

Setting a structural agenda for a green economic recovery from COVID-19

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Executive summary

The economic recovery from COVID-19 is taking hold in countries around the world, but governments face a challenge as the shift from short-term stimulus measures to deeper structural ones.

Green stimulus measures saw success where they were deployed after 2008-10, but the opportunity to build green structural measures on this foundation were missed. With governments at risk of following this path post-COVID, this paper provides the outline of the structural green recovery agenda, and gives a tentative mapping of the prioritization criteria governments might consider in designing structural reform packages.

It also provides insights into the thematic and implementation gaps in the green structural reform agenda as currently conceived, identifies the financial barriers facing a successful structural green recovery, and gives examples and case studies of green structural policies that have already been deployed with some success.

In unpacking the concept of green structural reforms, Section 1 finds a policy agenda made up of rhetorically contested space, and a lack of clear definitions. By offering up some important features of structural measures - drawing on a selection of key sources largely since the COVID-19 crisis and economic shock - this paper maps out a potential menu of high level and specific structural green recovery measures, in a nested framework.

In parallel, it identifies a set of structural prioritisation criteria that governments might formally or informally draw on in decision making around green structural reforms - divided into conventional, advanced and systemic/political brackets. In combining together the menu of reforms, and criteria for prioritization, we offer a combined mapping of structural reforms to prioritise or deprioritise given different objectives, and the beginnings of a toolkit for governments and policymakers.

From our framework, we conclude on the importance of green skills measures and integrated planning as structural reform measures, and an enduring emphasis on green fiscal reform and natural capital investment. We identify some gaps in the existing structural recovery literature, especially around specific monetary tools, green skills measures, agri-food, and gender integration; as well as in implementation of green recovery planning - discussed in Section 2.

We offer some insights on the challenges of financing green structural reforms in a green recovery context in Section 3, and some early examples and case studies of green structural measures that have seen some success on the ground in Section 4.

As a working paper, this paper will be subject to further peer review and revision in Section 1, and further expansion, especially in sections 2, 3 and 4.

"This paper provides the outline of the structural green recovery agenda, and gives a tentative mapping of the prioritization criteria governments might consider in designing structural reform packages."

1. The value of a structural green recovery

Conceptualising green structural reform

The COVID-19 crisis has brought with it what is by many measures the largest economic shock in history. This has in turn called forth an unprecedented economic response from governments around the world - initially in the form of triage and stabilisation, followed quickly by bridging stimulus packages of various kinds, and laterly a range of (variably) ambitious economic recovery packages aimed at ‘building back better’ than before.¹

Alignment with the green agenda and environmental policymaking has been a relatively consistent companion to recovery planning - not everywhere, but in many countries - and most especially in the thinking of governments in Europe, North America, and OECD nations more broadly. Green recovery and ‘green new deals’ have been picked up rhetorically by politicians around the world.

The reason for this alignment is not always obvious to those outside the green policymaking community - green economy and green growth are a few steps removed from the immediate pressures of COVID-19 on health systems, on social security and on sectors facing shutdown from pandemic mitigation measures. Poorly managed and risky human-nature interactions and the economic incentives around them present one explanation for raised pandemic risk, but the green tinge to the economic policy response is much wider than this.

The most obvious explanation for the alignment comes from the crisis moment itself and the structural, cross-cutting way that national governments have had to step in to fight the pandemic, mitigate its economic effects, and guide public behaviors in ways that are near unprecedented.

The emergence of green policymaking in this moment is linked to the opportunity of crisis to allow public authorities to remake the structure of the system - an inverted and democratised ‘shock doctrine’, targeted at the public good.² The environmental crises of climate change and biodiversity collapse demand a structural response, and governments are starting to seize a rare moment of system-wide change to intervene for the better.

Though this trend is unprecedented and wide ranging, it is also partial. As multiple analyses of the economic recovery from COVID show us ([Vivid Economics, 2021](#)) ([O’Callaghan, 2021](#)) ([OECD, 2021a](#)) ([GEC, 2021](#)), the green response remains largely piecemeal, short-term, and counter-cyclical. In reflecting on the lessons from the last moment of crisis in 2008 ([UNEP, 2020](#)), Barbier reiterates that short term stimulus and ‘shovel-ready’ green projects can only take government so far in the absence of economy-wide measures that address inter alia ‘the persistent underpricing of fossil fuels and market failures that inhibit green innovation’ across the economy ([UNEP, 2020, p14](#)).

¹ For details on analytical frameworks for phases of the COVID policy response, see ([OECD, 2020c, p10](#)), Tax and Fiscal Policy in Response to the Coronavirus Crisis, or ([GEC, 2020b](#)).

² Klein’s “the shock doctrine”: using the public’s disorientation following massive collective shocks – wars, terrorist attacks, or natural disasters -- to achieve control by imposing economic shock therapy.

The purpose of this working paper follows on from this backward looking observation, and is four-fold:

1. **Review the literature on green structural reform measures** through the lens of PIGE partners’ work on a green recovery from COVID-19. (Section 1)
2. To help unpack and **clarify the scope of a structural green recovery** from COVID-19; what does the policy menu look like, and how might governments begin to prioritise amongst options. (Section 1)
3. **Deepen understanding of the gaps** this review reveals in current green recovery thinking and implementation, and draw out the practical difficulties countries are facing financing a green recovery and making it sufficiently structural. (Section 2 & 3)
4. Illustrate the reality on the ground through **examples of structural and targeted green recovery policies** that are being successfully deployed. (Section 4)

To begin, what should be understood by ‘structural reforms’, and what measures then make up a prospective ‘structural green recovery’ agenda.

Though the terms are increasingly widely used ([GEA, 2020](#)), clear definitions are scarce. Intuitively, we can begin to identify structural reforms by identifying three important features.

First, they are those policies that alter fundamental economic arrangements around consumption,

production, pricing and governance. They are systemic in nature.

Second, they are ‘secular’ in the economic meaning of the term in requiring a longer timeframe to achieve intended impact. While they are not the tools for crisis fighting they are extremely relevant to rebuilding resilience and preventing crises from occurring.

And thirdly, they are in some sense general purpose reforms and have a role in many economic or geographic contexts. (Though the ‘universality’ of these measures is obviously limited in practice and all reforms will need tailoring to local contexts, political structures, and appropriate sequencing during implementation etc.)

For identifying ‘green’ structural reforms³ that might form part of a recovery agenda, in addition to aforementioned ([UNEP, 2020](#)), two important sources that specifically identify green structural measures are ([GEA, 2020](#)) and ([Stern, 2021](#)). These papers give clear guidance on the emerging consensus around aligned green-structural agenda, and identify the need for ‘structural [green] policies that set expectations and a clear sense of direction’ ([GEA, 2020, p6](#)) ([Stern, 2021, p2](#)).

([PIGE, 2020](#)) is also notable for setting out structural measures in the language of a ‘Just,

³ Given the importance of all dimensions of the transition to a successful green structural agenda, we consider inclusion measures and ‘inclusive’ green structural reform to be central and essential to our framing. For brevity we use ‘green structural reforms’ throughout this version, but ‘inclusive, green structural reform’ might be preferred.

Box 1 Structural reforms for a socio-ecological transformation

- Removal of environmentally harmful subsidies and extension of CO₂ pricing
- Removal of regulatory barriers / regulatory requirements for green investments
- Expansion of green financial instruments and green bonds
- Start of a qualification initiative
- Support for environmental innovations and market introduction
- Building green infrastructure
- Link to EU Green Deal measures

From ([GEA, 2020, p6](#))

Box 2 Aligning policy with structural change: key specific actions

- **Commit to putting the right price on carbon and rapidly eliminating fossil-fuel subsidies.** This could include consideration of an international carbon price floor among large emitters such as the G20, and border adjustments for energy-intensive trade-exposed sectors.
- **Lead in the global energy transition by setting targets for zero-carbon power and road transport:** investing strongly in clean energy and energy efficiency at home and in developing countries; phasing out unabated coal power generation domestically by 2030; ending overseas support for fossil fuel investments, starting with coal power generation; and defining a clear phase-out strategy for fossil fuels other than coal in line with the goals of the Paris Agreement. Foster and share research and development in energy and beyond.
- **Commit to a ‘just transition’;** ensure that the benefits and opportunities are shared widely; protect those that are most vulnerable to economic losses.
- **Step up green R&D** and bring innovations to market rapidly through direct public support, risk capital and open markets.

From ([Stern, 2021, p51](#))

Green & Transformative Recovery’, as are the recommendations in ([OECD, 2020a](#)) and ([GGGI, 2020](#)) despite not explicitly using a structural frame or language. (See Annex 1 for details).

Unpacking green structural measures is important if we are to avoid the making the mistakes of 2010 again, and the conviction governments have

invested into stabilisation and stimulus policies (prioritising speed of implementation, economic multiplier, climate impact potential, as ([Hepburn et al, 2020](#)) describe it) is to be transferred into the 5-10 year agenda, and priorities that have impact over the longer-term.

A menu of structural green recovery measures

In collaboration with [PIGE partners](#), we have provisionally identified and reviewed these further key sources of green recovery measures and extracted a provisional set of structural reform recommendations that are currently being emphasised by key green growth and green economy stakeholders.

These are arranged in a nested framework that separates the general, high-level policy measures (such as ‘green fiscal reform’) from more specific measures (such as a ‘fossil fuel funding moratorium’).

(See Table 1 below for key green recovery sources, and Annex 2 for further details on each measure, and Table 2 for the nested framework).

The review of these sources covers the recent literature on structural measures in post-COVID green recovery but - as we have discovered - is a) not exhaustive, and b) reveals some important gaps and areas of deficient attention (as we begin to outline in Section 2).

As stated above, this policy ‘menu’ in Table 2 is by no means exhaustive, and is one possible taxonomy amongst many for arranging or interpreting these reform measures. In the literature reviewed, several identified high level reforms - such as 3) green monetary tools, or 6) green skills and qualification measures - currently lack detailed subsidiary or specific policy measures for their implementation.

Green policy measures around bonds issuance, macroprudential guidance, or taxonomic frameworks may fit under 3), while 6) promises a wide range of possible structural labour market and educational interventions. What Table 2 therefore captures is a snapshot of what is currently in and out of scope in the policymaking debate around ‘green structural reform’, and a useful core of structural measures for policymakers build out from in deepening the green recovery.

While this ‘menu’ for INGOs and governments to work from is useful as a sensemaking framework, it is also limited in that it is abstracted from important contingent political and technical pieces of national level policymaking processes.

While policymakers and government ministries need a menu and examples to work from, they also need guidance and best practice on how to prioritise amongst any given menu of worthy structural reform measures. A menu, plus prioritisation criteria, can begin to build this kind of (high-level) toolkit for policy development and deployment.

Table 1 Key structural green recovery sources

Barbier, UNEP, 2020: [Building A Greener Recovery](#)

Dasgupta, 2021: [The Economics of Biodiversity: The Dasgupta Review](#)

GEA, Umweltbundesamt, 2020: [The Green New Consensus - Study Shows Broad Consensus on Green Recovery Programmes and Structural Reforms](#)

GEC, 2020a: [Green Economy Tracker | Home](#)

GGGI, 2020: [GGGI Post Covid](#)

GlZ, 2020a: [Green Recovery for Practitioners Setting the Course Towards a Sustainable, Inclusive and Resilient Transformation](#)

ILO, 2015: [Guidelines for a just transition towards environmentally sustainable economies and societies for all](#)

Lancet, 2021: [Lancet COVID Commission - Transforming Recovery into a Green Future](#)

OECD, 2020a: [COVID-19 and the low-carbon transition: Impacts and possible policy responses](#)

OECD, 2020b: [Making the green recovery work for jobs, income and growth](#)

OECD, 2021a: [OECD Green Recovery Database](#)

OECD, 2021b: [The inequalities-environment nexus: Towards a people-centred green transition](#)

O’Callaghan, Oxford, 2021: [Are We Building Back Better? Evidence from 2020 and Pathways for Inclusive Green Recovery Spending](#)

PIGE, 2020: [COVID-19: Ten Priority Options for a Just, Green & Transformative Recovery](#)

Stern, 2021: [G7 leadership for sustainable, resilient and inclusive economic recovery and growth](#)

Table 2 A nested framework of green structural reform measures

10 Consolidated high-level measures, and specific examples—including groups strongly recommending each.

HIGH-LEVEL GREEN STRUCTURAL REFORM MEASURES	RECOMMENDED BY	SPECIFIC GREEN STRUCTURAL REFORM MEASURES	RECOMMENDED BY
1 Strengthened planning, strategies and governance	GIZ, GEA, GGGI	1a Integrated beyond-GDP metrics 1b Cross-ministry coordination 1c Multilateral cooperation (SDG17)	HMT/Dasgupta, GEC, World Bank PAGE, GIZ PIGE
2 Green fiscal reform	GIZ, GEA	2a Higher CO2 pricing 2b Fossil fuel subsidy reform 2c Fossil fuel funding moratorium	GEA, Stern, OECD UNEP/Barbier, Stern, OECD, GGGI Stern, GGGI
3 Green monetary tools	GIZ		
4 Sustainable financial system	GEA	4a Broadened corporate reporting	GEA
5 Just transition and inclusion policies	GIZ, Stern, GGGI	5a Just transition plans for sunset industries 5b Intersectional environmental policymaking	GEC, ILO PIGE, OECD
6 Green skills and qualification measures	GEA, Oxford/O'Callaghan, GGGI, OECD		
7 Nature based solutions	GIZ, GGGI	7a Natural capital investment	Oxford/O'Callaghan, GEC
8 Green regulatory strengthening and deregulation	GEA	8a Mainstream green conditionality thresholds 8b Zero carbon power and transport targets 8c Environmental non-regression commitments	OECD Stern OECD
9 Green infrastructure investment	GEA, OECD	9a Green innovation, R&D investment 9b Green energy investment 9c Green transport investment 9d Green buildings upgrades	UNEP/Barbier, GEA, Oxford/O'Callaghan, Stern, OECD, GGGI Oxford/O'Callaghan Oxford/O'Callaghan Oxford/O'Callaghan
10 Empower green behaviour change	OECD	10a Alignment with digitalization policy agenda	GGGI, OECD

Prioritisation amongst structural policy options

Prioritisation criteria could include a policy measure’s estimated impact on job creation, on greenhouse gas emissions, or alignment with another policy agenda - such as the Sustainable Development Goals (SDGs). Some measures - often economic measures or job creation - are most politically prized, while social and environmental impact measures are increasingly common and occasionally mandated by law through impact assessment and consultation processes.

Table 3, below, provides an overview of some recent key sources on prioritisation amongst structural reforms and green measures specifically, drawn from recent literature and PIGE partners national experience.

Drawing on these sources and technical input, Figure 1 provides a (non-exhaustive) schematic overview of some of the varied prioritisation criteria

governments can use in assessing the viability of different green structural reform measures. These are colour coded based on whether they are primarily economic, environmental, social, technical, or political considerations, and are divided between groupings of conventional, advanced, and systemic/political criteria.

Conventional, for those criteria that would more commonly be part of the toolkit of an implementing ministry; though attention to measures like benefit-cost ratios certainly remain much more conventional than, inter alia, climate resilience.⁴

Advanced, for an emerging new generation of criteria that are starting to be recommended to

⁴ Climate resilience is being included amongst ‘conventional’ measures is intended to capture the sense in which disaster resilience, and structural investment in prevention measures, is more common in many planning processes.

Table 3 Key prioritization criteria sources

Lucas & Vardon, 2021: [Greening The Recovery To Make It Last: The role of natural capital accounting](#)

UN PAGE, 2020a: [New Findings: Green Recovery Options Perform Better, but Biodiversity Still at Risk | PAGE](#)

Hepburn et al, 2020: [Will COVID-19 fiscal recovery packages accelerate or retard progress on climate change?](#)

GEA, 2020: [The Green New Consensus - Study Shows Broad Consensus on Green Recovery Programmes and Structural Reforms](#)

Stern, 2021: [G7 leadership for sustainable, resilient and inclusive economic recovery and growth](#)

Vogt-Schilb et al, 201: [When starting with the most expensive option makes sense: Optimal timing, cost and sectoral allocation of abatement investment](#)

Batini et al, IMF, 2021: [Building Back Better: How Big Are Green Spending Multipliers?](#)

GGKP, 2020: [The 3Returns Framework: A method for decision making towards sustainable landscapes](#)

GGI Indonesia, 2018: [Green Growth Assessment & Extended Cost Benefit Analysis](#)

Pinzón & Robins et al, 2020: [The sovereign transition to sustainability: Understanding the dependence of sovereign debt on nature](#)

OECD, 2020a: [COVID –19 and the low-carbon transition. Impacts and possible policy responses](#)

Cohen et al, 2017: [The wealth of nature: Increasing national wealth and reducing risk by measuring and managing natural capital](#)

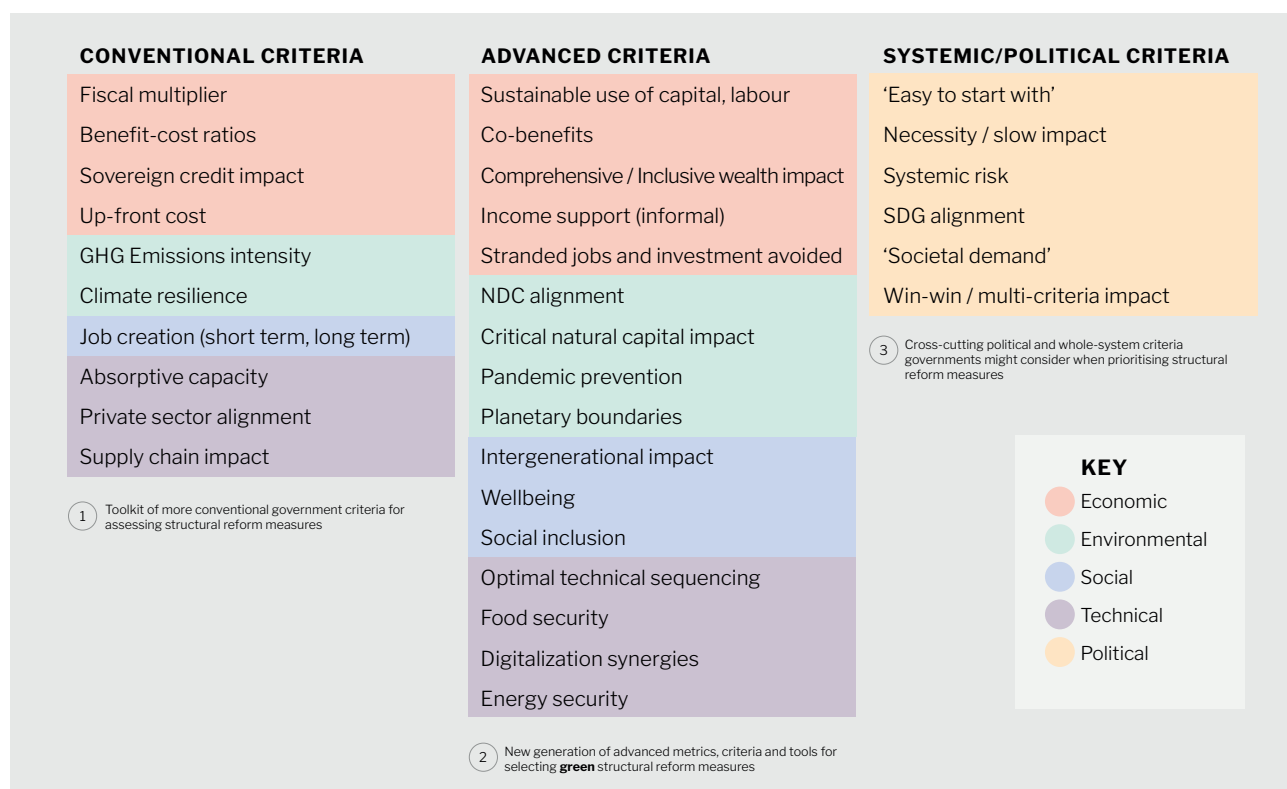
policymakers, and should increasingly be mainstreamed into national planning processes for structural measures. Consideration of critical natural capital, or measures of comprehensive/inclusive wealth⁵ can help to provide a deeper lens on environmental, social - as well as technical and economic - impacts of policy that are well suited to structural reforms, and governments looking to ‘build back better’ via an economic recovery that achieves multiple social objectives.

Systemic/political, for criteria that are politically salient - such as societal demand or popularity - or are cross-cutting in a way that is clearly structural, system-wide, and difficult to classify; such as SDG alignment, or perceptions of being policies that are ‘easy to start with’.

(Annex 3 provides further details of which sources describe each criteria, and Figure 2 (below) also includes short, illustrative descriptions of each criteria)

⁵ For definitions of critical natural capital, see (Cohen et al, 2017, p24), or for comprehensive/inclusive wealth, see (GGKP, 2020, p9)

Figure 1 Green structural recovery prioritisation criteria



A combined mapping of green structural measures and prioritization criteria

The mappings outlined in Table 2 and Figure 1 are partial and provisional, and we hope to develop them further with consultation and technical input from partners. Their usefulness from a policymakers perspective, for conceptualising a structural agenda for a green economic recovery from COVID-19 comes into focus when you combine the menu of green structural reform measures with prioritisation criteria.

Figure 2, below, attempts this by drawing on the sources mentioned to map (left to right) high priority reforms, low priority reforms, and key stakeholders against each of the criteria in Figure 1.

For instance, policymakers most interested in the fiscal multiplier of a given green structural reform might focus on high-level green infrastructure investment, alignment with growth enhancing tech and digitalisation policies, or direct investment in natural capital maintenance or and restoration.⁶

While they might avoid focusing on integrated beyond GDP-metrics which are likely to offer more gradual returns on investment and are poorly matched to those interested in positive fiscal impact. While the stakeholders most invested in the fiscal impact of a reform measure are likely to be economic and planning ministries themselves, and mainstream economic actors (such as economists, and the economic or business press).

Annex 3 provides a breakdown of some of the sources for identifying and mapping each criteria, but Figure 2 begins to offer policymakers a sensemaking toolkit for prioritisation amongst the vast range of competing green recovery and reform measures under consideration.

As with Table 2 and Figure 1, the mapping should be caveated as subject to further iteration, consultation and technical input - given that high and low prioritisation reflects an unavoidable degree of inter/subjective judgement. It is also hard to overstate the importance of regional, national, and locally specific contingencies for effective policy implementation - all the more so for structural measures.

This paper’s initial mapping is the start, not the conclusion, of a process that would include adaptation of the mapping to specific national political priorities and economic conditions. It offers a framework for approaching green structural reforms in a cross-cutting way.

⁶ Details of rationales / sources for each criteria are outlined in Annex 3, but for the fiscal multiplier see (Batini et al, IMF, 2021, p2) “...every dollar spent on key carbon-neutral or carbon-sink activities can generate more than a dollar’s worth of economic activity... estimated multipliers associated with spending on renewable and fossil fuel energy investment are comparable, and the former (1.1-1.5) are larger than the latter (0.5-0.6) with over 90 percent probability,” and (Hepburn et al, 2020, p365) “...High-productivity economies of the future will be those that make the most of artificial intelligence and the technologies of the fourth industrial revolution (Schwab and Davis, 2018) while also protecting and enhancing natural capital, such as ecosystems, biodiverse habitats, clean air and water, productive soils, and a stable climate.”

Figure 2 Mapping: Green structural recovery prioritisation

Green Structural Recovery Prioritisation: Conventional Criteria

CONVENTIONAL PRIORITISATION CRITERIA	DESCRIPTION	HIGH-PRIORITY REFORM MEASURES	LOW-PRIORITY REFORM MEASURES AND RATIONALE	CRITERIA STAKEHOLDERS
Fiscal multiplier	Short-term effect on economic output/GDP	<ul style="list-style-type: none"> 9 Green infrastructure investment (general) 10a Alignment with digitalization policy agenda (specific) 7a Natural capital investment (specific) 	<ul style="list-style-type: none"> 1a Integrated beyond-GDP metrics (specific) Slow acting, low short term fiscal return 	Economic and planning ministries Mainstream economic actors
Benefit-cost ratios	Monetised balance of benefits to costs; value for money	<ul style="list-style-type: none"> 7a Natural capital investment (specific) 2b Fossil fuel subsidy reform (specific) 5 Green skills and qualification measures (general) 	<ul style="list-style-type: none"> 5 Just transition and inclusion policies (general) Impact will be missed by BCRs 	Economic and planning ministries
Sovereign credit impact	Change in national credit worthiness	<ul style="list-style-type: none"> 2 Green fiscal reform (general) 7a Natural capital investment (specific) 1c Multilateral cooperation (SDG17) (specific) 	<ul style="list-style-type: none"> 8c Environmental non-regression commitments (specific) Sovereign credit markets may prefer more discretionary tools 	Central banks Economic and planning ministries Mainstream economic actors
Up-front cost	Immediate fiscal & financial costs of deployment	<ul style="list-style-type: none"> 2a Higher CO2 pricing (specific) 10 Empower green behaviour change (general) 8 Green regulatory strengthening and deregulation (general) 	<ul style="list-style-type: none"> 9 Green infrastructure investment (general) High up-front cost 	Politicians Economic and planning ministries Private sector
GHG Emissions intensity	Greenhouse gas emission intensity of deployment	<ul style="list-style-type: none"> 2b Fossil fuel subsidy reform (specific) 2c Fossil fuel funding moratorium (specific) 9 Green infrastructure investment (general) 	<ul style="list-style-type: none"> 3 Green monetary tools (general) Indirect impact on GHGs 	Scientists Environmental actors Planning ministries
Climate resilience	Contribution to adaptivity to impacts of climate change	<ul style="list-style-type: none"> 1b Cross-ministry coordination (specific) 5 Just transition and inclusion policies (general) 6 Green skills and qualification measures (general) 	<ul style="list-style-type: none"> 4a Broadened corporate reporting (specific) Indirect and lower impact 	Local communities Scientists Environmental actors
Job creation (short term, long term)	The number of short/long term, permanent/temporary jobs created	<ul style="list-style-type: none"> 5a Just transition plans for sunset industries (specific) 9a Green buildings upgrades (specific) 7a Natural capital investment (specific) 	<ul style="list-style-type: none"> 2c Fossil fuel funding moratorium (specific) Potential for short term employment shocks 	Politicians Economic and planning ministries Mainstream economic actors
Absorptive capacity	Ability of national economy to reconfigure to deliver a policy change	<ul style="list-style-type: none"> 1 Strengthened planning, strategies and governance (general) 6 Green skills and qualification measures (general) 5 Just transition and inclusion policies (general) 	<ul style="list-style-type: none"> 9 Green infrastructure investment (general) High demands on technical capacity, supply chains 	Economic and planning ministries Private sector
Private sector alignment	Alignment of a policy change with priorities and interests of private sector actors	<ul style="list-style-type: none"> 9a Green innovation, R&D investment (specific) 4a Broadened corporate reporting (specific) 10a Alignment with digitalization policy agenda (specific) 	<ul style="list-style-type: none"> 5 Just transition and inclusion policies (general) Potential for resistance due to short-termism/least cost mentality 	Private sector Economic and planning ministries
Supply chain impact	Impact on industrial and consumer supply chains	<ul style="list-style-type: none"> 1 Strengthened planning, strategies and governance (general) 6 Green skills and qualification measures (general) 9a Green innovation, R&D investment (specific) 	<ul style="list-style-type: none"> 2a Higher CO2 pricing (specific) Wide cost impact across supply chains 	Private sector Economic and planning ministries Local communities

KEY Economic Environmental Social Technical Political

Green Structural Recovery Prioritisation: Advanced Criteria (1/2)

CONVENTIONAL PRIORITISATION CRITERIA	DESCRIPTION	HIGH-PRIORITY REFORM MEASURES	LOW-PRIORITY REFORM MEASURES AND RATIONALE	CRITERIA STAKEHOLDERS
Sustainable use of capital, labour	Long term, sustainable allocation of capital and labour across the economy	2 Green fiscal reform (general) 4 Sustainable financial system (general) 1 Strengthened planning, strategies and governance (general)	10 Empower green behaviour change (general) Diffuse, indirect impact	Economic and planning ministries Central banks
Co-benefits	Positive side-effects of a policy change; positive externalities	9a Green innovation, R&D investment (specific) 7 Nature based solutions (general) 9b Intersectional environmental policymaking (specific)	3 Green monetary tools (general) Complex/hard to evaluate impact	Scientists Environmental actors Politicians
Comprehensive / Inclusive wealth impact	Composite measures of overall stocks of economic, social, financial, natural capitals	1a Integrated beyond-GDP metrics (specific) 2 Green fiscal reform (general) 7a Natural capital investment (specific)	2c Fossil fuel funding moratorium (specific) Write-off of subsoil assets	Scientists INGOs Economic and planning ministries
Income support (informal)	Impact on incomes of citizens; especially informal and marginally employed	5b Intersectional environmental policymaking (specific) 5 Just transition and inclusion policies (general) 9 Green infrastructure investment (general)	2b Fossil fuel subsidy reform (specific) Potential for consumer price impacts	Local communities Politicians Mainstream economic actors
Stranded jobs and investment avoided	Misallocation into brown jobs and investment prevented by a policy change	4 Sustainable financial system (general) 6 Green skills and qualification measures (general) 2c Fossil fuel funding moratorium (specific)	1b Cross-ministry coordination (specific) Cross-prioritisation between ministries	Private sector Economic and planning ministries
NDC alignment	Alignment with nationally determined contributions (NDCs) under the Paris Agreement	2 Green fiscal reform (general) 7 Nature based solutions (general) 9 Green infrastructure investment (general)	1a Integrated beyond-GDP metrics (specific) Long term impact only	Scientists Environmental actors Environment ministries
Critical natural capital impact	Impact on critical, globally irreplaceable natural capital assets	7 Nature based solutions (general) 7a Natural capital investment (specific) 8 Green regulatory strengthening and deregulation (general)	10a Alignment with digitalization policy agenda (specific) Targets a different set of consumption/production decisions	Scientists Environmental actors
Pandemic prevention	Contribution to minimising pandemic viral diseases	7a Natural capital investment (specific) 1b Cross-ministry coordination (specific) 1c Multilateral cooperation (SDG17) (specific)	7 Nature based solutions (general) Potential for increased human-nature interactions	Scientists Private sector Politicians
Planetary boundaries impact	Impact on nine, key planetary boundaries	2 Green fiscal reform (general) 8c Environmental non-regression commitments (specific) 1c Multilateral cooperation (SDG17) (specific)	10a Alignment with digitalization policy agenda (specific) Diffuse impact	Environmental actors Scientists
Intergenerational impact	Likely impact on future generations welfare and living standards	1a Integrated beyond-GDP metrics (specific) 9 Green infrastructure investment (general) 2 Green fiscal reform (general)	4a Broadened corporate reporting (specific) An incremental measure only	Environmental actors Local communities INGOs

KEY ● Economic ● Environmental ● Social ● Technical ● Political

Green Structural Recovery Prioritisation: Advanced Criteria (2/2)

CONVENTIONAL PRIORITISATION CRITERIA	DESCRIPTION	HIGH-PRIORITY REFORM MEASURES	LOW-PRIORITY REFORM MEASURES AND RATIONALE	CRITERIA STAKEHOLDERS
Wellbeing impact	Impact on citizen's assessment of their subjective wellbeing	<ul style="list-style-type: none"> 6 Green skills and qualification measures (general) 5 Just transition and inclusion policies (general) 10a Alignment with digitalization policy agenda (specific) 	<ul style="list-style-type: none"> 2b Fossil fuel subsidy reform (specific) Potential for transitional negative impact on wellbeing 	Local communities INGOs Politicians
Social inclusion	Contribution to social inclusion outcomes; decreased inequalities	<ul style="list-style-type: none"> 5b Intersectional environmental policymaking (specific) 5 Just transition and inclusion policies (general) 10 Empower green behaviour change (general) 	<ul style="list-style-type: none"> 2c Fossil fuel funding moratorium (specific) Immediate, sectoral impact on fossil fuel jobs/employment 	INGOs Local communities Politicians
Optimal technical sequencing	Technocratically and scientifically preferred sequencing of policy implementation	<ul style="list-style-type: none"> 1 Strengthened planning, strategies and governance (general) 8b Zero carbon power and transport targets (specific) 9 Green infrastructure investment (general) 	<ul style="list-style-type: none"> 2a Higher CO2 pricing (specific) Politically difficult, and less reliant on sequencing 	Scientists Economic and planning ministries
Food security	Overall impact on agri-food supply chain resilience	<ul style="list-style-type: none"> 1 Strengthened planning, strategies and governance (general) 1b Cross-ministry coordination (specific) 7a Natural capital investment (specific) 	<ul style="list-style-type: none"> 2 Green fiscal reform (general) Potential for supply chain impacts 	Politicians Economic and planning ministries Local communities
Digitalization synergies	Alignment benefits with digitalisation policy agendas; 4th industrial revolution	<ul style="list-style-type: none"> 10a Alignment with digitalization policy agenda (specific) 9a Green innovation, R&D investment (specific) 6 Green skills and qualification measures (general) 	<ul style="list-style-type: none"> 2b Fossil fuel subsidy reform (specific) Few digitalization opportunities 	Economic and planning ministries INGOs
Energy security	Impact on reliability of the energy supply system; electrical and non-electrical; primary energy demand	<ul style="list-style-type: none"> 1 Strengthened planning, strategies and governance (general) 9b Green energy investment (specific) 1b Cross-ministry coordination (specific) 	<ul style="list-style-type: none"> 8b Zero carbon power and transport targets (specific) Transitional risks to manage in energy supply 	Economic and planning ministries Politicians Local communities

Green Structural Recovery Prioritisation: Systemic / Political Criteria

CONVENTIONAL PRIORITISATION CRITERIA	DESCRIPTION	HIGH-PRIORITY REFORM MEASURES	LOW-PRIORITY REFORM MEASURES AND RATIONALE	CRITERIA STAKEHOLDERS
'Easy to start with'	Overall ease of policy implementation as a first step; for governments, consumers	<ul style="list-style-type: none"> 9b Green energy investment (specific) 1b Cross-ministry coordination (specific) 7 Nature based solutions (general) 	<ul style="list-style-type: none"> 2 Green fiscal reform (general) Complex/political by nature, and timing matters 	Politicians Mainstream economic actors
Necessity / slow impact	Assessment of necessary & essential reforms that must be front-loaded despite slow impact	<ul style="list-style-type: none"> 4 Sustainable financial system (general) 2a Higher CO2 pricing (specific) 6 Green skills and qualification measures (general) 	<ul style="list-style-type: none"> 8c Environmental non-regression commitments (specific) Can be introduced later in sequence once env. standards are raised 	Scientists Environmental actors INGOs
Systemic risk	Whether a reform contributes to reducing overall risks of systemic collapse or dysfunction	<ul style="list-style-type: none"> 1a Integrated beyond-GDP metrics (specific) 8c Environmental non-regression commitments (specific) 5b Intersectional environmental policymaking (specific) 	<ul style="list-style-type: none"> 10 Empower green behaviour change (general) Relies on individual, optional action, so unsuited for urgent/systemic issues 	Scientists Environmental actors
SDG alignment	Cross-cutting alignment with achieving the 17 Sustainable Development Goals (SDGs)	<ul style="list-style-type: none"> 1c Multilateral cooperation (SDG17) (specific) 1a Integrated beyond-GDP metrics (specific) 5b Intersectional environmental policymaking (specific) 	<ul style="list-style-type: none"> 2a Higher CO2 pricing (specific) Unlikely to contribute to SDG delivery alone - requires a wider policy package 	Environmental actors INGOs
'Societal demand'	Public and societal demand for a policy agenda; populist appeal	<ul style="list-style-type: none"> 9b Green energy investment (specific) 5 Just transition and inclusion policies (general) 6 Green skills and qualification measures (general) 	<ul style="list-style-type: none"> 2 Green fiscal reform (general) Often difficult to sell to local communities/voters 	Local communities Politicians Environmental actors
Win-win / multi-criteria impact	Extent to which a policy measure has cross-cutting impact across many criteria for prioritisation	<ul style="list-style-type: none"> 7a Natural capital investment (specific) 8a Mainstream green conditionality thresholds (specific) 1 Strengthened planning, strategies and governance (general) 	<ul style="list-style-type: none"> 3 Green monetary tools (general) More of a precision/technical policy instrument 	Economic and planning ministries Politicians

KEY ● Economic ● Environmental ● Social ● Technical ● Political

Insights for a green structural recovery agenda

Reviewing the mapping in Figure 2 reveals a few useful insights. Of the high-level, macro reform measures highlighted in the current sources and literature, it is (6) Green skills and qualification measures, and (1) Strengthened planning, strategies and governance that seem to align most strongly with the criteria reviewed.

They are followed by (2) Green fiscal reform, (5) Just transition and inclusion policies, and (9) Green infrastructure investment. It is notable that (3) Green monetary tools are least well aligned, though rather than lower importance this perhaps reflecting its technical and indirect impact channels and absence of integration with direct green structural recovery thinking. A gap to be filled and bridged, along with identifying subsidiary green recovery policies mentioned previously.⁷

For specific, subsidiary structural green reform measures it is (7a) Natural capital investment with by far the strongest alignment, reflecting the multiple returns and social, economic, environmental and technical impacts possible from channelling funds towards ecosystems and nature-based solutions. (1b) Cross-ministry

⁷ See (Mealy et al, E3G, 2021) for an overview of green macro-financial reforms that could be integrated.

coordination, (5b) Intersectional environmental policymaking, (1a) Integrated beyond-GDP metrics, (1c) Multilateral cooperation (SDG17), (9a) Green innovation, R&D investment, and (10a) Alignment with digitalization policy agenda, form a middle order of general purpose reform measures with multiple benefits. But it is (9b) Green energy investment, and (9c) Green transport investment, that see surprisingly little alignment given their prioritisation in short-term green stimulus spending, and carbon reduction strategies more generally.

It is possible that this reflects an inevitable limitation of separating and bundling of measures into general and specific categories, and the further segmentation of different types of investment into energy or transport in the literature. The high-level measure of green infrastructure investment sees strong alignment with many criteria, and may be preferred in most cases to reforms that bring more targeted investment.

There are multiple conclusions we might draw from this packaging of the green structural recovery agenda and how governments might best focus their attention in the 5-10 year recovery phase after the COVID-19 shock, as Barbier emphasises in (UNEP, 2020).

Key green structural recovery insights - for governments

Governments that want to get a grip on green structural reform at the highest level might focus on a green skills agenda and strengthen integration of green measures in their planning approaches and strategic governance.⁸

Green fiscal reform - to recalibrate existing consumption patterns - and just transition planning - to manage the impacts - are just as important as direct (public or private) investment in green infrastructure.

⁸ This is also a key finding of the OECD Green Recovery Database (OECD, 2021a)

Governments ready for implementation, perhaps with further recovery spending to deploy, might look to natural capital investment and nature based solutions first and foremost, and then on to other kinds of green infrastructure and R&D investment.

Effective coordination amongst ministries on green reforms is essential and - given the restructuring of governance and decision making involved - a structural programme all of its own. Key outcomes here might be linked with mainstreaming beyond-GDP metrics,

intersectional policymaking, and multilateral cooperation on transition trajectories.

Much of the green structural reform agenda is banking on significant returns from blue-sky green innovation and R&D investment. It can be hard to identify in advance the specific benefits of this kind of investment (aside from declining cost-curves for renewables, batteries, and - eventually - NETs⁹) but key political actors such as the EU and China¹⁰ are suitably convinced as

⁹ Negative emission technologies, which - for climate - all IPCC scenarios for stabilising at 1.5 or even 2 degrees are reliant upon. See (EASAC, 2018)

¹⁰ See, China Daily - [China, EU agree on green partnership, digital cooperation](#) Sept 2020

to see strong alignment with a digitalization agenda that offers decarbonisation directly and via behavior change.

For simple and conventional political priorities - like job creation - the straightforward answer is that governments focusing structural reform attention on upgrading capital - physical (buildings) and natural (ecosystems) have the best prospects for job rich growth in the long term. But on the other side of the ledger, that robust just transition planning specifically for sunset industries is needed to cut down on effective job losses.

Key green structural recovery insights - for INGOs / the policy community

As Table 2 and Figure 2 show, there are some **unavoidable definitional issues** in distinguishing a class of structural measures from non-structural stimulus measures. The slowest acting stimulus investments - such as many kinds of infrastructure investment - overlap with the fastest acting structural measures.

A linear mapping of which policies are most suited to different criteria, as in Figure 2, can only go so far in clarifying about the most effective sequencing of reform measures. Interactions and rebound effects call for more **development of more detailed scenario planning** beyond the initial mapping.

In reviewing and reframing the key green structural reform literature in Table 2, it is clear that there are **gaps in the menu of what is currently understood as green structural reform**. Specific, subsidiary policies around i) monetary tools, ii) the training and green skills agenda, iii), agri-food and agro-ecological policies, and iv) approaches to gender integration into policy, are absent from current framing; but not because they do not exist or cannot be integrated and articulated through a structural

green recovery lens.

In comparing the most promising structural reforms with data on current green recovery packages around the world (e.g. (O'Callaghan, 2021), (Lucas & Vardon, 2021), (OECD, 2021a), and (GEC, 2020a)), there are clear **gaps to overcome in current implementation of green recovery** on the ground. We might observe limited attention to gender integrated green recovery policy, the relative dearth of nature investment (compared with low carbon), and lack of attention to just transitions and informal actors in sub-sectoral recovery planning are most apparent. (As Section 2 aims to expand on).

Even with the usefulness of Figure 2 as an initial mapping, its partial and limited nature call for the **development of a stronger toolkit** by international green growth and green economy institutions. It is essential to go further to help governments build nationally relevant packages of green structural reforms, and assist with strategizing around the political economy financing and greening structural reforms - both new measures, and those already in motion.

2. Gaps in the current green recovery agenda

As section 1 of this paper began to articulate, the emerging green recovery agenda that we see in recent literature, government declarations, and legislation displays several distinct kinds of gaps and omissions.¹¹

1. The agenda is **insufficiently ‘structural’** in the sense that governments have been (in some senses, rightly) focused on stabilization/triage and greening of short term economic stimulus measures; not medium and long term reform.
 2. The literature and work produced by different actors attempting to align green recovery with a structural reform agenda currently **misses or undervalues certain key policy areas** (such as specific monetary tools, skills and retraining policies, and gender integration, inter alia) in its menu of options.
 3. There are clear **thematic gaps in the implementation of green recovery** packages that we can actually observe being deployed around the world; not least the lack of attention to structural investment in nature, gender integrated policy, and sectorally just transitions.
1. Lack of alignment with **integrated metrics** at a macro level (such as wealth accounting, or beyond-GDP measures), and micro level (granular project indicators, financing conditionality)
 2. Lack of alignment with a **rights agenda** (resource rights, representational rights, procedural rights, and distributive rights).
 3. Lack of attention to **societal demand** / democratic populism and civil society mobilization, engagement.
 4. Lack of attention to impact and interaction with existing **social inequality** (anti-poverty, zero hunger, and informality) agenda.
 5. Specifically, a consistent underutilisation of **gender** integrated policy approaches and methodologies in green recovery planning.
 6. Weak alignment with contributions to achieving the **Sustainable Development Goals** (SDGs), or even attribution where this is possible.
 7. Lack of attention to mitigating disrupted **circular economy** processes and progress.
 8. An ongoing **multilateral governance gap**, with no institutional home or accountability around green recovery implementation, or structural transition.
 9. Poor integration of aligned **blue economy** policy solutions, tools and methodologies.
 10. Weak engagement with potential **city and municipal-level** green recovery opportunities.

Section 1 has provided some analysis of the first and second type of gap, and Section 2 will primarily focus on the third kind - the thematic gaps in green recovery implementation, and structural solutions that might be scaled up.

In collaboration with PIGE partners, we have looked to identify a ‘long-list’ of thematic gaps that have been observed in green recovery implementation.

This list includes:

While all of the above are deserving of further attention, this section will prioritise gender, nature, sectoral policies - including informal economy - and just transition.

¹¹ Note: This section of the Working Paper will be subject to substantial revision and expansion in future versions. This version provides an outline of the analysis, data and sources to be covered

Gender integration into structural green recovery policy

- Gender inclusion is an important and longstanding gap in both the analytic framework of green growth and green economy thinking, and at the level of policy implementation.¹²
- Deployment of green stimulus and green recovery policies post-COVID have largely followed this trend, despite the efforts of many PIGE implementation partners.
- See ([GGGI, 2021](#)) Gender Equality and Social Inclusion Strategy 2021-2025, ([OECD, 2021b](#)) The Inequalities Environment Nexus - TOWARDS A PEOPLE-CENTRED GREEN TRANSITION, and, ([PIGE, 2020](#)) COVID-19: Ten Priority Options for a Just, Green & Transformative Recovery.
- The economic and social effects of COVID-19 have hit marginalised, poor women particularly hard, and yet a gender lens is notable by its absence from green stimulus packages, structural recovery planning, and (specifically) green job potential assessments.
- Limited exceptions include the explicit targeting of women entrepreneurs by the Nigerian government's MSME survival fund.¹³
- Inclusive green recovery approaches that integrate gender are important for fairness and for just transition reasons, but to improve effectiveness of public and private spending, and can help to ease political barriers via win-win measures that address multiple social objectives.
- A truly gender inclusive recovery agenda might have an expanded role for gender audits, stronger SDG alignment, and attention to the gender composition of green jobs programs as part of structural reforms; amongst other measures.

¹² ([Bass et al, 2016](#)) provides an overview of an alternate pro-poor inclusive framing.

¹³ See <https://guardian.ng/business-services/fg-to-disburse-n300m-msmes-survival-fund-to-mark-60th-anniversary/>

Nature integration into structural green recovery policy

- As Section 1 demonstrates, nature based solutions - broadly - and natural capital investment - specifically - are amongst the most promising green structural reform measures for achieving many governmental priorities simultaneously. ([Hepburn et al, 2020](#)) and ([Stern, 2021](#)) make this particularly clear.
- Despite this, reviews of green stimulus and recovery spending via ([O’Callaghan, 2021](#)) and ([GEC, 2020a](#)) indicate that investment in nature and biodiversity is much weaker than in climate mitigation and decarbonisation measures.¹⁴
- ([Lucas & Vardon, 2021](#)) and further elaborate on the opportunities of investing in natural capital - broadly construed - and integrating accounting approaches into structural recovery planning. The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) have further emphasised the missed opportunities.¹⁵
- ([Dasgupta, 2021](#)) and ([Agarwala et al, 2020](#)) have provided forward-looking policy recommendations for nature and natural capital-based policy agendas, which are ripe for integration into green structural reform planning.

¹⁴ Forthcoming work by GEC and IIED will provide an overview of nature-based recovery elements of the French, Brazilian, Ugandan, and Indian stimulus packages.

¹⁵ See *Respect for nature must be at the core of the green recovery*, by Ana María Hernández Salgar, chair of IPBES.

Integrating inclusive sectoral policy into a structural green recovery

- Sectoral and sub-sectoral green recovery planning is often too granular and context specific to fit easily into structural reform thinking.
- Addressing the challenges faced by the informal economy and smallest MSME actors is one area where there are cross cutting, common challenges to delivering a just transition.
- ([Rose et al, SEED, 2021](#)) provides an overview of the experiences of small, green entrepreneurs through the COVID pandemic, and guidance on the stronger role eco-inclusive enterprises can be empowered to play by the right enabling policy.
- Adapting green conditionality requirements for different sectors, and size of actors is a key challenge for a structural green recovery.

3. Addressing the financing challenge

Section 1 of the paper outlined the breadth of a potential structural green recovery agenda, while Section 2 highlighted some of the gaps to be backfilled by smart policymaking. A central question that remains is how a structural green recovery agenda is to be financed, especially given the acute practical difficulties countries in the global south face in funding countercyclical stimulus measures, let alone structural reform at scale.¹⁶

The most ambitious and structural green policy agendas have been deployed by high income countries with permissive financing conditions - notably the EU Green Deal.

These fiscal and monetary conditions are simply not available to a majority of economies around the world facing original sin and a constrained green monetary toolbox; most specifically in the global south where green structural reforms to leapfrog unsustainable infrastructure are most urgently needed.

Solutions for credible green structural reform must tackle the real and substantive transactional political economy barriers in (Mealy et al, 2021) to funding an otherwise growth, nature and wellbeing enhancing green structural recovery.

(Volz et al, 2021) provides an overview of debt-relief options to help relieve burdens and align developmental and ecological outcomes. (Griffith-Jones & Carreras, 2021) provide further suggestions, along with (Steel & Patel, 2020) on debt for nature swaps.

(ESCAP & GGGI, 2021) examines critical policy gaps and barriers to access climate finance for recovery projects, discusses the most commonly utilized range of financial instruments and mechanisms for climate and recovery in developing countries (i.e. project finance, thematic bonds, development funds and facilities, and debt for climate swaps) as well as the emerging post COVID-19 green and climate finance innovative trends; such as carbon financing structures. Finally, it discusses the importance of mainstreaming climate risk disclosure and reporting for boosting green investments in a recovery and transition era.

GGGI's Sustainable Recovery Index study (publication pending) has identified 10 good practices to finance a green and resilient recovery in developing countries with tight fiscal constraints:

- Alling future economic stimulus packages with national climate and development policies and targets to increase long-term mobilization of climate finance and quicker implementation.

¹⁶ Note: This section of the Working Paper will be subject to substantial revision and expansion in future versions. This version provides an outline of the analysis, data and sources to be covered.

- Prioritize investments in sectors that might have future impacts on fiscal revenues, or widening the tax base, by reducing informality whilst seeking a green economy approach.¹⁷
 - Allow Development Finance Institutions (DFIs) to lead the collaboration with the private sector to drive more capital.¹⁸
 - Crowd-in private capital, through new blended finance structures and by increasing the linkages between recovery, mitigation, and resilience in financing project.
 - Emit sustainability sovereign debt through sustainability or SDG-linked bonds - that can complement the labeled bonds market - to finance recovery measures whilst aligning long-term fiscal sustainability with economic and environmental sustainability.
 - Strengthening the overall financing of the agenda for sustainable development
 - Implement built-in mechanisms to increase fiscal revenues or reduce expenditures in the medium term, once economic conditions are normalized
 - Use of credit enhancements to de-risk certain investments that can be undertaken by the private sector.
 - Utilize debt swaps either Debt for Nature (DFN) or Debt for Climate (DFC) Swaps.
 - Restructure public-private partnerships.
- A structural recovery agenda cannot be operationalised without tackling liquidity constraints faced by critical actors, and multilateral actors and DFIs have a clear role to play in clearing a path.

¹⁷ See: UNDP Latin America and the Caribbean#COVID19 | POLICY DOCUMENTS SERIES UNDP LAC C19 PDS No. 21 Planning a Sustainable Post-Pandemic Recovery in Latin America and the Caribbean

¹⁸ See [The Global Landscape of Climate Finance: an Update](https://climatepolicyinitiative.org/publications/global-landscape-of-climate-finance-an-update/) (climatepolicyinitiative.org)

4. Examples of structural green recovery

Previous sections have attempted to describe a prescriptive vision of what a structural green recovery could and should look like if it is to be successful. Section 4 aims to be similarly prescriptive, but from an empirical foundation of practical examples of green structural measures that have been - or are being - successfully deployed at ground level.¹⁹

These examples and case studies will be applicable to the post-COVID recovery context, but draw from those deployed between 2010-2020, as well as in 2020-2021 during that wave of unprecedented government intervention in economies around the world. While recent measures are more apt and timely, earlier measures offer less tentative conclusions on successful implementation.

Drawing on Table 2 (but not being limited to this menu), this section arranges examples of green structural measures across five sub-sections:

1. Examples that have been **flexibly and more universally** applied across different geographies and contexts.
2. Examples that are **particularly suited to the global south**, or successful in named specific regions.
3. Examples that are **working at local and municipal levels** of deployment.
4. Examples that **offer rapid returns** of job creation, short term economic multipliers, or environmental impact.
5. Examples that have been **effective in particular key economic sectors** or sub-sectors.

Lastly, we attempt to draw together common lessons from these case studies, and conclusions from deployment so far during the COVID pandemic.

¹⁹ Note: This section of the Working Paper will be subject to substantial revision and expansion in future versions. PIGE partners are collating examples of successful green, structural measures from prior to COVID, as well as tentative examples of reforms underway during 2020 and 2021. This version provides an outline of the analysis, and some tentative/provisional case-studies.

1. Flexible structural policies

Coordinated multilateral planning (UN Agencies) [1c]

Multiple UN agencies have worked together to ensure there is an urgent, joined-up response to socio-economic needs countries and societies face from COVID-19.

[A UN framework for the immediate socio-economic response to COVID-19 - APRIL 2020](#) combined with [Economic Transformation Cooperation Framework Companion Piece - May 2020](#) helped to provide an integrated response to the socio-economic impacts of COVID, while integrating this with the imperative of achieving the priorities of the 2030 agenda and the SDGs.

2. Regionally specific structural policies

Embedding green economy principles in Senegal’s recovery process (Africa) [1]

UN PAGE’s programmatic work in Senegal was already underway prior to COVID-19, but responding to the crisis required [multiple adjustments to assist governance and planning processes in-country](#), ensuring the economic response was aligned with green economy principles.

Focusing on the Priority Action Plan of the second phase of the ‘Plan Senegal Emergent’ Priority Action Programme (PAP), PAGE built collaboration with the Economic, Social and Environment Council to develop a green recovery strategic orientation document focused on green taxation, sustainable public procurement, and youth entrepreneurship.

Additionally, a PAGE will provide technical support to Senegal’s recovery plans - including sectoral programmes targeting the sustainable management of forests and the plastics recycling sector, as well as in the development of a sustainable public procurement system to further support the greening of the recovery.

Greening Sectoral Plans Framed in Argentina’s Nationally Determined Contributions (South America) [1b]

[UN PAGE green recovery support in Argentina](#) has worked to strengthen the design and implementation of sectoral plans framed in the Nationally Determined Contributions to the Paris Agreement, specifically for priority economic sectors that have high potential to aid in greening employment and production.

In partnership with the National Climate Change Cabinet - which includes the line ministries in charge of leading the development of economic stimulus - PAGE assisted Argentina’s development of sectoral green recovery scenarios and related sustainable industrial reconversion plans.

This includes specific strategies for labour adaptation and employment promotion.

The work also involves a skills and capacity-building programme for political decision-makers and economic actors involved in climate change mitigation strategies, targeting an environmentally and socially sustainable recovery of the economy, and has enabled the development of financial instruments and standards for supporting the implementation of the recovery policies.

3. Municipal / local structural policies

This section forthcoming.

4. Structural policies with rapid returns

Operation COSHARE, COVID-safe green tourism in Mauritius [6]

Supported by UN PAGE and the ILO, [Operation COSHARE](#) (COVID-19 Occupational Health and Safety and Resource Efficiency) is a joint initiative by the Mauritian Ministry of Tourism, the National Productivity and Competitiveness Council (NPCC) and the Tourism Authority (TA).

Though currently limited in scope for a structural measure, It has trialled a combined approach to urgently needed COVID-safe training and support for the tourism and hospitality sector, with resource efficiency training to improve environmental sustainability. The aim is to position Mauritius as a safe and environmentally sustainable tourist destination, while protecting the sector from a negative shock that would result in job losses, and mainstreaming green practices. Though limited in scope so far, there have been at least 1000 beneficiaries of the training programme already.

5. Sectoral structural policies

Greening family agriculture in Mato Grosso, Brazil [5]

Working with Mato Grosso state government, UN PAGE has been [greening the ‘State Plan for Family Agriculture’](#), which aims at putting in place economic incentives and inclusive sectoral policies and plans that promote “leave no one behind”, innovation, climate change resilience, and biodiversity conservation.

This includes assessing the socio-economic impacts of COVID-19 on family agriculture and small farm production, particularly for vulnerable groups, facilitating financial access for small farmers, and developing a land-use management system for rural settlements.

Central to this work has been working with small producers to increase awareness of the multiple benefits of a green recovery in the agriculture sector and to help establish an integrated training programme for the development of resilient business models in the agriculture sector that are more strongly aligned with green economy principles.

Annex 1

1: 10 priority options for a Just, Green & Transformative Recovery (PIGE, 2020, p2)

1. **The Green Economy Principles of Wellbeing, Justice, Sufficiency & Efficiency, Planetary Boundaries, and Good Governance** should guide recovery plans and actions. A just transition is one that leaves no one behind, upholds human rights, protects the most vulnerable in our societies and creates new, green jobs. Underpinning these principles is the recognition that the participation of all stakeholders is core to a transformative recovery. Recovery plans should try to ensure diverse visions, values and priorities - of women, youth, and indigenous peoples - are considered. Many policy makers are already beginning to put some of these principles in practice, including in Amsterdam, Bhutan, Costa Rica, Iceland, New Zealand and Scotland.
2. **Develop and actively use national green economy plans, 'Green Deals' and green industrial strategies and green COVID-19 recovery plans to build long-term resilience and prosperity.** Governments can integrate inclusive green economy approaches into initial macro and micro-level 'rescue' policies, medium term economic stimulus packages, and longer-term transition planning. The surge of support from 17 European member states to keep the European Green Deal on track is testament to the broad consensus that a green transition is a prerequisite for future prosperity. Countries should use this opportunity to redouble efforts to meet the ambitions of the SDGs and Paris Agreement, monitoring their green recovery plans against NDCs.
3. **Structure fiscal stimulus and financial aid packages to accelerate the transition to a fair and green economy - not to undermine it.** For example, in response to COVID-19 governments can provide tax measures such as deferral or relief for vulnerable communities and industries, including small businesses, as in the case of Kenya, Italy and others. Austria and France are making their airline bailout conditional on adhering to the Paris Agreement; while Poland and Denmark are only providing financial aid to companies not registered in tax havens. Governments can also use green economy assessment tools to maximise alignment of proposed COVID-19 monetary and fiscal policies with a green recovery, and explore approaches such as debt-for-nature/climate swaps, biodiversity bonds, ecological fiscal transfers and other innovative, sustainable financing mechanisms. We encourage the transparent publishing of recovery plans and budgets so that civil society can help build consensus and hold government to account for public spending. This should assist the balance between investment for recovery and longer-term transformation.
4. **Recognise and value the role of nature in reducing risks.** Our societies and economies are dependent on nature, and highly vulnerable to its accelerating decline. Governments and stakeholders should mitigate the risk of future zoonotic disease outbreaks by addressing their root causes. Governments should also look to renew environmental protection efforts towards CBD targets, as well as adopting nature-based solutions, natural capital accounting, and public environment restoration schemes which create jobs while restoring the environment. Historically Ethiopia, India and South Africa have implemented large scale public employment programmes that provided social protection and income while contributing substantially to environmental rehabilitation and resilience.
5. **Build resilience to external shocks.** Investing in sustainable infrastructure and service provision for energy, food, water, health and sanitation is essential for building resilience to external economic shocks. These should go hand in hand with stronger public health and environmental protection institutions which ensure better air quality, water and sanitation, waste management and efforts to safeguard biodiversity. Resilience will also be strengthened by supporting small businesses, jobs and livelihoods; improving skills and education for a future-orientated labour force; and accelerating the deployment of digital and other emerging technologies. We urge support for grassroots efforts to build local resilience and put the sufficiency principle into practice through more sustainable consumption patterns.

- 6. Strengthen and broaden inclusive social protection mechanisms and advance human rights.** The pandemic is having a disproportionate impact on vulnerable groups in society and accentuating both horizontal and vertical inequalities. Enhancing human rights - including social, economic, civil, and environmental rights - alongside the work to improve the social safety nets is of critical importance. Social protection measures include emergency social assistance, extending access to unemployment benefit to informal sector workers, assisting enterprises and workers in the informal economy, oneoff payments to affected workers, universal basic incomes, universal health care, labour market interventions, and more comprehensive social insurance systems. These must address longstanding deprivations, ensure minimum living standards for all, and renew the government - citizen social contract. The Spanish government's decision to lay the foundation for Universal Basic Income (currently means tested) as part of their welfare response to COVID-19 is one example; while France and Germany have retooled existing unemployment insurance to cater for workers in urgent need.
- 7. Accelerate the energy transition and tackle fossil fuel subsidies.** Ensure recovery accelerates and broadens the achievement of Nationally Determined Contributions (NDCs) under the Paris Agreement, and that social, economic and health system resilience are prioritised in updated NDCs. According to the IEA, low oil prices offer a unique opportunity to remove fossil fuel subsidies, which are economically as well as environmentally damaging; Nigeria's decision to scrap its subsidies is expected to save the government at least \$2 billion a year. The African Union has committed to advance renewable energy across the continent, where 600 million people do not have access to electricity, as part of the region's response to COVID-19.
- 8. Apply a gender-responsive lens to the recovery to effectively address underlying issues of gender inequality.** The pandemic has clearly led to gender-differentiated impacts, exposing women to poverty and inequalities. Labour market inequalities are visible in the wage gap between women and men, the high proportion of women in vulnerable employment in the informal economy, and the disproportionate burden of unpaid work which falls to women and girls. Intersectional gender analysis can be conducted across all plans and actions to better assess financial and social distributional impacts. Gender-sensitive emergency response measures that deliver decent wages and working conditions for women and men are being implemented in Hawaii, under a feminist economic recovery plan that seeks to build an economic system capable of delivering gender equality.
- 9. Prioritise small and informal enterprises to accelerate the private sector transition to greener practices.** Small enterprises account for 70% of total employment globally and - though especially vulnerable to economic shocks - offer an important conduit for stimulating social uptake of green innovations. Chile's Emergency Family Income for around 4.5 million of the country's most vulnerable households illustrates the kind of tailored support that is needed for those in informal employment. Similarly, the Indian government is preparing a post-lockdown action plan to reskill unemployed migrant and informal economy workers, which comprise 90% of India's 500 million-strong workforce.
- 10. Improve global cooperation and coordination.** Strengthening shared governance in order to mitigate emerging economic and environmental risks is a particularly important priority. There is a role for a renewed multilateralism and collaborative crisis management, based on a strong science-policy interface and in support of societally-defined values and priorities. Supporting civil society in building alliances between diverse groups is key in developing a more coherent movement to express these values. A priority for this cooperation will be to resolve the resulting debt crisis and lack of fiscal space for recovery in many developing countries. Peer-to-peer exchange is to be encouraged as all nations are facing COVID-19 and need to prepare for a better recovery. Establishing national monitoring platforms to chart the impact of recovery measures on progress towards the SDGs, climate goals, biodiversity targets offers a potential opportunity for improved national and regional coordination.

2: Policy recommendations for a low-carbon recovery (OECD, 2020a, p12)

- **Avoid weakening of environmental policies** to reduce policy uncertainty for businesses, to achieve co-benefits and to reduce political economy barriers.
- **Help firms manage liquidity problems across sectors**, including renewable energy and other low-carbon technology sectors.
- **Consider making direct support to firms contingent on environmental improvements** to provide an opportunity for governments to actively manage and soften the transition from fossil fuels to low-carbon technologies. If attaching strings to companies in the pre-recovery phase may be difficult, credibly committing to doing so in the recovery phase may help setting incentives and adjust investors’ expectations. It also contributes to ensuring the long-term viability and competitiveness of firms in a low-carbon economy.
- **Make use of opportunities to support behavioural changes that may help a low-carbon transition**, for example through facilitating teleworking and rolling out high-speed broadband.
- **Prepare in advance a pipeline of low-carbon projects for the recovery phase.** Projects need to be evaluated upfront in terms of expected job gains and emissions intensities, both short-term and longer-term. Improving the understanding of economic and environmental impacts of green policy packages using quantifiable metrics will help designing more effective policies.
- **Invest in low-carbon infrastructure and avoid locking-in emission intensive technologies**, to combine job creation with durable emission reductions. Recovery packages will need to support job creation and resilience in the presence of scarce government funds, while being in line with the emission reduction targets of the Paris Agreement. Government support to energy efficiency retrofitting of buildings can for example help absorb job losses from the construction sector, while facilitating a low carbon transition. Investment in energy capacity or capital intensive projects may not be the immediate priority, but needed replacements of depleted energy capital should be done in line with climate objectives.
- **Maintain government support for innovation** to continue the development of low-carbon technologies. In addition to basic research, this includes support for deployment and commercial demonstration to help achieving market scale through risk-sharing between public and private sectors.
- **Ensure incentives for low-carbon consumption, investment and innovation during the recovery through the removal of fossil fuel subsidies and commitment to carbon pricing.** Investment support without price signals is not sufficient to achieve continued investment in low-carbon technologies, while a credible commitment to future carbon prices can provide incentives without immediately imposing the burden on recovering firms. Phasing out fossil fuel subsidies and tax expenditures can also generate much needed funding to reduce pressures on public finances in the recovery phase. Other policy measures including regulations and standards will need to complement carbon pricing in driving the transition.
- **Ensure adequate compensatory spending to avoid unfair burden sharing and other complementary measures to enhance the political acceptability of carbon pricing.**

3: Recommendations for achieving green growth and climate action post-COVID-19 (GGGI, 2020, p46)

COVID-19 recovery plans create an opportunity to build back better, and surveys show that there is public support for greening COVID-19 recovery plans. While the primary objective of COVID-19 recovery plans will be to generate short-term employment and income to restart the economy, the significant investments involved can serve a dual purpose to accelerate climate action.

Recovery packages should be designed to combine COVID-19 recovery with climate action, applying the following recommendations:

1. **Apply green stimulus priorities:**
 - a. Maximize the share of green and low carbon measures in the package so that brown components do not outweigh the green elements. A deal is not green if the green elements make up less than 50 percent of the package.
 - b. Make support to brown economy firms, for example, bail-outs to protect employment, conditional on measures to accelerate the green restructuring of brown firms.
 - c. Do not reverse existing green, environmental, low-carbon, or climate action policies to protect brown jobs.
2. **Transition fossil fuel subsidies to renewable energy subsidies.** Fossil fuel importing countries with existing subsidies can take advantage of the low fossil fuel prices to abolish or phase out brown subsidies. They should be replaced with green subsidies such as renewable energy feed-in tariffs, net-metering plans, and subsidies for energy efficiency in public, residential, office, and industrial buildings.
3. **Set ambitious targets as part of recovery packages or “green deals”.** Green deals are an investment opportunity to make climate action targets achievable. Blue Sky and Net Zero targets by 2050 or earlier should be announced as part of green deals.
4. **Align with climate and green growth strategies and plans.** COVID-19 recovery packages should be aligned with ambitious NDCs, LT-LEDS, and green growth strategies. Recovery packages should include many low carbon and climate-resilient measures that have already been proposed and assessed in these strategies and are, therefore, quickly implementable.
5. **Phase out coal.** Coal is the energy source hardest hit by the COVID-19 crisis, and recovery plans should not protect or resurrect coal-based projects, but instead accelerate the phasing out of coal, the fuel most harmful to the climate. All forms of government support for fossil fuel projects internationally should also be phased out.
6. **Stimulate green innovation and green jobs.** Small and medium companies provide the majority of employment, particularly in the service industry. Governments can green existing jobs through green job retraining and stimulate new green jobs through green entrepreneurship incubation programs and through subsidies for green jobs created by start-up companies. This is particularly relevant to hard-hit service sectors in vulnerable countries such as small island developing states and least developed countries, particularly tourism.
7. **Combine digital and green new deals.** The COVID-19 crisis has accelerated the digitization of the economy through remote working, online education, online shopping, and contactless transactions. Investments in digital infrastructure and digital inclusion can create employment, increase resilience, and increase access to the online economy for the most vulnerable.
8. **Promote nature-based solutions through employment-based social assistance programs.** Evaluations show that government programs to support income through work on green urban infrastructure, reforestation, watershed management, or ecosystem rehabilitation, such as mangrove restoration, can be effective COVID-19 support programs that enhance environmental assets and provide effective climate action.
9. **Accelerate solar-powered irrigation.** Employment, food security, and climate resilience can be effectively enhanced through solar-powered irrigation, particularly in South Recommendations Asia, to replace existing diesel-powered irrigation, and in Africa, to expand irrigated areas.
10. **Upgrade health facilities with clean energy.** Millions of off-grid community health centers in developing countries lack access to reliable energy or rely on expensive, polluting, diesel generators. Providing renewable energy packages – solar PV panels plus batteries – together with solar-powered equipment such as refrigerators and sterilizers, is a climatefriendly enhancement of the resilience of the public health system.

Annex 2

Key general and specific green structural reform measures, sources

Key Reforms (<i>general - specific examples for each</i>)	Description (organisation, link)
1) Strengthened planning, strategies and governance (general)	<p>Further develop national GG strategies, SD plans, biodiversity strategies, clear intermediate climate strategies, and new headline metrics. Costa Rica, Rwanda, New Zealand. (GIZ, pg 7)</p> <p>[EU] Link to EU Green Deal measures. (GEA, pg 6)</p> <p>Set ambitious targets as part of recovery packages or “green deals”. Green deals are an investment opportunity to make climate action targets achievable. Blue Sky and Net Zero targets by 2050 or earlier should be announced as part of green deals;</p> <p>Align with climate and green growth strategies and plans. COVID-19 recovery packages should be aligned with ambitious NDCs, LT-LEDS, and green growth strategies (GGGI, pg 46)</p>
1a) Integrated beyond-GDP metrics (specific)	<p>GEC has identified adoption and mainstreaming of new macro level metrics - e.g. wealth accounting, other beyond-GDP - and micro level metrics - project/financing conditionality and BCA indicators - as important structural reforms.</p> <p>Priority Option 1 - The Green Economy Principles of Wellbeing, Justice, Sufficiency & Efficiency, Planetary Boundaries, and Good Governance (PIGE, pg 2)</p> <p>Changing Our Measures of Economic Progress - Standard economic measures such as GDP can mislead badly. If the societal goal is to protect and promote well-being across the generations (i.e. ‘social well-being’), governments should measure inclusive wealth (societal means to those ends). Inclusive wealth is the sum of the accounting values of produced capital, human capital and natural capital... Natural capital accounting serves as a necessary step towards the creation of inclusive wealth accounts. (Dasgupta, pg 493)</p>
1b) Cross-ministry coordination (specific)	<p>PAGE Guiding principles - MULTI-MINISTERIAL ENGAGEMENT. Activities are initiated in countries where key ministries have jointly expressed interest in collaborating with PAGE. (PAGE, pg 8)</p> <p>PAGE and GIZ each emphasise the core importance of reforms in national ministerial cooperation for successful mainstreaming of green economy and green growth solutions.</p>
1c) Multilateral cooperation (SDG17) (specific)	<p>Priority Option 10 - Improve global cooperation and coordination. Strengthening shared governance in order to mitigate emerging economic and environmental risks is a particularly important priority. There is a role for a renewed multilateralism and collaborative crisis management, based on a strong science-policy interface and in support of societally-defined values and priorities... (PIGE pg 3)</p> <p>PAGE has highlighted the institutional importance of governments building multilateral structures to secure buy-in for green economy processes - through SDG 17, PAGE and IFIs and INGOs.</p>
2) Green fiscal reform (general)	<p>Green tax reform, fossil fuel subsidy reform, domestic/international fossil fuel moratoriums, green public procurement; interalia. Ghana, Nigeria, Indonesia. (GIZ, pg 7)</p> <p>Removal of environmentally harmful subsidies and extension of CO2 pricing; Expansion of green financial instruments and green bonds; env-oriented public procurement (GEA, pg 6,8)</p>
2a) Higher CO2 pricing (specific)	<p>Higher CO2 price... provides the necessary economic incentives for sustainable investments, business models and consumption decisions. (GEA, pg 8)</p> <p>Commit to putting the right price on carbon and rapidly eliminating fossil-fuel subsidies. This could include consideration of an international carbon price floor among large emitters such as the G20, and border adjustments for energy-intensive trade-exposed sectors. (Stern, pg 51)</p> <p>Ensure incentives for low-carbon consumption, investment and innovation during the recovery through the removal of fossil fuel subsidies and commitment to carbon pricing; Ensure adequate compensatory spending to avoid unfair burden sharing and other complementary measures to enhance the political acceptability of carbon pricing. (OECD, pg 12)</p>

2b) Fossil fuel subsidy reform (specific)	<p>Subsidy reform to fix under pricing, deployment of carbon and green taxation. (Barbier, pg 14)</p> <p>Commit to putting the right price on carbon and rapidly eliminating fossil-fuel subsidies. This could include consideration of an international carbon price floor among large emitters such as the G20, and border adjustments for energy-intensive trade-exposed sectors. (Stern, pg 51)</p> <p>Ensure incentives for low-carbon consumption, investment and innovation during the recovery through the removal of fossil fuel subsidies and commitment to carbon pricing. (OECD, pg 12)</p> <p>Transition fossil fuel subsidies to renewable energy subsidies. Fossil fuel importing countries with existing subsidies can take advantage of the low fossil fuel prices to abolish or phase out brown subsidies. They should be replaced with green subsidies such as renewable energy feed-in tariffs, net-metering plans, and subsidies for energy efficiency in public, residential, office, and industrial buildings. (GGGI, pg 46)</p>
2c) Fossil fuel funding moratorium (specific)	<p>Phasing out unabated coal power generation domestically by 2030; ending overseas support for fossil fuel investments, starting with coal power generation; and defining a clear phase-out strategy for fossil fuels other than coal, in line with the goals of the Paris Agreement. (Stern, pg 51)</p> <p>Phase out coal. Coal is the energy source hardest hit by the COVID-19 crisis, and recovery plans should not protect or resurrect coal-based projects, but instead accelerate the phasing out of coal, the fuel most harmful to the climate. All forms of government support for fossil fuel projects internationally should also be phased out. (GGGI, pg 46)</p>
3) Green monetary tools (general)	<p>Green conditionality on central bank lending, climate stability mandates, green bond programmes, env. stress tests, brown-penalising capital ratios. Egypt. (GlZ, pg 7)</p>
4) Sustainable financial system (general)	<p>Establishment of a sustainable financial system that prices-in environmental risks in lending and investment decisions and improves financing options for sustainable projects. (GEA, pg 6,8)</p>
4a) Broadened corporate reporting (specific)	<p>Broadening of corporate reporting to include environmental and social aspects, creating transparency to support sus. business models. (GEA, pg 8)</p>
5) Just transition and inclusion policies (general)	<p>Public work programmes, social dialogues & worker representation, green skills development, marginalised group engagement - indigenous groups, women and girls. Ethiopia. South Africa. (GlZ, pg 8)</p> <p>Commit to a 'just transition'; ensure that the benefits and opportunities are shared widely; protect those that are most vulnerable to economic losses. (Stern, pg 51)</p> <p>Stimulate green innovation and green jobs. Small and medium companies provide the majority of employment, particularly in the service industry. Governments can green existing jobs through green job retraining and stimulate new green jobs through green entrepreneurship incubation programs and through subsidies for green jobs created by start-up companies. This is particularly relevant to hard-hit service sectors in vulnerable countries such as small island developing states and least developed countries, particularly tourism. (GGGI, pg 46)</p>
5a) Just transition plans for sunset industries (specific)	<p>Governments should: ... (c) integrate provisions for a just transition into national plans and policies for the achievement of the Sustainable Development Goals and national environmental and climate change action plans. (ILO, pg 8)</p> <p>GEC has highlighted the importance of sector specific just transition plans, especially for the fossil fuel industry.</p>
5b) Intersectional environmental policymaking (specific)	<p>OECD and GGGI have emphasised gender aspects of policy making as important, such as mainstream an intersectional lens for policy making, considering gender impact, social impact, and impact on marginalised groups within green economy frameworks, planning processes, and implementation. And keeping inclusion and eco-socially aligned policy as a touchstone.</p> <p>Priority Option 8: Apply a gender-responsive lens to the recovery to effectively address underlying issues of gender inequality... (PIGE, pg 3)</p>

6) Green skills and qualification measures (general)	<p>Green qualification measures, especially training, further training and continuing education. (GEA, pg 6,8)</p> <p>Structural changes in major sectors, including energy, agriculture, transport, and construction, require shifts in the structure and capabilities of the domestic labour force. Future oriented policy making should prioritise green skillbuilding initiatives in response to (i) continuing high levels of unemployment, (ii) new injections to green projects in the form of recovery spending, and (iii) the great need to invest in human capital for the low-carbon transition. (O’Callaghan, pg 17)</p> <p>Stimulate green innovation and green jobs. Small and medium companies provide the majority of employment, particularly in the service industry. Governments can green existing jobs through green job retraining and stimulate new green jobs through green entrepreneurship incubation programs and through subsidies for green jobs created by start-up companies. (GGGI, pg 46). OECD have also identified a green skills agenda as an essential structural measure.</p>
7) Nature based solutions (general)	<p>Forest preservation and afforestation, enhanced biodiversity conservation, ecosystem based adaptation, sustainable agriculture, and pooled, parametric insurance mechanisms. Pakistan, India. (GIZ, pg 8)</p> <p>Promote nature-based solutions through employment-based social assistance programs. Evaluations show that government programs to support income through work on green urban infrastructure, reforestation, watershed management, or ecosystem rehabilitation, such as mangrove restoration, can be effective COVID-19 support programs that enhance environmental assets and provide effective climate action. (GGGI, pg 46)</p>
7a) Natural capital investment (specific)	<p>Measures considered in this report include support for forestry, waterways, public parks, and general conservation initiatives. (O’Callaghan, pg 32)</p> <p>Without clean water, healthy soils, pollination and all the other vital services nature provides, our economies and societies cannot function. We must make sure nature is protected, and its true value is recognised within our economies. (GFC 2020a, Nature policy)</p> <p>Investments in natural capital, such as through nature-based solutions, increase the ecosystem services they provide, contributing to individual and societal wellbeing (Lucas & Vardon, pg 14)</p>
8) Green regulatory strengthening and deregulation (general)	<p>Removal of regulatory barriers / regulatory requirements for green investment; upper limit on renewables removals, quotas for EVs. (GEA, pg 6,8)</p>
8a) Mainstream green conditionality thresholds (specific)	<p>Beyond stimulus, cross-cutting for fiscal, monetary policy - brown weighting, raising sectoral targets.</p> <p>Consider making direct support to firms contingent on environmental improvements to provide an opportunity for governments to actively manage and soften the transition from fossil fuels to low-carbon technologies. If attaching strings to companies in the pre-recovery phase may be difficult, credibly committing to doing so in the recovery phase may help setting incentives and adjust investors’ expectations. It also contributes to ensuring the long-term viability and competitiveness of firms in a low-carbon economy. (OECD, pg 12)</p>
8b) Zero carbon power and transport targets (specific)	<p>Lead in the global energy transition by setting targets for zero-carbon power and road transport; investing strongly in clean energy and energy efficiency at home and in developing countries. (Stern, pg 51)</p>
8c) Environmental non-regression commitments (specific)	<p>Avoid weakening of environmental policies to reduce policy uncertainty for businesses, to achieve co-benefits and to reduce political economy barriers. (OECD, pg 12)</p>
9) Green infrastructure investment (general)	<p>Building green infrastructure. (GEA, pg 6)</p> <p>Invest in low-carbon infrastructure and avoid locking-in emission intensive technologies, to combine job creation with durable emission reductions. (OECD, pg 12)</p>

9a) Green innovation, R&D investment (specific)	<p>Allocating any fossil fuel repricing revenue to public support for green innovation, R&D and key infrastructure investments. China, South Korea. (Barbier, pg 23)</p> <p>Systematic support for environmental innovations and their introduction to the market (e.g. through pilot projects) (GEA, pg 6,8)</p> <p>Examples of green R&D spending opportunities include renewable energy technologies, technologies for decarbonising hard-to-abate sectors, and carbon sequestration. (O'Callaghan, pg 36)</p> <p>Step up green R&D and bring innovations to market rapidly through direct public support, risk capital and open markets. (Stern, pg 51)</p> <p>Maintain government support for innovation to continue the development of low-carbon technologies. In addition to basic research, this includes support for deployment and commercial demonstration to help achieving market scale through risk-sharing between public and private sectors. (OECD, pg 12)</p> <p>Stimulate green innovation and green jobs. Small and medium companies provide the majority of employment, particularly in the service industry. Governments can green existing jobs through green job retraining and stimulate new green jobs through green entrepreneurship incubation programs and through subsidies for green jobs created by start-up companies. (GGGI, pg 46)</p>
9b) Green energy investment (specific)	Green energy investment involves increasing generation capacity for renewables such as solar, wind, hydroelectric power, and enabling the rapidly growing green hydrogen market. (O'Callaghan, pg 19)
9c) Green transport investment (specific)	Electric vehicles (EVs), public transport, as well as cycling and walking infrastructure are all options, less so heavy transport and aviation as yet. (O'Callaghan, pg 24)
9d) Green buildings upgrades (specific)	Governments have several tools available to support green buildings...we focus on energy efficiency retrofits as well as rooftop solar installation. (O'Callaghan, pg 28)
10) Empower green behaviour change (general)	Make use of opportunities to support behavioural changes that may help a low-carbon transition, for example through facilitating teleworking and rolling out high-speed broadband. (OECD, pg 12)
10a) Alignment with digitalization policy agenda (specific)	<p>Combine digital and green new deals. The COVID-19 crisis has accelerated the digitization of the economy through remote working, online education, online shopping, and contactless transactions. Investments in digital infrastructure and digital inclusion can create employment, increase resilience, and increase access to the online economy for the most vulnerable. (GGGI, pg 46)</p> <p>Make use of opportunities to support behavioural changes that may help a low-carbon transition, for example through facilitating teleworking and rolling out high-speed broadband. (OECD, pg 12)</p>

Annex 3

Conventional, advanced, and systemic/political criteria for selecting green structural reforms

Conventional prioritization criteria	
Prioritization criteria	Description (by, linked)
Fiscal multipliers	<p>‘What determines the long-run multiplier? High-productivity economies of the future will be those that make the most of artificial intelligence and the technologies of the fourth industrial revolution (Schwab and Davis, 2018) while also protecting and enhancing natural capital, such as ecosystems, biodiverse habitats, clean air and water, productive soils, and a stable climate. Here, we focus on the climate impact.’ (Hepburn et al, pg 365)</p> <p>Note: Despite this in the text, amongst policy archetypes, green infrastructure investment is rated in bottom-half for long-run multiplier by those surveyed in Figure 1.</p> <p>‘Select amongst public green infrastructure, investment projects based on multiplier effects.’ (GIZ, pg 7)</p> <p>‘...every dollar spent on key carbon-neutral or carbon-sink activities can generate more than a dollar’s worth of economic activity... estimated multipliers associated with spending on renewable and fossil fuel energy investment are comparable, and the former (1.1-1.5) are larger than the latter (0.5-0.6) with over 90 percent probability.’ (Batini et al, IMF, pg 2)</p>
Benefit-cost ratios	<p>‘... Green Growth Assessment Process (GGAP) and extended Cost Benefit Analysis (eCBA) are used as planning tools to help design policy interventions and encourage the use of green technologies, in addition to best practices to ensure green growth outcomes of the investment projects.’ (GGGI, pg 12)</p>
Sovereign credit impact	<p>‘Benefits [of investment in natural capital] could include enhanced qualitative and quantitative ratings from investors who wish to see alignment across all asset classes with the Sustainable Development Goals and the Paris Agreement on climate change. Ultimately, this could translate into a lower and more stable cost of capital for sovereign issuers, with consequent implications for the cost of capital across the economy and governments’ access to finance for their domestic development goals.’ (Pinzón and Robins et al, pg 38)</p>
Up-front cost	<p>‘Economic recovery programmes are of a short-term nature and serve to overcome an acute economic crisis. They are usually debt-financed and place a heavy burden on public budgets.⁴ The burden should therefore be temporary.’ (GEA, pg 18)</p>
GHG Emissions intensity	<p>‘Policy recommendations for a low-carbon recovery:.. Prepare in advance a pipeline of low-carbon projects for the recovery phase. Projects need to be evaluated upfront in terms of expected job gains and emissions intensities, both short-term and longer-term. Improving the understanding of economic and environmental impacts of green policy packages using quantifiable metrics will help designing more effective policies’ (OECD, 2020a pg 12)</p>
Climate resilience	<p>‘Structural policies that set expectations and a clear sense of direction. These must include making faster progress on carbon pricing, the phasing out of fossil-fuel subsidies, introducing supporting regulations that accelerate the drive to net-zero emissions, valuing natural capital, and building climate and environmental resilience into all policies.’ (Stern, pg 2)</p>
Job creation (short term, long term)	<p>‘Prepare in advance a pipeline of low-carbon projects for the recovery phase. Projects need to be evaluated upfront in terms of expected job gains and emissions intensities, both short-term and longer-term. Improving the understanding of economic and environmental impacts of green policy packages using quantifiable metrics will help designing more effective policies.’ (OECD, 2020a pg 12)</p> <p>Impacts on job creation in the informal sector has also been flagged as a priority/criteria by the ILO. ‘The global economy needs urgent measures and policies that reach the real economy, all workers, including the self-employed and non-permanent, casual and informal workers, and all sustainable businesses, especially small and medium-sized enterprises (SMEs).’ ILO Director-General Guy Ryder, speaking at the April 2021 Annual Meetings of the World Bank and the IMF.</p>

Absorptive capacity	<p>Identified as a potentially important criteria during the post-covid stimulus and recovery phase by GEC, in discussion with PIGE partners.</p> <p>The ability of public and private actors to respond to new policy priorities, absorb investment, and deliver policy change.</p>
Private sector alignment	<p>NOTE: The importance of this criteria is contested given that all measures involve varying degrees of alignment with and involvement of public/private actors.</p> <p>'In the medium and long term, however, both [climate and environmental] crises can only be overcome through a clear change in the direction of private investment, since this determines the greater part of economic development¹⁰.^{ftn10}The relevance of private investments for overcoming the crisis is emphasised inter alia by the German Council of Economic Experts (c.f. Sachverständigenrat zur Begutachtung der gesamtwirtschaftlichen Entwicklung 2020).' (GEA, pg 23)</p>
Supply chain impact	<p>'In the current economic crisis, we must also examine whether interrupted international supply chains and health protection issues may limit the effectiveness of such instruments and measures.' (GEA, pg 7)</p> <p>The ILO has also identified supply chain impact as a key marker of green recovery success in its planning processes, eg. with the EU in (ILO, 2020)</p>

Advanced prioritization criteria

Sustainable use of capital & labour	'The overarching goal of structural reforms is thus the sustainable use of capital and labour and the avoidance of stranded investments and stranded jobs (c.f. Stern 2020).' (GEA, pg 23)
Co-benefits	'[Rationale for green investment areas] Contribution to recovery and growth: jobs, multipliers, other economic co-benefits... Contribution to net-zero emissions, climate-resilient trajectory and environmental sustainability: emissions reduction potential, other environmental co-benefits...' (Stern, pg 27)
Comprehensive / Inclusive wealth impact	<p>Identified as a potentially important emerging criteria by the GEC, in consultation with PIGE partners - for details, see (GGKP, pg 9).</p> <p>'The Wealth Economy approach argues for investment in productive, sustainable and resilient physical, human, social, intangible, and natural capital in regions that need it most, in order to generate sustainable prosperity. Investment in comprehensive wealth includes locking into low emission infrastructure, securing the skills, jobs, and ideas necessary for the 21st century economy' (Agarwala et al, 2020, pg 49)</p>
Income support (informal)	<p>Impacts on incomes in the informal sector has also been flagged as a priority/criteria by the ILO. 'The global economy needs urgent measures and policies that reach the real economy, all workers, including the self-employed and non-permanent, casual and informal workers, and all sustainable businesses, especially small and medium-sized enterprises (SMEs).'</p> <p>ILO Director-General Guy Ryder, speaking at the April 2021 Annual Meetings of the World Bank and the IMF</p>
Stranded jobs and investment avoided	'The overarching goal of structural reforms is thus the sustainable use of capital and labour and the avoidance of stranded investments and stranded jobs (c.f. Stern 2020).' (GEA, pg 23)
NDC alignment	'...[a strong and coordinated green recovery] must include: the preparation and submission of well-specified nationally determined contributions (NDCs) ahead of COP26; putting in place sufficiently strong and green recovery programmes for delivery' (Stern, pg 15)

Critical natural capital impact	<p>‘The 3Returns Framework operationalizes already existing capital accounting frameworks (Natural Capital Protocol and Social & Human Capital Protocol) and presents green growth interventions for landscapes as investments in natural, social & human, and financial capital. Adequate green investments result in an increase in monetary and non-monetary benefits, which simultaneously lead to the preservation of resources required for current and future well-being (economic, natural, social, and human capital stocks).’ (GGKP, pg 2)</p> <p>‘Second, governance regimes based on scientifically informed political decisions should protect critical natural capital, such as a stable climate and well functioning ecosystems. Such capital underpins our prosperity, but is often subject to uncertain thresholds. Governance of critical natural capital stocks should be informed by biophysical limits, potential irreversibility, thresholds and risks to essential life support functions’ (Cohen et al, pg 4)</p>
Pandemic prevention	<p>‘Investing in natural capital is part of a green recovery, providing both short-term and long-term benefits for the economy, society and environment... In addition, NBS can reduce environmental risks, such as reduced losses from floods, storms, heatwaves and wildfires, and provide social and environmental benefits, including improved air quality and nature, as well as reduce climate change and pandemic risk.’ (Lucas & Vardon, pg 16)</p>
Planetary boundaries	<p>‘The Green Economy Principles of Wellbeing, Justice, Sufficiency & Efficiency, Planetary Boundaries, and Good Governance should guide recovery plans and actions.’ (PIGE, pg 2)</p>
Intergenerational impact	<p>‘Commitments to intergenerational justice need to be anchored within government structures, tools and institutions that are independent of short-term considerations. For instance, the Next Generation EU plan proposed by the European Commission (EC, 2020) outlines a green path out of the COVID-19 crisis by integrating the European Green Deal in the recovery and by reinforcing the Just Transition Fund, both of which explicitly highlight the importance of intergenerational justice.’ (OECD, 2020d, pg 20)</p>
Wellbeing	<p>Identified as a particular priority by the OECD.</p> <p>‘The current crisis presents governments with challenges in ensuring that the recovery and stimulus measures enhance, and do not adversely affect, environmental sustainability and well-being’ (OECD, 2020b, pg 7)</p> <p>‘The Green Economy Principles of Wellbeing, Justice, Sufficiency & Efficiency, Planetary Boundaries, and Good Governance should guide recovery plans and actions.’ (PIGE, pg 2)</p>
Social inclusion	<p>See comprehensive overview in (OECD, 2021b) The Inequalities Environment Nexus - TOWARDS A PEOPLE-CENTRED GREEN TRANSITION: ”</p>
Optimal technical sequencing	<p>Identified by GEC as a potentially important prioritisation criteria. Focused on the technical or economically efficient sequencing of green structural measures; as distinct from those that are politically or financially viable.</p>
Food security	<p>Identified by the ILO as a potentially important prioritisation criteria.</p> <p>‘[As stimulus measures and responses] NBS [also] have high long-term benefits. For example, they contribute to climate protection and adaptation, to the stability of ecosystems and the conservation of biodiversity, and to increasing food security.’ (GEA, pg 23)</p> <p>‘Key message 2: Investing in natural capital provides both short-term and long term social, economic and environmental benefits Protecting, sustainably managing and restoring nature (e.g. through nature-based solutions) not only provides employment in the short term and can boost economic growth, but can also deliver social benefits (e.g. improving health and food security), improve the environment (e.g. enhancing biodiversity and carbon sequestration), reduce physical risks (e.g. reducing flooding and limiting storm-related damage) and help prevent future pandemics.’ (Lucas & Vardon, pg 4)</p>
Digitalization synergies	<p>‘Sustainable digitisation. It is also important to closely dovetail the Green Economic Stimulus Packages and digital change, i. e., to use digitisation as an important “enabler” for socio-ecological transformation, while at the same time reducing the negative environmental impacts of digitisation, such as the consumption of energy and raw materials by the digital infrastructure.’ (GEA, pg 22)</p> <p>Note: this alignment is particularly apparent in the structural policy agendas of the EU and China, where green-digital twin track is apparent across policymaking.</p>

<p>Energy security</p>	<p>Identified by the ILO as a potentially important prioritisation criteria.</p>
<p>Whole-system and Political criteria</p>	
<p>'Easy to start with'</p>	<p>Identified by PAGE and GIZ as potentially important prioritisation criteria. The sense of benign easy structural measures for governments to start with, requiring lower preparation, governance systems, and funding.</p> <p>'Lessons learned from economic recovery packages during the 2008/2009 financial crisis - Overview of lessons learned... Favour green measures that can be implemented quickly.' (GEA, pg 14)</p>
<p>Necessity / slow impact</p>	<p>Sequencing matters, and path dependency means early investment in difficult to green sectors can be necessary - least cost can mislead.</p> <p>'...But in every sector, many actions imply one-time investment and persistent emission reductions over a long period of time—such as replacing gasoline vehicles with plug-in hybrid or electric vehicles, replacing fossil-fueled power plants with renewable power, or retrofitting buildings. These are best modeled as abatement investment. In these cases, decision-makers have control over the rate of change of emission reductions, rather than the emission level directly... it can thus be misleading to use models based solely on abatement cost curves to design or assess abatement strategies, or to investigate the optimal timing or distribution across sectors of abatement effort.' (Vogt-Schilb et al, pg 221)</p>
<p>Systemic risk</p>	<p>Identified by PIGE partners as an important, if high level prioritisation frame - captured by economy and society-wide interactions, and tipping points.</p> <p>'Systemic change occurs at scale through the effective combination of macroeconomic and structural policies, setting a clear sense of direction and giving confidence to investors. Through structural policies, i.e. policies impacting the composition of economic activity directly or through relative prices, action by the G7 can accelerate progress towards net-zero emissions while boosting recovery and social cohesion.' (Stern, pg 7)</p>
<p>SDG alignment</p>	<p>'The green transition, and the deep transformation that this entails for our economic systems and societies, can also alleviate existing inequalities in well-being outcomes, given the interconnected nature of social and environmental challenges – as recognised by SDGs.' (OECD, 2020b, pg 9)</p>
<p>'Societal demand'</p>	<p>Identified by GEC as a key prioritisation criteria for green structural reform; alignment with societal demand for change, or a popular democratic agenda.</p>
<p>Win-win / multi-criteria impact</p>	<p>Identified by PIGE partners as a key prioritisation criteria for green structural reform in the recovery moment - those measures that cut across categories and offer win-win opportunities that contribute to multiple prioritisation criteria.</p>

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