health impacts. As research from Age UK and others shows, these impacts can be measured in GP appointments and hospital visits to treat cold-related illnesses and long-term health conditions, even in excess winter deaths. Fuel poverty and cold homes are a cost to the environment, health and social care budgets and human lives.

Anecdotal evidence from Energiesprong pilot projects in Nottingham suggests that the deep whole-house retrofit model offers the potential to make major inroads into the health and quality of life issues which lie at the centre of the spatial justice issue highlighted by the UK2070 Commission: in transforming their homes to generate energy cleanly, tenants are highlighting benefits in appearance through modernised, attractive facades; usability through warmth throughout a property, rather than only those rooms they can afford to heat; liveability through both warmth and reduced internal noise levels (brought about by thicker walls and better windows and sealing).

Though it is at an early stage and a small scale, a production facility has also been set up in Nottingham, which points to the potential for substantial numbers of skilled, semi-skilled and white collar jobs in design, manufacture, installation and support as the industry reaches scale: Energiesprong estimates the total UK market may be as high as 28 million homes.

Evidence from these programmes shows that tenants and the communities they are part of feel prouder about warmer, better-looking homes and improved street scenes. The value of this grassroots motivation should not be under-estimated: the offer of warmer, healthier and more liveable conditions incentivises acceptance of a programme which delivers substantial environmental gain from home-level demand to decarbonised supply.

This human factor demonstrates that creating the space for the Retrofit Accelerator model to deliver and grow would bring significant cross-cutting benefits which penetrate all the way to community level. It will signal not only that the UK is serious and innovative in its approach to meeting net carbon zero, but that it has used the opportunity to create a public good at societal and individual level, and an economic benefit through nationwide market creation.

The breadth of environmental benefit likely to be created by Retrofit Accelerator's scalable model points to the need for enabling, coordinated policy change – the key to making it happen.

7 Conclusion

We would submit that government policy which supports the creation of a new national industry for deep whole-house retrofit specifically addresses the UK2070 Commission's first national priority, and is consistent with the aims of priorities 4 (Strengthening the foundations of local economies) and 6 (Shaping the future through National Spatial Plans). Moreover, it is also entirely consistent with Government's stated policy aim that the UK will achieve net carbon zero emissions by 2050 – a policy likely to come under the spotlight at COP26 in September 2020.

Deep whole-house retrofit can make a significant, single-step contribution to the UK's net carbon zero targets, whilst enabling a series of consequential gains consistent with the Commission's aims:

- The creation of a new, regionally scalable industry providing skilled and semi-skilled employment, and using environmentally efficient off-site production methods.
- An improvement in tenant health outcomes likely to reduce stresses on health and social care budgets.
- A better quality of life for tenants through warmer, well-ventilated homes, lower internal noise levels and improved street scenes.
- Enabling a more cost-effective transition to decarbonised energy supplies by significantly reducing energy demand.
- Make an important contribution to reducing the resource consumption in areas of concentrated development, such as London and the South East.

Providing financial support to help this industry scale-up beyond its innovation phase would, therefore, be an investment not just in progress towards net carbon zero, but in better social and economic outcomes capable of mitigating the impact of climate change on disadvantaged communities.

We outlined in point 4 the measures necessary to help retrofit achieve commercial viability: financial support for initial market innovation; regulation that enables housing providers to charge appropriately for investment in warmer homes; mitigation of the financial risks presented by Right-To-Buy; clarity over levels of VAT on energy efficiency; recognition in EPC targets that retrofit is a one-step to 2050 proposition; reclassifying energy efficiency as a national infrastructure priority.

We believe these measures would unlock a greater value. The potential to roll-out this model and orient it towards regions can also contribute directly to the rebalancing of the UK economy. We would suggest that the development of a regional pathfinder programme for retrofit, involving collaboration across the Northern Powerhouse and Midlands Engine for example, could be aligned with and supported by regional investment strategies, local skills development and national clean growth objectives.

The opportunity presented by deep whole-house retrofit is timely. There is growing public acceptance of climate change as an issue and increasing awareness at societal level (particularly amongst emerging generations) of the need for behavioural change and solutions which enable that. As the UK seeks to redefine its place in the world, and digital technologies reshape business and the economy, there is also an appetite for new economic opportunity.

On this basis, we commend the deep whole-house retrofit as a transformational opportunity and urge government to embrace its potential through decisive policy change.

- *Turner & Townsend is a professional services business; this therefore represents a professional perspective on technological and market potential and is not a view on policy philosophies.*