# Carbon Co-op

Based in Greater Manchester, we are a not-for-profit social enterprise providing the tools, knowledge and expertise that people and communities need to make big reductions in their home energy use. Our primary aim is to ensure domestic carbon emissions are radically reduced in order to avoid runaway climate change. As a Community Benefit Society we are owned by our individual householder members, with a board elected by the membership at the annual general meeting of the society.

## Activities

We carry out work and offer services for our householder members as well as carrying out consultancy work for like-minded organisations.

Our activities cover a range of areas:

- Inspiring: authoring case studies, information and inspiration
- Connecting: providing advice, bringing householders together, building a network of suppliers and installers
- Training: running specialist seminars, info nights and workshops
- Expertise: offering quality, independent technical assistance, assessments and consultancy
- Shifting the debate: carrying out innovative new research projects influencing UK policy

# Overarching questions

## 1. How does Net Zero enable us to meet our economic growth target of 2.5% a year?

Fundamental to this is the question as to whether economic growth can be effectively uncoupled from carbon emissions. Historically climate scientists have identified a direct

relationship[1] [2] between economic growth indicators and carbon emissions. The implementation of policies to affect economic growth also need to set out how additional growth will not lead to additional carbon emissions or the importation of carbon emissions through outsourcing carbon intensive processes.

In addition, we find the term 'Net Zero' to be problematic in framing the challenge of decarbonisation. As climate scientists have highlighted[3], achieving Net Zero is dependent on commercialising and scaling many technologies currently at embryonic stages of development. The UK can't bank on these technologies becoming mature within the timeframe required for the achievement of our targets and as a result must focus efforts on carbon demand reduction technologies.

We believe evaluations of Net Zero must consider factors other than economic growth. We could yet more justify decarbonisation for producing co-benefits such as improving public health and wellbeing[4], securing employment[5], reducing crime[6], progressing equality[7] and protecting biodiversity.[8] Broadening our evaluative focus to include these heterogeneous, real-world measures means we can more accurately assess the benefits of Net Zero.

Notwithstanding these issues, Net Zero provides huge opportunities for the development of, and investment in, the British economy. Decarbonising the UK's housing stock, for example, which accounts for around 17% of UK greenhouse gas emissions[9], could create almost half a million full-time construction jobs alone and three million in other economic sectors.[10] Construction is one of the least productive industries in the UK. Hourly rates of pay are below the national average, while 'middle and lower-educated workers account for a larger share of hours worked' in construction than the rest of the economy.[11]

---

1 https://odi.org/en/events/the-challenge-of-growth-can-economic-growth-be-compatible-with-climate-change-mitigation-targets/

2 https://www.ons.gov.uk/economy/nationalaccounts/uksectoraccounts/compendium/economicreview/october2019/thedecouplingofeconomicgrowthfromcarbonemissionsukevidence#conclusion

3 https://kevinanderson.info/blog/the-solution-is-the-problem/

4 https://www.who.int/news-room/fact-sheets/detail/climate-change-and-health#:~:text=Climate%20change%20affects%20the%20social,malaria%2C%20diarrhoea%20and%20heat%20stress.

5 https://cles.org.uk/blog/a-green-recovery-for-local-economies/

6 https://www.hks.harvard.edu/centers/mrcbg/publications/awp/awp8

7 https://www.gov.uk/government/news/uk-boost-to-advance-gender-equality-in-climate-action

8 https://www.britishecologicalsociety.org/net-zero-and-ecology/

9 https://www.theccc.org.uk/wp-content/uploads/2020/12/Sector-summary-Buildings.pdf

10 https://www.uk100.org/sites/default/files/2021-07/Emissions%20Powers%20WMCA%20Summit%20Launch%20PR%2013%20July%20-2.pdf

11 https://www.ons.gov.uk/economy/economicoutputandproductivity/productivitymeasures/articles/productivityintheconstructionindustryuk2021/2021-10-19

Reskilling and growing the construction sector in local areas around the UK therefore presents an opportunity to improve the basic skills of an average UK construction worker, contributing to greater business productivity and local growth. This huge job creation in cities, towns and rural communities will also enable hundreds of thousands of consumers to spend more in their local economy, stimulating demand for goods and services, and unlocking more investment opportunities.

# 2. What challenges and obstacles have you identified to decarbonisation?

## A Just Transition

People in the global top 1% of income cause twice as much consumption-based $CO_2$ emissions as those in the bottom 50%.[12] This means people from a higher socio-economic background have a larger responsibility to cut emissions than those on lower incomes. At the same time, those with fewer resources will be most affected by fuel poverty and extreme weather events like flooding. Put simply, those who can afford to take steps to decarbonise should do so and those who cannot will need our support.

## Mobilising resources

A big barrier to decarbonising homes is consumer cost. Conducting a ‘deep’ retrofit on one home can cost in the region of £35,000.[13] In one survey of 1,000 adults conducted last year, 35% of households cited concerns over the costs of energy efficiency upgrades, while 26%

[12] https://www.nature.com/articles/s41560-021-00900-y#:~:text=Consumption%20by%20high%2DSES%20people%20produces%20far%20more%20GHG%20emissions,7%25%2C%20respectively)17.

[13] https://green-alliance.org.uk/wp-content/uploads/2021/11/reinventing_retrofit.pdf

stated retrofit was too expensive.[14] Most people, particularly those 11 million households now in fuel poverty[15], will need help with upfront investment.

### Achieving legitimacy

Another big challenge facing decarbonisation is its lack of legitimacy. Many perceive the Net Zero agenda as infringing on their freedoms and opportunities. However, the energy crisis shows market-based solutions to climate breakdown have failed to deliver. Energy suppliers' abject failure to provide consumers fair energy bills and Ofgem's calls for input on local energy institutions point towards market failure.[16] There is a huge appetite for democratic oversight of the energy market.[17] We simply cannot do decarbonisation without citizen and community involvement.


## Lack of interoperability between digital energy systems

With increasing digitisation of energy, new problems are emerging in realising whole system efficiencies. One of the primary among these is lack of interoperability between system elements. For example, demand side response approaches require market signals from DNOs to be passed to domestic aggregators and for aggregators to run campaigns in hundreds or thousands of individual homes. There are five or six common domestic battery brands and if aggregators cannot integrate with their systems due to the use of proprietary platforms by manufacturers, then effective DSR cannot be realised.

A remedy to this is the mandation by regulators of common open data standards that all market actors need to meet. An example of this is the mandation of OpenADR in California, which has created a level playing field for aggregators and a functioning domestic DSR market. The implementation of Building Renovation Passports is another example of a system to enable interoperability.

---

[14] https://www.pwc.co.uk/press-room/press-releases/ukeo-world-environment-day.html

[15] https://www.endfuelpoverty.org.uk/fuel-poverty-set-to-hit-11m-households-as-protesters-gather-in-westminster/

[16] https://www.ofgem.gov.uk/publications/call-input-future-local-energy-institutions-and-governance?utm_source=linkedin&utm_medium=ofgem&utm_term=&utm_content=&utm_campaign=news-release

[17] https://cc-site-media.s3.amazonaws.com/uploads/2022/06/CarbonCoop_GMLEMCitizenJury_Report_v3.docx.pdf

## Skills shortages

Finally, a huge challenge with decarbonisation is a serious skills shortage in the UK construction industry. Decarbonising all 29 million UK homes will require half a million full-time construction jobs. Reskilling construction workers will be important but insufficient because the UK's repair, maintenance and improvement (RMI) workforce currently totals approximately 250,000.

This means retrofitters will need to come from outside the industry to fulfil key PAS 2030 roles such as Retrofit Assessors, Retrofit Coordinators, Retrofit Designer and Retrofit Installers.[18] Engaging potential suppliers to understand the barriers they face to moving into retrofit is important. Reforming the apprenticeship system to help construction SMEs recruit more apprentices in green trades will also be vital, as will requiring construction training colleges to offer trainees on-site experience.[19]

# 3. What opportunities are there for new/amended measures to stimulate or facilitate the transition to Net Zero in a way that is pro-growth and/or pro-business?

Construction is one of the least productive industries in the UK. Hourly rates of pay are below the national average, while 'middle and lower-educated workers account for a larger share of hours worked' in construction than the rest of the economy.[20] Because successful retrofit requires a whole house approach, 'practitioners working on building retrofit require knowledge, communication, problem-solving, coordination and project management skills'. [21] Reskilling and growing the construction sector in local areas around the UK therefore provides an opportunity to improve the basic skills of an average UK construction worker, contributing to greater business productivity and local growth.

At the same time, we believe assessments of Net Zero must consider factors other than contributions towards economic growth. We could yet more justify decarbonisation for producing co-benefits such as improving public health and wellbeing[22], securing

---

[18] https://retrofitacademy.org/retrofit-skills-gap/

[19] https://www.unitetheunion.org/news-events/news/2018/april/unite-calls-for-training-overhaul-as-dead-end-construction-courses-increase/

[20] https://www.ons.gov.uk/economy/economicoutputandproductivity/productivitymeasures/articles/productivityintheconstructionindustryuk2021/2021-10-19

[21] https://birminghamagainstthecuts.wordpress.com/2022/02/20/retrofitting-homes-in-birmingham-business-models-jobs-and-skills/

[22] https://www.who.int/news-room/fact-sheets/detail/climate-change-and-health#:~:text=Climate%20change%20affects%20the%20social,malaria%2C%20diarrhoea%20and%20heat%20stress.

employment[23], reducing crime[24], progressing equality[25] and protecting biodiversity.[26] We must broaden our focus to include these heterogeneous, real-world measures if we are to accurately assess the benefits of Net Zero.

### Digitalisation

The widespread introduction of smart metres as well as the development of new digital technologies increases opportunities for the integration of smarter decarbonisation approaches.

## 4. What more could government do to support businesses, consumers and other actors to decarbonise?

We need to increase the capacity of retrofit 'one stop shops' like People Powered Retrofit[27] in Manchester to help potential retrofit consumers in all tenancies, whether able to pay or otherwise, benefit from economies of scale through bulk purchasing of retrofit materials and construction skills, and enable energy communities to be a driving force behind decarbonisation efforts.


Providing financial support for low-carbon technologies is also very important. A 'deep' retrofit can cost in the region of £35,000[28], installing an air source heat pumps costs in the region of £5,000–£10,000[29] and solar panels typically cost £6,500 for a three-bed semi-detached house.[30] Ensuring a just transition to Net Zero means supporting low-income households who have contributed the least towards the climate crisis and are most impacted by fuel poverty and extreme weather events.

On skills, far too many people studying construction in our construction skills colleges are leaving education without any on-site experience, a prerequisite for getting a job in construction. Of the 203,400 people who undertook a construction course in 2016-17, just

[23] https://cles.org.uk/blog/a-green-recovery-for-local-economies/
[24] https://www.hks.harvard.edu/centers/mrcbg/publications/awp/awp8
[25] https://www.gov.uk/government/news/uk-boost-to-advance-gender-equality-in-climate-action
[26] https://www.britishecologicalsociety.org/net-zero-and-ecology/
[27] https://retrofit.coop
[28] https://green-alliance.org.uk/wp-content/uploads/2021/11/reinventing_retrofit.pdf
[29] https://www.checkatrade.com/blog/cost-guides/air-source-heat-pump-cost/
[30] https://www.which.co.uk/reviews/solar-panels/article/solar-panels/solar-panel-costs-aDxBY2v7kr60

21,010 – 10% – were linked to an apprenticeship.[31] This lack of on-site experience means many fail to qualify, compounding the UK's green construction skills shortage. The government must rectify this by requiring training colleges to offer on-site experience as part of their curriculum.

# 5. Where and in what areas of policy focus could Net Zero be achieved in a more economically efficient manner?

We advocate for a whole system approach to decarbonisation in order to make the most efficient use of resources and to reduce the need to repeatedly upgrade system elements.

An example of this is whole house retrofit. It is better to develop a whole house retrofit plan for a property, realised in stages or one go, in order to prevent the need for measures to be installed and later removed in successive waves of renovation.

# 6. How should we balance our priorities to maintaining energy security with our commitments to delivering Net Zero by 2050?

## Demand reduction

A national retrofit programme would reduce the UK's energy demand and its dependence on fossil fuels imports. The UK imported around 50% of the gas it consumed in 2021. Retrofitting homes and deploying low-carbon heating measures like heat pumps at the scale required to meet our Net Zero targets could decrease the UK's total gas demand by 37% by 2050.[32] Meanwhile, the more renewables the UK builds, the less dependent on foreign providers it will become. Renewables have generated enough electricity in 2022 to avoid the need for five times as much gas as the UK imported from Russia last year.[33]

---

31 https://www.unitetheunion.org/news-events/news/2018/april/unite-calls-for-training-overhaul-as-dead-end-construction-courses-increase/

32 https://www.ippr.org/research/publications/train-local-work-local-stay-local

33 https://www.theguardian.com/environment/2022/aug/25/fact-check-is-net-zero-really-to-blame-for-soaring-energy-bills-green-levies-renewables

# 7. What export opportunities does the transition to Net Zero present for the UK economy or UK businesses?

By 2050, the domestic market for smart systems and flexibility solutions could be worth as much as £1.3 billion to GDP supporting around 10,000 jobs, while the export potential in 2050 could be worth as much as £2.7 billion and 14,000 jobs.[34]

However, proprietary technology and 'walled gardens' effectively bar mechanisms we need to be able to do local grid flexibility, making it difficult to create and scale up new markets. We therefore advocate for new open standards and open-source software and hardware so that we can effectively capture those export opportunities.

Training up hundreds of thousands of people to retrofit homes also presents a huge opportunity to export skills and expertise to countries with high demand for retrofit and yet whose retrofit industries are nascent and immature.[35] For example, the EU's building stock is responsible for about 40% of the EU's energy use and 36% of the bloc's emissions.[36]

---

[34] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1003570/gitf-report.pdf

[35] https://www.turnerandtownsend.com/en/perspectives/industrialising-the-global-retrofit-market/

[36] https://www.edie.net/one-stop-shops-for-building-retrofit-taking-shape-in-europe/

**Questions for local government, communities and other organisations delivering Net Zero locally**

# 24. What are the biggest barriers you face in decarbonising / enabling your communities and areas to decarbonise?

Planning restrictions present major barriers to our communities decarbonising. We need to liberalise the planning system to enable communal, co-operative, shared energy generation, distribution and supply. We welcomed the government's decision in September to bring consenting for new onshore wind projects in line with other infrastructure.[37] We now need similar relaxations for solar photovoltaic and ground source heat pumps community energy projects to enable communities to play their part in our journey towards Net Zero.

# 25. What has worked well? Please share examples of any successful place-based Net Zero projects.

## Oldham Energy Futures

This project saw Carbon Co-op support two neighbourhoods in Oldham, Sholver and Westwood, to discover, shape, test their own plans and projects for decarbonising their neighbourhood.

Over two years we put local energy system data in the hands of local citizens, facilitated the creation of Community Led Energy Plans and mentored the development of new local projects. The result was that we developed bespoke energy action plans for the Oldham areas of Sholver and Westwood, informed by local expertise and open data sets. The key lesson to draw from this is that by putting data and expertise in the hands of citizens and by involving key local partners such as district network operators (DNOs), we can generate greater local awareness and understanding, build community wealth and stimulate sustained action on climate change.

37 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1105989/CCS207_CCS0822746402-001_SECURE_HMT_Autumn_Statement_2022_BOOK_Web_Accessible.pdf

We believe this multi-partner approach to Net Zero can and should be replicated across the UK, however there are several barriers which first need removing to facilitate this. First, the government should mandate the creation of local energy plans with involvement from citizens. Secondly, the Department for Business, Energy and Industrial Strategy and energy regulator Ofgem should put essential local energy in the public domain. And finally there is a huge need to support the capacity of local authority officers.

## City Building Glasgow

City Building Glasgow is a good example of a skills and employment-led approach to low energy building.[38] Its manufacturing division, RSBi, is equipped to produce UPVC windows and doors, timber kits, kitchen and bedroom furnishings for City Building and external customers. It is one of the largest supported manufacturing businesses in Europe, employing 270 people, 60% of whom have a disability or disadvantage, providing access to training and development opportunities, and thus clearly delivering positive social outcomes as well as greening construction.[39]

The challenges of housing shortages and fuel poverty call for a return to the public management of public building construction and energy supply. The severe consequences of outsourcing public works illustrated by the collapse of Carillion, the lack of investment in vocational education and training (VET), and labour market deregulation have resulted in the variable quality and standards of public sector buildings. The transition to green construction isn't just a technical challenge, but one requiring a radical transformation of employment too.

[38] https://www.citybuildingglasgow.co.uk/

[39] https://www.scottishleftreview.scot/city-building-glasgow-inspirational-model-of-low-energy-construction-and-direct-labour/

City Building provides an example of how a labour-centred alternative to green construction policies can be realised.

## B4Box

B4Box in Stockport is doing fantastic work training multi-skill apprentices to decarbonise homes. Rather than specialising in one trade, multi-skill apprentices learn multiple trades, meaning they can carry out general repairs and maintenance to brickwork, paint, plaster, woodwork and other elements of existing buildings – a skillset highly transferable to retrofit. So rather than performing one task on a retrofit project and leaving the next stage to be done by another contractor, B4Box operatives see a job through from start to finish.

This not only improves the quality of the building work, it also makes those construction workers much more employable. We believe this model is highly replicable across the UK. B4Box has trained up 1,400 in Greater Manchester since starting up in 2008. There's clearly huge potential in communities across the country which we can unleash.

# 26. How does the planning system affect your efforts to decarbonise?

Planning restrictions affect communities' efforts to decarbonise in many ways. For instance, external wall insulation (EWI) is considered permitted development so typically does not require planning permission. However, anyone who lives in a listed building or a conservation area may need planning permission to install EWI.[40] This is an onerous planning restriction, particularly for rural communities, which we believe needs liberalising. Similarly, installing solar panels is subject to many planning requirements, which we feel should be liberalised.

Planning rules in England since 2015 have given local communities a veto on onshore wind farms. We welcomed the Government's decision in September this year to bring consenting for new onshore wind projects in line with other infrastructure by permitting large onshore wind projects to bypass local planning rules if designated as nationally significant infrastructure projects.[41] We now need similar relaxations for solar photovoltaic and ground source heat pumps community energy projects to enable communities to play their part in our journey towards Net Zero.

[40] https://www.planningportal.co.uk/permission/common-projects/insulation/planning-permission

[41] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1105989/CCS207_CCS0822746402-001_SECURE_HMT_Autumn_Statement_2022_BOOK_Web_Accessible.pdf

# 27. How can the design of Net Zero policies, programmes, and funding schemes be improved to make it easier to deliver in your area?

## Whole System approach

Funding for retrofit works and supply chain development should be integrated, with a rigorous approach that compares training and qualifications attained to energy performance achieved.[42]

[42] https://cc-site-media.s3.amazonaws.com/uploads/2020/07/3.-PeoplePoweredRetrofit-Report.pdf