

Petersfield, United Kingdom

RETROFIT SOUTH EAST: HOW SOCIAL HOUSING RETROFIT CAN HELP MEET EUROPE'S CLIMATE CHANGE TARGETS

Retrofit South East developed a model for low-carbon retrofit of social housing. The refurbishment of 14 homes created a focus for networking, dissemination and transfer of knowledge to construction businesses, professionals and policy-makers. The project tested solutions to a range of identified market failure issues, to stimulate the emerging retrofit market. This in turn will lead to the creation of new high-quality jobs in the region, and support energy efficiency and carbon reduction targets.

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The project was developed in recognition of the significant challenges the housing sector faces if it is to hit the national energy efficiency target of an 80% cut in greenhouse gas emissions by 2050. Social housing association Radian took a lead with Retrofit South East to help others and to build capacity in the sector. As Paul Ciniglio, the project leader described it: 'We recognise the scale of the retrofit challenge in the social housing sector. We have to really embark on this.'

During the course of the project 14 semi-detached Reema type homes in Borough Grove, Petersfield underwent an advanced low-carbon refurbishment. Free business assistance was delivered to 85 SMEs to improve their ability to 'upsell' energy efficiency and its benefits to householders. Two conferences were held to present findings. A series of reports was produced with extensive detail of the retrofit techniques used, such as cost, results, energy efficiency improvements and potential impacts of upscaling for the regional economy, a new finance model, and a map of regional low-carbon retrofit exemplars. A network of refurbishment pioneers in social housing was created.

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The project was developed in recognition of the significant challenges that face the housing sector if it is to hit the national energy efficiency target of an 80% cut in greenhouse gas emissions by 2050. This in effect means that over half a million homes will need to be refurbished every year in the UK. Social housing association Radian, which is technically a social enterprise, took a lead with Retrofit South East – both to help others to innovate and to build capacity in the sector. As Paul Ciniglio, the project leader described it: ‘We recognise the scale of the retrofit challenge in the social housing sector. We have to really embark on this.’



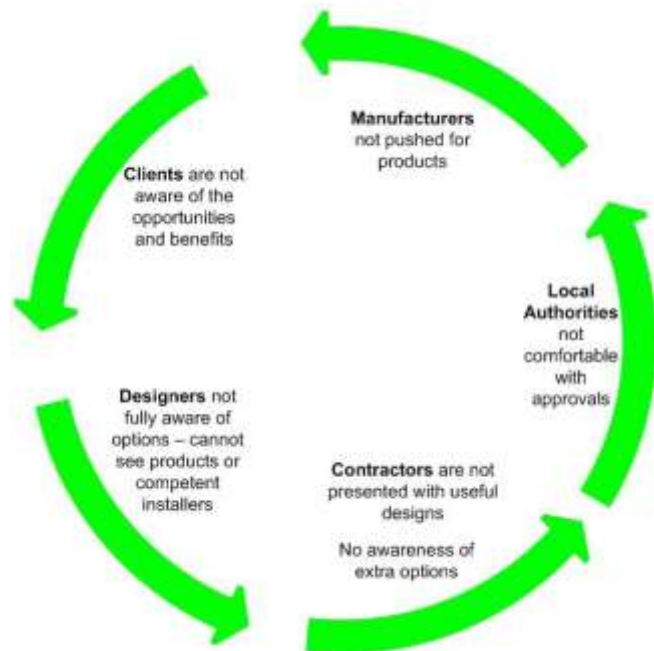
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the retrofit techniques used, such as cost, results, energy efficiency improvements and potential impacts of upscaling for the regional economy, a new finance model, and a map of regional low-carbon retrofit exemplars. A network of refurbishment pioneers in social housing was created.

The project was developed and delivered by four partner organisations, each bringing a different element of expertise to create a holistic approach. **Radian** is a registered social landlord managing over 17 000 homes in the south of England. It is a pioneer in the retrofit sector, with several good practices adopted nationally and regionally, winning the Ashden UK Gold Award for Sustainable Energy in 2011. Radian was the lead partner, undertook the refurbishment of the properties and led on public relations. **Camco** is a climate change solutions company which specialises in all aspects of sustainable energy technology and policy development. It coordinated the partnership, and wrote the application, progress reports, specialist reports on exemplar mapping, lifetime emissions and regional impact, as well as the final summary. **Parity Projects** is a national award-winning company started specifically to improve the energy efficiency of housing stock beyond traditional measures. It delivered the business support element of Retrofit South East. **Global Environmental Social Business (GESB)** is a private company specialised in financing energy efficiency and renewable energy projects. It assessed the theoretical feasibility of the Retrofit Revolving Guarantee Fund concept as a finance mechanism of the future in the UK market.

A regional jigsaw

Retrofit South East demonstrated good practice on several levels. It was one of the first UK projects to support retrofitting of social housing under the new ERDF regulation provisions introduced in 2009. It took a comprehensive and strategic approach, by using the exemplar retrofit of a whole street to also build capacity of construction businesses to meet the emerging needs in this sector, explore finance mechanisms to underpin future investments and raise the political profile of retrofit. It trialled a way to work with vulnerable tenants to encourage energy-efficient behaviour and take them out of fuel poverty.



The project took a regional view of the challenge and put together a jigsaw of the actions required to unblock the market and stimulate the supply chain for refurbishment and retrofit. Firstly, exemplar housing is needed to inspire and demonstrate what is achievable. Secondly, finance mechanisms are required to make the investments affordable. Thirdly supply-side capacity needs to be built through business assistance, and finally an engagement with policy stakeholders is a precursor to creating the right framework. Retrofit South East took this pan-regional, multi-stakeholder approach to show how it could accelerate the rate of change needed in housing retrofit to hit climate and energy targets.

Cathy Hough, consultant at Camco, believes this approach can also be used in other regions: 'Technical differences aside, you can always use the same social, economic, political and financial approaches to find the right jigsaw approach.'



Meeting policy imperatives

Retrofit South East was conceived in the context of climate change debate and targets, the issue of fuel poverty in low-income households and the need to develop solutions to meet this double challenge.

Retrofit Southeast is a practical exemplar to address the policy aspirations of the EU Climate and Energy Package and national carbon reduction targets. In terms of the regional context Retrofit South East supported the Operational Programme objective of 'promoting competitiveness in the region whilst contributing to reducing the region's technological footprint'.

Proof of concept: to rebuild or retrofit?

Although this was the first time project partners had accessed European funding, Retrofit South East benefitted from and built on past experience. Camco had previously set up the

Existing Homes Alliance¹ that calls on all sectors to play their part in making sustainable, low-carbon homes a reality across the whole of the UK's housing stock. Camco and Radian had worked together on 'Generation Homes' with funds from the Energy Saving Trust.

The centrepiece and most tangible element of the project was the refurbishment of 14 homes in Borough Grove, Petersfield, built in the 1950s and rated E in terms of standard European Energy Efficiency ratings. The homes were cold, damp and uncomfortable and well past the end of their useful life. The retrofit specification created by Radian included a range of features including 100mm external wall insulation, 300mm loft insulation, 50mm floor edge insulation, new A grade gas boiler and heating systems, A-rated windows and doors, improved airtightness, ventilation features, and 1.48kWp solar PV. Six of the southerly oriented homes also received solar thermal panels on the roof and an additional area of PV panels (2.1kWp in total). All homes were fitted with low flow taps, low flow showers, dual flush WCs, and a 200 litre water butt for rainwater storage. 85% of site waste was recycled.

In Spring 2009 when Retrofit South East started, almost no thought was given to refurbishing existing homes. Rebuild was the dominant practice. In the four years since then there has been a huge shift from new build to retrofit of existing homes, and Retrofit Southeast has contributed to that. The lifetime emissions report 2 produced by Camco as one of project outputs modelled the reduction (not as monitored in use) and produced figures relating to total emissions e.g. not just regulated emissions showing that it is more effective to retrofit than rebuild. The advanced retrofit produces 30% less carbon emissions over the life (taken as 50 years for the purposes of the study) than a new home built to current 2010 Building Regulations part L (traditional brick and block new construction). It is also estimated that demolition and re build of a new home would cost approximately 43% more than the total all in advanced retrofit costs.. The final report says the project showed 'that improving existing homes can deliver greater lifetime carbon savings than new build, at lower cost, by retaining all the benefits of existing communities.'

A show home in Borough Grove featuring the entire standard and some additional innovative features was kept open for nine months for demonstration purposes. The show home had achieved a modelled 90% reduction in its regulated emissions, taking it from Band E to Band A. The houses with the solar water heating and larger solar PV system have achieved a 88% reduction in predicted CO2 emissions, and the others a 79% reduction.

Radian's own direct labour organisation undertook the works, with apprentices and residents in the team, developing the skills of the future. As one worker put it: 'I've learnt the eco side of the trade here. I wouldn't have had a clue before.'

Engaging the community

Radian started talking about the upgrading initiative with residents in the Petersfield estate six years ago. One part of the community voted to demolish and rebuild the homes. Radian reports that housing associations generally prefer this option because it allows an increase in the housing unit density by a factor of two. But Borough Grove residents chose to retain and improve their existing homes.

The process of working with tenants on the retrofit was both time and labour intensive, but was key to success. Many of the tenants are elderly and vulnerable and need special care to get them involved. As Paul Ciniglio explained: 'Working with social housing tenants' misperceptions is the major issue. They don't understand or believe in retrofit. It's absolutely essential to convince them in the right ways. You have to tell people at least three times before they get the message.'

¹ <http://www.existinghomesalliance.org.uk/>

² Lifetime Carbon Emissions of Retrofit Versus New Build, Camco, September 2011

The community consultation and support took the form of a series of meetings to explain the benefits of retrofitting and the processes involved. It also included newsletters, communication in layman's terms, several door-to-door visits, and a site office, into which residents could drop in at any time. A group training session led by NGO 'Greening Petersfield' was followed up with individual advice about energy-efficient behaviour.

A Community Liaison Officer was employed to support tenants, and to provide information on a one-to-one basis. Two houses were retrofitted at a time, and tenants were decanted to other homes nearby for around 10 weeks whilst the work took place on their home. Retrofit South East experience has reinforced the need for a full-time staff member with community skills, something that private sector companies can learn from. 'You can't expect the technical construction people to have the time or people skills to do that.'

Satisfaction levels of tenants in newly refurbished Borough Grove, Petersfield are high. Mrs Woodward has lived there for 22 years. Speaking in her home she said: 'The house was in a bit of a state. It's much warmer now and cheaper to run: my bills are cut in half. We all got to design our own homes, I was flabbergasted. The beauty of it is I've still got my home, my garden, but it's a new house.'

Neighbour Mrs Talbot and her son Paul agreed. 'We really love it here, we are very settled. I had my two children here and lost my husband. I didn't want to move. With the panels on the roof I couldn't believe how much I've saved on the electric.'

The tenants of Borough Grove have seen the EU in action, and on a sunny day after moving back in, one called out to a Radian worker 'I'm running on solar today!' Staff at Radian also believes in the positive impact that beautiful and energy efficient homes can have on family life, confidence, job prospects, health and social impacts, such as renewed pride in the community.

Greening the SME offer

In order to tackle the supply side of the retrofit market, Parity Project ran a suite of modular workshops for construction professionals coming from 85 SMEs to improve business awareness. The offer was targeted at architects, surveyors, project managers and construction tradespeople. Businesses were given support and advice on how to identify 'golden moments' or trigger points which provide the best opportunities to retrofit – for instance, when the floorboards come up in a property to install heating pipes, take the chance to put in ground insulation.

Russell Smith, Managing Director of Parity Projects, reported that none of this practice is normal yet: 'We have a long way to go to make retrofit a default mode for contractors. We have to keep nudging them in the right direction.' The barriers appear to include ignorance and assumptions. The words 'eco-renovation' and 'green' seem to turn many people off. 'A lot of small contractors know how to make money. They don't want to offer householders too many options and confuse their offer. We have to badger away to convince them.'

Getting SMEs to sign up to the workshops proved difficult, as it seems that in a recession many small businesses did not want staff to take a day off-site. From a mail-out of 500 flyers, 10 responses were received. 'It's very difficult to reach these guys.'

Part of the solution to this marketing challenge was to put adverts in local papers, to use the Radian database of contractors, to



quote positive customer feedback, and to go to conferences to talk to those who are 'semi-convinced' anyway.

The workshops helped SMEs to move on in their thinking. 'For those of us who are fully immersed in refurbishment it all sounds like common sense. The SMEs said it was a real eye-opener.'

Funding the future

Another piece of the jigsaw puzzle – finance – is identified as a major barrier for large-scale energy-efficiency retrofit projects. There is currently a market failure. Energy efficiency projects need low-cost loans over 25 to 30 years. The payback time is too long for many investors.

Global Environmental Social Business (GESB) assessed the theoretical feasibility of a Retrofit Revolving Guarantee Fund model that they had developed to see if it could be applied in future in the UK. This fund concept was originally developed by the World Bank Group in the late 1990s, and has been successfully introduced in Central and Eastern Europe, China and Brazil.

The fund allows a move away from mortgages based on asset value, which is not always possible for energy efficiency investments, as housing associations often prefer to use that as security for new build. The aim of the fund is to de-risk the portfolio by providing 20% guarantee on the loan and to bridge the gap, to give evidence to banks that the risks they perceive are not real. Global Environmental Social Business believes this can be proven within 10 years and the loan product can be mainstreamed. It can effectively create a new market for banks in the UK.

Three stakeholder meetings involving the National Housing Federation took place during the project and it was agreed that these funds could drive retrofit in the UK and should be piloted. It provides an alternative finance mechanism for social landlords to consider with its non-asset-based finance solution and potentially an 'off the balance' sheet approach.

New provisions for housing in the revised ERDF regulation

It is only relatively recently that Operational Programmes have been able to support projects like Retrofit South East, since the new regulation introduced in 2009, which allows for up to 4% of ERDF to be used on housing. CECODHAS, the European federation of public, cooperative and social housing, argued for the ERDF to support the development of social housing. With the revised regulation, €8 billion – of which £100 million (€125m) in the UK – became available for 'energy efficient refurbishment and the use of renewable energy in existing stock for social cohesion purposes'.

The South East ERDF Competitiveness Programme 2007-13 wanted to be one of the first programmes in the country to respond to the European Commission's change in the regulations to accommodate retrofitting activity. Radian was the first housing association in England to use it.

Being the first region to take up this opportunity had its challenges, especially around the interpretation of the regulations, eligibility of the activity, and capital versus revenue ratios.

Matthew Heath, who monitored the project, first at South East England Development Agency and then at the Department for Communities and Local Government, said: 'The main risk was that new ground was being broken, so the project always had the feeling of being the 'odd one out' – not really fitting with our existing Operational Programme, or any of the existing guidance or evidence requirements. Everything being done by the project was different from anything done before in any other project in the South East. The project was to serve as a demonstrator pilot for possible roll-out throughout the South East and beyond.'

According to Corine Meier of the National Housing Federation (NHF), overall take-up of this new regulation is low, in part because the change came midway through the delivery of

Operational Programmes. 'It's a new area of spend and there are lots of questions about the regulations and an issue about capital versus revenue with a ratio of 10% to 90% which is disappointing.' NHF argues that retrofit is capital investment, creates employment and that housing is an indirect job generator. According to Ms Meier, the regulations are being interpreted differently across the EU and there needs to be a better steer to make good use of the opportunities for the social housing sector and retrofit economy in the future.

Despite these difficulties Radian commented on the added value of the EU funds: 'Accessing the ERDF took us from a good to a very good project, and enabled us to push the boundaries. For instance originally the plan was for 50mm insulation, but we were able to install 100mm. Importantly, it also allowed a focus on hard-to-treat homes.'

The provisions of the ERDF regulation were considered one of the most difficult parts of project delivery. As all partners were new to this funding stream, it took some time to absorb the lengthy guidance and rules, and a dispute over interpretation that arose as a result of an audit took a long time to resolve. The project team identified a mismatch with typical ERDF outputs and results. There was no way to capture some of the important results of the project such as conference attendance, participants in the professional networks, and the contribution to the policy agenda.

Flying the retrofit flag

Retrofit South East added significantly to the knowledge base of retrofitting in social housing, both by documenting and analysing the impact of the refurbishments at Borough Grove, but also by producing reports on regional growth potential, financing tools and the map of exemplars. For example the regional benefits report published in November 2010³ showed, amongst other things, how a major programme of investment in the region's existing housing stock could generate tens of thousands of jobs, create a market of between £450-850 million (€550m-1bn) a year and take at least 360 000 people out of fuel poverty. Radian will continue to monitor and report on the energy efficiency and CO₂ emissions of the homes for two years.

Retrofit South East has also successfully attracted political support and run well received conferences, with over 750 participants, as part of the dissemination plan to push the policy agenda. Local MEP Caroline Bearder brought a delegation from Brussels to view the homes and it was part of a BBC *Politics Show* feature on the use of European funds. Chris Huhne, whilst UK Minister at the Department for Climate Change and Energy, spoke at one of the Retrofit South East conferences.

The project has triggered innovative thinking not just of local benefit to SMEs and residents. As the team points out, 'Retrofit professionals are often isolated, banging on in their own organisations and no one listening. They came away from our network meetings with new ideas and connections to each other. It is about thinking outside the box together and scaling up to go forward.'

The show home, whilst it was open, was a major attraction receiving 250 visitors. The SuperHomes network⁴ which allows the public to visit old houses that have been refurbished for energy efficiency, has evidence to suggest that 25% of people who visit a show home go on to spend over £5 000 (€ 6 000) on energy efficiency measures. It is a way to offer the public neutral information with no sales pitch or marketing bias and motivate energy-efficient behaviour – and this was evident in Borough Grove too.

It seems that a good deal of the success of Retrofit South East was due to the partnership, which jokingly called itself the 'Retrofit Dream Team', referring to the knowledge, skills and ideas brought by each partner, and the way that they complemented each other to produce added value. The team was motivated by a shared mission to make this market grow and

³ Benefits of Eco-Retrofit in the South-East, Camco, 2011

⁴ <http://www.superhomes.org.uk/>

their vision is based on sound analysis and experience. Paul Ciniglio's leadership has been recognised by his peers. 'Paul had the drive. He must take credit for the overall vision. He is someone who consistently pushes the boundaries, looks for the next frontier. Practitioners come to the events because they want to hear Paul speak.'

Ultimately as the final programme summary report⁵ states: 'Providing warm, safe and comfortable housing in which people and communities can thrive goes to the heart of what housing associations wish to achieve. The physical evidence of (energy efficiency) benefits is important... but perhaps the most satisfying evidence of overall success is how the homes feel to live in.'

Challenges

The main challenge for Retrofit South East was with the provisions of ERDF regulation concerning housing. This is not natural territory for a housing association, and there was not a clear or clean fit between the activity and traditional ERDF outputs. Difficulties arose in March 2011 between DCLG and Radian about terminology regarding the difference between training for SMEs and business support, and they took a long time to resolve. This caused a good deal of frustration, additional workload and anxiety on the part of the project partners, to the extent that project delivery was jeopardised and Radian has now lost the appetite to participate in future ERDF-funded initiatives. It was also a challenge to recruit SMEs for the business assistance activity and to evidence the SME indicator of increasing turnover by 5% as a result of the intervention.



A more familiar challenge for the Radian retrofit team was minimising the upheaval for Borough Grove residents who had to move out of their homes temporarily in order for the building work to take place. It was an emotive time, and Radian tried to take care of its tenants by providing information and practical support.

A continuing challenge is cost. Retrofit South East final reporting makes it clear that advanced retrofitting is an expensive business. The total cost for Borough Grove, Petersfield was about

£91,900 (€113 500) for a full refurbishment per property including hidden costs such as the tenant's disturbance allowance and housing association support staff time. By comparison demolition and rebuild would have cost in the region of £144,700 (€178 700). There can be some savings from scale and with the development of newer technologies prices often decrease (for instance the PV is now a third cheaper), but the fact remains this is a costly business.

Transferring retrofit lessons

Retrofit South East has the potential to be transferred both as a framework concept and in its individual innovative components to boost markets and improve social housing stock in other regions

The Retrofit Revolving Guarantee Fund concept was presented at a major conference in London in February 2012. It has been transferred to the Severn Wye Energy Agency⁶ 'Countdown to Low Carbon Homes' initiative. Following a feasibility study funded by the

⁵ Retrofit South East, Programme Summary report, Camco, September 2011

⁶ <http://www.swea.co.uk/index.shtml>

Welsh Assembly, Welsh housing associations are planning to implement the Retrofit Revolving Guarantee Fund to support their carbon reduction and sustainability strategy targets. The Energy Saving Trust in the UK is looking at it closely for large-scale Green Deal schemes in Birmingham and Manchester. The UK Technology Strategy Board is using the exemplar low-carbon retrofit.

As a result of the Retrofit South East experience, Parity Projects has developed an accredited qualification called 'Understanding sustainable refurbishment'. It encourages all trades to work together in a more efficient cooperation. Parity Projects is also training trainers in further education colleges and private training providers to achieve a multiplier effect.

Making sure the process is smooth from the residents' perspective is also important. Neighbours talk to each other, word-of-mouth is important and bad publicity can disrupt the process. A permanent show home really helps both residents and SMEs get on board. Radian has produced a video⁷ to showcase the refurbishment, with residents speaking about the whole experience and their satisfaction with the new homes. It has a strong emotional appeal and is ideal for peer-to-peer communication to convince other social housing tenants of the case.

Scaling up for the future

Now the project is over, the Retrofit South East partners continue to independently develop knowledge and skills to meet the UK's ambitious climate and energy goals and ensure that social housing tenants benefit from improvements to their communities. Radian would like to develop a pattern book of different solutions for different types of housing stock.

According to CECODHAS, 12% of Europe's residential housing stock is social housing. From project evidence it seems that tackling retrofit in this sector could increase energy efficiency and promote sustainable economic development. The ability to combine ERDF for capital costs and ESF running in parallel for apprenticeships and skills could provide a more holistic, integrated approach achieving goals for jobs and energy efficiency in a low-carbon economy, and lift more social housing residents out of fuel poverty. The Retrofit South East demonstration project has shown the transformational potential for housing refurbishment to deliver not only on EU climate change targets, but also wider economic, health and social benefits.

AEIDL has been contracted by the European Commission in 2012 in order to provide examples of learning practice in urban development supported by the European Regional Development Fund during the 2007-2013 programming period (contract reference 2011.CE.16.0.AT.035). The views expressed by AEIDL remain informal and should not under any circumstance be regarded as the official position of the European Commission.

⁷ <http://www.radian.co.uk/201106082604/retrofit-south-east-video.html>