

Ten Bold Ideas.

Accelerating climate
action in the 2020s

Possible.
Inspiring climate action

Possible.

Inspiring climate action

At Possible, we're on a mission to speed up action on climate change. Whether it's our world-leading Solar Schools campaign, our work building solar powered railways, or fighting the ban on onshore wind, everything we do is about inspiring more people to take more action on climate change.

Possible changed its name from 10:10 Climate Action on 10th October 2020.

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www.wearepossible.org

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What's Possible?

In summer 2019, the staff at team Possible got together to imagine the world in 2050. Imagine we'd succeeded in our mission to inspire people to build the rapid, zero carbon transition the climate crisis demands. Imagine that we'd kept to 1.5 °C global warming, and built infrastructure to protect everyone from all the impacts those temperatures bring (because 1.5 °C is no fairytale even if it's significantly better than 2°C).

We asked ourselves what would need to happen to get there? What projects, policies and cultural changes would we need? Many of our answers were things we were already very familiar with. There was the low-hanging fruit we and other members of the climate movement have been pushing for years, like lifting the ban on onshore wind¹ and investment in energy efficiency.² There were also the sort of policies bodies like the Committee on Climate Change have been arguing for in their advice on achieving net-zero; introducing a Frequent Flyer Levy,³ for example, planting at least 30,000 hectares of woodland a year,⁴ and cutting our consumption of lamb and beef.⁵

But we knew we needed more than just what we had on the table. What's more, if we were going to bring the UK public with us in the radical transformation, we needed ideas that weren't just necessary, but inclusive, fair, fun and exciting. We need ideas that inspire a change from business as usual and help build the rapid, zero carbon transition the climate crisis demands.

We asked our supporters what sort of bold ideas they would like to see. There was a lot of enthusiasm for shifting how we consume; make goods more repairable, end fast fashion, share equipment like lawnmowers, and move to plant-based foods. There was an understandable focus on home fossil fuel use too; insulating all homes, a ban on new homes with gas heating, ensuring all new homes were topped with solar, or more simply “wear more clothes in winter”. There were calls to cultivate seagrass on a massive scale, curtail flights, open borders to climate refugees, support uptake of electric cars and buses, take on the advertising industry, and boost public discussion and understanding of climate change.

We also dug out all the cool ideas for climate action we’d collected over the years, all the plans we’d sketched on the back of an envelope and filed away for when we had more time to dream. We chatted to some of the cleverest people we knew in the climate movement (big shout out to Chris Venables for some extra research) and absorbed reports from some of our favourite inventors and activists.

From all this work, the Possible team sketched out ten bold ideas to boost climate action in the 2020s. Because we couldn’t stop at ten, we’ve included ten from our cutting room floor that we like the sound of, but haven’t had time to work up in any detail yet. We hope we’ve got something for everyone, from introducing a Public Climate Service to having a fixing factory on every high street.

Some of these ideas are developments of projects we’re already working to make happen, some are a bit more speculative; they’re all projects we’d love to explore further. Once the urgency and scale

of the climate crisis is truly understood, you quickly realise that we’re stuck between the impossible and the unthinkable. With these ideas we want to both inspire people to make the impossible possible and offer a glimpse of how it can be done with better investment into innovation, creative problem solving and a holistic positive attitude.

And maybe you have thoughts too? We’re keen to hear your bold ideas, and talk to people who want to work with us to make more bold ideas happen.

If there’s something in here you’d like to talk more about – or you’ve got an idea of your own to pitch to us – do get in touch.

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Ten more ideas we had along the way, but haven't had time to work up in detail, from community kelp farming to the return of the clipper for transatlantic journeys.



Idea 1

Community volcano power

Harness the heat from magma stored deep under UK soil using tech owned by, controlled by and benefiting local communities.

The UK might not be known for its volcanoes, but there is still a fair amount of heat under our feet. There's the constant warmth found just a few metres below the surface of the earth, which ground source heat pumps are designed to harvest (see idea six). But the UK also has a number of regions where the geology is just right for deep geothermal wells to be drilled - kilometres-deep holes that tap heat conducted up from magma in the Earth's mantle.

Recent estimates suggest that such wells could generate 4% of the UK's annual electricity demand on commercially viable terms, plus an even bigger share of the heat energy we need.⁶ But if the UK is going to successfully tap its geothermal resources (which at Possible, we'd like to see) we need to ensure that communities are actively involved from the outset.

There are two main types of deep geothermal energy resource in the UK: hot sedimentary aquifers - basically hot water in underground reservoirs - and granite batholiths, or hot dry rocks. The UK's only commercially operating deep geothermal plant in

Southampton is on a hot water formation, where the city council has been generating both clean electricity and heat to supply its district heating network at the site for over 25 years.⁷ There's more hot water deep underground elsewhere in Wessex, Cheshire, the East of England and the central belt of Scotland around Glasgow and Edinburgh.

But the bigger – and more commercially attractive – prize here is the hot rocks found under Weardale and the Lake District in the North of England, and under Devon and Cornwall in the South West. When it comes to renewable energy gold, Cornwall is where the treasure is buried, and the local authorities know it, insisting on including government support for developing geothermal in their recent devolution deal.⁸ This local political support has played a big part in bringing forward the UK's first new deep geothermal plant in 25 years at United Downs near Falmouth, where a three mile deep well has been successfully conducting flow tests since September 2019.⁹ All being well, the site should start generating electricity early next year.

However, when it comes to rolling this out, there's one potential snag. Tapping Cornwall's granite for renewable heat involves the same processes and drilling equipment as fracking for shale gas, which has proven to be highly controversial in the UK. Injecting high pressure water into the wells can cause seismic tremors – mini-earthquakes – and local communities might be understandably dismayed to see mammoth drilling rigs rolling into their neighbourhoods to frack for heat. While the energy is clean, renewable and generates 24/7 (unlike wind and solar), getting at it might not be universally popular.

At Possible, we think there is an obvious solution here: community ownership. Just as onshore wind turbines tend to be welcomed by

communities when they own these assets and reap the benefits, new deep geothermal wells in the UK should have a mandatory stake for the local communities whose energy needs they will serve. In many ways this makes even more sense than for wind farms, since much of the energy the wells will yield will come in the form of heat – an intrinsically localised resource which can be piped directly into local homes and businesses, but cannot travel further than this. Most homes in Cornwall today are not connected to the gas grid, making them prime candidates for plumbing in to a local heat network, cutting heating bills as well as carbon emissions in the process. And because heat networks provide a monopoly service, in countries where they are the main source of home heating, like Denmark, they are exclusively owned and run on a not-for-profit basis by local authorities and energy cooperatives.

Although deep geothermal projects tend to need to take place at a scale that's a bit bigger than a typical community energy scheme, one local community in Iceland is already working with its local council to build four small geothermal plants to meet local energy needs,¹⁰ and steam from commercial geothermal plants is even being used to produce local craft beers in Italy.¹¹ Back in Cornwall, the Eden Project is leading the way, with plans to drill two boreholes that will provide renewable heat for their iconic biome greenhouses, alongside enough electricity to power 7000 Cornish homes as well as the attraction itself.¹² Meanwhile in Penzance, a community benefit society raised over half a million pounds through a local share issue to heat part of their open air saltwater swimming pool through heat mined from a deep well.¹³ The pool is being plumbed into the magma heat source during October 2019, and will be opening to the public soon afterwards.

These are exactly the sorts of power stations we want to see for a modern Britain; low carbon, but also welcoming, sites where

local people can collect together for fun as well as profit; tourist attractions even. As the UK's abortive fracking industry finally hits the rocks, perhaps the skilled jobs and drilling equipment they no longer need could be put to better use down in Cornwall, tapping clean heat from the Earth's core on behalf of local communities?

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Idea 2

A Public Climate Helpline

A telephone and digital helpline offering information on climate change, and support for anyone struggling with climate dread and access to crisis support on the impacts of climate change.

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Possible, then known as 10:10, was born in the summer of 2009. People came out of the climate change blockbuster, *The Age of Stupid*, asking ‘but what can I do?’. We wanted to be able to offer them a decent answer, and we’ve been committed to helping people find answers and act on them ever since.

But as more and more of the UK public wakes up to the crisis, we need a larger system for answering these questions.

A Public Climate Helpline would offer people (a) advice on how to decarbonise all aspects of their own lifestyles and workplaces, (b) mental health support for those experiencing climate dread and grief, and (c) at times of crisis, access to support in tackling the impacts of climate change.

In 1992, the UK government agreed it would talk to the public about climate change. It’s in Article 6 of the United Nations Framework Convention on Climate Change, which agrees to promote actions to develop and implement “educational and public awareness

programmes on climate change and its effects”.¹⁴

A helpline such as this would simply be the government, belatedly, taking positive action on this agreement. It needn't be so 1990s an approach as just a phone line either, there'd be fully accessible web content, an app, and even bots and text or whatsapp-based content too. If you're more of a web person than a phone one, we'd be there for you.

Moreover, there is a need for a helpline like this. As the Committee on Climate Change explained in their 2019 Progress Report to Parliament, “over half of the emissions cuts to reach net-zero require people to do things differently. The public must be engaged in the challenge”.¹⁵ But there is little sign of any formal moves by government to do this. The Energy Saving Trust was one of the first casualties of austerity after the financial crash, having its budget halved in a single year in 2011/12. Meanwhile reviews of the UK's domestic energy market show that active consumers with access to online advice and switching sites pay the lowest energy bills – leaving older and less tech-savvy energy users in leaky homes, on rip-off tariffs.¹⁶ People looking for answers on how to tackle climate breakdown in their own lives should be able to talk to a human being who can point them in the right direction.

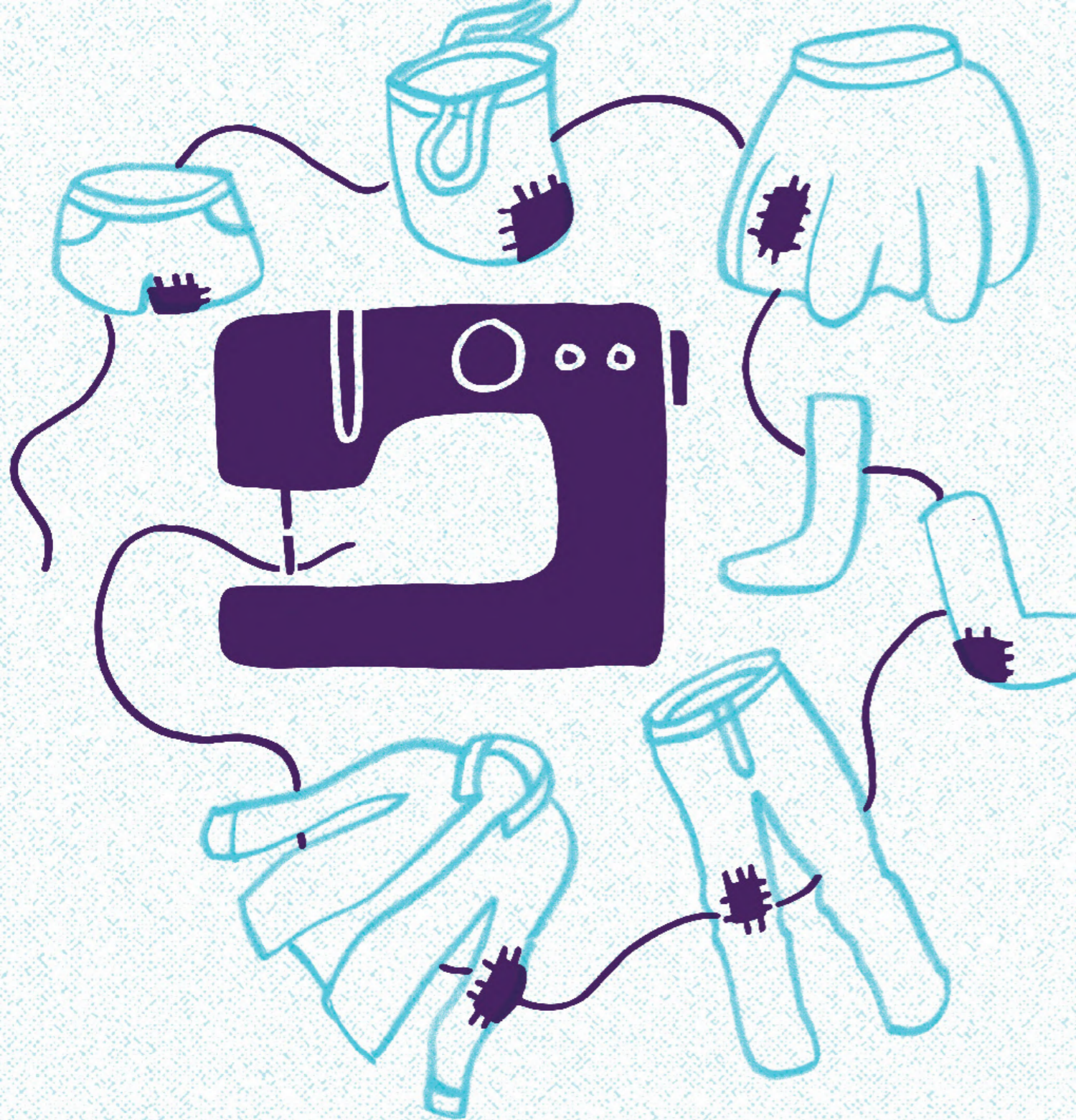
What's more, as the civil disobedience movement Extinction Rebellion have graphically shown, people may need help coping with the less practical aspects of confronting the climate crisis too. Coming to terms with the potential end of human civilization and the mass extinction of species can take a serious toll on

mental health¹⁷ – especially for those who lack anyone to talk to about it, either because of social isolation or because the people in their own social lives have not yet engaged with the reality of the climate emergency. Trained grief counsellors could listen to callers' concerns, and ideally connect them with local support groups where they can share their feelings with like-minded fellows. No online service can substitute for the sound of a friendly human voice.

Finally, as climate impacts within the UK begin to escalate in the form of extreme weather events like heatwaves, water shortages and flooding, more and more people will be exposed to unfamiliar adverse conditions. Many people are likely to need guidance on how to avoid or overcome these impacts, particularly during localised crises that are not severe enough to warrant a 999 call, but are too severe for an average layperson to simply deal with autonomously.

A Public Climate Helpline could be a one stop shop for anyone looking for support addressing climate breakdown – and provide an abundance of answers to that age-old climate question “but what can I do?”

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Idea 3

A fixing factory on every high street

Free and accessible local community hubs offering services on everything from access to repair specialists, support on guarantee schemes and training for those wanting to skill up on fixing household items.

The UK is a consumer society. A trend we've been committing to for a good couple of centuries, our economy is now highly dependent on how much people spend on things that would have appeared fantastically luxurious (or curiously pointless) just decades ago.

Most of what we buy is now made far away, be it electronics, clothes or toys. It often ends up in the same places: e-waste, second hand clothes, disposable plastics and other modern 'waste' streams are fast becoming some of the UK's biggest material exports.

Because we've managed to offshore the production and disposal of so much of our material lives, we're spared having to consider its environmental cost. People in other - usually much poorer - nations are burdened with sifting through our plastic waste, or watching as key natural resources are gobbled up to fund others'

material prosperity. Once you take into account carbon emissions associated with goods and services produced abroad, the UK's carbon footprint increases by a whopping 25%¹⁸ (that's a lot). So we need to start thinking seriously about how we curtail it.

We can start by learning how to extend the useful lives of products. The Times recently reported that 300 tonnes of clothes are binned in the UK *each year*.¹⁹ We produce 25kg of e-waste per person annually²⁰ – weighing in total as much as a third of the UK's human population. One in four people have a broken smartphone at home.²¹

But where there are tonnes of waste there is also tonnes of potential, and a fixing revolution in the UK could unlock it. So let's imagine a future in which every highstreet in the country has a public fixing factory.

Fixing factories would offer a host of services. First, you'd be able to get advice on whether what you need fixing is already covered by a guarantee, manufacturer repair scheme or product recall notice. If so, you'll get the details you need to claim what you're entitled to. Obviously, this service would also be available without having to leave the house, thanks to a slick online user interface. But if it helped to go through it in person, you could drop by too.

If you're not covered, perhaps you'd like to be linked up with a local repair specialist? You'll be referred straight away via a local, accredited database. Perhaps you're short on cash, or want to develop your own fixing skills? You can sign up for an open fixing session run by a mixture of volunteers and paid staff. You'll get to sit down with an expert and get under the bonnet – seeing for yourself how your product can be fixed, and knowing for sure if it can't (in that case, fixing factories will take items off your hands for parts or responsible disposal).

Of course, you might have the skills you need to fix your stuff already, but lack the tools. No problem – you can drop into one of the weekly open workshops in the factory's 'library of things'²² and find anything and everything you might need from soldering irons to 3D-printers to spare parts. Or you might want to get skilled up before you need to fix something – whether it's learning how to patch a worn elbow or replace a smartphone battery. Just book yourself onto one of the regular public courses focused on common fixes. Once you're skilled up, why not help out once a month by volunteering at an open session to help others get back up and running? And it need not stop with fixing – fixing factories would be hubs of 're-making' too, repurposing unloved items into new and wonderful creations. You might also be inspired to get involved with consumer activism, pushing manufacturers to sell products that last and are repairable.²³

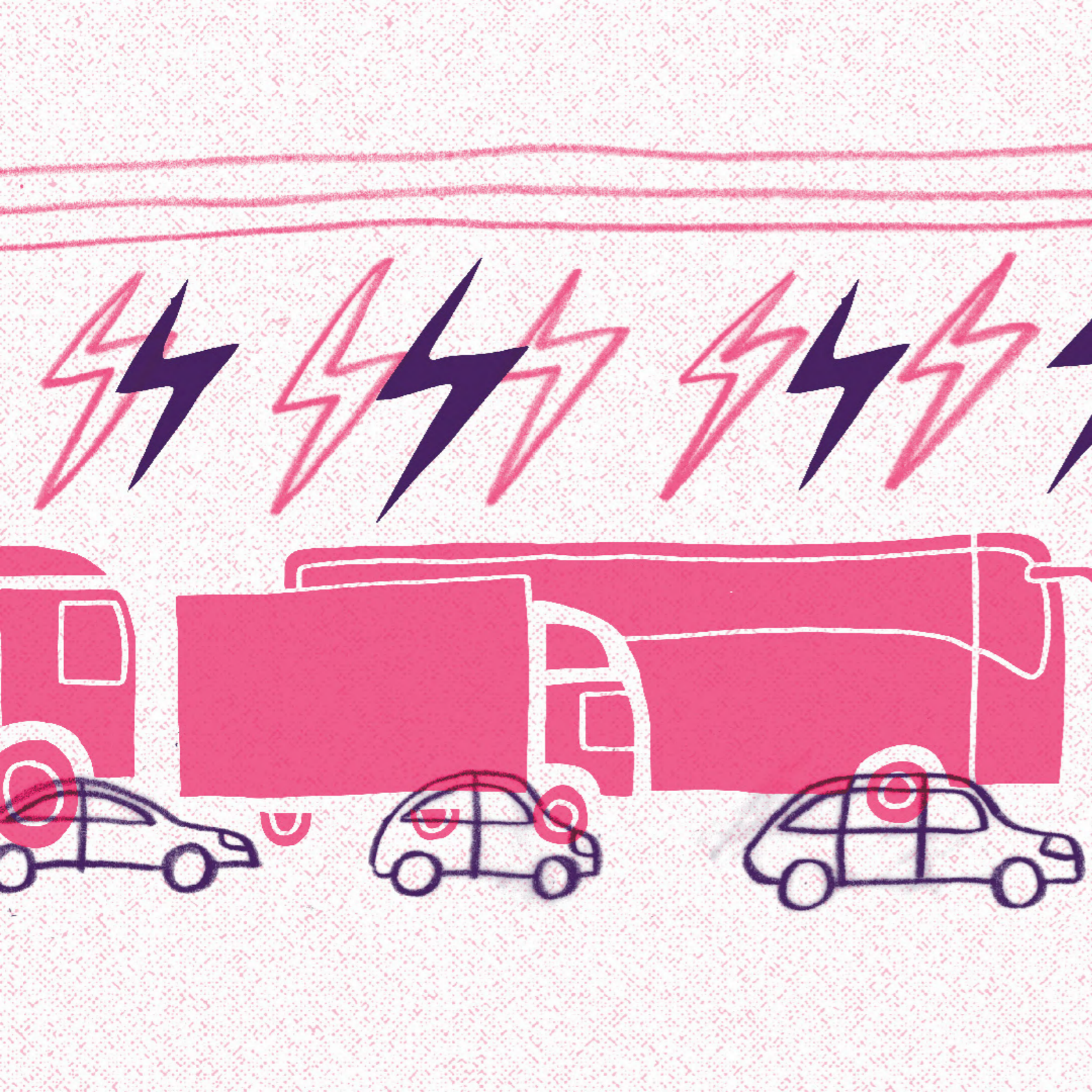
Fixing factories could generate revenue from referrals to local repair businesses, public course bookings (offered free to anyone on low income, unemployed, retired or a student), scrappage payments and sales of repurposed items. Combined with low rent from local authorities (or private landlords facing commercial closures due to internet shopping), this could reduce or even eliminate reliance on public funding. Bringing life and community back to increasingly bare or identikit high streets would be an added bonus.

While a strong volunteer ethos would increase their reach and impact, a fixing economy would also be a new source of fulfilling jobs. According to the Remade Network²⁴ (born from the pioneering Edinburgh Remakery²⁵), a repair economy could directly create 10,000 new jobs in the UK by 2035, at one tenth the cost of major infrastructure projects.

And the good news is that others are already showing the way. 'Remakeries' in Brixton and Edinburgh have shown that a social enterprise model for fixing shops does work – and the Remade Network now aims to replicate it nationwide. Repair cafes have been empowering people to fix their stuff for years: the Restart Project²⁶ was born in London in 2013 and its Restart Parties now span the globe. These innovators are ready to lead the way, but public support is needed to put boosters under them.

This country needs fixing. Just maybe in ways you hadn't yet thought of.

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Idea 4

Electric motorways

Turn the slow lane on motorways into a network of electric motorways for lorries and coaches, all powered by community owned renewable energy.

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Transport is now the UK's biggest source of emissions.²⁷ While electric vehicles, car sharing and 'micro-mobility' (e.g. dockless bikes and electric scooters) are offering exciting new ways for us as individuals to get around, there's a big problem many of us simply ignore: freight trucking.

Heavy Goods Vehicles are just too heavy and have to travel too far for today's battery technologies to handle²⁸ and while hydrogen power could be an option in the future there are major questions over efficiencies and availability of supply.

Enter electric motorways: overhead electrified cables along the slow lane of the motorway that supply power direct to trucks via roof-top pantographs (the apparatus on top of electric trains and trams). The same set up could be used for electric coach travel too.

Whilst most technical approaches to decarbonising road freight offer marginal improvements in fuel efficiency and small associated reductions in carbon, investment in overhead electrified cables for

our key road freight corridors could cut 80% of the emissions from long haul articulated lorry trips. The 20% carbon remaining would come from the parts of these journeys not on electric highways.²⁹

But with a bit of strategic planning, we could also connect the e-motorway traction system with the sorts of tram infrastructure we will also need to extend in every city. This would mean trucks could move cleanly around our cities – which they need to do to make freight deliveries – by sharing the tram network from late evening to early morning. Likewise, e-motorways could also be used by electric trolley-buses, a kind of trackless tram pioneered in China that runs on roads,³⁰ for pollution-free passenger transit between towns and cities. Dedicated e-lanes could clear domestic traffic from the paths of trucks and coaches, with a consistent cruise speed of around 55mph allowing better scheduling for passenger services and logistics planning for hauliers. Seamless transfer from the electric motorway onto the urban tram network would allow trolleybuses to connect city centres via completely traffic-free trips on clean, quiet coaches.

This isn't a pipedream – there are already demonstrator schemes up and running on short stretches of motorway in Germany,³¹ Sweden³² and the USA.³³ 83% of all lorry miles travelled in Britain are on motorways and A-roads,³⁴ and we have 7000 miles of such trunk roads that would be suitable for electrification.³⁵ Electric powertrains are much more energy efficient than internal combustion engines and electricity is a much lower cost fuel than diesel,³⁶ so hauliers will be looking at substantially lower running costs for e-motorway freight routes. This means the infrastructure investment needed – estimated at around £7 billion³⁷ – could be recovered easily through a truck and trolleybus toll, as is being called for in Germany.³⁸

There's a health angle too, as we need to electrify to cut air pollution, a problem that professional drivers are especially badly hit by. As with many approaches for tackling climate change, it should provide savings to the NHS, as well as simply making the population healthier and happier.

One of the most exciting things about electric motorways is the new opportunities they will create for decentralised renewables. 7000 miles of new electrified roads is 7000 miles of new distributed electricity demand – demand that can now, thanks to our world-leading Riding Sunbeams project³⁹ – be met through direct supply from solar, wind and battery storage installed alongside the motorway. Communities that have historically been blighted by motorways cutting through them won't just see dramatic improvements in local air quality and noise pollution, they'll finally be able to capture some of the economic value of these arterial roads, and build community wealth by developing new wind and solar to power the electric traffic passing through their areas.

Green campaigners aren't used to advocating ideas that combine the worlds "building" and "roads", but we at Possible think e-motorways have traction. Instead of feeding the dangerous business models of oil majors by refuelling parasitic petrol stations, truck and trolleybus traffic on electric motorways can put money straight into the local economies through which they pass, by buying clean electricity direct from the community. Motorways will never be a sustainability paradise but the electric motorway of the near future could be a very different place to today's polluted traffic sewers.

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Idea 5

Plant a climate forest

A programme to plant millions of trees on top of disused open cast coal mines, creating a publicly owned forest.

At its peak in 1920, British coal mining employed well over a million people. As an industrial pursuit, we basically invented it. Coal powered the industrial revolution and its fingerprints cover every aspect of the modern lives it produced, and that we now live. Though a mere 650 people remain employed in UK coal mines,⁴⁰ the legacy of this once great industry is all around us. In our national story, our political history, our material prosperity – and in the perilous state of our climate.

Old coal mining areas such as south Wales, the north east coast, and an area stretching from Leeds all the way down to Nottingham are littered with old open cast coal mine sites. Look at a map⁴¹ and the vast scale of these coalfields – many larger than the towns and cities that surround them – becomes quickly apparent.

The UK is now actively turning its back on coal. Co-founder of an international effort to end coal-fired power generation,⁴² the UK will turn off its last coal power station in 2025 and has already reduced their use to a handful of percentage points.⁴³ But the Committee

on Climate Change is now warning the government that other measures beyond cleaning up our power supply are needed to get to zero carbon as soon as possible. One such measure is tree planting – which the committee says we need to ramp up massively in order to boost national tree cover by 50%.⁴⁴

Planting a new, national ‘climate forest’ on top of our old coal mines would lock legacy carbon back into the ground, memorialise a historic industry and create hundreds of new public green spaces close to urban centres.

According to mapping data held by the Coal Authority, the land area covered by old open cast mines is a massive 845 square kilometres (84,500 hectares, or 209,000 acres).⁴⁵ That’s a lot of land – over three times the size of Birmingham. Based on typical planting densities of between 1000 and 2,500 trees per hectare, woodland creation across this whole area could result in between 85 and 200 million new trees (some of this land, though far from all of it, has already been forested as part of remediation work – so further work is needed to refine estimates).

Planting millions of new trees would allow us to start drawing carbon down from the atmosphere over the coming decades at the same time that we slow – and ultimately stop – putting it up there in the first place. Given our outsize historical role in burning fossil fuels it is only right that we do this. And where better than on the sites that gave birth to the fossil age?

The beauty of woodland creation is that it is about far more than carbon. Mixed native woodlands increase biodiversity, provide habitat for wildlife under increasing pressure and protect against flood risk in an era of increased extreme weather. They’re also

brilliant for people. Access to nature is demonstratively beneficial for mental and physical wellbeing,⁴⁶ and woodlands serve as a vital source of beauty, calm and creativity for many.

Coal mines required people to work them, so these disused sites are often near to towns and cities. This could be a golden opportunity to address the injustice of access to nature in the UK: the most affluent 20% of areas in England have 5 times the amount of green space compared with the 10% most deprived.⁴⁷ A network of climate forests would also provide an opportunity to teach visitors and school children about the pivotal place that coal miners have in the nation’s history – as well as climate change and the role of trees in urgently responding to it.

A programme to forest the nation’s open cast coal mines should have people at its core and local communities in the lead. Harnessing people power to plant new trees (working through schools, local businesses, charities and civic groups), would help to lower costs while creating new connections within communities – and between communities and their landscapes. Placed into community or public ownership, local people should be deeply embedded within the governance of these new spaces, enshrining free public access and the management of woodlands for public benefit permanently.

Examples of this approach already exist. The National Forest in the Midlands was created 25 years ago amidst open cast coal mines, clay quarries and other relics of an industrial past. The project is now halfway to planting 17 million new trees,⁴⁸ transforming a landscape now home to abundant wildlife and tourists alike.

What is being achieved there is an inspiring vision for what we could build with communities up and down the country. It would be a fitting memorial to local histories, while taking action together for better futures.

This idea was developed with the kind support of Guy Shrubsole, author of *Who Owns England*.

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Idea 6

Heat pumps under public green spaces

Install heat pumps under as many public green spaces as possible, from parks to allotments, generating revenue for local authorities.

A massive chunk of the UK's carbon emissions comes from heating the buildings we live and work in (around a third in fact⁴⁹). This is in no small part because our heating largely comes from burning oil and gas, rather than using electricity (which itself can be made by burning oil and gas, but increasingly comes from solar and wind too).

While an enormous challenge, solutions, such as heat pumps, are out there. These machines gather ambient heat in the soil, air or water around us, concentrate it, and pump it into buildings.⁵⁰ For water and ground based heat pumps, you need space to lay pipes to collect heat. Although ground source heat pumps are becoming more and more popular in rural environments, for urban communities, where most people live, finding enough space can be tricky.

This is where our bold idea comes in. By installing heat pumps *underneath* the UK's public green spaces we can unlock this source

of low carbon heat in towns and cities, while generating new revenue streams to support local parks up and down the country.

Heat pumps are (a little unintuitively) what makes your fridge cold. Simply put, they are machines for moving heat from one place to another, where it would not naturally do so. By moving heat from the inside of a fridge to the outside environment you create a cool interior. But you can also use heat pumps in reverse – and move heat from the wider environment to a smaller space within it. That’s what is happening when we use heat pumps to heat buildings.

Long heat collecting pipes are laid underground or underwater (say, in a lake, pond or reservoir). Water is pushed through the pipes, absorbing ambient heat from the ground or water body, and rising a few degrees in temperature. Now the clever bit: that heat is transferred from the water to a special fluid, which is then pressurised to raise its temperature. This high temperature heat is then finally transferred to the water in a normal central heating system inside a building.

A heat pump uses electricity to pump the water and fluids around the system, and pressurise the special fluid to raise its temperature. With electricity being rapidly cleaned up (half of UK power is now low carbon) this means zero carbon heat is within reach. Even better, heat pumps are super efficient: for every unit of electricity put in, you get up to *five* units of heat out.

Digging up land that is already built upon to lay pipes increases the cost of installing heat pumps. That’s why green spaces offer such an opportunity. With only weeks of disruption you can install heat collecting pipes under sections of parks or gardens, return them good as new, and go on to source heat from them for up to 100 years before

the pipes need replacing. What’s more, as a local authority or green space manager you’ve just tapped into a valuable resource – clean heat – you didn’t even know you had. By selling that heat via a local heat network to local businesses, homes and amenities you can generate revenue to help fund upkeep and development of parks. Or you can provide the heat to your own buildings – and make savings on your bills.

There are already a few places experimenting with this. Projects in Edinburgh,⁵¹ Bristol⁵² and across National Trust sites⁵³ are showing it can be done. For the last year, Possible has been working with Hackney Council.⁵⁴ Now we need to make it possible for every green space to unlock green heat.

We sat down and looked at just how much heat there is beneath our feet across the nation’s publicly accessible green spaces. A lot, it turns out: about 15% of current annual domestic heating demand (equivalent to 8.4 million tonnes of CO2 emissions every year). In late 2019 we’ll be releasing figures for every local authority showing how much heat is sitting beneath their green spaces. Of course, sadly not all of that will be economically or practicably recoverable. But what our study tells us is that local councils and other public green space owners are quite literally sitting on top of a massive opportunity. Now it’s time to go out and grab it.

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Idea 7

A war chest for local authorities declaring climate emergencies

A nationwide climate response programme which offers local authorities the tools they need to deliver on climate emergency declarations.

In November 2018, Bristol City Council became the first local authority to declare a climate emergency.⁵⁵ Less than a year later, over 225 local governments had followed suit, spanning rural areas, London boroughs and metropolitan regions and combined authorities.⁵⁶ That means over half of the UK's 408 largest councils, controlled by parties across the political spectrum, have now declared climate emergencies.

The local climate emergency movement is defined by its urgency, with many councils setting targets for decarbonisation far in advance of the national government's 'net-zero' 2050 goal. And yet, with a highly centralised political system and local government budgets straining under a decade of budget cuts, councils lack the means to fully accelerate towards their goal. Groups like the Centre for Sustainable Energy⁵⁷ and the UK100⁵⁸ network can provide advice, but we need more support for action at scale.

Our bold idea is a war chest for every local government fighting the climate emergency. Bigger than simply money, we'd propose a full climate plan accelerator programme – a combination of funding, finance, devolution of powers and institutional support – to unlock this radical vision.

The mushrooming of emergency declarations has opened up a new frontier for climate action. Responding to the climate crisis requires transformative action everywhere, not just Westminster. Whether it is retrofitting local homes, delivering world-class public transport, unlocking land for new community woodlands, or helping to shift diets to benefit people and planet alike – local government action is not just nice to have, it is essential.

Place-based action also has the power to bring the debates, plans and actions needed to go zero carbon closer to home. The scale of transformation required – and the core questions of social equity it demands – cannot proceed without the meaningful participation of local publics.

Yet, with a few exceptions, local governments are ill-equipped to design and deliver plans for such ambitious near-term zero carbon targets. They often lack the budgets, the powers and the expertise to fully grapple with the scale of the necessary and laudable tasks they have democratically adopted.

It's time to change this. A nationwide climate response accelerator programme comprising money, new powers and institutional support can harness the energy, ambition and potential unleashed by the local climate emergency movement.

First, money. Investing now in bold climate action makes us all richer in the long run. The Committee on Climate Change thinks we need to spend up to 2% of GDP,⁵⁹ which experts say means doubling current spending to £42bn every year.⁶⁰ It's vital a large chunk of this goes to local authorities – including funding to establish dedicated climate action teams in every council, run civic deliberation processes, commission new research and to seed new citizen initiatives and sustainable businesses. Capital budgets need to be bolstered and new zero-cost finance offered to secure investment in the local climate solutions those plans identify. This needs to be serious money, not token hand-outs: government should immediately commission a broad study to understand the scale of funds required by local authorities over the next decade.

Second, devolved powers. As long as local governments are prevented from controlling essential local services and systems, their ability to create transformative change is undermined. The wildly successful Transport for London model should be open to every urban authority, allowing world class public transport systems to grow outside the capital (it's 2019, and Manchester doesn't control its own buses⁶¹). Councils that want all new buildings to be zero carbon (or energy positive – see idea eight) should be able to insist the developers deliver them. Government should establish an accountable public process for identifying which powers councils need devolved for bold climate action, and hand them over as soon as possible.

Third, expert support. Declaring and responding to a climate emergency is uniquely complex. The Committee on Climate Change crunches the numbers for central government to guide climate policy – and holds it to account. Let's extend its remit and resources to work with every council to evidence, design and deliver zero carbon plans, and help citizens hold local authorities to their commitments. A well

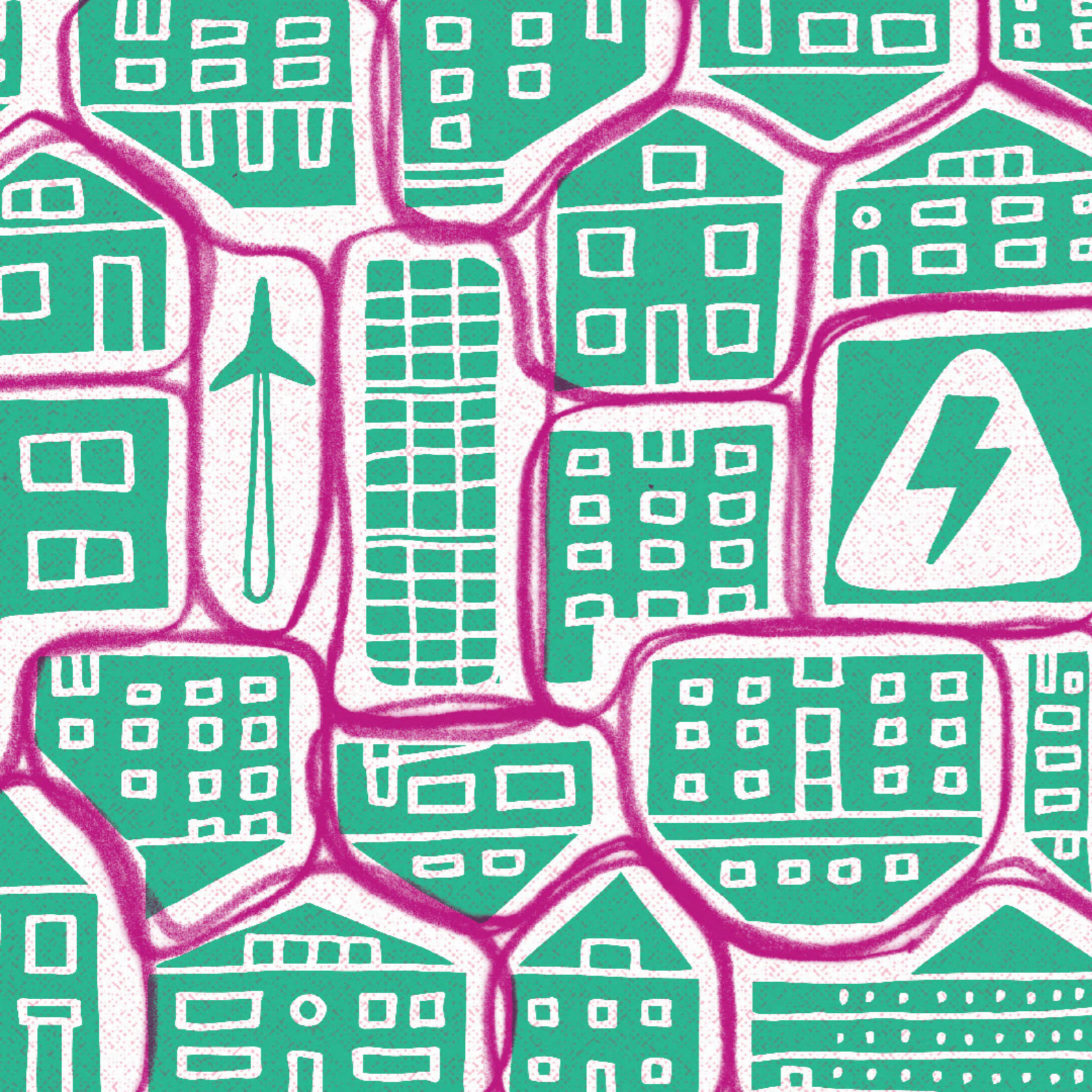
resourced national network of climate emergency practitioners would put boosters under this new movement, by enabling knowledge exchange, expertise and skill sharing. Such a body could also enable peer accountability, consolidating collective commitment to deliver on big promises. We need to leave behind the days of mayors launching bold climate plans one day, and cutting the ribbon on a new airport runway the next.

Done right, delivering on climate emergency declarations has the potential to revitalise local democracies, energise civic participation and strengthen local economies – not just cut carbon.

And if local governments can deliver, then the national government's job of meeting legally binding carbon targets just got easier. And if existing targets get easier, they can be upgraded – with international significance. Making a success of local climate action can have consequences far beyond county lines.

So many localities are declaring their intention to respond to the climate crisis with the urgency it demands. It's time Westminster gave them the tools to do so.

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Idea 8

Energy positive homes

Every new home we build shouldn't just be 'zero carbon', but energy positive - producing more (clean) energy each year onsite than is imported from the grid

Back in 2015, the UK was one year away from adopting a ground-breaking Zero Carbon Homes standard. It would have required all new homes to be 'carbon neutral' - producing as much energy onsite, through technologies like solar panels, as they consumed through lighting, heating and other appliances. All very exciting - until it was suddenly scrapped by the then chancellor, George Osborne.⁶²

Back in 2019, we've lost valuable time in climate-proofing new homes and providing affordable, high-quality homes for all. So it's time for a bolder approach. It's time to ensure that every new home we build is not just 'carbon neutral', but energy positive - producing more (clean) energy each year onsite than it imports from the grid. This wouldn't only mean tiny carbon footprints but tiny (even negative) bills. Prioritise access to those most in need of housing and you've got a tool for tackling climate change, the housing crisis and fuel poverty, all in one.

One of the reasons households are so gnarly for cutting the UK's carbon isn't just that we rely heavily on gas (and sometimes oil) to heat them – it's because the UK has some of the oldest, least efficient housing stock in western Europe. This is also one of the reasons that one in ten UK households live in fuel poverty, and that 17,000 people died last year from cold homes.⁶⁴ The government's Fuel Poverty Action Group estimate that cold homes cost the NHS around £1.3 billion every year⁶⁵ (that's about 25,000 nurses). And yet installation of home efficiency measures like double glazing and loft insulation have been pushed off a policy cliff since 2014 – falling by a massive 85%.⁶⁶

Despite this fairly dismal picture, there's really nothing stopping us from building the kick-ass homes of tomorrow, today. A glimpse of what this could look like can be found in a project completed just months after Osborne's u-turn. In July 2015 the Welsh School of Architecture unveiled the UK's first 'energy positive' house – built over 16 weeks near Bridgend.⁶⁷ Employing a cunning combination of onsite solar and batteries, heat pumps (see idea six) and smart ventilation systems, it would enable residents to earn money for exported energy to offset, or even surpass, the cost of energy imported at other times. Cheap (even profitable) to live in, the best bit is that the project gave the lie to Osborne's argument that such low carbon homes would be too expensive to build in the first place. The Bridgend project came in at £1000/m², within the official range for social housing (and remember this was a single demonstrator property unable to harness economies of scale).

Fast forward a few years, and there's more evidence of what could be achieved with the right ambition. Norwich City Council took the decision to begin building social housing again in 2012, and set up a new publicly owned company to do so. The first fruit of this move is a 100 home development on Goldsmith Street, built to exacting

Passivhaus standards.⁶⁸ A combination of super-efficiency, smart ventilation and onsite renewables can bring bills down by 70%. For a council this is win-win-win – secure housing for local people, more reliable rent enabled by lower household running costs, and strides towards urgent climate goals.

Of course, most of the homes that will be lived in come 2050 have already been built, to a wide variance of quality (and ability to retrofit). Given the quite shocking reality of housing for so many people across the country in 2019, it's clear that we also need an ambitious and immediate programme to retrofit existing properties – starting with those most in need first. Such retrofitting programmes might not get properties to energy positive or Passivhaus levels, but they should aim to get as close as economically feasible. This will be no small feat – we've left it so late that experts think we need a retrofit a minute between now and 2050⁶⁹ – but the benefits of achieving it are multiple.

Take, for example, Wilmcote House; a large concrete-panel building owned by Portsmouth city council. It's in one of the most deprived areas of England, a stone's throw from the birthplace of Charles Dickens. It was recently given a £12.9 million deep retrofit, all done while the tenants were still living there. According to researchers at the London School of Economics's Centre for Analysis of Social Exclusion highlighted,⁷⁰ before the retrofit, residents had multiple issues with damp, condensation and mould, as well as draughty windows, leaky roofs and freezing rooms. Children did their homework wearing woolly hats and mould grew on walls and mattresses. After the improvements were completed in 2018, tenants were warmer, healthier, happier and saving hundreds of pounds per year each in energy bills, according to researchers at the London School of Economics.⁷¹ The cost worked out at about £117,000 per flat, but the council saw this as money

well spent, and cheaper and less disruptive than demolishing and rebuilding the block.

In Nottingham the local council worked with Dutch start-up Energiesprong ('energy leap') to carry out whole house retrofits of 150 properties, exploiting economies of scale and modular design to cut energy bills in half.⁷²

More eExamples abound, such as the pioneering Energiesprong approach being tested in Nottingham,⁷³ but for now they remain just that. It's up to us to level up and make sure we bring them home to everyone.

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Idea 9

Plastic packaging: reuse, reuse and reuse

A standardised reuse system for all takeaway containers, own brand supermarket products, and coffee cups.

The plastic waste problem now ranks above price as shoppers' top concern.⁷⁴ 85% of the British public say they are very or fairly concerned about it,⁷⁵ and 70% of us now support a total ban on single use plastics like straws and cotton buds.⁷⁶ Every stage of plastic's lifecycle emits carbon, from production to waste management - in total accounting for 4% of global emissions. Furthermore, future profits of oil and gas giants depend increasingly on growth in plastic use - so undermining the need for plastic is also undermining the oil and gas business model, period.⁷⁷

The trouble is, our entire food packaging and distribution system is premised on single use plastics - as anyone who has tried going plastic-free unilaterally quickly finds out. Sure, nobody needs an orange in a plastic blister pack - it comes with peel - but what about a takeaway meal? Or a bottle of milk?

But it's with milk that we can find a clue to the only workable solution to the problem of single use plastic packaging. Until the 1990s, nearly all milk was delivered direct to people's homes in reusable glass

bottles. Empty bottles would be collected from the doorstep, cleaned and refilled for the next day's delivery round.

Although there is a long established hierarchy for sustainable waste management which is drummed into children from preschool – 'reduce, reuse, recycle' – virtually all policy to date has focused on the least effective of these, recycling. Only 9% of all plastic waste has ever been recycled,⁷⁸ and half of plastic supermarket packaging physically cannot be recycled in household waste recycling facilities.⁷⁹ What needs to happen is a return to reuse.

A ban on single use plastic packaging will be in practice impossible without a new, parallel system for distributing, collecting and cleaning durable, reusable packaging for foods and other household goods, with an initial focus on hard containers. Products like takeaways and ready-meals already come in standard portion sizes. So do soft drinks, detergents, spreads and condiments. So the first step here to establish this new system should be to mandate standardised reusable container sizes for all supermarket own-brand groceries, and for food trays for takeaway restaurants and – of course – coffee cups.

Every food retailer would use the same mandatory, interchangeable containers for every possible product, with their own brand and product information printed on temporary labels. Companies want their logos on packaging, which could be a key barrier to this. But the creation of disposable plastics and paper packaging simply as a canvas for corporate logos is an artefact of the late Victorian era that, as we approach the 2020s, we have to grow out of. There are plenty of other ways to advertise and build a relationship with customers. But to get the new system up and running, we propose to begin with supermarket own brand goods as, unlike Marmite jars or Coca Cola bottles, their packaging is broadly undifferentiated.

Consumers would then put out three different bins each week for collection: rubbish, recycling, and reuse. All the standard containers would be included in the reuse kerbside collection as part of the municipal waste management regime, perhaps collected in dedicated reuse trucks which return the containers to local distribution hubs to be cleaned, disinfected and sorted. Local restaurants could be resupplied direct with their weekly container order, with the remaining containers going back upstream into the giant food manufacturers' supply chains.

The cost of setting up and running the new system could be covered in part by the food wholesalers and retailers using it, but could be cross-subsidised by a tax on single use plastics for companies that insist on continuing to use them in their packaging – providing a double incentive to switch to reuse. For people, the system would hardly be any less convenient than the one we have today – albeit with a third bin to manage in the home, and a bit more thought into which item goes in which bin. Austrian homes have six different coloured bins to sort recyclable waste⁸⁰ – so we know this can be done.

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Idea 10

National Climate Service

A national programme enabling everyone in the UK to take paid climate leave to work on practical projects building ambitious climate action.

Climate change is the biggest challenge humanity has ever faced. As the October 2018 IPCC report on 1.5°C made clear,⁸¹ keeping warming below this level will require rapid change greater than anything we've managed before. Climate campaigners sometimes like to call it our generation's Moonshot. But putting a man on the moon is nothing compared to what's in front of us. Not only do we face a much stiffer challenge, ours is one that needs everyone – not just a core group of brilliant scientists and brave astronauts – to achieve the seemingly impossible.

That's why we like the idea of a National Climate Service – an unprecedented programme to enable anyone anywhere to contribute to real climate solutions. Imagine mass volunteering, training for new green jobs, practical education and nationwide climate job shops – all rolled into one. A national project of epic importance, scale and potential – with everyone invited. A National Climate Service would rapidly build a climate workforce but also empower the public to learn about, and shape, the urgent transformations to a zero carbon world as they happen.

As ever, this is not just about climate change. Climate change is never just about climate change. This is about the society we want to live in. A National Climate Service offers the opportunity to bring together remain and leave, Labour and Conservative, rural and urban, millennial and middle aged. A skillfully designed, progressively executed, open and fair project of national renewal lies within our grasp – seeking a prize far bigger than any of our current political disagreements.

What might it look like? Imagine every school leaver is offered a year of paid climate service, on the living wage. They could choose to spend that time to work on practical projects – say helping plant a climate forest (see bold idea five), or providing free energy saving advice in highstreet advice cafes, or working as a community product fixer in their local town's fixing factory (see bold idea three). Or they could opt for training – say in retrofitting buildings, installing renewable energy systems, or low carbon farming techniques. There would even be the chance to travel (overland wherever possible, of course), to learn from and work in other countries. This could offer a new take on the much-satirised 'gap yah', help to recognise the UK's climate debt to populations around the world and enable first hand learning about climate impacts affecting peoples' lives. At the end of their year young people could go onto university, further training – or straight into the workforce to learn on the job.

Now imagine that everyone over 25 is also entitled to 12 months paid climate service until retirement age (this would include those school leavers a few years down the line). If you're employed you'll have a right to take it, either all at once or in smaller chunks over longer periods, in agreement with your employer. If you're a high earner you'll have to accept a pay cut – but if you're on low wages (or unemployed) you could end up receiving a financial boost,

helping redress some of the UK's runaway inequality. Employed or not, you could choose to retrain into a new career demanded by the zero carbon transition – or spend your time on the ground restoring peat bogs, replanting hedges or repairing the shared e-cargo bikes parents are using to run their kids to and from your local school. Like school leavers, those taking climate leave would also be able to contribute to projects abroad – particularly where they had relevant skills and knowledge to transfer.

But it wouldn't stop there. As well as a universal entitlement to a year's paid climate service, anyone could sign up anytime to volunteer on local carbon cutting, nature-restoring or citizen science projects. Whether you're a retiree, part-time worker or eager student and in Belfast, Birmingham or Berkshire – the National Climate Service would be there to offer you high-quality, meaningful experiences that build community and cut carbon. That could include choosing to be on standby to respond to extreme weather events such as flooding, helping communities to respond and rebuild. Careful thought would be needed to ensure that volunteers didn't undermine opportunities for good green jobs – but having to grapple with the implications of a deluge of willing climate volunteers would be a nice problem to have.

A wide variety of affordable practical and academic courses – charged on a sliding scale relative to income and free to anyone on universal credit or unemployed – would be available to anyone wanting to develop further after their initial training entitlement is used up. And if you already have the skills to make the switch into a low carbon career, a network of climate job shops would be ready to sign-post you to the best opportunities.

Clearly an idea this ambitious would need paying for. But the work it would enable simply must be done, so the real question is

whether we're prepared to make the investments now for a safe and prosperous future. And it would pay for itself in more ways than one: directly through revenue from its training arm, to the treasury as people access higher skill, higher wage work, and to the NHS through fuel poverty alleviation (to name just a few). And here at Possible we wouldn't be opposed to funding set up costs through a windfall tax on oil major profits. Just saying.

The opportunities feel almost endless. Carbon cutting. Community building. Society healing. Nature restoring. History making. Now that's what you call a Moonshot.

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Ten more ideas

Here are ten more ideas we had along the way, but haven't had time to work up in detail. Let us know if any of them pique your interest.

Menu-flipping

While veggie, vegan (and everything in between) is increasingly mainstream, omnivorosness (it's a word, OK?) is still the default. Open a standard menu and perhaps 20% at best of what you find there will be on offer to those trying to cut down on eating animals and things that come out of them. With all the health and planetary welfare benefits of a plant-rich diet, perhaps now is the time to change that up. A menu-flip takes the normal ratio of meat:fish:veggie:vegan options and inverts it, putting veggie and vegan front and centre while still reserving meat and fish options for those who want them. It sidesteps the vegan/eats everything binary, while setting 'normal' on a new course (or three courses, if you're up for it). It would also provide both space and impetus for greater variety, exploration and creative flourish across plant-rich dishes, opening dietary experimentation to more people. While some businesses would see risk in taking this on straight away, public institutions like schools and hospitals are well placed to take a lead, having as they do duties of care and education and much to gain from healthier populations and planet alike. For those with an interest, it provides space and impetus for greater variety, exploration and creative flourish across plant-rich dishes, opening dietary experimentation to more people.

Return of the Clipper

The world was captivated by Greta Thunberg's boat trip to the UN, but it's not an option open to most of us. Zero carbon transatlantic flight is very unlikely to be viable before 2050, but demand for travel between Europe and the USA is not going away. While electric flight catches up with the hype, we need to invest in a dedicated weekly service between the US and Plymouth, with passengers travelling on custom built, high tech sailing clippers with back-up battery power.

Wind wealth fund, aka "The Great British Bluster Bonus"

The UK is the biggest market for offshore wind globally, and until recently, more than half of the world's installed offshore wind generating capacity was in UK waters. We have an unimaginably vast renewable resource surrounding our island nation. But only 0.7% of our offshore wind today is owned by the British public. Let's not repeat the mistake the UK made by squandering our North Sea oil and gas resources; instead let's emulate Norway, whose sovereign wealth fund has made Norwegian citizens some of the most financially secure in the world. Payments for licenses to build offshore wind in UK waters should be reinvested in the low carbon transition, with dividends being paid out each year to UK citizens on their 18th birthdays.

National history of fossil fuels museum

This isn't a joke about putting fossil fuels in a museum because they should be consigned to history. Fossil fuels built a lot of our modern world; if we're going to rebuild that world, we need to understand their history. There are plenty of natural history museums which tell us about how coal and oil and gas formed over millennia, but there

is less on the social, cultural and economic histories of the fossil fuel industries over the last few centuries. A project claiming to be the “world’s first fossil fuels museum” recently launched in Sweden (though it looks slightly like PR for an energy company) but really, as the nation that kicked off a lot of the world’s addiction to fossil fuels, we need one in the UK. Put Shell in a gallery case, rather than ask them to sponsor one.

Campaign for real golf

The ecological impact of golf courses is coming under increasing criticism, with councillors in Glasgow calling for the city’s golf courses to be transformed into forests, wetlands or even allotments and a recent exchange in the letters page of the London Evening Standard suggesting they should be all turned into community forests. Is there a better way to limit the negative impacts of golf, without spoiling everyone’s fun? Let’s start the campaign for real golf, where you play in reforested and rewilded conditions rather than apparently pristine fields.

Solutionary Rail

The UK’s railways don’t just connect the countryside with cities, they connect rural spaces with lots of renewable resources with urban areas with high energy demand. The railways, when they are electrified, already work as a sort of parallel national grid. So why not combine the two resources? Doubling up rail corridors as grid corridors for electricity from new solar, wind and hydro plants could lower the costs of renewable energy at the same time as creating a business case for electrifying railway lines into resource-rich regions like North Scotland and Cornwall.

Community kelp farming

Kelp both sequesters carbon and is a source of high-quality protein. What’s more, British kelp forests are some of the most biodiverse environments on Earth, assuming we can restore the damage done to them by years of poor coastal management. Can we apply the same principles of a community energy approach to this opportunity; engaging coastal communities (who, after all are some of those most at risk from climate change in the UK) with questions of negative emissions, marine biodiversity and sustainable agriculture through involvement in schemes which protect, develop and farm seaweed?

Bike fleets for schools

Despite being the most efficient machine ever invented for moving people, cycling only accounts for a tiny proportion of all journeys taken. Yet more cycling means healthier, happier people and less carbon. What if we embedded cycling culture at the heart of school life, allowing every school child access to a bike as soon as they’re old enough to ride them? Schools would own bike fleets, loaned every year to students and passed down the years as the kids outgrow them. As well as free cycling proficiency lessons for every child, students would have access to bike fixing lessons to set them up for cycle sufficiency throughout their lives. And to make sure cycling to school is safe parents would be able to sign up to a rota to lead ‘bike-trains’ (with basic training, if they need it) in and out. And final year students leaving for good get to hold onto them for good.

Repair Charter

Repairs on anything other than cars, houses and white goods seems pretty old fashioned these days. You'd almost raise eye-brows announcing you've just had your shoes resoled or the zip replaced on your backpack over dinner. But grappling with the UK's total carbon footprint – not just what we emit from these shores – means making the most of the things we need and use to live and improve our lives. There's little to encourage it currently. That's where a Repair Charter could come in. A combination of updated consumer rights – for example, the ability to fix anything you buy yourself and statutory minimum guarantee periods proportionate to an item's cost – could sit alongside requirements for repair manuals to be included as standard with new products (just as instruction manuals are), and the removal of VAT from local repair services. Employers meeting higher standards – say modular designs more easy to fix, or lifetime product guarantees – could be recognised with gold-standard public accreditation, or be exempted from having to help fund a growing network of fixing factories (see idea three).

Make old petrol stations assets of community value

There are thousands of petrol stations in Britain today, but with the meteoric rise in Electric Vehicles (EVs), it is clear that their days are numbered. The majority of EV charging is expected to take place at work or home, with most of the remainder happening in car parks. But petrol stations are by their nature key strategic sites serving the needs of local communities. As they die off, let's let communities decide what to do with them next, by registering them as assets of community value.

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