CITIZEN-LED RENOVATION

People Powered Retrofit – Carbon Co-op

Business model overview

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Carbon Co-op

PEOPLE POWERED RETROFIT

Retrofitting homes in the Greater Manchester Area (©Carbon Co-op)

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Overview of the People Powered Retrofit business model

Factor	Description
Name	Carbon Co-op – People Powered Retrofit
Location	Manchester Ireland
Active since (year)	2010
Why was it started and how did it develop?	After ten years of providing renovation services to hundreds of households in the Greater Manchester area, the team at Carbon Co-op found that business models for owner occupied buildings were not coming of the ground in the U.K with the scale required to tackle climate change. 'Top-down' measures, using for example energy supplier obligations, were making some progress in incentivising shallow renovation measures such as loft- and cavity wall insulation but fell short of delivering the required emission reductions. Through previous activities they already knew that a 'bottom up' approach could do better. It can rely on existing knowledge and relationships in a neighbourhood, local workforce, supply chains, and support from the local municipality and community. To harness these forces and develop local markets for 'deep' renovations, they developed the 'People Powered Retrofit' approach. They believed that a service in which retrofit delivery is made in collaboration between the provider (Carbon Co-op) and the homeowner is crucial in convincing people to renovate their home. To develop this, they focussed both on developing a service that could support different retrofit models and a 'neighbourhood-level infrastructure', meaning a local network of suppliers and homeowners build on trust. Given the lack of contractors specialised in delivering complete sustainable home renovations, Carbon Co-op engaged with small local contractors specialised in general renovation, maintenance,

	and/or home improvement. Essential was also the development of open source ICT software tools such as the 'Home Retrofit Planner' an online household energy assessment and decision-making tool. The development of the People Powered Retrofit approach is supported by the UK national government through a call funded by the Department of Business, Energy, and Industrial Strategy (BEIS). To help develop markets for energy efficiency, the department funded several pilot projects to study the effectiveness of localised approaches involving small contractors and community intermediaries. The pilot consists of a six-month research and development phase (ended in March 2019) and a two-year delivery phase (2020-2021). The people powered retrofit approach is well documented in a report resulting from the research and development phase: https://cc-site-media.s3.amazonaws.com/uploads/2019/01/PPR-Report-June-2019.pdf
Main objective	Carbon Co-op's main objective is to help people reduce their home carbon emissions through delivering energy services and providing advocacy. In this business model overview the focus is on their "People Powered Retrofit" approach. It is a 'householder-led' approach to 'energy efficiency retrofit' for the Manchester region. It is a partnership between Carbon Co-op and URBED, an urban design practice for the built environment run as a worker cooperative. It is aimed at owner occupied buildings working towards deep/whole house retrofit.
Organizational form and governance	Carbon Co-op is a 'Community Benefit Society', registered as 'The Society for the Reduction of Carbon Limited'. Governed by a board of directors elected by the members of the society on the Annual General Meeting. The board can choose to add up to three directors to the board per year. They have a set of 'governing rules' and an 'ethical partnership' policy and are using a specific governance philosophy called 'Policy Governance' also known as 'Carver Governance'. The team has 17 members, of which 5-6 are involved in the People Powered Retrofit service.

Key partners	In delivering the people powered retrofit service the following partners are involved: ▪ Carbon Co-op: client engagement, service design, social marketing ▪ URBED: data analysis and mapping, supply chain development, retrofit/architectural design, and quality assurance ▪ Fieldwork studio: graphic design and website building ▪ Shortwork: evaluation of the approach with the homeowners (quality control, and how homeowner experienced the service and the works); Eventually Carbon Coop wants to do the evaluation inhouse. ▪ Cumbria Action for Sustainability: a charity that is on the advisory group, Carbon-Coop is also working with them to replicate the approach in the Cumbria region. ▪ Quantum Strategy and Technology: engineering and community energy consultancy helping with replication of the approach. ▪ Arc4: part of advisory group, retired constructor providing technical advice. ▪ Electricity Northwest: (distribution network operator): on the advisory board and involved in other Carbon Coop projects ▪ Ecology Building Society: on the advisory board ▪ Green Growth business support agency: on the advisory board, a municipal agency involved in providing business support, economic development and training to the private sector in Greater Manchester.

Key activities	For the People Powered Retrofit service Carbon Coop has the following key activities:
	
	▪ Raising demand and awareness around sustainable renovation options:
	  ○ Raising householder awareness and 'normalisation' via community events such as a 'home energy party' in which people learn about energy efficiency in the home and can e.g. visit a retrofitted home, and specific neighbourhood campaigns using a variety of events and channels
	  ○ Social media campaign
	  ○ Engage with other local community energy organizations and community and volunteer groups
	  ○ Engage with public authorities
	
	▪ Providing the service (see renovation journey). Providing a 'People Powered Retrofit' advisor – the first point of contact for interested households. Provide advice on the key aspects of the service, an assessor to do the initial home assessment, and a coordinator to oversee work.
	▪ Sourcing and selecting contractors and suppliers:

	○ Mapping existing contractor networks ○ Sourcing materials: access offered to materials and suppliers via wholesalers and other channels. Carbon Coop has a relationship with different wholesalers to ensure they have the right materials for renovation in stock. ○ Selecting contractors to work with following a set of positive selection criteria (environmental impact, local, small/worker owned, honesty & reliability, shared ethos) ○ Deliver specific training to selected contractors for specific skill gaps regarding local housing stock ▪ Planning and design ○ Engage in dialogue with local planning authority on planning and building issues related to renovation ○ Coordinating the design of the retrofit works together with partner URBED ▪ Developing and improving (IT) support tools ○ The team at Carbon Coop has developed several IT tools that are crucial to delivering the People Powered Retrofit approach. This includes a customer relationship management (CRM) tool and the 'Home Retrofit Planner' which helps the retrofit assessor in assessing the home, modelling energy use and outlining potential improvements. ○ Provide training, support, and licensing for IT tools to other organizations. ▪ Replication: ▪ The aim of replication is to enable other citizen energy and environmental organisations in other areas to develop and deliver similar services to People Powered Retrofit either under their own brand or under the People Powered Retrofit brand. Ultimately, groups generate income for themselves and pay a licensing fee back to Carbon Co-op. Replication involves: ○ Assessing the capacity of host organisations to replicate the approach. ○ Developing a manual on how to set up a 'People Powered Retrofit' approach-based service ○ Working with other groups / non-profit organisations interested in setting up the service (e.g. via social franchise, providing training, consulting etc). ○ Putting a legal collaboration agreement in place to oversee collaboration between organisations. ○ Developing a network of organisations delivering the service in different parts of the UK.
Key resources	(not in order of importance)

	▪ Staff: 5-6 staff members at Carbon Coop are involved in delivering the PPR – these include advisors, assessors, and coordinators – as well as 2-3 staff members at URBED. ▪ Partners: both the key partners listed above as well as freelance assessors, coordinators and architects that Carbon Coop works with. ▪ Contractors: specially selected and trained to deliver retrofit works and in receipt of specialist training and support. ▪ ICT tools: the ICT tools facilitate delivery of the service ▪ Membership: membership involvement is crucial. It helps build the network, reach out to new customers through word-of-mouth, and help 'normalise' retrofit in Manchester ▪ Reputation: the reputation as a citizen-led, trusted, non-profit service is of great importance in getting both new members and customers for the retrofit service
Value proposition	The main value proposition of People Powered Retrofit to households is guiding and supporting them from beginning to end through the sustainable renovation of their home. In doing this, the decision-making power always lies with the household. The service supports and simplifies the decision making (see renovation journey) by guiding households through the different stages and options that are available. In the end, it is the household that has a contract with contractors and Carbon Co-op provides a Retrofit Coordinator to help manage the renovation. For communities as a whole the value proposition is a better developed market for home retrofits due to network building, lower emissions, local employment, increased awareness on energy efficiency and climate change (which is a co-benefit of participation in community energy initiatives).
Relationship with households/ beneficiaries	Customers of the People Powered Retrofit are invited to become a member of Carbon Coop and become actively involved in the local energy transition. For example as part of the 'Greater Manchester Local Energy Market (GMLEM) which focusses on developing 'energy master plans' for different neighbourhoods and the Powershaper service that offers a local flexibility and demand response platform for householders. Since most retrofits they do include the installation of solar PV partaking in the Powershaper is a logical next step for many.

Communication channels	▪ Community events ▪ Word-of-mouth ▪ Through network of community (energy) and volunteer groups ▪ Local public services i.e. advice services linked to municipalities and community buildings such as community activity centres, libraries, information hubs etc.
Beneficiary/customer segments	Based on the mapping done Carbon Co-op arrived at different customer segments. The mapping showed that profiled households lived: not in the most or least 'deprived' areas and tend to be in younger, middle income areas but with the households themselves being a bit older / wealthier than their neighbours; in ethnically non-diverse suburbs or ethnically diverse but higher educated suburbs; not in areas in which most households have no educational qualifications. This led, roughly, to the following customer segments: ▪ 'Climate Change Pragmatists': usually people in their 30-40's, motivated to reduce their emissions and are willing to invest some time and money in doing so. Are looking for an expert that can show them how to do that. ▪ 'Climate Change Idealists': different age groups, very motivated, want to achieve highest degree of emission reductions irrespective of costs ▪ 'Civic Minded Retirees': are motivated to contribute to society, and are looking to spend their retirement in a comfortable home ▪ 'Techno-optimists': are motivated by wanting to try new technologies and identify as 'innovators'. Interested in showing that they are 'eco' minded / wealthy. Willing to spend extra money on branded systems such as Tesla batteries. ▪ Mixed people/motivations: other customers that do not fit one of the segments, interested in renovation for a variety of reasons. Moreover, they found that while the type of people and their motivation are important predictors of whether households are to engage in renovation activities there is a also a relation to 'triggers' such as life-stage (new job, children, retirement, etc.) or ageing of the building (e.g. heating system is about to break, window frames eroding, etc.).

Cost structure	Costs involved in delivering the people powered retrofit approach is: - Staff: currently 5-6 people involved in delivering the service - Overhead: office, IT support, administration, etc. - Freelancers/partner services: assessment, design, and evaluation/monitoring;
Revenue streams	Households pay a fee to participate in the service. The costs of the design and contractor are paid directly by the household to these parties and do not go through Carbon Co-op. Household fees: ▪ An initial advisory conversation (by phone) is for free, but households pay a fee for the retrofit advice / home assessment ▪ If they continue with the service another fee applies for the design/ project management stage. In total there are six stages, with the first stage (advice by phone) being free of charge. ▪ Average cost for a household for the whole service is around 2500-3000 euro, they pay a bit at every stage. Depending on the size of the house the fees could be higher. The average renovation cost for the household is around 50.000, means around 5% are preliminary costs. This is well below industry standard of 10-15%. This fee excludes permits, architect fee, etc. However this really differs per households as about one third to half of the households opt combine a regular renovation with the retrofit measures. This of course means extra fees can apply for the works falling outside of the service (e.g. added engineering costs, design, permits etc.). Consultancy fees: ▪ Carbon Co-op is working on replicating the service to other community energy groups and non-profits and are advising local authorities on how they can engage with citizens to set up energy communities. Training fees: ▪ Usually, contractors that partner up with the service do a training with Carbon Co-op they pay a small fee for this

	Social franchise fee/ IT tool licensing: ▪ Social franchising involves an originator organisation like Carbon Co-op, that develops an income generating business idea that can function in different geographical areas and delivers a pro-social or environmental impact. The model is replicated by franchisees, who pay an upfront cost to establish the service and have staff trained in it and then pay an ongoing, annual fee, based on sales of the service locally. Franchises are geographically exclusive to avoid competition. A social franchise aims to scale both financial impact and social/environmental impact, without growing individual, large, dominant organisations – but instead supporting a diversity of many small organisations. ▪ Although the IT tools developed are open source many groups have asked to be supported in using and implementing both the tools and the service. Carbon Co-op receives a fee for this. Initial government grant: ▪ Carbon Co-op received a government grant to help develop the service during its initial stages in 2019. For Carbon-Coop financial viability of the service lies between 100 and 150 households joining the service per year. They can deliver this with the existing staff base by becoming more efficient. They expect they need between 300.000-350.000 euro annual turnover.
Data gathering	During the research and development stage of the initiative existing contractor (networks) in the local area were mapped and significant effort was put into identifying potential customer segments. Moreover, different existing service models were analysed. Through this research they identified areas in the Greater Manchester region where early adopters for the People Power Retrofit service were likely to live (see the research report for detailed description). Instead of focussing on building archetypes as is usually done when looking at renovation, they put their focus on people. Their research showed that type, age, and size of houses in the areas where potential retrofit

	clients were found varied hugely. Carbon Co-op also held an extensive survey among households then involved in renovation projects asking them about their motivations, needs, and barriers to success.
Renovation journey	1. Enquiry by homeowner 2. Advice (by phone) from People Powered retrofit advisor: the household makes a 'retrofit project brief' outlining their needs, wishes, budget, etc. This is done using a set of questions prepared by Carbon Co-op 3. Making a plan: Home assessment using 'my home energy planner' tool looking at the building, renovation measures, ventilation, and overheating. Done by a retrofit assessor from Carbon Coop, or a freelancer trained by Carbon Coop. On the basis of the assessment the retrofit assessor makes a plan for 'medium term' (5-20 years) improvements to the house 4. Developing the design (part 1): the retrofit coordinator from Carbon Coop prepares three 'retrofit pathways' for the homeowner and outlines the design requirements and process for the three pathways. 5. Developing the design (part 2): the homeowner chooses for an installer, consultant, or conservation design. With an installer being able to design basic upgrades such as for solar PV, the consultant being able to do a more technical design required for most upgrades, and the conservation design being only required for older houses with special (heritage) status (e.g. 'listed' or 'monumental'). The design is made by partner URBED or a freelance designer/architect. A plan of the works to be undertaken is made, and procurement for a contractor is started. 6. On site/installation works: a pre-installation inspection of the house is done by the retrofit coordinator and contractor and the contractor performs the planned work according to the design. The retrofit coordinator acts as a contact and support for the homeowner 7. Handover from project coordinator to homeowner 8. Evaluation of the works and retrofit process is done by partner 'shortworks'
Certification	The service is harmonised with the British retrofit quality standards, PAS2035, but at present it is not certified under that scheme. It may be that the service does become certified in the future. Some certified installers are needed for specific measures such as PV panels and heat pumps, but certification lies with the installers.

Professional skills/training	Carbon Co-op puts much emphasis on (on-and-offsite) training of the contractors it has partnered with. The main reason they started offering training is due to the lack of specialised retrofit contractors in their area. There are enough people doing construction work at the moment but not retrofit. Carbon Co-Op offers three types of training: ▪ A basic training for people that are skilled in construction and/or regular renovation but lack specific expertise / experience for sustainable renovation. The training consists of four 90-minute sessions over a period of two weeks. The contractors pay a small fee. ▪ A more specialized training for people that are skilled in retrofit and want to expand further (continuous professional development). These are single sessions usually done by an external specialist coming from suppliers/product related organisation. E.g. a windows supplier or advisor on ventilation systems. They usually offer this for free in exchange for getting into contact with contractors. However, Carbon Co-op takes great care that the experts that come in talk about their product group in general and do not give a sales pitch for their product. E.g. a supplier of windows talks about the benefits/workings of high insulation windows in general, not just their product. ▪ An assessor and retrofit coordinator training. After having done this training they can work with the service on a freelance basis. In addition to giving their own training Carbon Co-op also refers people to other training institutes or can provide network and business support (e.g. sharing contacts with people on specific subjects). They are currently offering this service for free.
Financial subsidies/loans	For developing the People Powered Retrofit service Carbon Co-op received a one-off organisational revenue support grant from the UK national government. For the retrofit works the homeowners are not currently eligible to receive grants.
Number of supported renovation projects	For this specific service (People Power Retrofit, not counting renovations done before that) which started in 2019 Carbon Coop has received 140 enquiries resulting in 60 clients with 12 clients approaching tender stage in 2020.

Investments	As of end 2020 around 558.000 pounds to be invested in renovation work for 12 homes.
Average project size	46500 pound (558.000 / 12)
Conversion rate	With 51 clients and 140 enquiries the current conversion rate is around 36%. However, the goal of the service is not just to renovate as many homes as possible but also to employ and train people and develop both the systems in the service. This works towards the development of a strong local market for sustainable renovation services and a cultural shift towards seeing retrofit as 'normal'. The project pipeline (roughly) looks as follows: 1. The retrofit advisor enters in dialogue with the household. Currently their retrofit advisor advices around three households per week, or 150 per year. 2. The retrofit assessor assesses the building of clients advancing beyond the advisory stage. On average a retrofit assessor does around 2 assessments per week, or 100 per year. When Carbon Coop does not have enough capacity inhouse they bring in freelancers to do assessments. 3. The retrofit coordinator does on site coordination for the households going ahead with their renovation plans. Currently this stands at around 50 projects per year per coordinator. (50 over a year). When Carbon Coop does not have enough capacity inhouse they bring in freelancers to do assessments. Carbon Coop is working towards having an architect on the staff team, for now they are at their partner URBED and occasionally freelancers are brought in
Drivers	▪ Lack of national/ local government action on sustainable renovation. Despite ample potential due to interested homeowners and generally low levels of energy performance in buildings there were limited (successful) schemes or services for homeowners/tenants available in the Manchester area. This gap provided space for Carbon Co-op to develop ▪ The current potential within the Greater Manchester area is already well above Carbon Co-ops capacity (currently a six-week waiting list to sign up for the service). This is a good driver for the development of the service, but also means replication of the service is crucial in accelerating the normalisation of sustainable renovation

	▪ Government grant for a pilot on developing local retrofit markets ▪ Untapped demand from householders who want to retrofit their homes for a variety of reasons including environmental, comfort, economic and others.
Barriers	▪ Scalability of organisation: the ability to scale the delivery organisation quickly enough to meet demand. ▪ Innovation takes time: developing a new, innovative service from scratch is time consuming and risky. ▪ Lack of skilled people: because it is new, there is generally a lack of skilled people to deliver this services. ▪ Lack of knowledge/awareness: few householders understand what retrofit is or how it is meant to work. ▪ Changing government policy: undermines householder and supply chain confidence in the area and puts people off.
Needs	▪ Increased capacity i.e. workforce ▪ Increased capital to invest in building capacity. ▪ Consistent and long term policy
Future plans/ambitions	▪ Expansion of the service to around 150 at least retrofits per year (break-even). They hope to reach this in the coming three years. After that they believe they can grow to around 500 clients per year (not all in retrofit stage) given the demand in the area. ▪ Replication of the service to other community groups and non-profits, also through 'social franchising'. They are currently working with three other organisations to replicate the PPR service. ▪ Community share issue to provide capital to fund expansion.

SWOT analysis of People Powered Retrofit business model

Strengths	Weaknesses
Carbon Co-op: ▪ Strong network of partners ▪ 10 year experience in delivering home renovations ▪ Inhouse expertise ▪ When joining PPR households also get access to Carbon Coops other services *People Powered Retrofit approach:* ▪ Focus on household engagement and involvement ▪ Tailor made IT Tools ▪ Trust – as a non-profit and citizen-led approach – that households will receive impartial advice and good value for money	▪ The citizen led model means it can be slower to raise large amounts of capital to scale the service. ▪ The model is aimed at early adopters with available capital to invest, the mass of the population are likely to require more financial support. ▪ The model is based on a high value service and so requires a deep retrofit approach, it is unknown how suitable it is for large volume, low value retrofit projects.
Opportunities	**Threats**
▪ Large pool of innovators/early adopters (up to 1.000.000 households) potentially interested in sustainable renovation. There is currently already more demand for the service than they can satisfy.	▪ Lack of consistent national government policy on supporting home renovation ▪ Government acting in a way that threatens PPR model. E.g. a public retrofit service. ▪ Policy makers expect tens of thousands of homes to be delivered a year, it may be possible for PPR to deliver that in future via franchise but not at present. ▪ Playing field is open, but competition will rise. ▪ Lack of specialist skills in the sector.

	▪ Changes in technology that undermine the case for retrofit e.g. hydrogen boilers, heat networks, and may not in the long term be viable.

Visualisation of People Powered Retrofit business model