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SUBMISSION TO ENVIRONMENTAL AUDIT COMMITTEE – Green Jobs Inquiry

Oxford University Economic Recovery Project at the Smith School of Enterprise and the Environment, University of Oxford

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Key Points:

1. Further investment into green jobs through larger programs of green investment can support the UK’s economic recovery from the COVID-19 pandemic.
2. The success of green programs like the Green Homes Grant is conditional on the availability of workers with appropriate skillsets.
3. The government should immediately undertake a skills assessment to identify capacity gaps and areas for labour force improvement.
4. Green jobs can have positive impacts into the wider economy in the form of knowledge spillovers.
5. Bailouts to protect employment in high emission industries should come with green conditions attached.

This written submission to the Environmental Audit Committee draws on research conducted at the [Oxford University Economic Recovery Project](#) (OUERP) and the [Smith School of Enterprise and the Environment](#) (SSEE). Views expressed in this paper are solely those of the authors and do not necessarily represent those of the OUERP, SSEE, the University of Oxford, or funders. The paper is intended to promote discussion and to provide public access to results emerging from our research.

OUERP is the world’s hub for developing and communicating long-term economic perspectives on recessionary fiscal spending. The project develops leading original research, as well as core advisory services to governments and multilaterals, businesses, and non-profit institutions. Core initiatives include tracking of global COVID-19 government recovery spending, assessment of spending effectiveness, and development of core perspectives on how to incorporate long-term economic, social, and environmental objectives into immediate stimulus action. The project is generously supported by the Children’s Investment Fund Foundation, ClimateWorks Foundation, Green Fiscal Policy Network (including the IMF, UNEP and GIZ), and University of Oxford Social Sciences Division.

Recent prominent publications from the project include:

- [Will COVID-19 fiscal recovery packages accelerate or retard progress on climate change?](#) By Cameron Hepburn, Brian O’Callaghan, Nicholas Stern, Joseph Stiglitz and Dimitri Zenghelis
- UK Briefing: [A net-zero emissions economic recovery from COVID-19](#) By Jennifer Allan, Charles Donovan, Paul Ekins, Ajay Gambhir, Cameron Hepburn, David Reay, Nick Robins, Emily Shuckburgh and Dimitri Zenghelis

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Q2. Does the UK workforce have the skills and capacity needed to deliver the green jobs required to meet our net zero target and other environmental ambitions (including in the 25-year environment plan)?

It is unlikely that the UK workforce currently has the skills and capacity needed to deliver the green investment initiatives required to meet a target of net zero emissions by 2050. Meeting the nation's net zero ambitions will require significant new investment into green energy technologies across several sectors, some of which have not yet been invented. Investment will be required from both the public and private sector and will employ individuals of all education levels in some capacity. Significant green investment over the coming 25 years into a currently unknown set of projects will require a strong green labour market and perhaps could be supported by a "deep backbench" of multi-skilled individuals who can work in "utility positions", flexible to move through the green labour market.

The impetus to consider green skills is particularly strong in the current economic environment, where COVID-induced contractions in the macroeconomy necessitate recovery spending, enabling new future-oriented industries to take the place of 'dying' industries, including those built on fossil fuel extraction or burning. As a part of the objective to 'decouple' economic growth from greenhouse gas emissions, the government has signalled ambition to invest in a 'green recovery' and has made progress in this already. The UK has announced £30bn in green spending initiatives to date including £2.7bn in clean energy related projects. Other high profile green recovery investment initiatives include the Green Recovery Challenge Fund and Green Homes Grant. Economists and [environmentalists](#) alike continue to advocate for even greater green fiscal spending as the nation shifts from the 'rescue' stage of fiscal support to the 'recovery' stage.

Government must invest in green skills retraining programs with the highest of urgency given the unprecedented size of rapid green investment following from the pandemic. If skills are insufficient to meet investment needs, labour capacity shortages could restrict the speed and magnitude of economic impact. Economic impact is slowed if contractors must delay projects on account of labour shortages. Economic impact is reduced if (i) green labour shortages cannot be met by a net labour surplus, meaning more people remain unemployed and/or (ii) a green labour deficit leads to salary increases biased towards the highest earners, given that higher earners generally [have a lower marginal propensity to consume](#) than lower earners. However, both (i) and (ii) are uncertain results, with many factors at play in a rapidly changing labour market and with various other, non-green, recovery investments also being implemented. For instance, depending on the circumstance, it may be that a green labour deficit has the opposite effect and leads to salary increases biased towards the lowest earners, who generally have a higher marginal propensity to consume.

In the medium to long term, to understand the scale of the skills and capacity gap, the government should undertake an assessment of training and reskilling needs to meet its target of creating two million green jobs in the UK by 2030. A report for the Local Government Association has found that there may be as many as [694,000 direct jobs employed in the low-carbon and renewable energy economy in England by 2030](#), representing a significant gap between predicted and target figures. The skills gap is particularly urgent in the [nuclear and low-carbon heat sub-sectors](#), while gaps have also been identified in areas relevant to renewable energy implementation, such as [geology, engineering, and electrical trades](#).

Q3. What needs to be done to ensure that these skills and capacity are developed in time to meet our environmental targets?

Although uncertainty remains over the pandemic and the timeline of green investments, the government must start planning worker retraining initiatives as soon as possible,

as green stimulus is likely to increase demands on the labour market. At the macro level, the effect of climate policies on the industrial mix of labour demand [can be anticipated](#). However, labour markets [are not fully flexible at the level of individual workers](#). This is in part due to a skill mismatch – the incompatibility of skillsets required for brown and green jobs, but it is also related to the behaviour of the workforce. Individual workers in high-carbon industries may be unaware of the long-term risks posed to brown jobs or more simply, they might not be willing to acquire the necessary skills to switch. Workers' propensity to invest in their own human capital is key to meeting environmental targets on time while also implementing just transition principles.

To effectively equip workers with the ability to adapt to a changing world of work, **governments could create retraining programs targeted to those whose future employment opportunities are reduced due to environmental targets**. Such programs are not unprecedented and often involve the private sector. Germany and France require employers to pay for reskilling for all compulsory redundancies. Australia, Estonia, and Luxembourg offer state assistance specifically targeting those at risk of technological unemployment. Austrian [“labour foundations”](#) (or ‘work foundations’) are run by companies or statutory bodies to help workers on the brink of mass redundancies transition to new jobs.

But not all workers are equally likely to invest in retraining activities. Monetary and opportunity costs of engaging in training activity are incurred immediately, while benefits might materialise in the future, creating an intertemporal trade-off. Workers who discount the future more heavily may be less willing to retrain. Those who are more risk averse [lower their time invested in education](#), suggesting that education can be seen as risky.

Workers who fear losing their job over the next five years due to technological advancements are [significantly more likely to express intentions to invest in further training](#). In some cases, workers consider assistance with this to be [the best way to respond to adverse labour market developments](#).

- It is crucial that policies simultaneously provide workers with accurate estimates of the probability of losing their job in brown industries and inform them of retraining benefits.
- Automatic opt-out retraining programs, to prepare individuals to transition out of sectors impacted by environmental objectives, would especially benefit those least likely to engage in retraining on their own account.

However, as [demonstrated by the US experience](#) of suboptimal worker retraining programs, retraining programs come with many risks. To ensure sufficient uptake and alignment with market needs:

- Programs must be targeted to address skills gaps and be well advertised.
- Programs should directly link to corporate sustainability goals to leverage existing private sector ambition and mitigate market risks,
- Programs could be opt-out, rather than opt-in to set norms and compel participation.
- Program design must start early to ensure that capacity can be built in time to meet environmental targets.

Q4. What measures should the Government take to ensure that its proposals to meet environmental targets do not by default lead to jobs in affected industries being exported?

To prevent jobs from being exported, a transition to net-zero should involve replacing existing fossil fuel generation with renewable energy, rather than exporting emissions and importing dirty energy from elsewhere. Currently, [177,000 people in the UK are employed in the energy sector, almost 100,000 of which are in traditionally high-carbon industries](#) such as oil and gas

extraction. Gradually, equitably, and responsibly replacing these industries with renewable energy generation could aid in reducing the importing of foreign fossil-generated energy and the exporting of jobs related to this energy generation. Jobs in renewable energy construction and resource management, such as solar panels and wind turbines, are [less susceptible to offshoring](#) due to their location-specific nature.

Worker retraining in these areas can help to maintain labour capacity while facilitating a just transition. A skills assessment of high-carbon industries may allow workers to transfer to green industries. The UK is [in a good position to undertake this assessment](#) due to its learned societies and emerging research in the HM Treasury Net Zero Review.

Looking forward, the UK should continue to support ‘pathfinder’ projects such as the Hydrogen Neighbourhood, that aim to innovate new technologies that keep jobs in the UK. Similarly, a commitment to carbon capture infrastructure can not only help meet environmental targets while protecting high-emission industries, but also create substantial job opportunities in itself. Developing new green technologies domestically will help the UK protect its own jobs while also building a comparative advantage, as new industries are built up to generate new employment while establishing an advantage over international competitors.

Q8. What additional interventions should be taken to aid in a ‘just transition’?

Climate change, technological advancements, the rise of atypical employment contracts and new forms of work, and population ageing, all have had and will continue to have a significant impact on labour markets, even more so following the pandemic. These factors [reduce work security](#), leading to increased skills mismatches and increased probability of unemployment spells. Workers may suffer from increased anxiety, weaker social connections, increased financial vulnerability, and ultimately poorer health status.

To aid just transitions, policy-makers will need not only to ease the job shift to green and less automatable jobs, but also to provide the right information and incentives to facilitate individual optimal financial decisions, while also addressing the non-standard work penalty. This should be a priority to prevent further economic and social polarisation in labour arrangements. Robust, mutually reinforcing programs to protect people’s income [could help](#) build financial security for individuals and families at risk and enable retraining over people’s working lives. These social protection systems could support the long-term competitiveness and resilience of workers, organizations, and entire economies.

Q9. What impact can green jobs have on the wider UK economy?

Investment in green job growth through green R&D may mitigate some of the economic fallout from Brexit in the future through the [generation of knowledge spillovers](#)¹, building comparative advantages. After Brexit, the UK will lose access to green energy research funding it receives through the LIFE+ fund, Horizon 2020, and NER200 mechanisms, and EUR1.6bn in support of low-carbon projects. Green R&D generates a [significant amount of knowledge spillovers when compared to non-green counterparts](#). Modelling has shown that a delay in clean energy R&D, as well as a lack of funding, can lead to a [major innovation gap in the future](#), rendering the British economy uncompetitive. According to Smith School data at the Global Recovery Observatory led by Oxford in partnership with the IMF, UNEP, and GIZ through the Green Fiscal Policy Network, the UK has allocated around £900m towards green research and

¹ Knowledge spillovers are the costless stimulation of technological improvements in third parties as the result of innovation.

development as part of its COVID recovery spending, a low sum compared to Germany (EUR2.3bn) and France (EUR8.5bn). A higher level of R&D spending could help the UK remain competitive internationally.

Green job investments more generally are also likely to have positive spillover effects. They are identified as having [high long-run economic multipliers](#) and can induce jobs in other sectors of the economy. [One study](#) identifies that one green job is brings with it [4.2 new non-green local jobs in normal times, but only 2.2 new non-green jobs in periods of economic downturn](#).

Q10. What contribution can green jobs make to the UK's economic recovery from Covid-19?

Investment into green jobs can help to secure a fast, strong, and prosperous economic recovery from COVID-19. Evidence from the Smith School based on [survey results from 231 G20 economic experts](#) (including central bank leadership and finance ministers) shows that some green investments outperform other fiscal policy archetypes for economic recovery. The relative performance of 25 major fiscal recovery archetypes was assessed based on speed of implementation, long-run multiplier, climate impact, and overall desirability. This identified five stand-out rescue policies, listed below:

- Clean physical infrastructure investment in the form of renewable energy assets, storage (including hydrogen), grid modernization, and CCS technology
- Building efficiency spending for renovations and retrofits including improved insulation, heating, and domestic energy storage system
- Investment in education and training to address immediate unemployment from COVID-19 and structural shifts from decarbonization
- Natural capital investment for ecosystem resilience and regeneration including restoration of carbon-rich habitats and climate-friendly agriculture
- Clean R&D spending.

Recovery investment in some, if not all, of these industries will bring new jobs to that sector. Academic research generally concludes that renewable energy infrastructure is more labour intensive than conventional energy production in its early stages. [One study](#) suggests that every \$1m in spending generates 7.49 full-time jobs in renewables infrastructure, 7.72 in energy efficiency, but only 2.65 in fossil fuels. Natural capital investment and retrofitting can quickly bolster employment as they require little specialized worker training—retrofitting especially [involves little excess planning](#), as the technology to increase energy efficiency in buildings and other infrastructure already exists. As more individuals are employed in green jobs, their resulting spending is likely to help boost the economic recovery.

The United Kingdom has already made a start on this. Global Recovery Observatory data reveals that the government has so far spent an approximate £30bn on green economic recovery policies. Some notable green policies include the Green Homes Grant, R&D funding for clean transport, a combined £730m for the Nature for Climate Fund for tree planting and peatland restoration, and green infrastructure investment in the form of carbon capture and storage implementation—all high-multiplier, high-climate impact projects. But there is room to go further. Expansions to existing programs, especially those most shovel-ready in the Green Homes Grant and various natural capital funds, will continue to boost economic recovery, while the UK continues to lag behind other countries in areas like hydrogen investment and electric vehicle investments.

As such, green jobs are a crucial part of the UK's green recovery strategy, but the success of these measures relies on effective and just green job retraining initiatives. For example, failing to get builders qualified as Green Homes Grant installers will likely lead to a lower voucher take-up in financial value than the full allocation given to the program, dampening its economic and job creation effect. If the workforce does not have the appropriate skills or capacity, then effective policy implementation will be inhibited.

Q11. How can the UK ensure high emissions are not locked-in when tackling unemployment?

The UK must learn from mistakes made during the recovery from the 2008 global financial crisis, where global CO₂ emissions [grew by 4.5% in the year following the crisis](#). This exceeded the previous 5-year average of 2.4%, driven largely by global investment into high emissions industries to stimulate domestic economies.

But the answer is not to neglect jobs and industries in high emitting sectors. Instead, any bailouts should come with green conditions attached, requiring corporations to commit to environmental targets that are in line with the governments' own and then relying on the market economy to facilitate investment into the most competitive new technologies. Paths to net-zero emissions are [viable for airlines](#), and similar paths are possible for other emitting industries. Repercussions for failing to reach these goals could include the conversion of bailout funding to equity, or other financial penalties. Such measures could ensure that employment is protected, while committing industries to reduce emissions in the long term and begin a reinforcing cycle of new investment.

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