Delivering a Green Recovery/Green New Deal Post-COVID-19:

Opportunities and priorities for a Glasgow City Region response

Greening the Recovery

Green Reset "tilt to green" **Green New Deal**

A sustainable recovery from COVID-19

Scoping paper by the

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Summary

- The coronavirus (COVID-19) pandemic is a major crisis. The short-term response in the UK, Scotland and the Glasgow City Region (GCR) has focused on the public health emergency, but with accompanying rescue and support measures to protect incomes, businesses and the economy.

- Despite this response, a major recession is still likely. To address this, there is discussion of possible stimulus packages, as well as possible wider reforms, to tackle the anticipated economic and financial impacts. There have been a large number of papers and commentaries that have called for these packages to be targeted to ensuring the recovery is 'green' or a 'green new deal'.

- This scoping paper was prepared for Climate Ready Clyde's Board in support of the members' work on COVID-19 economic recovery. It has investigated the potential for promoting low carbon development and climate change adaptation (resilience) as part of possible COVID-19 recovery plans, including what could be implemented locally in the GCR. The paper has been developed under the Resilient Regions: Clyde Re:Built Project, led by Climate Ready Clyde (CRC) and managed by Sniffer, working with Creative Carbon Scotland and Paul Watkiss Associates.

- The paper has reviewed the recent green recovery literature, and considered the role that such interventions could play post-COVID-19. Many studies focus on the opportunities for low carbon development in stimulus packages (e.g. direct green investment and policy reform). This can create jobs and economic growth, as well as support the Scottish Government's national net-zero target for 2045, and Glasgow's own net-zero target for 2030. Some adaptation measures, particularly nature-based solutions, are also identified as they have high job creation and economic potential.

- The crisis has also highlighted a general lack of preparedness for systemic risks. There is therefore an opportunity post-COVID-19 to strengthen resilience. This could cover public health, but extend to weather related disasters and climate change. Such actions would align with Climate Ready Clyde's forthcoming GCR adaptation strategy, and would provide many ancillary benefits.

- The paper has reviewed a long list of possible green recovery and resilience building options. It has assessed these against their potential for job creation, economic growth, addressing existing inequalities, and considered their likely acceptability. It has also looked at which of these would require national level implementation, and which are more applicable regionally. This assessment has led to a short-list of options that may be suitable for a green recovery package. These include direct investment (e.g. energy efficiency retrofit programmes, green resilience infrastructure) but also policy and regulatory reform, capacity building and finance.

- Finally, the paper has identified a series of steps that could help Glasgow City Region Cabinet and Regional Economic Partnership implement a green recovery package. This includes an analysis of plans (direct interventions, but also policy and reform), the development of a green project pipeline, looking for additional sources of finance (including the private sector), designing innovative financing structures that target blended finance, strengthening institutions including mainstreaming climate, and creating strong and positive messaging (and

raise awareness) on the benefits of the green recovery. It also includes an illustrative portfolio of measures to demonstrate the various co-benefits and trade-offs of a 'green recovery', and what could be considered to maximise contributions for economy and climate.

Background

The coronavirus (COVID-19) pandemic is a major crisis that has already required national, regional and local interventions. The short-term response in the UK, Scotland and Glasgow City Region (GCR) has been focused on the public health emergency. This has been complemented by a series of support schemes, including income protection (the job retention scheme and self-employed income support), business loans, tax cuts and deferrals, and a strengthened safety net. Spending on measures to counter the COVID-19 pandemic has reached just over £4 billion in Scotland, including a comprehensive £2.3 billion package of support for business, a £620 million boost for health services and £358 million extra to maintain transport services[1].

However, it is now recognized the UK is facing a severe recession, of an unprecedented scale. The Office for Budget Responsibility (OBS), which is providing monthly projections, estimates GDP will be reduced by 13% in 2020, with the unemployment rate potentially rising to over 7%. A recent analysis of forecasts from HM Treasury (May 2020) reports an 8.6% reduction in GDP growth for 2020 and unemployment levels of 7.7%[2]. There are also knock-on effects projected to continue into 2021 and beyond. Even though the UK GDP is currently projected to recover in 2021 (+ 6.2%), the unemployment rate is expected to stay at 6.3% (HMT, May 2020).

It is also emerging that some sectors are more prone to furloughs and to potential job losses than others. This is due to three main factors: the impact of social distancing, the ability to work at home, and the decline in customer demand and revenues. McKinsey (2020) estimate 24–26% of jobs in Glasgow and Clyde Valley City Region (225,000 jobs) are at risk of furloughs, layoffs or reduction in hours or pay during periods of high physical distancing. There is a strong correlation between the likelihood of a worker being furloughed or laid off and them having previously been on a low income. Analysis by the GCR's Intelligence Hub shows that 217,000 individuals were furloughed in the GCR in May, and an additional 45,000 were using the Self-Employed Income Support Scheme. The underlying modelling suggest that once support is reduced, this could result in an increase in unemployment of between 60,000–100,000 (Glasgow City Region, 2020).

In order to address these shocks to the economy and to employment, there has been discussion of possible stimulus packages, to reduce the economic and financial impacts. A large number of papers and commentaries have called for these interventions to be 'green'.

This scoping paper has been prepared to contribute to this emerging debate, and especially to focus in on the relevance of a green recovery for the GCR. The paper:

- Reviews the recent green recovery literature and considers the role that interventions could play in post-COVID-19 activities.
- Summarises the literature into a list of low carbon and resilience interventions.
- Considers the potential relevance of different options for the GCR, in terms of potential jobs, economic growth and wider benefits.
- Reflects on what might be needed to implement these measures, including some early suggestions on what to do next.

[1] https://www.gov.scot/news/covid-19-budget-revision/

[2] The average is calculated from a range of independent forecasts.

The paper has been developed under the Resilient Regions: Clyde Re:Built project, led by Climate Ready Clyde (CRC) and managed by Sniffer, working with Creative Carbon Scotland and Paul Watkiss Associates.

Resilient Regions: Clyde Re:Built is a project seeking to catalyse a transformational approach to addressing the impacts of climate change in the Glasgow City Region. It's led by Climate Ready Clyde (a regional climate initiative) made up of stakeholders from the City Region, with technical, cultural, economic and governance expertise from Sniffer which supports CRC. It also has cultural expertise and understanding of creative arts in sustainability from charity Creative Carbon Scotland, specialist climate change and economic expertise from research consultancy Paul Watkiss Associates, and climate innovation expertise from EIT ClimateKIC. The project is funded by the Climate Ready Clyde partners and the European Union's climate innovation hub, EIT Climate-KIC

What is a 'green recovery' or 'green new deal'?

A standard fiscal stimulus package to address the fall-out of COVID-19 might only aim to stimulate consumption and investment, with the only goal to support the recovery of the economy as quickly as possible. A very large number of papers, commentaries and articles have emerged in recent months that highlight that any stimulus package should be different to this (i.e. a green recovery or a green new deal). This paper has reviewed a range of studies that have appeared on this subject, which are set out in the reference list at the end of this document. Whilst this is only a subset of the literature (which is growing all the time), the papers reviewed have come from public bodies, businesses and the voluntary sector.

This body of literature argues that any recovery or stimulus package that is introduced to address the forthcoming recession should be used as an opportunity to help deliver low carbon or net-zero targets and build climate resilience, to align with the sustainable development goals, and to pivot towards a fairer and just society. At the same time, it should avoid support to fossil fuel investment (extraction and use) or high carbon intensive activities (i.e. high emitting sectors). Some of these studies also highlight key criteria or principles that should be included in these packages (e.g. Committee on Climate Change (CCC), 2020; Scottish Environment Link, 2020; Friends of the Earth (FoE) Scotland, 2020).

Alongside this, the COVID-19 crisis has raised the awareness of major risks, including major disaster and even systemic risks (the risk of major failure of the overall system, including potential collapse), and their economic and financial impacts, to individuals and society as a whole. This is highly relevant for the climate change agenda (including the alignment with the Paris Agreement) as well as the Sendai framework for disaster risk reduction[3]. The crisis has highlighted the need for improved resilience, especially given the interconnections between health, disasters, climate change, and how these risks differ between groups (i.e. societal inequities).

While the phrase 'green recovery' is most commonly used, it is important to note a difference in time periods or reference points – some commentators have talked about a 'new normal', the need to 'build back better' (or greener), or a 'green re-set' (noting that this implies doing something different). There is also discussion of a 'green new deal' (including in Europe), which follows the new deal model implemented in America after the Great Depression.

[3] https://www.undrr.org/implementing-sendai-framework/what-sf

What is the justification for a green recovery?

An important question to ask is whether the COVID-19 crisis has made a stronger and more specific case for a green recovery, as compared to before the pandemic, or whether the crisis is just being used an opportunity to promote (existing) green measures.

Related to this, a primary objective of any recovery package should be to help address the economic and employment impacts of COVID-19. A related question is therefore whether green options are preferable to other options in delivering these objectives.

This section examines these arguments. It finds there is a good case for a green recovery.

First, recovery stimulus packages are likely to focus on areas that have strong potential for job creation and economic growth. There is good evidence that green jobs do have high job creation potential and the literature reports that green investment leads to more jobs per £ invested than fossil fuels (Garrett-Peltier, 2017). The level of benefits will vary on the exact green measure, and some green options will be more positive than others. This is explored in more detail later when looking at alternative options for the GCR.

Second, there is a need to align any recovery measures with the announced targets for net carbon and climate-resilient development. In 2019, the Scottish Government[4] committed to a target of net-zero emissions of all greenhouse gases by 2045. The Scottish Government has also set out that it will adopt an ambitious new target to reduce emissions by 75% by 2030, and has an ambitious Climate Change Adaptation Programme. Glasgow City has announced a goal to be the UK's first carbon neutral city by 2030 following a decision of the council's City Administration Committee[5]. This includes a large number (61) of actions[6]. This target will involve a major uplift in funding, for example, to deliver such a target[7]. Other local authorities in the region, including North Lanarkshire Council, Renfrewshire Council and West Dunbartonshire Council have also declared climate emergencies.

Climate change is also being highlighted as a financial risk, under initiatives on climate related financial disclosure (e.g. in the Task Force on Climate-related Financial Disclosure (TCFD) and the Network on Greening the Financial System (NGFS, 2019)). This involves both physical climate risks (from climate change itself) and transition risks (associated with changing climate policy and the risk of stranded assets). A major financial stimulus should recognize the importance of these climate risks and move towards low carbon and climate resilient development, particularly where central government finance is involved.

Third, the pandemic has increased the awareness of risk, and the recognition that it is important to have better preparedness for all sorts of major risks (not just pandemics). The UK National Risk Register of Civil Emergencies (Cabinet Office, 2017) had identified pandemic flu as the number one risk in the register. However, floods are another very high risk in the register, followed by droughts and heatwaves. A post COVID-19 recovery package therefore also provides an opportunity to improve resilience to major civil emergencies (health and other) in city regional planning. This

[4] https://www.gov.scot/news/scotland-to-become-a-net-zero-society/

[5] https://www.glasgow.gov.uk/article/25066/Council-Sets-Target-Of-Carbon-Neutral-Glasgow-by-2030

[6] http://www.glasgow.gov.uk/councillorsandcommittees/submissiondocuments.asp?submissionid=94826

[7] https://glasgowchamberofcommerce.com/news/news/2020/february/06/glasgow-s-path-to-net-zero-revealed-in-detail-for-the-first-time-as-cop26-summit-approaches/

extends, critically, to future climate change risks and the need for adaptation. These risks were identified in the Glasgow City Region Climate Risks and Opportunities assessment (Climate Ready Clyde, 2018), and are currently being considered in the development of the GCR adaptation plan. There is therefore an alignment with such resilience building activities and ongoing strategy work.

Fourth, the crisis has exposed the inequalities that exist in society, and might open up the opportunity to make the recovery as inclusive as possible. This means moving beyond a narrow focus on economic recovery alone, to consider the wider economic and social aspects. Existing studies in the GCR (including some designed to support response in the pandemic) find that current climate related shocks, as well as future impacts of climate change, do affect groups in society differently, and disproportionally affect socially deprived and vulnerable groups (Climate Ready Clyde, 2018; Clydeplan, 2020). Proactively addressing such issues during the policy design stage could help shape interventions and recoveries that are inclusive. For example, these could direct interventions towards lower income households, or ensuring policy reform takes account of distributional effects.

Finally, a green post-COVID-19 recovery plan needs to be seen in the context of a potentially deep recession in the near future (HMT, 2020). The fiscal space needed for this will involve challenges, especially in the face of a likely demand shock and high levels of unemployment. It may involve redeploying existing resources to their best use, and re-examining budget revenues, expenditures and financing. In addition, COVID-19 is affecting planned delivery of public expenditure which will also need to be reprofiled and reprioritised. For the GCR this translates into tailoring the green recovery towards its priority needs and regional context. This points to the need for carefully developed recovery plans, which look beyond the immediate rescue packages and are aimed at supporting the economy out of recession in the medium-term, while building the foundations for long-term prosperity.

What type of interventions are in a green recovery? Which could be most applicable for Glasgow City Region?

A large number of interventions have been proposed in the recent green recovery literature. This paper has identified these and compiled a long list of measures for both low carbon and climate resilience. Five main groups of options were identified:

- direct investment (e.g. in low carbon infrastructure)
- policy and regulatory reform (e.g. regulatory standards)
- capacity building and institutional strengthening
- finance (e.g. new financial instruments and structures)
- transformational change (i.e. deeper more fundamental shifts to new states from existing systems).

For both low carbon and climate resilient investments we have then sought to explore:

1) Which measures are likely to be most effective in a COVID-19 recovery package (i.e. which are most likely to help create jobs and generate economic growth)?
2) Which of these can readily be introduced regionally (in the GCR), and which require Scottish or UK level action?

For the first question, the most important immediate elements in the short-run are likely to be the speed of delivery (how quickly they can be implemented) and how labor-intensive they are.

However, they should also have high multipliers in the long-run (i.e. generate a high return for every £ of expenditure) (Bhattacharya and Rydge, 2020).

The second question asks whether the interventions can be applied locally, and thus taken forward by the GCR or other local actors, and which might require the Glasgow City Region Cabinet to lobby for change (e.g. to the Scottish Government).

Low Carbon Interventions for a Green Recovery

The green recovery options that align to low carbon development are presented below.

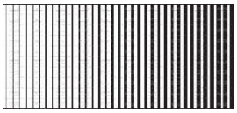
Investment type	Suggested measures
Direct investment 	Invest in zero carbon (renewable) energy, and energy storage infrastructure.
	Extend, modernize and reinforce the grid to support higher renewable penetration.
	Support home renovations and retrofits, the electrification of heating systems. Invest in new low and zero-energy buildings (especially public buildings).
	Boost low and zero-carbon public transport vehicles, cycling and walking, and private vehicle low carbon infrastructure (e.g. vehicle charging points).
	Invest in low and zero-carbon research and development (R&D) and pilot / demonstration projects and support adoption of new climate technologies (e.g. hydrogen/carbon capture and storage, low carbon pilots in energy intensive industries).
	Invest in broadband connectivity and digital infrastructure to build on the teleworking experience and favour smart-working (which contributes to lower carbon lifestyles).
	Invest in large-scale landscape restoration, green space and reforestation (note this could also have adaptation co-benefits).
	Invest in low carbon heat systems, including community schemes.
	Avoid new investment in fossil fuel exploration, extraction, production and generation, as well as high carbon intensive activities.

Policy and regulatory reform 	Introduce or strengthen new energy efficiency standards or regulations (e.g. for appliances, for low carbon building standards, for vehicles).
	Introduce incentives for low and zero carbon uptake (e.g. home renovations and retrofits, electrification of heating systems, electric vehicles).
	Introduce incentives for the uptake of energy efficient appliances, lighting and digital devices.
	Reduce or remove fossil fuel subsidies.
	Introduce green tax regimes (e.g. carbon taxes).
	Reconsider/reform other subsidies to lower greenhouse gas activities (e.g. agriculture).
	Use public sector procurement to support the market of energy efficient and low-carbon goods and services (links to direct investment above).

Capacity building/ institutional	Support the development of green investment pipelines for stimulus packages.
	Strengthen coordination and cooperation, from local to national green recovery.
	Use masterplans to support long-term energy neutrality and shift economies as part of COVID-19 forward planning.

	Develop skills development programs (e.g. technical and vocational education (TVET) projects for low carbon industries) and address immediate unemployment from COVID-19 and structural shifts from decarbonization.
	Introduce capacity building/policy support for mainstreaming climate into budgeting and planning.

Investment type	**Suggested measures**
Financial	Increase uptake and use of green bonds.
	Introduce additional financing instruments to support private investments in green projects such as guarantees.
	Prioritize financing for low carbon investments/programs/funds for low carbon investments/programs/funds.
	Improve the information and disclosure of climate risk (transition risks) in line with TCFD and related initiatives.
	Introduce credit lines, guarantees, employment support and tax exemptions for SMEs to promote investments in low-carbon/energy-efficient measures.
	Provide financial incentives using appropriate instruments to green industries/activities in preference to brown industries/activities.
	Provide conditional bailouts, that make crisis support for carbon-intensive industries/firms conditional on emissions reduction targets/low-carbon transition (e.g. as with the Air France bailout).
	Address information asymmetry by improving and, standardizing metrics for the classification of assets as 'green' (compared to 'brown').

Transformation	Transform food and land use systems to shift to sustainable and low-carbon production.
	Accelerate economic diversification (away from fossil fuels).
	Shift planning regime towards urban green new/redevelopment/regeneration and sustainable spaces.
	Introduce, plan and implement net-zero targets.
	Introduce and scale-up radical transport (universal and comprehensive public transport/car free).
	Develop new industrial plans to promote radical restructuring.

Which measures are likely to be most effective in a COVID-19 recovery package?

As highlighted above, the early priorities are to create jobs and generate economic growth. Government spending on investment appears preferable to tax reductions in a recovery, as it delivers greater jobs and higher multipliers. There is some evidence that low carbon investments perform very well, notably building insulation retrofits and renewables, as these are labour intensive: studies find that every $1m in spending generates 7.7 full-time jobs in energy efficiency and 7.5 in renewables infrastructure, as compared to only 2.7 in fossil fuels (Garrett-Peltier, 2017).

Another study (Hepburn et al., 2020), considered four criteria: the speed at which the stimulus delivers real-world impact; the short- and long-run economic multiplier (the return for every pound of expenditure); the climate impact potential; and overall desirability of the measure. It highlighted five key interventions for a green recovery:

- clean infrastructure investment (i.e. renewable energy, storage (including hydrogen), grid modernisation and carbon capture and storage (CCS) technology)

- renovations and retrofits to enhance building efficiency including improved insulation, heating and domestic energy storage systems
- investment in education and training towards low carbon areas
- nature based solutions (natural capital) including restoration of carbon-rich habitats and climate-friendly agriculture
- clean energy research and development (R&D) spending.

However, these investments – whether in green investment or policy reform – are not necessarily what localities or regions will want to invest in. A standard fiscal stimulus package might only aim at supporting the recovery of the economy as quickly as possible, as compared to green solutions that can also ensure high multipliers in the long-term. Furthermore, the UK Government will provide much of the funding and may set the criteria for its use.

Which measures could be taken regionally?

Some options have more obvious regional applicability (i.e. for the GCR) and align to existing mandate and responsibilities. For example, energy efficiency retrofits and public transport measures are more local than electricity grid measures. There is also much more opportunity for urban green space interventions. Furthermore, public sector procurement can be introduced locally, for example to support energy-efficient and low-carbon goods and services market. Collaborating with local higher education establishments on training could also present focused opportunities to improve the skill sets of the local population. These local options could help accelerate and support a just-transition, particularly for those made unemployed as a result of the crisis.

Conversely, other options, notably policy and legislation, especially standards and taxation measures, are likely to have to come from national government, although there is some potential for local planning controls.

Climate Resilient Interventions

The green recovery options that align to climate resilience are presented in the tables below. While some of these may be associated with a green recovery stimulus, there are also a further set that are relevant for improved resilience planning (emergency response, disaster preparedness, disaster risk management/reduction and climate change adaptation).

Investment type	Suggested measures
Direct investment 	Invest in hard (engineered) resilience infrastructure (e.g. flood protection) which leads to job creation and local investment.
	Invest in nature-based solutions (e.g. ecosystem-based flood protection, green spaces, landscape restoration and watershed protection) which leads to job creation and local investment.
	Ensure climate proofing is included in all infrastructure investment (adaptation) funded under recovery or stimulus packages.
	Invest in early warning systems (improving current, developing new) to build greater resilience in general (health surveillance, but also other civil emergency).
	Invest in research and development, pilots and demonstration in adaptation goods and services.

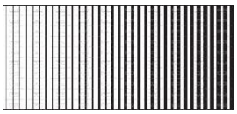
	Introduce community targeted approaches including adaptive social protection.
	Invest in building retrofits for flood resilience/overheating (buildings).
	Invest in rural support scheme spending, particularly with sustainable agriculture, to provide rural stimulus.

Policy and regulatory reform 	Introduce resilience/climate standards (e.g. climate and disaster risk considerations in road standards) to ensure stimulus investments are also resilient.
	Integrate climate risks in regulations.
	Improve coordination between government agencies at the national and subnational levels, and horizontally across departments leading to clear setting of resilience priorities, appropriate sequencing and policy coherence.
	Introduce financial incentive schemes (e.g. for resilient investment) to support immediate recovery and sustain benefits longer term.
	Introduce policy reform to enhance resilience (e.g. payment for ecosystem service schemes, land value capture) to help sustain and continue recovery investments.

Capacity building/ institutional 	Support the development of resilience investment pipelines for the recovery package.
	Strengthen institutions and their capabilities to assess, prepare and reduce complex, systemic risks and disasters, including weather extremes and climate change.
	Introduce skills development programmes to match green infrastructure and resilient investments, and integration of resilience in general training (cross cutting).
	Build institutional capacity to ensure coordination on climate change and disaster resilience policies.
	Increase preparedness of the public by raising awareness of the impact of a climate crisis, disaster risks, resilience and actions in case of an emergency.
	Capacity building/policy support for mainstreaming climate and disaster resilience into national development planning (green budgeting) alongside recovery planning.

Financial 	Increase uptake of debt instruments (e.g. catastrophe bonds, resilience bonds) to help raise finance for recovery plans (with resilience focus) and prepare for future shocks.
	Increase debt re-structuring (e.g. debt swap examples for adaptation) to help finance green investments (e.g. NBS) in recovery packages.
	Introduce de-risking instruments (e.g. risk pooling insurance, nature-based insurance models (e.g. parametric insurance), guarantees, disaster insurance, alternative re-insurance models to support enhanced resilience and reduce impacts of future shocks.
	Introduce contingency financing including disaster contingent financing to support enhanced resilience and reduce impacts of future shocks.
	Improve the information and disclosure of climate risk (physical climate risks) in financial institutions and introduce (mandatory) climate related financial disclosure to enable investors to make informed decisions on post-COVID-19 investment.

	Develop forecast-based financing (forecasts to funnel resources to communities before extreme events hit) to strengthen resilience.
	Scale up blended finance (e.g. special purpose vehicles) to help finance resilient investments in recovery packages.
	Improve public financial management for shock resilience to enhance capacity for future crisis.

Transformation 	Introduce systems approach to climate related risks and impacts.
	Shift planning regime towards urban green transformation.
	Transform food and land use systems to shift to sustainable and resilient production, increase resilience of value and supply chains.
	Rethink land use development patterns, especially highly at-risk areas, towards resilient cities that can cope with shocks and stresses.
	Reform government, governance, planning and policy (e.g. social justice and citizen led).
	Rethink value and explore new economic and financial models that capture social and environmental value (beyond GDP).

Which measures are likely to be most effective in a COVID-19 recovery package?

There are a wide range of interventions on resilience in the green recovery papers. However, several prioritise disaster preparedness and natural capital (nature-based solutions) as priorities for a green recovery, as they have a high potential for jobs, and short- and long-run economic multiplier effects (Hepburn et al, 2020). These nature-based or green infrastructure projects are also outdoors and so can be developed with social distancing (more so than home retrofit).

Many of the resilience options above are likely to have high economic benefits. Early warning systems, disaster risk management (DRM) and disaster risk reduction (DRR) have high benefit to cost ratios (i.e. every £1 spend delivers several £s of benefits) (ECONADAPT, 2017; GCA, 2018). There is less literature available on the direct job creation from adaptation measures but many are also likely to be high, due to the crossover with some of the mitigation investments (e.g. in nature-based solutions or building retrofit).

However, despite these benefits, resilience investment is often given a low priority, due to various barriers (e.g. policy failures, financial barriers) (Cimato and Mullan, 2010). These barriers are higher for private investment, because of the challenge to identify revenue streams. While there may be a greater willingness to scale up these interventions because of COVID-19, these underlying challenges will still need to be overcome. Furthermore, as highlighted above the risks of disasters (e.g. floods) and climate change will not occur evenly across groups within these countries, with the poorest affected most (in relative terms). This highlights a role for resilience in delivering inclusive growth.

Which measures could be taken regionally?

Many of the direct investments outlined above could be implemented regionally in the GCR – particularly in terms of direct investments, policy and regulatory reform, capacity building and the more transformative elements – whilst many of the financial mechanisms identified would need Scottish or UK level support. Scottish and UK level support could also play a role in strengthening the other types of investments.

A GCR post-COVID-19 recovery plan could build on these lessons to promote stronger collective action to tackle climate change, and pave the way to building resilient economies and societies that make a sustainable use of natural resources, are more resilient to future crises, and reduce the vulnerability of people, particularly the most vulnerable, to future threats.

What are the opportunities for a Glasgow City Region Green New Deal?

Based on the analysis above (i.e. on options that might provide a local stimulus, that can be implemented regionally) the following are identified.

	Low Carbon	**Climate Resilience**
Direct investment	• Public building – low carbon and energy efficiency programme (e.g. renewables, appliances, zero energy in new and existing buildings) • Energy efficiency/renovation retrofit programme for households • Public and low carbon transport infrastructure (electric vehicle charging) • Attract low carbon R&D pilot (e.g. H_2)	• Natural flood protection schemes • Green space/regeneration (Glasgow and Clyde Valley Green Network) • Enhanced early warning (floods) • New early warning (heat) • Community based schemes • Household level flood resilience/resistance programme
Policy and regulatory reform	• Low carbon requirement in public sector procurement (all aspects) • Low carbon standards in local planning guidance • Subsidies/taxes/exemptions to incentivise low carbon	• Climate risk assessment for public procurement • Climate risk in planning guidance • Civil emergency strengthening • Subsidies/taxes/exemptions to incentivise resilience
Capacity building/ institutional	• Develop net-zero action plan for the GCR • Develop green investment pipeline • Working with local higher education for low carbon industry skills training, linking with the Glasgow City Region Skills Investment Plan • Climate mainstreaming in planning and budgeting	• Build resilience plan and pipeline (Clyde Re:Built project) • Climate mainstreaming in planning and budgeting • Public awareness raising
Financial	• Structure innovative financing instruments to attract private sector investments (e.g. green bonds) • Support blended finance solutions to encourage pooling of public and private sector finance to achieve scale and replicability • Place low carbon investment criteria into public sector finance • Move towards climate related financial disclosure for financial institutions	• Use public sector finance to address private sector investment risks through appropriate instruments such as guarantees • Structure innovative financing instruments to attract private sector investments (e.g. nature-based climate bonds) • Better collaboration between local authorities and financial institutions to understand and mitigate investment risks for specific climate resilience interventions • Climate related financial disclosure for financial institutions
Transformation	• Net-zero transition	• Social justice/distributional issues addressed in resilience plan and pipeline

	• Social justice/distributional issues addressed in green investment pipeline • Radical transport (universal and comprehensive public transport/car free) • New industrial plans to promote radical restructuring	• Community based schemes and citizen led pilots

It will also be important to design a package(s) that give priority to those sectors which have been hardest hit by the pandemic and need to recover. A regional approach will help identify the most appropriate sectors for the GCR. This is likely to focus on the sectors which have the most employment risk, and this may require targeted measures in addition to, or instead of, a general green stimulus.

Alongside this, it will be important to strengthen those sectors that may have to cope with a second wave of COVID-19 (i.e. the healthcare sector and civil protection).

What are the issues involved for a Glasgow City Region Green New Deal?

To date the focus of the response to coronavirus has been on 'rescue'. The policies introduced have not had a green focus, and analysis (globally) indicates only around 4% of the 300 interventions worldwide can be considered to be green (Hepburn et al., 2020). In the UK, the priority of the rescue package has been to increase cash flows to individuals in financial distress and to support incomes, and to provide liquidity and support to businesses. The green package has yet to be teased out of the various ongoing discussions on longer term COVID-19 recovery.

However, positive messages are emerging.

The Scottish Government has written to the Committee on Climate Change announcing its intention to seek advice on a green recovery, whilst the UK Government announced at the Petersberg Climate Dialogue XI that Governments have a 'duty' to build climate resilient economies post COVID-19[8].

In Glasgow, an emergency COVID-19 Recovery Group, made up of members of the Glasgow Economic Leadership, the Glasgow Partnership for Economic Growth, the Glasgow Economic Commission and some external advisors, has been created with the task to design a recovery plan based on "collaboration, innovation and resilience"[9]. Glasgow City Council is also participating in the C40 'Global Mayors COVID-19 Recovery Task Force' and the 'Cities for Resilient Recovery' coalition of the Global Resilient Cities Network. Work has commenced to develop a regional COVID-19 economic recovery response that includes all eight local councils and other partners.

It is also highlighted that while the Conference of the Parties in Glasgow (COP26) has been delayed until November 2021, there will still be a huge emphasis on Glasgow. A green recovery provides a real opportunity for the region to lead by example.

[8] https://www.businessgreen.com/news/4014548/petersberg-climate-dialogue-uk-governments-duty-build-climate-resilient-economies-post-covid-19

[9] https://www.glasgow.gov.uk/article/25869/Post-Pandemic-Economic-Recovery-Plan-for-Glasgow-to-be-developed

Other examples are emerging. In England, the North of Tyne Combined Authority recently announced its intention to promote a green recovery strategy[10]. Further afield, other initiatives are emerging. In the U.S., New York passed the Accelerated Renewable Energy Growth and Community Benefit Act on April 3. The legislation follows the Climate Leadership and Community Protection Act — sometimes referred to as New York's Green New Deal. The City of Amsterdam decided to consider the 'Doughnut model' for its post-crisis economy. The principle of the model (developed by Oxford economist Kate Raworth) is that the goal of economic activity should be about meeting the core needs of all people, within the means of the planet[11].

It is clear that any COVID-19 recovery package will require political leadership and public support, and this also applies to a green recovery package. It will also face some barriers. Further discussion is included in the box below.

Barriers and Possible Solutions to a Green Recovery

There are possible institutional barriers to integrating a green recovery. The existing UK economic response does not yet have a strong green focus. While there are some things the GCR and Scottish Government can do on their own, the main stimulus package will be at the UK level, and will then cascade through to Scotland through the block grant. This may create some space for a greener Scottish perspective; however, it would be preferable to have a coordinated approach with government at all levels.

While it is highly uncertain, there is the possibility of localized outbreaks of the coronavirus or even a second wave in the autumn/winter. This might lead to some type of restrictions, and worsen the public finances. High debt levels might lead to tax raises and/or reduced public spend, making the recovery plan financially challenging. The UK has already implemented an unprecedented approach and these measures will have long-term implications and determine the economic landscape in which a new Green Deal will take place, not least because of the level of public debt, inflation and interest rates that will emerge. This may lead to caution around a further (green) recovery package. It is also highlighted that the goals in a Green Deal (job creation, health benefits, resilience and mitigation) have the characteristics of public goods. These require intervention of governments – either to provide such goods directly or create the enabling environment for the private sector to do so. This does involve a tension as the private sector will only act when there is the incentive (and return) to do so, which is more challenging when public goods are involved. At the same time, it will be possible to achieve greater green impact, if it is possible to leverage private finance.

The UK and Scottish Governments' investment decisions will be critical for the success of a post-COVID-19 Green Deal, particularly in its initial phase. Large public investments and public procurement can support the market for energy-efficient and climate-resilient products and services while generating employment. Such investments should be prioritised to generate large socio-economic benefits quickly. At the same time, there is an opportunity to deliver change that is more transformational in the recovery package, but this may deliver benefits in the longer-term (and thus be less attractive in addressing immediate challenges). More transformational change will require significant resources, time, strong leadership, and courage. However, it is unlikely to meet the criteria of "bankability" applied by financial institutions or the private sector, especially for resilience investments. This may mean a portfolio approach is useful, mixing measures with high short-term benefits, as well as more transformative actions.

On the low carbon side, the crisis has led to a global reduction in Greenhouse Gas (GHG) emissions, and these might fall by 8% in 2020 (IEA, 2020). However, recent studies (UNEP, 2019) estimate that global GHG emissions must fall by 7.6% *every year* from 2020 to 2030 to limit temperature increases to 1.5°C. Without government intervention, emissions will likely rebound once the lockdowns ends. This highlights the challenge involved in achieving the Scottish net-zero target. There are also challenges involved for

[10] https://www.chroniclelive.co.uk/news/north-east-news/37m-cash-boost-revealed-give-17965695

[11] https://www.pri.org/stories/2020-05-11/amsterdam-s-coronavirus-recovery-plan-embraces-doughnut-economics-people-and

resilience. Some of these are shared: COVID-19 and climate change involve uncertainties, which make it more difficult to make exact decisions. Some are different, (e.g. COVID-19 is an immediate and discernible danger), while climate change is gradual and emerging over longer time periods.

While there have been some local benefits of the crisis (i.e. lower transport congestion, lower air pollution), there are also behavioural barriers, including inertia, that will mean individuals, firms and government may try to go back to their pre-COVID-19 life, unless provided with the right information, incentives and enabling environment to act differently. Alongside this, a "standard" fiscal stimulus package would aim at stimulating consumption – to support the recovery of the economy as quickly as possible, which would reinforce this return. This may mean a strong promotional campaign is needed to sell the reasons for, and the benefits, of a green recovery (i.e. for a new normal). This could build on positives from the crisis (i.e. there is some evidence people don't want to return to the way before the lockdown) (Sky News, 2020).

Importantly, many green opportunities provided by the post-COVID-19 recovery are unlikely to happen on their own (or without very strong political backing). They will require the careful design of a package, which recognises these barriers and strategically addresses them through a portfolio of instruments to drive investments and change behaviour at scale.

There is still likely to be intense pressure to continue to support workers and provide liquidity and support to businesses during the recovery phase. The policy choices in the next few months will affect the potential to introduce low carbon development and climate resilience in the main recovery phase. Without such action, there is likely to be a post-lockdown rebound in greenhouse gas emissions, and the lock-in of higher carbon activities (International Energy Agency[12]).

However, while the green recovery literature has many examples of interventions that could be involved in such an initiative, there is less information on how to implement these programmes in practice.

One of the overriding concerns will be the deliverability of such investments. If governments were to make large-scale funding available, it is highly unlikely that such investments would be 'shovel ready', and instead would need to be primed early. This level of preparedness is likely to be uneven – in some cases, the GCR has already undertaken much of the analysis needed. For example, on mitigation, pilots of Local Heat and Energy Efficiency Strategies offer possible avenues, whilst the Glasgow and Clyde Valley Green Network Partnership, or the Metropolitan Glasgow Strategic Drainage Partnership and Climate Ready Clyde could also channel finance into a green recovery.

How to make this happen?

Finally, and perhaps most critically, a green recovery will require a planned approach. A number of steps are highlighted to implement such an approach.

Analysis and co-design of plans for the green recovery package. As highlighted above, there are different types of interventions (direct, policy reform) and different options. A next step is to analyse preferred options and from this, develop a roadmap for implementation. The latter can identify which options are regional, and which will need national level development.

The prioritisation of options can draw on the key criteria set out in the literature (as discussed earlier in this document- i.e. the jobs potential and the economic benefits), but also ensure

[12] https://www.iea.org/reports/sustainable-recovery

options are inclusive and enable a just recovery. To help this, the recovery options can be identified and co-designed with local stakeholders (politicians, businesses, academics, representatives of local communities and minorities), who all have deep knowledge of the local areas where they live and work, hence improving the success of such plans.

This analysis can also identify the contribution to Glasgow's net zero target and the emerging GCR Adaptation Strategy, providing estimates of the aggregate benefits.

An initial prioritisation of some of the key options in the green recovery literature has been made in this paper and is shown in the Table below.

Table 1: Rating of illustrative 'green' recovery interventions for Glasgow City Region

High	Med	Low

	Criteria rating and level of benefits			
Measure	**Economic recovery (job creation (employment), economic multiplier, addressing inequality (just)**	**Mitigation benefits**	**Climate Resilience benefits**	**Reduced pandemic risk/other civil emergencies and disaster risks**
Building retrofit (energy efficiency, reduced heating, cooling/shading)	High – Large-scale labour-intensive programme, job creation potential, lower energy bills (long term pay back) economic benefit	High – Reduced heating demand	Med - Reduced overheating risk, health/productivity gains	Low - Increased tolerance for lockdowns as required (lower costs, higher thermal comfort)
Heat health warning systems	Low - Minor economic stimulus	Low	Med - Steering public behaviour during times of heat risk	Med - Heat affects similar groups to COVID (older and vulnerable), so reduce extra stress on shielded population. Reduced health system demand.
Property flood resilience (undertaken inside a property to reduce damage)	Med - Large-scale (labour-intensive) installation programme (job creation). Economic benefits (loss reduction). Low acceptability	Med – avoided embedded carbon in flood repair	Med - Reduced flood damage	Low - Reduced water-borne diseases or transmission risk during climate events, or risk of displacement
Property level flood resistance (stop water entering property)	High - Broad macroeconomic benefit for (1:200+ yr. return periods), job creation potential	Med – avoided embedded carbon in flood repair	High - Reduction of flood risk	Low - Low systemic risk potential - only very specific households
Flood risk management schemes	Med - Loss avoidance / uplift in rateable values / broad economic stimulus / some job creation	Med – avoided carbon in flood recovery	High - Reduction of flood risk	Medium - Reduction of systemic risk (e.g. health impacts if combined with climate impacts)
Upgrading existing green spaces/ecosystem-based adaptation	High - Labour intensive (job creation). Uplifts in rateable values / GVA	Medium – small-scale sequestration / Potential micro renewables	Med – Reduced surface water flood risk, cooling of wider environment	High - Increased recreational and amenity benefits (physical and mental health benefits) Positive for social distancing. Reduced dependency on global food supply chains
New green space (e.g. derelict and vacant land, green spaces, roofs and walls, SUDS, growing spaces)	High - Labour intensive (job creation). Uplifts in rateable values / GVA	High – large-scale sequestration potential (dependent on design), reduced food miles	High - Reduced heat island effect, surface water risk,. Reduced global supply chain dependency	

Develop a pipeline of green recovery projects. One quick win will be to take suitable existing project proposals and bring these forward (e.g. green corridors), and look for promising opportunities and develop these rapidly (e.g. public building retrofit). An early task is therefore to build up a green project pipeline, and look to fast-track these with a business case. There may also be an opportunity to draw on technical assistance funding to develop the delivery plans for certain types of investments.

Look to other sources of finance, including the private sector. There may be other areas of public finance (e.g. underspends) or opportunities to access other funding sources (the Green Bank, EIB, Scottish National Investment Bank) that could help implement at scale. A critical area will be to try and better leverage public sector finance, and this could mean innovative models that provide sufficient support to attract private sector finance possibly through blended approaches. It could also investigate innovative financing instruments (e.g. green bonds, resilience bonds), as well as to investigate regionally funded support packages for businesses of regional strategic interest.

Coordinate with others. There are likely to be recovery initiatives at all levels of government. An important issue will be to make sure there is some degree of alignment, and look for the synergies from a more integrated approach. This could engage with Scottish Government on the potential to develop a Green New Deal recovery framework for the whole of Scotland, as well as on wider powers needed regionally for effective delivery.

Mainstream climate change. To deliver these elements, it will be important to integrate the new green recovery thinking across local government. This will include mainstreaming low carbon and resilience into planning and budgeting. It should also embed adaptation requirements into public procurement that promote mitigation, adaptation and resilience to long-term climate risks.

Strengthen institutions to build capacity for future shocks and emergencies. Many actions will already be underway for health emergency planning for COVID-19 but there are opportunities to extend this preparedness and planning to other civil emergencies, including the climate change emergency. This may involve new working groups, or new roles and responsibilities, but will also require resources.

Raise awareness and promote. A final and critical element is to create a strong narrative for the green recovery, making sure that the benefits are identified, and the messaging is clear, and to promote this to bring people on board.

Next steps

The scoping paper will be used by Climate Ready Clyde members to inform their own organisation's recovery responses, and the Climate Ready Clyde secretariat will also use it to support economic recovery efforts at the local, regional and national scales. It will be developed further by the Resilient Regions: Clyde Re:Built Project and used as an input to develop Glasgow City Region's Adaptation Strategy and Clyde Re:Built's emerging plans for a portfolio of transformative adaptation.

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