**A nine-point plan for the UK to achieve net zero carbon emissions**

[**Guardian climate pledge 2020**](https://www.theguardian.com/environment/series/guardian-climate-pledge-2020)

Author Chris Goodall says tackling the climate crisis is neither difficult nor expensive and can help boost the economy

[**Chris Goodall**](https://www.theguardian.com/profile/chrisgoodall)Tue 6 Oct 2020 07.00 BST

[](https://www.theguardian.com/environment/2020/oct/06/a-nine-point-plan-for-the-uk-to-achieve-net-zero-carbon-emissions?CMP=Share_AndroidApp_Other" \l "img-1)

 Illustration: Guardian Design

1. **Insert the correct phrases (collocations, idioms, phrasal verbs) in the correct space:**

**living standards, downward blip, nine-step plan, it is easier said than done, taking the pledge, climate** [**crisis mitigation**](https://www.iif.com/Portals/0/Files/content/1_200625WeeklyInsight_v1.pdf)**, technically possible**

**N**et zero. It’s a simple enough concept – the notion that we reduce carbon emissions to a level where we are no longer adding to the stock in the atmosphere. More and more [companies](https://www.theguardian.com/environment/2020/sep/15/facebook-and-google-announce-plans-become-carbon-neutral) and [countries](https://www.theguardian.com/environment/2020/jun/24/uks-net-zero-pledge-what-has-been-achieved-one-year-on) are [\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_](https://www.theguardian.com/environment/2020/sep/22/china-pledges-to-reach-carbon-neutrality-before-2060)\_\_\_\_\_\_\_\_ , promising to hit net zero by 2050, 2030 or even sooner.

But\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Industrial processes remain carbon intensive, as do agriculture and aviation. Even the sudden economic halt brought about by the Covid-19 pandemic this year will result in a mere \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_in global greenhouse gas emissions.

The sharp decline in energy use at the beginning of the pandemic has not persisted. Government stimulus programmes have done little to prioritise green projects – barely 1% of the funds made available around the world will target \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_­­­­­­­­­­­­­­­­­­­­\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Hopes that the virus would push us into radical action to reduce emissions have proved illusory.

This may make us pessimistic about the future – but that would be a mistake. The last six months have seen a growing realisation around the world that fully decarbonising our societies is\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, relatively cheap and potentially of major benefit to society, and particularly to less prosperous sectors.

A sensible portfolio of actions could reduce emissions, provide jobs and improve \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_in forgotten parts of the UK. It won’t be completely painless, but this \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_can transform much of the British economy.

1. **Insert the following sub-titles in the correct space above the corresponding paragraph**:

**Batteries and hydrogen, Flying and shipping, Motoring, Farming, Carbon tax,**

**Energy Utilities, Efficiency, Reforestation**

1. **Insert the correct modal verb in the spaces below: can, should, will, would**

**1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Successful action \_\_\_\_\_\_\_\_\_\_ need to start with electricity generation. Britain has made surprisingly good progress in recent years, cutting CO2 from power plants by 60% in the last decade, largely as a result of the replacement of coal generation by wind and solar power. We \_\_\_\_\_\_\_\_\_ \_\_go much further because we’ll need to generate far more electricity to meet demand from electric cars and from heat pumps for heating homes. If we increase generation by about 20 times from today’s levels, it \_\_\_\_\_\_\_\_\_\_\_\_\_\_ give us sufficient electricity almost all the time, significantly reducing the problems arising from the unpredictability and intermittency of most renewable sources.

Is such as massive expansion actually possible? [I have calculated](https://www.carboncommentary.com/blog/2020/8/23/how-much-space-will-a-100-renewables-uk-require) that the UK \_\_\_\_\_\_\_\_\_\_\_\_ achieve this target by devoting about 5% of its maritime zone to offshore wind, 2% of the land area to solar panels and about 12% to onshore wind. These are large numbers, but far from impossible. BP, a recent convert to the importance of the expansion of global renewables, [makes a similar estimate](https://www.bp.com/en/global/corporate/energy-economics/energy-outlook/energy-outlook-downloads.html) that wind and solar sources \_\_\_\_\_\_\_\_\_\_\_\_\_\_ also be expanded 20 times around the world to achieve net zero emissions by 2050.

**2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Under the scenario described above, we \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ have far too much electricity almost all the time. Batteries \_\_\_\_\_\_\_\_\_\_\_\_\_ cope with some of this surplus but most of the power \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ be converted to hydrogen. Today, hydrogen is created from fossil fuels but it \_\_\_\_\_\_\_\_\_\_\_\_\_ be easily made from water using electrolysis. The gas \_\_\_\_\_\_\_\_\_\_\_\_\_be stored to make electricity on the rare occasions when the available renewable power is insufficient. Hydrogen is hugely versatile; it \_\_\_\_\_\_\_\_\_\_\_\_\_\_also be deployed to power vehicles, to provide the energy for steel-making and other industrial processes, and to act as the critical raw material for the chemicals industry.

In the last few months, major European countries have shifted strongly towards this plan. [France](https://www.electrive.com/2020/09/14/france-presents-national-hydrogen-strategy/) and [Germany](https://www.h2-view.com/story/german-government-to-invest-e9bn-in-national-hydrogen-strategy/) have promised a total of €16bn to help build a hydrogen sector. Companies in [Norway](https://www.norsk-e-fuel.com/en/) and [Denmark](https://www.weforum.org/agenda/2020/06/danish-companies-hydrogen-fuel-facility-electrolysis/) have announced plans to create chemical plants to build zero-carbon liquid fuels made from hydrogen and using carbon dioxide captured directly from industrial processes. Italy’s dominant gas distributor [has begun mixing hydrogen into its pipelines](https://www.nytimes.com/2020/05/27/business/hydrogen-fuel-climate-change.html) while Spain’s largest utility company is to build a facility [to make the gas from solar electricity](https://www.iberdrola.com/press-room/news/detail/iberdrola-fertiberia-launch-largest-plant-producing-green-hydrogen-industrial-europe) and use it to provide all the needs of a large fertiliser plant. Shell plans to take surplus electricity from North Sea windfarms to provide hydrogen for an [oil refinery in the Netherlands](https://www.shell.com/media/news-and-media-releases/2020/crosswind-wins-tender-for-hollandse-kust-noord-wind-farm.html). A Finnish partnership has suggested using the CO2 from paper mills to combine with green hydrogen [to make substitutes for petrol and diesel](https://yle.fi/uutiset/osasto/news/pulp_mills_could_be_massive_source_of_synthetic_fuel/11552281) while [a French mill](https://www.smurfitkappa.com/uk/newsroom/2020/smurfit-kappa-to-participate-in-worlds-first-project-on-hydrogen-energy-storage) will be using it to make electricity when power prices are high. All this has happened in the last year and the number of announcements is speeding up across the continent.

**3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

As a supplement to decarbonising the UK’s energy supply, we also need to wrest back control of the energy networks from their current owners, often non-UK businesses owned by private equity funds. Many other countries, such as the US, have publicly controlled energy companies that can act to meet local needs and minimise the cost of gas and electricity. The UK should follow [the example of Germany](https://www.theguardian.com/commentisfree/2018/feb/28/small-town-wolfhagen-community-revolution-german-europe-energy-contract) and offer the chance to local governments to run all the utility networks in their areas. So far, municipal energy companies have not been successful in the UK but they have never actually been able to own the pipes and wires within their towns and cities. This should change.

**4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

We need to complement the decarbonisation of energy supply with measures to improve energy efficiency. In the UK the crucial target is the poor insulation standards of almost all our housing. Policy has been lamentably weak in this area over the last decades. We now require programmes of deep refurbishment, working street-by-street across the country. This may seem expensive and difficult but could provide a much-needed boost to jobs and incomes in deprived areas. France is devoting a large fraction of its economic expansion plan to improving the energy efficiency of its homes and public buildings such as schools and prisons. We can also follow this example.

**5. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

The obvious other target is car use. Many European cities [have pedestrianised large areas of their centres](https://www.theguardian.com/world/2020/apr/11/world-cities-turn-their-streets-over-to-walkers-and-cyclists), introduced better cycling provision and improved public transport. As far as I know, none has reversed these changes. Taking cars out of cities is the single best way of reviving centres, reducing pollution levels and getting more people on bikes. Let’s particularly embrace electric bikes, which use a hundred times less energy than a car. Detailed analysis [in the Dutch city of Utrecht](https://www.bloomberg.com/news/articles/2019-07-05/how-the-dutch-made-utrecht-a-bicycle-first-city) showed that spending on cycle lanes was more than repaid by lower health costs as a result of the population embracing an active means of getting around the urban centre.

**6. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

[Energy](https://www.theguardian.com/environment/energy) use represents around two-thirds of carbon emissions. Easily the next most important source of greenhouse gases is farming. Cows and sheep emit methane and fertiliser use creates nitrous oxide, both powerful greenhouse gases. Moving towards a diet dominated by plants is a vital part of the fight against the climate crisis. We’ll probably never get a stable climate until meat has almost disappeared.

It is increasingly clear that [we can make fully vegan foods that resemble meat](https://www.theguardian.com/food/2020/feb/09/hold-the-beef-how-plant-based-meat-went-mainstream) for those who would miss the taste and texture of the real thing. Meat production dominates farming around the world and reducing animal numbers will give us space to introduce properly climate-friendly agriculture. That means farming that is less intensive and less dependent on herbicides, pesticides and fertilisers. It will also employ more people.

**7. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

We need [a massive programme of reforestation](https://www.theguardian.com/world/2019/jun/19/planting-billions-trees-save-planet). The UK woodland cover is little more than a third of that in other large European countries and the planting of mixed trees will help capture CO2, bring jobs back to the periphery of the British Isles, help control flooding and improve air quality, as well as providing greater opportunities for leisure.

**8. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

In the long term [we can probably replace the fossil fuels we use for flying](https://www.theguardian.com/world/2019/aug/31/flight-risk-can-we-take-the-carbon-out-of-air-travel) with low-carbon alternatives made from captured CO2 and hydrogen. Today we should cut down our flying, either by taking the train or avoiding long-distance travel. This is costly and difficult for some people, but [the “Flight Shame” movement, originating in Sweden](https://www.theguardian.com/world/2019/jun/04/stayontheground-swedes-turn-to-trains-amid-climate-flight-shame), has helped push down passenger numbers, particularly in Germany. Flying really matters to your personal carbon footprint; your share of a return journey from London to New York will typically produce more CO2 than the emissions from driving a car for a year.

**9. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Lastly, we should try to bring the reluctant oil and gas industries onside by instituting a tax on the production of anything that results in carbon emissions. Rarely in the past have businesses asked to be more heavily taxed. But today almost all large fossil fuel companies are pleading for a carbon levy that provides the necessary incentive for them to wean themselves off extracting oil and gas.

Fighting the causes and consequences of the climate emergency is neither particularly difficult or expensive. The net impact on jobs and living standards will be strongly positive. The programme will require direction from central government, and probably an effective carbon tax, alongside a willingness to hand over some powers to local authorities.

Perhaps this is the most contentious part of the programme I propose: the idea that Whitehall should recognise both that the free market needs some assistance when it comes to the climate crisis, and that devolution of real power to towns and cities could be beneficial to everybody.

• Chris Goodall is an author and environmentalist whose latest book, [*What We Need To Do Now*](https://guardianbookshop.com/what-we-need-to-do-now-9781788164719.html)*,*assesses the steps needed to build a low-carbon world and was shortlisted for the Wainwright Prize.