

Labour Party Call for Evidence – Green Recovery

Consultation response from the

Centre for Competition Policy

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This consultation response has been drafted by the named academic members of the Centre, who retain responsibility for its content.

As an academic research centre, we welcome explicit citation and sharing of this consultation response and the research cited within it. If you would like to discuss the evidence in more detail, please feel free to contact the centre or the named academics.

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Executive Summary

This consultation response begins by briefly setting out some context to “green economy, which has been re-labelled and re-packaged several times, partly to make the idea more attractive and agreeable to a wider audience. The European Union’s (EU’s) articulation of a ‘Green Deal’ offers a useful reference (page 3).

(Q1) On prioritising sectors for the Green Recovery (GR), we acknowledge the importance of the power sector and the particularly the decarbonisation of heat for buildings. However, there should also be focus on transport and the construction industry which, up until now have made very little net reduction. Correctly remunerating the displacement of fossil fuel at the margin and taking into account the concomitant distributional effects of low-carbon technological adoption and policy changes is central to a just transition to a low-carbon economy. We provide learning from studies in the UK and abroad to discuss the efficacy of regional developments, zero interest loans and decentralised renewable/storage technologies and EVs for consumers in different socio-economic circumstances. Schemes should be evaluated, ideally with gold standard randomised controlled tests.

(Q2) On supporting people who have lost employment during this crisis to move into environmental growth sectors, we outline the importance of regional task forces that comprise of all types of actors in the labour market. We provide some evidence for positive GR job growth, but government and businesses will need to ease frictions that arise from workers moving from sunset to green industries with training provision. Longer-term, politicians should be cognisant of the unpredictable ramifications that (deflationary) rapid technological change such as solar might have on incentives, job growth and the Labour Party’s priorities.

(Q3) On whether sector-specific support for business should be given during the Covid-19 crisis, we suggest regional development funds and regional task forces could be created, starting with the energy, transport and construction sectors. A more proactive process of skills/education and the potential barriers/frictions could help ensure a smooth transition within and between sectors for workers.

(Q5) On dealing with the regional and area-based impacts of this crisis, upskilling and retraining workers to enable them to move from older declining sunset industries or sub-sectors/businesses adversely affected by the Covid-19 crisis to new green jobs.

(Q6) On helping existing businesses, including SMEs, to adapt as a result of the crisis, we emphasise investment in infrastructure, physical capital, new technologies, and the provision of funding for (re)training of employees in businesses of all sizes.

(Q7) On how the proposed measures we put forward can improve quality of life, we highlight the benefits of employment, job security and continued training/upskilling of workers. Where there is progress or future schemes being rolled out, we point to the success of opt-out mechanisms in changing behaviour in complex markets (e.g. organ donations and pension contributions) and make the case to apply this to installed solar PV, tree planting in public/Government owned land. On transport, we discuss ways to move up the S-curve for adoption.

(Q9) On the key institutions who should play a role in delivering a green recovery, we advance inclusionary, participative, deliberative decision-making processes. On effective delivery, we emphasise (with examples) the importance of getting right regulatory structure to incentivise sharing of resources and technologies for better environmental management of common-pool resources is crucial.

(Q10) On other important points and issues, we see Covid-19 as an opportunity to break old habits (path dependency) and instil new (greener) ones, rather than continue ‘business as usual’. We list some concrete examples on household consumption, education and transport. In the context of Brexit trade negotiations and the debates around level playing field, we cite how well targeted regulation can provide a boost to productivity, rather than hinder it.

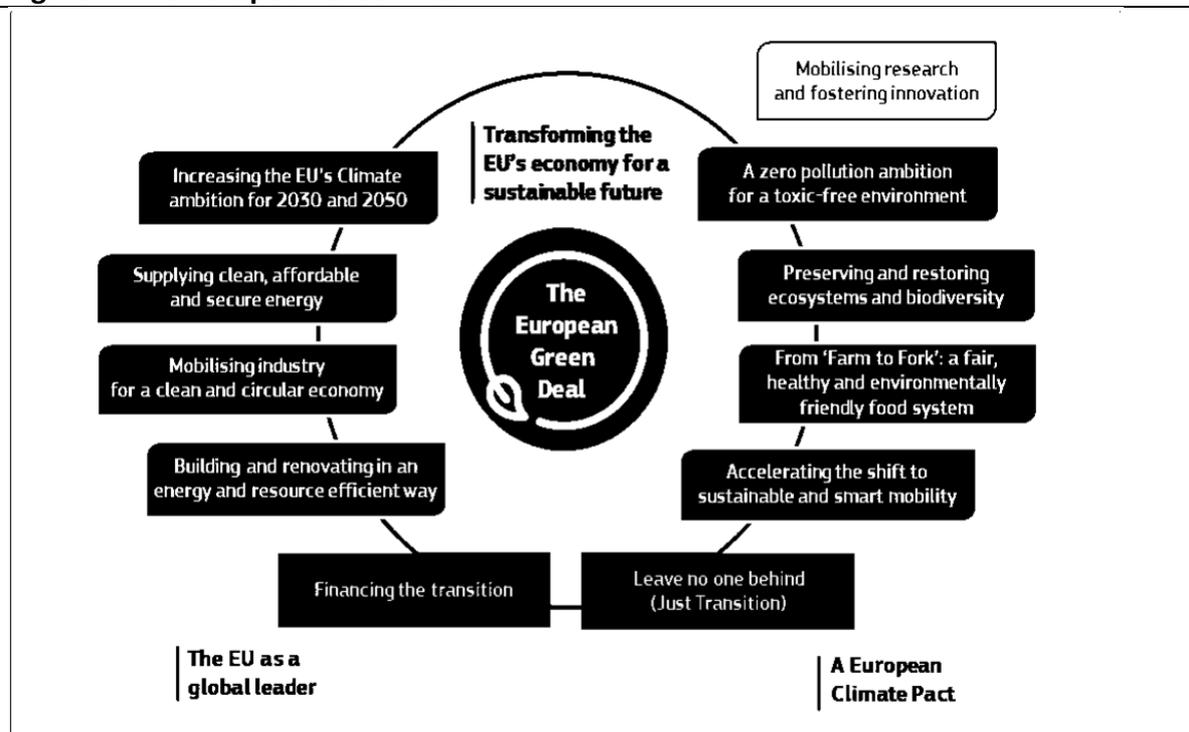
CCP Response to the Labour Party: Green Recovery Consultation

We very much welcome this opportunity to respond to the Labour Party’s consultation on a “Green Recovery”. Within the remit of our expertise, we respond to each question bar question 4 and question 8. CCP houses a diverse set of members and this response reflects the views of the authors not the Centre as a whole. We focus on the examples of energy, transportation and construction in many of our answers but before doing so we provide some brief comments on the context for the debate about greening an economy and realising a green recovery.

Background: Greening an economy and a Green Recovery

The notions of a ‘green economy’ and the process of ‘greening’ an economy, and by extension that of a ‘green recovery’, have a long history (see Fairbrass and Vasilakos, chapter 1, forthcoming and Benson *et al.*, chapter 2, forthcoming). These terms, or their synonyms, first surfaced a couple of centuries ago, although the issue has only really risen to the top of the public policy-making agenda in the past two decades, as individuals and organisations in the public, private and third sectors have wrestled with definitions, interpretations, and how best to implement the ideas in practice. Indeed, the lack of terminological and definitional clarity appears to have hampered implementation. So long as alternative labels and phrases such as ‘sustainability’, ‘sustainable development’, ‘low carbon economy’ and the ‘circular economy’ exist in parallel, vie for acceptance, and pass into and out of fashion, this only serves to compound the miasma surrounding this topic. The result is that, currently, there are a number of expressions in use that include the word ‘green’ as an adjective in conjunction with other terms such as ‘jobs’, ‘collar’ and ‘economy’ that serve as substitutes for one another.

Figure 1: The European Green Deal



Source: Commission of the European Communities (CEC), 2019, p3

What is clear is that over the course of time, the idea of a green economy has been re-labelled and re-packaged several times, partly in an effort to make the idea more attractive and agreeable to a wider audience. Whilst a universal agreement about which labels to employ and what they mean remains elusive, the European Union's (EU's) articulation of a 'Green Deal' does offer some useful guidance. See the Figure below. In effect, the EU's Green Deal highlights the essential elements of a green economy and points to ways of amalgamating economic targets with more ecologically and socially ethical forms of progress.

Having furnished a background to the discussion, we now proceed to address the questions posed as part of this consultation.

1. What sectors do you believe are the priorities for investment from government, for a green recovery programme to build a stronger, more resilient future economy? How can this investment reduce regional inequalities as well as address the climate crisis and environmental degradation? And what science and technologies do we need to invest in?

It is widely acknowledged that the power sector could be a main contributor in bringing about emission reductions thus far in the UK, primarily through the phasing out of coal, whilst all other sectors have either made small inroads, stagnated, or increased greenhouse gas (GHG) emissions (Committee on Climate Change, 2019). A case therefore could be made for other sectors to be prioritised for investment as part of a green recovery, in particular those such as transport and the construction industry which, up until now have made very little net reductions (BEIS, 2016).

Nonetheless, in the initial phase of any green recovery, the prioritisation of the decarbonisation of heat for buildings is crucial. This requires rapid investment in the electrification and the concomitant installation of low-carbon heating (e.g. heat pumps). Indeed, an argument could be made for the expansion of existing combined heat and power (CHP) (and cooling) district heating (DH) schemes, which can flexibly integrate low-carbon sources (a common approach taken by Nordic countries, for example). In order to bolster households' acceptance of, and demand for, DH schemes, improvements in the regulation surrounding the protection of consumers within current/future DH schemes are required, particularly considering the lock-in effects that arise when entering a contract with a localised monopoly and potential weaker routes to redress.

However, research utilising a representative sample of households in Birmingham suggests that low-income and fuel poor households are less likely to adopt low-carbon heating (Burlinson et al., 2018), despite representing those most likely to benefit from 'win-win' solutions i.e. those able to reduce emissions and costs for the end-user. Regional inequalities in wealth, energy and health could partly be resolved by targeting low-carbon heating investment towards low income, fuel poor and/or vulnerable households (e.g. elderly households with long-term illnesses/disabilities and/or off-grid) and by the provision of the necessary energy efficiency and structural improvements (e.g. insulation) able to achieve optimal thermal comfort.

Lyubich (2020) puts forward initial evidence that finds a gap in energy expenditure between black and white communities in the United States. Hence, research could further help identify the extent to which structural inequalities, differences in housing stock, and energy efficiency measures can explain expenditure patterns in the UK's residential sector.

To make progress towards achieving this aim, the idea of allocating substantial public funding to energy efficiency and structural initiatives must be revisited as a matter of urgency. The Energy Company Obligation (ECO) is inadequate. Moreover, the defunct Green Deal, whilst sensible in theory, was unpopular among households. It became apparent that the majority of installations did not deliver on its 'golden rule'.¹ Regional development funds could be

¹ The Golden Rule specified two conditions prior to installing energy efficiency measures using Green Deal finance: 1) the expected monthly savings must exceed the monthly repayments paid via the households' energy bill, and 2) the duration of payments must fall below the lifetime durability of the

initiated with the support of community-based initiatives and trusted organisations. A ground-up approach is necessary to identify, target, and reach out to low-income, fuel poor and/or vulnerable households. Such a targeted regional approach is likely to be a fruitful tool for facilitating a green recovery.

In addition, the introduction of zero percent interest loans could provide another source of finance for households and, importantly, for landlords (filling the void left by the cessation of the Green Deal). Zero percent interest loans could help resolve the so-called landlord-tenant (split-incentive) problem (Davis, 2010; Gillingham et al., 2012) and provide a route towards meeting future Energy Performance Certificate requirements. They could also start to correct the disparity between the quality of accommodation in the private rented sector compared to all other tenures (Burlinson, 2017). We believe such finance deals are also advantageous due to the familiarity many households within the UK population have with these as a method of making larger consumption decisions.

During this initial phase of a green recovery, the electrification of heating will clearly require the continued decarbonisation of the power sector. Investment in large scale offshore wind turbines and onshore wind and utility scale solar, which now benefit from being cost competitive with conventional forms of generation, will be paramount (Lazard, 2019). Further progress could be made if financial incentives correctly remunerate innovative business models (e.g. energy storage, smart digital consumers/prosumers) at the *margin* (Burlinson and Guilietti, 2018; Beltrami et al., 2020; Guilietti et al., 2020). However, it is important to consider the structural changes (e.g. labour markets) that may arise whilst moving from phasing out coal to the displacement of gas fired power plants.

In the regional dimension, there is potential to further explore how the renewable energy sector and its infrastructure can not only provide lean energy supply domestically, but also consider how public funding (e.g. regional development funds) could incentivise the location/relocation of industry to particular areas of the country with the highest indicators of deprivation (e.g. employment, income, health, education). Indeed, such industrial activity could bring about ancillary benefits in the form of the export of renewable products and services. Consider, for example, the local developments in and around Hull in the UK and Bremerhaven in Germany (see Moulton *et al.*, Chapter 6, forthcoming). These two coastal cities had both suffered major economic setbacks as a result of severe declines in local maritime industries (e.g. fisheries and shipbuilding). However, using differing strategies, both cities have turned to renewables, especially offshore wind, and the 'green' improvement of public housing as a source of jobs, economic growth and recovery.

Alongside power and heating buildings, transport (including aviation and ground transport) should be prioritised.² Electric vehicles at present represent a small proportion of registered vehicles in the UK, i.e. fewer than 5 per cent. Whilst the barriers are well known (e.g. upfront costs, range anxiety), services that pull households towards owning electric vehicles (rather than pushing households with financial incentives) could be further explored. Lessons can be learnt from vehicle charging innovations that underperformed in Denmark and Israel (Noel

measure. The key pitfalls must be addressed, i.e. relatively high interest rates on repayment and savings that fell below expectations.

² Herein we focus on ground transport.

and Sovacool, 2016) as well as innovative charging services developing in China. For example, NIO (the so-called Chinese Tesla), offers the 'worry-free power plan' which, for a monthly subscription, provides a 1000kWh free charging quota, valet charging services, battery upgrades and access to battery swapping/charging stations. Such services could be crucial for attracting households who may continue to experience range anxiety (in the short-medium term) and, for example, do not have access to a private charging point (e.g. rented properties, tower blocks) (Burlinson et al., 2020). It is also generally a useful tool for households when making financial planning decisions.

In addition, a central consideration for uptake is likely to be the weight that households place on upfront costs relative to annual costs, hence subsidies focusing on the former could have greater impact in the short-term. However, it is notoriously difficult to encourage engagement of households with energy using durables even when products appear to be 'win-win' from an economic and environmental perspective. A rich literature explores this apparent energy efficiency paradox, which states that consumers often do not adopt energy efficient technologies, despite being made very aware of the risk-free long-term savings they can enjoy here (Allcott and Greenstone, 2012; Gillingham and Palmer, 2014). Hence market-based, non-market and behavioural drivers of this paradox could be considered in terms of the barriers preventing a green recovery.

Further research is needed to help understand and assist households in switching to green energy tariffs. Whilst companies like Bulb, Octopus and So Energy, offering low-cost, low-carbon tariffs, have broken into the retail sector, there is still significant consumer inertia in the market. Despite low search and switching costs, households do not necessarily switch for savings alone (Deller et al., 2020). In light of this, consumers' financial and non-financial preferences are also key to understanding the potential for a green recovery.

Going forward it is crucial to consider the impact of a large-scale uptake of decentralised renewable/storage technologies and EVs on households who rely on legacy natural gas and power infrastructure (e.g. distribution networks). There is emerging evidence that suggests that a 'death spiral' in legacy infrastructure could arise as households become increasingly independent from the grid. The interaction of solar and storage technologies could result in the legacy infrastructure costs being shared by a shrinking household base, thereby leading to further take up (Bennato et al., 2019). Similar to the disappearance of high street banks and post offices as more households go digital, it is important to support low income, fuel-poor, and vulnerable households who rely on legacy infrastructure, especially those who are unable to (or take more time to) adopt low carbon technologies, in order to ensure a just transition for all.

Whilst regional development funds and zero per cent loans could also serve as potential mechanisms to help balance the number of high vs. low-medium income solar PV owners (or prosumers), there might be room for the installation of solar PV at scale across the socially rented sector. A national or regional funded project(s) could be created in which all social housing which meet the operational requirements for the optimal use of solar PV (e.g. roof space, roof direction) are automatically enrolled for free panels i.e. zero upfront or maintenance costs. The behavioural economics literature on framing tells us that an opt-out mechanism, rather than opt-in, could alleviate some of the inertia in the market (Johnson et al., 2002). This is so long as there are organisations that can support households from the

ground-up and, just as importantly, can garner public acceptance (Ambrosio-Albalá et al., 2019). Local authorities and communities could share the benefits by providing ancillary services to the grid through the creation of distributed generation and perhaps create a flexible energy system with community storage installed alongside.

As with technology adoption, the analysis of the distributional effects arising from carbon taxes (and subsidies if taxation is infeasible) used to correct environmental externalities, must be at the heart of a just transition. The Office for Gas and Electricity Markets is conducting timely and important research in the area of changes in economic regulation on ‘winners and losers’ in energy markets (Ofgem, 2020). Such efforts could continue and be applied to policy changes central to the green transition.

Another sector that could potentially play a major role in any green recovery is construction as revealed by the research work of Gibbs and O’Neill. In one research paper (Gibbs and O’Neill, 2014), the authors focus on the green building sector and explore the development of green entrepreneurship and the part that it could play in bringing about a shift towards a green economy. In a subsequent paper, Gibbs and O’Neill (2015) examine policy makers’ interest in nurturing a green economy, scrutinising the UK government’s efforts in trying to bring about changes in the mainstream building and construction sector through encouraging the espousal of green building methods and techniques. The paper evaluates the effects of recent developments in UK policy concerning green building, as illustrated by Code for Sustainable Homes and in Building Regulations. Gibbs and O’Neill find that these policy codes and regulations have produced a particular set of responses to green building requirements that tend to favour technological solutions that fit well with the existing system. In summary, it is important to recognise, as argued by these two authors, that public and private sector organisations that are striving to realise a greener economy are beginning to pay much more attention to the role of building and construction, given that this sector of the economy is thought to contribute about 45% of carbon emissions (O’Neill and Gibbs, 2018).

2. How do we support people who have lost employment during this crisis to move into environmental growth sectors? How can we ensure that such jobs are decently paid, with quality training, and offer representation by trade unions? What lessons can be learned from past programmes current support and international examples?

A key step that extends across all such questions is the creation of (re)training schemes hosted by firms/industry and/or further education/higher education. Incentives could be considered, e.g. tax relief, careers breaks, ‘skills wallets’, to increase the re-employment or re-training of sunset industry workers within the renewable sectors.

To further support this aim, it is important to consider regional task forces that comprise of all types of actors – local government, business, trade unions, community advocates and charitable organisations. It is imperative that training/retraining schemes and task forces are diligently monitored not only through annual reporting but also, if possible, evaluated through gold standard randomised control trials. The regional and devolutionary structure of the UK could play a key role in the provision of jobs that can ensure a decent standard of living.

In the short term to medium term, there may be an increase in well-paid jobs by enabling people move into the environmental growth sectors with training and support for mid-career

retraining. There is also research by Brown and Ahmadi (2018) that suggests a US Green New Deal would create '35 million job years between 2020 and 2050, with net job increases in almost all regions of the US'. Moreover, the onset of electrification may create new jobs and sub-sectors of the industry. However, as noted above, care is needed to prevent excessive disruption within and between sectors of the labour market and for households reliant on legacy infrastructure. Enhancing education will be important to combat the disruption caused by artificial intelligence and the digital economy (Blackwell, 2018), and will be key in order to match workers to the jobs created throughout the green transformation (e.g. the Labour Party's own ambition of 1 million new jobs). The matching process is important to consider when planning, particularly as a product of education, training, income and other labour market frictions.

We have largely laid out the positive case for job creation from the GR in this consultation response. The document, however, refers to a long-term time horizon too. Technology advancement is deflationary; over time it provides more efficiency for less cost (Booth, 2020). If the aim of the GR is to set out a long term path toward i) *environmental self-sustainability* and ii) *growth* (including well-paid jobs) then there needs to be some consideration paid to the unpredictable interaction between these twin goals as shaped by the deflationary effects³ of rapid technology advancement. This is especially relevant for whether the economics of the energy market can continue to deliver well-paid industry jobs and the work-related benefits over the longer term if costs keep falling. For instance, faced with a scenario of very cheap solar energy and battery improvements for storage, what would Labour's priority be? To protect other [green] industries and jobs, even if they are more inefficient, or to allow potentially greater gains in abundance, efficiency and lower energy costs by embracing a winner technology (prioritising self-sustainability and quicker carbon neutrality)? The GR assumes that we will stimulate enough growth to replace jobs (but Covid-19 may lead to unprecedented job losses); what planning is in place if we have to embrace long term deflation – i.e. societal models that are not built on a need for a permanent inflationary environment (see Booth, 2020)?

3. How should sector-specific support for business during this crisis be used to both protect and promote employment and to pursue our climate and nature objectives?

As noted in Q1, regional development funds and regional task forces could be created, starting with the energy, transport and construction sectors. In addition, it will be important to target those industries and sectors which are least likely to bounce back from the crisis and see where opportunities lie ahead for retraining and redeployment of these skillsets. For the latter, SMEs and the self-employed could be offered incentives, e.g. start-up grants/funds or tax relief, to move into the renewable/green sector. More specifically, in the energy sector, there could also be sustainable and risk-removing contracts for difference (CfDs) so that firms are incentivised to take a 'risk' on this industry and do not fear being a first mover.

We could learn from this experience, as well as be proactive in the effort to create new jobs for regions and industries hardest hit by this crisis in order to help counteract the hysteresis or scarring effects that arise from unemployment and/or the destruction of business. For example, the UK's industrial policies of the 1980s, that led to the decline of the British coal-

³ Deflation of consumer prices and jobs.

mining industry, shows the importance of providing timely, sufficient, and effective job training, retraining and education, along with support for new industrial sectors that could replace those in decline.

Clearly, there are opportunities to redeploy workers from within fossil fuel industries into similar types of engineering roles within the renewable sector. Again, the evidence presented in the work of Moulton *et al.* (forthcoming) illustrates the way in which two cities that have both been adversely affected by past industrial change (severe declines in local maritime industries e.g. fisheries and shipbuilding) have responded by turning to renewable energy (particularly, offshore wind) and the 'green' improvement of public housing as a source of jobs, economic growth and recovery.

Nonetheless, we could go further and explore the matching process of skills/education and the potential barriers/frictions in order to ensure a smooth transition within and between sectors. I.e. what is the scope for redeploying people from industries which are facing a crisis? What are the models of retraining and support which should be examined? Do we know of examples of programmes which have been effective in enabling redeployment; and what can we learn from programmes that have not been effective? Once again, we highlight the advantage of taking a regional approach to such analyses and benefitting from the localised skills and expertise within given areas of the UK.

5. Given the regional and area-based impacts of this crisis, what role can a green recovery play in mitigating these impacts? What are the lessons of past environmental interventions in terms of local and regional impacts?

A green recovery can play a significant role, both at a regional and a more localised level. As discussed immediately above, upskilling and retraining workers to enable them to move from old(er) declining sunset industries or sub-sectors/businesses adversely affected by the Covid-19 crisis to new green jobs (e.g. energy, construction and transport), will be crucial. It will be important to take advantage of local geography and sector location in order to harness the knowledge and skills of the labour force most effectively. As mentioned above, there are several examples of offshore wind firms replacing declining traditional industries in the north east of England. Equally, there are moves afoot in the East of England to develop a thriving renewables industry (solar and offshore wind). There are also efforts to foster Hydro in the North of England, Scotland and Wales, replacing gas platforms and coal mining/steel respectively. A regional and area-based green recovery could also harness local support and the minimise NIMBY-ism, particularly if the private and public benefits of employment and the ancillary opportunities that can be brought to their communities are recognised – including the scale of the projects, the money brought in and the source of contractors.

6. How can we help existing businesses, including SMEs, to adapt as a result of the crisis, including through measures for a green recovery? How can these measures be allied to the improvement of productivity and viability for these companies?

Again, it is a matter of investment in infrastructure, physical capital, new technologies, and the provision of funding for (re)training of employees in businesses of all sizes, SMEs to MNCs. All of which could assist in achieving higher labour productivity and ensuring the future resilience of workers and firms. Support could be offered to help and assist time- and finance-

constrained SMEs. The message must be one of ease, convenience, and a willingness to connect SMEs with other enterprises in order to make it worthwhile to increase productivity.

Interestingly, an observation by the Governor of the Bank of England that the UK's poor productivity might be given a boost at the expense of jobs, as a result of Covid-19 (Bailey, 2020). The crisis may be seen as a process of shaking out of less productive firms. However, it is important to note that the UK has been stuck in a productivity puzzle since the financial crisis of 2008, an issue the UK Government and BoE have struggled to overcome. A genuine move towards a green recovery may provide the springboard to reverse the decade long plateau in productivity.

7. How can measures you are proposing in this recovery and renewal period improve quality of life—for example around walking, cycling and public transport, and improving access to nature? What habitats are you especially concerned about and want to see more support for and focus on?

Quality of life, and life satisfaction more generally, can be improved through the direct benefits of employment, job security and continued training/upskilling of workers. The economics of life satisfaction/happiness literature clearly highlights the detrimental effects of unemployment on measures of life satisfaction and emotional wellbeing (for seminal work see e.g. Clark and Oswald (1994)). Indeed, increasing income has a positive effect on life satisfaction over the entire income distribution and can bring about greater levels of happiness at lower income deciles (Kahneman and Deaton, 2010). Hence, any green recovery measures proposed could/should not only take into account 1) whether a job is created/matched, but also 2) whether the job pays a living wage/work-related benefits.

Similarly, a wealth of research has established a positive association between local greenspaces and life satisfaction (see Capaldi et al., 2014 for an overview) and positive (but weaker) evidence supporting the positive association with emotional wellbeing (Houlden et al., 2018). With this in mind, access to nature and the roll-out of greener transport, e.g. cycling and e-mobility, could not only be seen through the lens of direct health benefits but also the lens of climate change, environmental and conservation goals.

Opt-out (rather than opt-in) mechanisms have successfully overcome inertia and changed behaviour in complex markets (e.g. organ donations, pension contributions). This concept could be applied to the installed on solar PV (as mentioned in Q1) and the consideration of mass opt-out tree-planting in public/Government-owned land. This programme learns from and could potentially be spearheaded by the Woodland Trust's Free Trees for Schools and Communities programme.

Tree planting initiatives are crucial for the development and conservation of the environment and the wellbeing of staff and students tackling exceptionally difficult circumstances. Indeed, Dr Burlinson and Dr Fairbrass are thankful to the Woodland Trust as we have been successful in our application for the delivery of 120 saplings to be planted at the University of East Anglia's campus in November 2020. With social distancing rules in place, we aim to randomly assign participation to members of staff and students to extend the benefits to those more/less likely to participate. Similar programmes based in the UK could provide the necessary respite for students/staff/communities involved in similar tree planting schemes in the upcoming term/year.

This points towards a broader concern about how urban greenspaces are utilised and ensuring that any adaptations to these spaces are implemented in a way that includes a wider demographic of users (i.e. not focus purely on enthusiasts).

Regarding transport, the car industry, for instance, is currently built around an economy where the car sits in an owner's drive for 95% of the time (Morris, 2016). It is possible that automation and the rise of alternative modes of transportation (in 2019, 111 million people used the Uber app on a monthly basis (Statista, 2020)) will alter how we move around and reshape how we think about owning vs. renting/sharing electric powered and even automated transportation. Renting/sharing models could once again provide an alternative mode of access to e-mobility for households residing in privately rented accommodation or tower blocks.

To move further up the S-curve⁴, the Government may need to play a more interventionist role in order to boost household investment in electric vehicles. Intervention is also likely to be required to incentivise SME projects aiming to implement innovative charging points and services. Supporting charging at home or the provision of alternative charging points/services when this is not possible is key – whilst households may feel less anxious about travelling with public charging points when travelling, a central source of anxiety arises from the inability to charge at home or lack of access to services that can step into this role.

9. What are the key institutions including business, local government, trade unions who should play a role in delivering a green recovery? Are there particular lessons that should be learnt about effective delivery? Local people know their communities better than Westminster. What steps do we need to introduce to empower local communities to be able to tailor the provision to suit their needs?

All of the governance actors (i.e. business, local government, trade unions, community groups and other interest groups) could and should be invited to play a role, however, securing their participation in the decision-making/policy-making and also securing their buy-in to the objectives of a green recovery may prove more difficult due to constraints surrounding time/finances and powerful lobbying forces.

Local stakeholder involvement is going to be crucial, but the end user's incentives and ability to meaningfully engage may be severely dampened by the effects (e.g. loss of income) in the midst and beyond the current crises. On the other hand, despite the current challenges, the 'Black Lives Matter' movement has clearly shown appetite to make a positive change across several dimensions of inequality.

Moreover, an inclusionary, participative, deliberative decision-making process is essential. All types of policy actors must somehow be represented – government, business and third sector – at all levels of governance from grass-roots up to central government and every other level in between. Typically, local people know their communities better than Westminster. The importance of grassroots organisations and groups cannot be understated whilst planning to establish an inclusionary, participative, deliberative decision-making process.

⁴ The cumulative distribution function of technology diffusion loosely follows an S-shape.

Going forward, open dialogue will be required to design targeted and timely measures which can support a green and sustainable recovery, and where blanket policies are offered, dissemination of why this is the right step to take must be clarified. Clarity on messaging and the role of policies must be clearly disseminated to the public – we have seen the consequences that confusion or ambiguous messaging has throughout the Covid-19 pandemic.

For effective delivery, the importance of the right regulatory structure to incentivise sharing of resources and technologies for better environmental management of common-pool resources is crucial.

A green recovery will benefit greatly from companies working together to share innovative technologies, which have positive environmental benefits. It is important to consider how regulatory regimes incentivise or disincentivise collaborations and action against environmental degradation. A study by Bowen et al. (2018) examined the behaviour of Canada’s Oil Sands Innovation Alliance (COSIA) established in 2012 between twelve major competing companies in the Alberta oil sands. This research moved beyond studying “coordinated” actions (which commonly sees organisations agreeing on rules and acting to certify decisions independently) to “collaborative” actions where there is a practice of sharing resources and technologies to effectively manage common-pool resources. Furthermore, this often offsets some the reluctance that investors face through the perceived riskiness of these types of venture.

COSIA members developed a set of formal agreements. Specifically, they agreed to: (i) allow firms to choose the projects they contributed to, knowing that all project outcomes would be shared with all members; and (ii) ensure that any technology that was shared within the initiative would not be applied elsewhere (e.g. other countries or regions). Establishing the organising rules used to govern shared activities took considerable time to negotiate and evolved considerably throughout negotiations. Bowen et al. (2018) found that companies took a shorter period to negotiate and generated more innovation projects when the issue was relatively small scale and of local relevance. For example, regarding greenhouse gases, COSIA failed to make technology/intellectual property shareable beyond the project team, as companies did not wish to share technology that was central to their competitive advantage outside of the Alberta region. A central lesson is that the bolder the ambition (e.g. getting greenhouse emissions down) the more difficult it can be to encourage companies to work together effectively because they are concerned about losing a regional competitive advantage. CCP has applied learnings from this case study for water companies where performance indicators and ranking tables could disincentive to share innovation with competitors (Bowen et al., 2019). In 2019 Ofwat launched a consultation of encouraging innovation between water companies over the next few years⁵.

⁵ See: <https://www.ofwat.gov.uk/consultation/innovation-funding-and-competition-further-consultation-on-design-and-implementation/>

10. What other issues/points do you think are important? What are the Covid-19 challenges of delivering such a programme and how might they be overcome?

The Covid 19 crisis can be seen as a critical juncture (as identified in historical institutionalist and path dependency theory) (Hall and Taylor, 1997; North, 1990; Sorensen 2015). It can provide an opportunity to break old habits and instil new (greener) ones, rather than continue 'business as usual'.

Public consent remains important for big-scale government investment. Covid-19 has seen unrivalled public (and even political) acceptance of unprecedented state intervention to protect industries and households from the economic fallout. This *may* be a turning point when the public expects the government of the day to be more proactive in delivering ambitious green programmes and strong environmental regulation (Vaughan, 2020).

Regulation will play an important role in ensuring the right incentive structures are in place as UK organisations make a transition to greener practices and put pressure on a range of organisations in order to seek to achieve and/or maintain high(er) environmental standards. Debates about the 'level playing field' provisions (a mechanism preventing either the UK or the EU from lowering their environmental standards to secure a competitive advantage) has become a sticking point in the UK-EU trade negotiations (Morris. C, 2020). Clearly, there are good reasons for trying to secure and sustain high standards via a regulatory framework. For instance, there is evidence that when well-targeted regulation is delivered effectively, it can have net positive benefits, including for overall productivity. For example, Albrizio et al. (2017) assessed a panel of OECD countries who have implemented a wide range of environmental policies that aim to improve environmental conditions. With regard to environmental policy, the paper demonstrates that higher levels of regulatory stringency (set by regulators in "high regulation" countries) benefitted the overall productivity of industries. Productive firms benefitted from a short-run increase in productivity growth, whereas least productive firms suffered: this suggests that industry overall benefitted from the exit of least productive firms in the market.

It is imperative to view Covid-19 as a crisis which can lead to greener opportunities. We are in an unprecedented period where people have been forced to disrupt their routines (e.g. working from home, walking/cycling to work, clearing out clutter from rooms/lofts) – we need to harness this. For example:

- 1) if households are decluttering their homes during lockdown, a programme to rollout loft insulation could take advantage of these new clear spaces;
- 2) given households are cooking more at home and have moved towards big weekly shops, local communities/businesses selling fruit and vegetable boxes/drop-offs could be supported by local Government in order to encourage healthy home cooked meals going forward;
- 3) fundamentally, children and young adults are living through an unprecedented period of isolation and educational/social disruption, it is crucial therefore to reform the education system at all levels in order to teach students the link between Covid-19 and conservation, as

well as the broader climate change issues, so that they can learn, internalise and shape their own green futures; and,

4) on households adopting walking/cycling routines and travel preferences. The Government and transport sector will need to confront whether the apparent decade long move in consumer preferences towards large SUVs will continue after this crisis. On the one hand, sales in the transport sector have declined over the last decade due to uncertainties in the conventional vehicle market. On the other hand, SUV sales have boomed over the same period. This leads to a potential trade-off. If EVs are to become competitive their manufacturers will have to take a share of the SUV market – thereby reducing road transport pollution. But at the same time, relative to smaller EV alternatives, a switch towards larger SUVs will exert greater pressure on the power sector at the margin – increasing pollution upstream. This trade off needs to be carefully considered if the transport sector is to fruitfully contribute to the UK's net zero targets.

Finally, we must remain flexible to the possibility of alternative options that may be seen as 'viable' and 'appealing', and potentially lead to long-lasting habitual adaptation as we move towards creating a just transition to a low-carbon economy.

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