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

Discussion paper - version June 2022

Green Economy Coalition, with the support of **Partners for Inclusive Green Economy**

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Acknowledgements

The Green Economy Coalition (GEC) is the world's largest alliance for green and fair economies. This discussion paper was prepared by the GEC with the support and collaboration of members of the informal Partners for Inclusive Green Economy (PIGE) initiative. Though the GEC recognise and are grateful for indispensable support in preparing materials for this paper, the GEC is wholly responsible for its content, any views expressed, and any errors/omissions present. As a discussion paper, this publication should be viewed as an iterative document with provisional, tentative analysis that will be subject to further peer-review and revision.

The opinions expressed herein do not necessarily reflect the official views of the member countries of the intergovernmental organisations participating in PIGE.

GEC would like to extend special thanks to Diana Quezada (GGGI), John Maughan, Luisa Kim, Koeun Lee (GGKP), Enrico Botta (OECD), Callie Ham (PAGE/ILO), Steve Bass (IIED), and all collaborators.

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Executive summary

In response to COVID-19, new thinking around how to plan, implement and manage a green recovery has emerged. This paper provides an outline of this aspirational structural green recovery agenda, and gives a tentative mapping of the prioritisation criteria governments might consider in designing structural reform packages. In addition, it considers gaps and weak links in the green structural reform agenda as currently conceived; surveys the barriers blocking adequate structural financing; and gives examples of green structural policies have been deployed at a national level.

Section 1 unpacks the concept of green structural reforms, and finds a rhetorically contested policy space, complicated by a lack of clear definitions. In response, the paper identifies three key features of effective green structural reform policies: they must be systemic, long-lasting, and general purpose. We then propose a nested framework of green recovery measures (see Box 1, below), together with prioritisation criteria for governments.

The paper thus offers a combined mapping of how governments might proceed with structural reforms to give due attention to different crosscutting objectives, and the beginnings of a toolkit for governments and policymakers to shape further. This mapping is able to identify specific measures that show most promise for managing multiple risks and achieving a range of societal objectives, such as green skills, integrated planning, green fiscal reform and natural capital investment.

Section 2 examines gaps in the current structural recovery agenda, identifying a longlist of overlooked themes. These include integrated metrics, the rights agenda, societal demand / social mandate for action, entrenched social inequality, gender integrated policy approaches, municipal-level policy, and many others. The section details how more integrated structural policy might be delivered in sections on nature, gender, and small business.

Section 3 considers the financing challenge. We review viable approaches to channelling green structural funds to the global south, implementing concessionary financing and investment, and easing the liquidity constraints faced by many governments.

Section 4 provides 15 case studies exploring national experiences of green structural reform - including measures that have seen some success on the ground in the past 10 years, as well as those with mixed results that illustrate the challenges of comprehensive structural reform. These cover themes including green planning and governance, structural investment, and regulatory approaches, and countries including Brazil, Colombia, the Czech Republic, France, Ghana, India, Indonesia, South Korea, Pakistan, and the Philippines.

We conclude by exploring how the nascent framework of green structural recovery measures can be embedded into investment and policy-making processes over the coming five to ten years, as the attention on greening the COVID-19 recovery wanes.

"This paper considers gaps and weak links in the green structural reform agenda as currently conceived; surveys the barriers blocking adequate structural financing; and gives examples of green structural policies have been deployed at a national level."

Box 1: Ten high-level measures for structural and inclusive Green Recovery reform

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

We finish with **6 key recommendations for policymakers:**

- **Strengthen the emerging framework of green structural reform measures** to create a coherent superstructure for national-level action on green recovery beyond the current phase.
- **Strengthen joint planning processes to promote dialogue with key national actors** and enhance institutional capacity to achieve green and inclusive recovery.
- **Develop integrated toolkits and scenario planning to guide national policymaking** and institution building, and ensure that new policies align with existing treaties and commitments.
- **Seize the opportunity to invest early** in fiscal reform, nature-based solutions, and the green skills agenda, and integrate green measures into governance approaches.
- **Address key gaps in green structural thinking**, especially around nature, gender inclusion, support for MSME/informal actors, and viable financing solutions.
- *(G7/G20 governments only)* **Step up to deliver finance for the global south,** political will for multilateral coordination, and green innovation at national level.

Introduction

Stimulus spending cannot mitigate risk, only patch up the damage after risks have manifested. The cheapest and most effective way to mitigate risk is to head it off before it is too late.

This was the lesson from the global response to the 2008 financial crash. Stimulus measures to keep economies from collapsing were largely and the limited green stimulus measures which were deployed were effective, albeit on a small scale than needed. However, governments opted to prop up the status quo, and the opportunity to put national and global economic systems on a different footing was missed. Governments are at risk of repeating this mistake with COVID-19.

From the perspective of 2022 the trajectory of the global recovery from the pandemic is more uncertain, not less. Variable access to treatments and vaccines, as well as differing mitigation strategies, has set in motion highly divergent economic recoveries in the global north, south, east and west.

It is in this context of multiple risks that political priorities have begun to move beyond the COVID moment to concerns around inflation and regional conflict in Ukraine, even as many countries are facing new COVID variants and yet further escalations in health and economic crises.

'Greening' of this recovery from COVID is consequently a challenge with many facets, and calls simultaneously for structural responses and local solutions that can account for the systemic scale of the challenge, and sheer diversity of national experience.

This paper attempts to provide some context and a framework for a green recovery agenda that can exist beyond the short term imperatives of emergency actions, stimulus packages, and bailouts. This agenda has learned the hard lessons of the 2008-10 financial crisis, and seeks to seize this moment to mainstream essential green priorities and policies into the post-crisis agenda.

A key consideration at this moment is that governments are not facing one crisis, but many. Not managing risks to one system, but compounding risks across many linked systems. To quote the WEF, 2022:

"Economic, geopolitical, public health and societal fractures - which increase after pandemics - risk leading to divergent and delayed approaches to critical challenges facing people and planet… [such as] accelerating the green transition in response to climate change…" (WEF Global Risk Report 2022, p12)

To deal with this new - or if not new, supercharged - domain of risk governments need in hand new tools, new policies, and most of all new priorities and criteria for success. Fortunately architecture and toolboxes of this kind have already been created in the international governance frameworks of the 2030 Agenda for Sustainable Development; supported by the Paris Agreement and the aspirational 1.5 °C warming target. These 'multipurpose policies' have been supplemented by the emerging range of green stimulus policies we have seen deployed by governments and during COVID, as well as longer term processes such as Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) work programme.

If green policy priorities are to stay prominent in the face of long term environmental risks, governments and INGOs need a coherent green structural recovery agenda and an ever more complete set of policies, guidance frameworks, empirical evidence, and qualitative case-studies. The aim of this paper is to draw on the knowledge of the Partners for Inclusive Green Economies (PIGE) to make a contribution to this goal and help governments integrate environmental, social and economic objectives and risks into their policy priorities for the medium term.

1. The value of a structural green recovery

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 and OECD nations more broadly. Given that green recovery and 'green new deals' have been picked up rhetorically by politicians around the world, this paper aims to examine evidence globally, beyond those countries with the largest budgets.

The reason for the green-COVID 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 behaviours in ways that are near unprecedented.

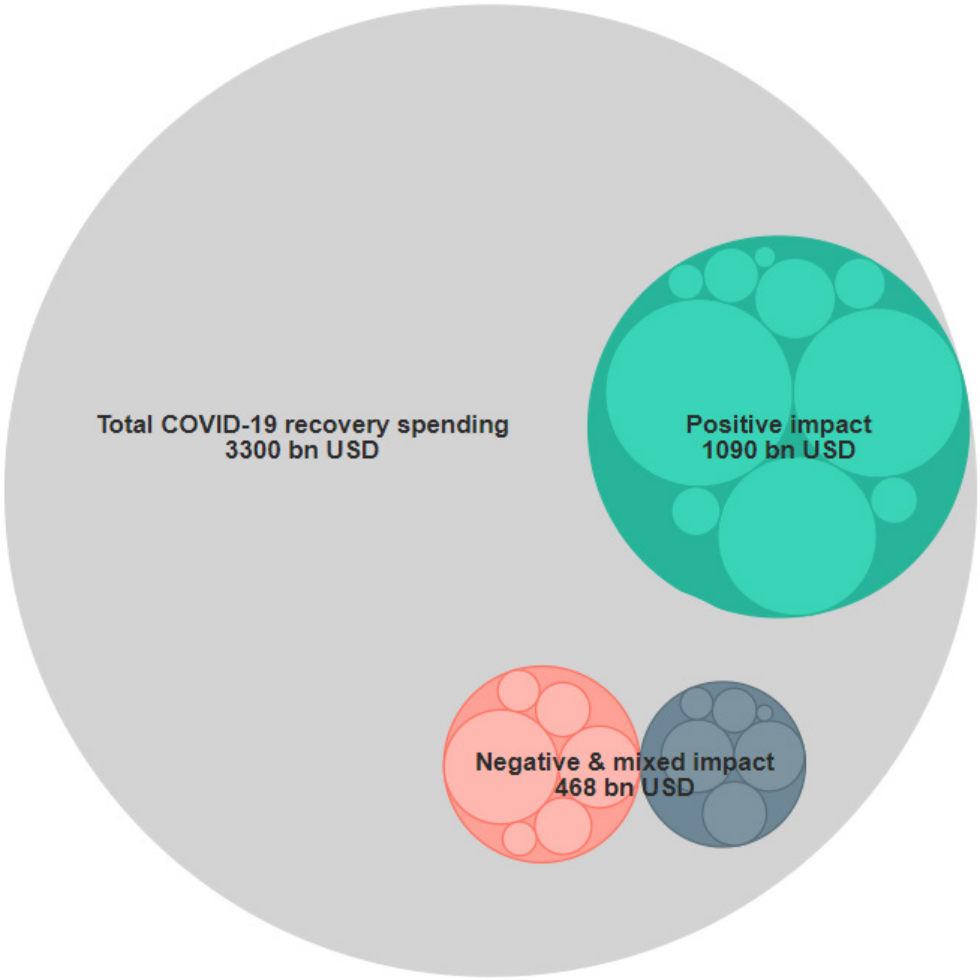
The emergence of green policymaking in this moment is linked to the opportunity of crisis to allow public authorities to remake the structure of the system - an inverted and democratised 'shock doctrine', targeted at the public good.[2] The environmental crises of climate change and biodiversity collapse 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 argue (Vivid Economics, 2021) (O'Callaghan, 2021) (OECD, 2021a) (GEC, 2021), the green response remains largely piecemeal, short-term, and counter-cyclical only. The OECD Green Recovery Database - (OECD, 2022a) - demonstrates this distinctly mixed picture clearly in their headline visual of the environmentally positive/negative balance of COVID-19 recovery spending of all kinds [Figure 1, below].

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 new economic conditions as 'shock therapy'.

Figure 1. Impact of COVID-19 recovery spending



Source: OECD Green Recovery Database

(UNEP, 2022, p4) summarises this situation succinctly that "[there] remains little sign of much-needed structural changes including fiscal and pricing reforms, embedding natural capital into macroeconomic planning, beyond GDP measures… As such, decision makers are missing the opportunity to restructure their economies for the benefit of people and nature."

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).

As (UNEP, 2022, p4) notes, it is "by accompanying economic stimulus with environmental regulatory and fiscal reforms that governments have the chance to build back *in a new way*" [emphasis added].

"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."

The purpose of this paper follows on from Barbier's backward looking observation to 2008, and is five-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 competing 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 deployed with success, or with mixed outcomes due to identified barriers (Section 4)

5. **Provide a concluding framework to shape an initial structural agenda for green recovery** from COVID-19 (Conclusion and recommendations)

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. Is it reforms to institutions that matter? The legal structure, or social or economic decision-making process? The OECD draws on structural reform language extensively (e.g in the G20 'Enhanced Structural Reform Agenda'), and defines them as reforms that are "...key for economies to cope with these challenges, adapt, stay competitive and deliver inclusive growth" (OECD, 2019). It is widely noted by economic commentators that the exact usage of the term in policy circles is euphemistic at best, unclear at worst.

The above descriptions all capture something of the measures in question, but it is also useful to contrast these reforms negatively in terms of what they are not - these reforms are persistent and in direct contrast to urgent economic 'triage' and time-bound 'stimulus' measures that governments have undertaken during COVID-19.

While acknowledging the inherent definitional questions faced by many other macro-policy framings, for the purposes of this paper we will identify structural reforms primarily by three important features - reforms or measures that are intended or aim to be systemic, long-lasting, and general purpose.

- **Systemic** - Structural policies are those that systematically alter fundamental economic arrangements around consumption, production, pricing and governance. They go beyond surface policy adjustments to reform deeper aspects of the economy.

- **Long-lasting** - Structural interventions are persistent, secular measures (in the economic meaning of the term) that require a longer timeframe to achieve intended impact. Unlike stimulus, they are not the tools for crisis fighting - but instead are extremely relevant to rebuilding resilience and preventing crises from occurring in the first place.

- **General purpose** - By their foundational nature, structural reforms aim to have a role in most economic or geographic contexts. The 'universality' of these measures in practice is obviously a subject of ongoing debate, and all reforms will need tailoring to local contexts, political structures, and appropriate sequencing during implementation.

"Unpacking green structural measures is important if we are to avoid the making the mistakes of the post-2010 phase again."

Box 2 Structural reforms for a socio-ecological transformation

- Removal of environmentally harmful subsidies and extension of CO, 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)

For further identifying 'green' structural reforms that are environmentally focused and might form part of a green recovery agenda, three key sources that identify green structural measures (UNEP, 2020), (GEA, 2020) and (Stern, 2021).[3] 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, 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 the post-2010 phase 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.

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' (or recovery) throughout this version, but 'inclusive, green structural reform' (or recovery) might be preferred.

Box 3 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 intemational 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)

A menu of structural green recovery measures

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

This set of measures are descriptive of the literature at time of publication, and as such are not a complete set of prescribed green structural policy measures. Section 2 provides much greater detail on perceived gaps in the agenda, as articulated.

These measures identified 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 Box 4 below for key green recovery sources, Annex 2 for further details on each measure, and Table 1 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 (see Sections 2, 3).

Box 4 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

GIZ, 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

UNEP, 2022: Building Back Greener: International Environmental Protection and Achieving the Sustainable Development Goals in the Context of COVID-19

Table 1 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	HMT/Dasgupta, GEC, World Bank
			1b	Cross-ministry coordination	PAGE, GIZ
			1c	Multilateral cooperation (SDG17)	PIGE
2	**Green fiscal reform**	GIZ, GEA	2a	Higher CO2 pricing	GEA, Stern, OECD
			2b	Fossil fuel subsidy reform	UNEP/Barbier, Stern, OECD, GGGI
			2c	Fossil fuel funding moratorium	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	GEC, ILO
			5b	Intersectional environmental policymaking	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	OECD
			8b	Zero carbon power and transport targets	Stern
			8c	Environmental non-regression commitments	OECD
9	**Green infrastructure investment**	GEA, OECD	9a	Green innovation, R&D investment	UNEP/Barbier, GEA, Oxford/O'Callaghan, Stern, OECD, GGGI
			9b	Green energy investment	Oxford/O'Callaghan
			9c	Green transport investment	Oxford/O'Callaghan
			9d	Green buildings upgrades	Oxford/O'Callaghan
10	**Empower green behaviour change**	OECD	10a	Alignment with digitalization policy agenda	GGGI, OECD

As stated above, this policy 'menu' in Table 1 is by no means exhaustive, and is one possible taxonomy amongst many for arranging or interpreting these reform measures. In the key 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 1 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. Section 4 of this paper provides some examples and case studies that can begin to fill this essential context. But 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 measures. A menu, plus prioritisation criteria, can begin to build this kind of (high-level) toolkit for policy development and deployment.

Prioritisation amongst structural policy options

As we use the term below, 'prioritisation criteria' could include a given 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 - tend to be most politically prized, while social and environmental impact measures are less common, though see increasing attention and are occasionally mandated by law through impact assessment and consultation processes.

Box 5, 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 experience working with national governments.

Drawing on these sources and technical input, Figure 2 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]

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.

Box 5 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

GGGI 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

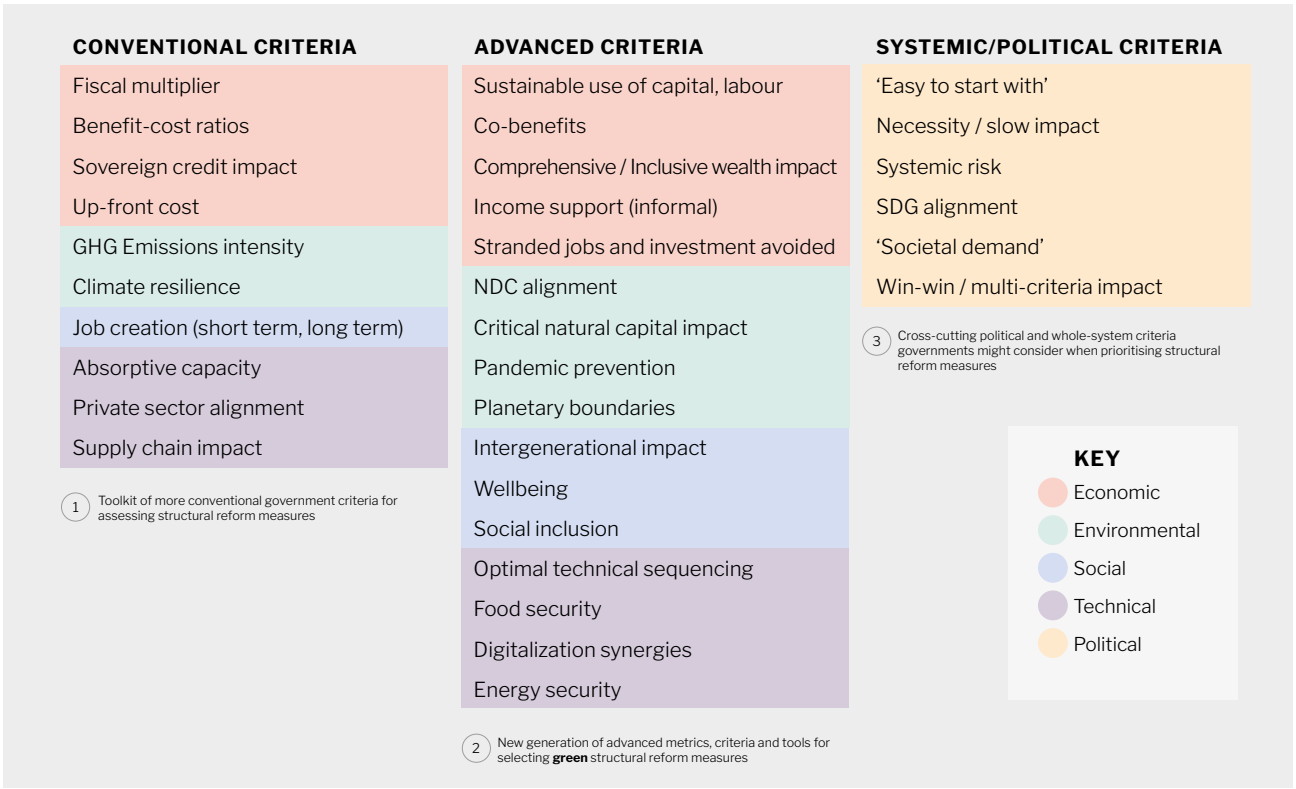
Advanced, for an emerging new generation of criteria that are starting to be recommended to policymakers, and should increasingly be mainstreamed into national planning processes for structural measures. Consideration of critical natural capital, or measures of comprehensive/inclusive wealth[5] can help 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 2 Green structural recovery prioritisation criteria



A combined mapping of green structural measures and prioritization criteria

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

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 Table 2 begins to offer policymakers a sensemaking toolkit for prioritisation amongst the vast range of competing green recovery and reform measures under consideration.

"It is hard to overstate the importance of regional, national, and locally specific contingencies for effective policy implementation - all the more so for structural measures"

As with Table 1 and Figure 2, 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 highly 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 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 to begin to 'operationalise' the complex web of high level policy objectives, inputs and outputs a structural recovery approach will need to succeed, and avoid potential 'paralysis from complexity'.

Further development is needed to refine this kind of mapping as a guide or toolkit for governments - perhaps linking existing national legislation or reform proposals to high-priority green structural reforms or important criteria.

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...".

Table 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	9 Green infrastructure investment (general) 10a Alignment with digitalization policy agenda (specific) 7a Natural capital investment (specific)	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	7a Natural capital investment (specific) 2b Fossil fuel subsidy reform (specific) 5 Green skills and qualification measures (general)	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	2 Green fiscal reform (general) 7a Natural capital investment (specific) 1c Multilateral cooperation (SDG17) (specific)	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	2a Higher CO2 pricing (specific) 10 Empower green behaviour change (general) 8 Green regulatory strengthening and deregulation (general)	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	2b Fossil fuel subsidy reform (specific) 2c Fossil fuel funding moratorium (specific) 9 Green infrastructure investment (general)	3 Green monetary tools (general) Indirect impact on GHGs	Scientists Environmental actors Planning ministries
Climate resilience	Contribution to adaptivity to impacts of climate change	1b Cross-ministry coordination (specific) 5 Just transition and inclusion policies (general) 6 Green skills and qualification measures (general)	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	5a Just transition plans for sunset industries (specific) 9d Green buildings upgrades (specific) 7a Natural capital investment (specific)	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	1 Strengthened planning, strategies and governance (general) 6 Green skills and qualification measures (general) 5 Just transition and inclusion policies (general)	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	9a Green innovation, R&D investment (specific) 4a Broadened corporate reporting (specific) 10a Alignment with digitalization policy agenda (specific)	5 Just transition and inclusion policies (general) Potential for resistance to due to short-termism/ least cost mentality	Private sector Economic and planning ministries
Supply chain impact	Impact on industrial and consumer supply chains	1 Strengthened planning, strategies and governance (general) 6 Green skills and qualification measures (general) 9a Green innovation, R&D investment (specific)	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) 5b 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 irreplacable 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	6 Green skills and qualification measures (general) 5 Just transition and inclusion policies (general) 10a Alignment with digitalization policy agenda (specific)	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	5b Intersectional environmental policymaking (specific) 5 Just transition and inclusion policies (general) 10 Empower green behaviour change (general)	2c Fossil fuel funding moratorium (specific) Immediate, sectoral impact on fossil fuel jobs/employment	INGOs Local communities Politicians
Optimal technical sequencing	Technocratically and scientifically prefered sequencing of policy implimentation	1 Strengthened planning, strategies and governance (general) 8b Zero carbon power and transport targets (specific) 9 Green infrastructure investment (general)	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	1 Strengthened planning, strategies and governance (general) 1b Cross-ministry coordination (specific) 7a Natural capital investment (specific)	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	10a Alignment with digitalization policy agenda (specific) 9a Green innovation, R&D investment (specific) 6 Green skills and qualification measures (general)	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	1 Strengthened planning, strategies and governance (general) 9b Green energy investment (specific) 1b Cross-ministry coordination (specific)	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	9b Green energy investment (specific) 1b Cross-ministry coordination (specific) 7 Nature based solutions (general)	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	4 Sustainable financial system (general) 2a Higher CO2 pricing (specific) 6 Green skills and qualification measures (general)	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	1a Integrated beyond-GDP metrics (specific) 8c Environmental non-regression commitments (specific) 5b Intersectional environmental policymaking (specific)	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)	1c Multilateral cooperation (SDG17) (specific) 1a Integrated beyond-GDP metrics (specific) 5b Intersectional environmental policymaking (specific)	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	9b Green energy investment (specific) 5 Just transition and inclusion policies (general) 6 Green skills and qualification measures (general)	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	7a Natural capital investment (specific) 8a Mainstream green conditionality thresholds (specific) 1 Strengthened planning, strategies and governance (general)	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

Overall, the mapping in Table 2 above reveals how an intentional focus by governments on which priorities and outcomes they are actually interested in can be a useful step in the policy development cycle, as well as improving transparency for stakeholders of all kinds. This can be the beginning of taking a bundle of abstract policy ideas and operationalising them as a guidance approach or toolkit within government, and for use in collaboration in dialogue with civil society stakeholders.[7]

Further policy insights are also clear, such as the observation that 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.[8]

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 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.

"An intentional focus by governments on which priorities and outcomes they are actually interested in can be a useful step in the policy development cycle, as well as improving transparency for stakeholders of all kinds."

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).

7 For an example of this kind of approach, see the Policy Ideas Database for Sustainable Prosperity (https://sustainable-prosperity.eu/) by ZOE. Institute for future-fit economies.

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

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.[9]

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.

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 identify in advance the specific benefits of this kind of investment (aside from declining cost-curves for renewables, batteries, and - eventually - NETs[10]) but key political actors such as the EU and China[11] are suitably convinced as 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.

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

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

11 See, China Daily - China, EU agree on green partnership, digital cooperation Sept 2020

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

As Tables 1 and 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 Table 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 1, 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 expands on in some detail).

Even with the usefulness of Table 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.

Lastly, as well as new frameworks for linking policies with government priorities, we there is also a need to connect structural policy directly to multilateral agreements and goals such as the Paris Agreement objectives, national NDCs, Glasgow Commitments, Kunming Conference on Biodiversity (CBD) outcomes, and SDG goals and targets.

"A linear mapping of which policies are most suited to different criteria can only go so far in clarifying about the most effective sequencing of reform measures."

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.

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.

Section 1 has provided some analysis of the first and second type of gap, and this Section 2 will primarily focus on the third kind - the thematic gaps in green recovery implementation, and structural solutions that might be scaled up. (DevAlt, 2022a, Figure 3) provides an example of this kind of approach, applied at a national level for India - reproduced below.

Figure 3 Sector-agnostic policy gaps in post-COVID budgets of India

Higher emphasis on monetary policy than fiscal policies in COVID recovery budget	Ambiguity in target outcomes of certain schemes regarding impact on natural capital	Regrouping of scheme level components in annual budgets limiting the scope for comparisn of budgets of different years	Lack of scheme level details for certain schemes and data on implementation	Gaps in implementation and last mile connectivity causing inequality in benefits to target beneficiaries

Source: DevAlt, 2022a

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:

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.
11. Lack of strong strategic vision and strategy for post-covid recovery even amongst countries with significant stimulus spending.[1]
12. Lack of green R&D spending to deliver needed innovation to meet already committed environmental targets.[2]

While all of the above are deserving of further attention, this section will prioritise briefly exploring the challenges (and some solutions) around integrating gender, nature, sectoral policies - especially MSME, informal economy and just transition into structural green recovery measures.

1 GGKP have emphasised the example of Italy, where resources for measures relevant to the green transition are dispersed in various smaller components and elements, and that despite its size of the domestic stimulus and rescue package and ecological transition Ministry, there is a clear and unified impetus for a structural green transition.

2 See (OECD, 2022b, p2); "Green innovation is crucial to decarbonise economies but very few green research and development (R&D) measures have been identified in recovery plans. Around half of the CO_2 emissions reductions by 2050 need to be delivered by technologies that are not yet commercially available [IEA, 2021]. However, less than 1% of all recovery spending is directed towards green R&D."

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.[3]

Deployment of green stimulus and gre en 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.[4]

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. This includes managing multiple areas of systemic risk when societies are under the severe pressure of a combined health and economic crisis, given the shock-absorbing role women are often expected to play in the care economy and beyond.

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.

(OECD, 2021b, p44) emphasises the importance of long term measures and skills development to attract women towards jobs in 'green sectors'. It identifies the U.S. domestic four pillar C3E program for closing the gender gap and increasing the participation of women in clean energy sectors. Pillar 1: a senior-executive level Ambassadors program; Pillar 2: C3E Initiative presence at public forums and to strengthen the recruitment and retention of women in the energy field; Pillar 3: networking through both on and offline communities; and Pillar 4: an annual award to recognising leadership/accomplishment of mid-career women clean energy sector.

The French "Women of the Construction Sector" (or "les ells du BTP") scheme is a further example of multipronged training and networking initiative targeted at the low-carbon green building sectors. While the Austrian Research Promotion Agency developed various programs to support young female researchers in STEM sectors such as FEMtech Internships for Female and FEMtech Career, which aims to increase the number of female scientists employed in industrial research.

It is notable that none of these three schemes are near to sufficient scale or ambition to meet the long term skills deficit in these key green transition sectors, and only approach structural ambition in their aims of long term impact. The paucity of large scale, broad based, and long term structural policy interventions is demanding of particular attention from policymakers.

Several of the PIGE implementation partners working internationally have attempted to raise the ambition and profile of gender-aligned green recovery measures. The (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, provide an overview and further detail of these efforts.

3 (Bass et al, 2016) provides an overview of an alternate pro-poor inclusive framing.

4 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) are keen to make this particularly clear in their analysis.

Despite this, reviews of green stimulus and recovery spending via (O'Callaghan, 2021), (GEC et al, 2022), and (GEC, 2020a) indicate that investment in nature and biodiversity is much weaker than in climate mitigation and decarbonisation measures.

(GEC et al, 2022, p7): "Recovery plans in each country are missing the opportunity to invest in nature and integrate natural capital into decision-making, despite international and country-specific evidence that investments in natural capital can bring economic and social benefits, including driving social inclusion and growth opportunities."

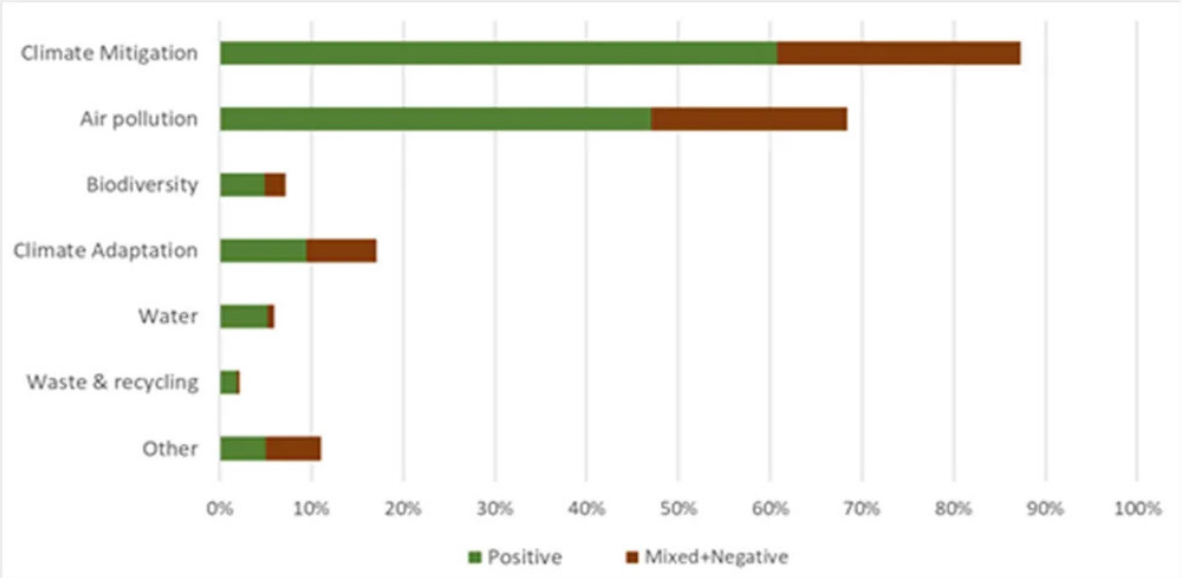
(OECD, 2022b, Figure 4) is particularly clear on this deficit of attention, as shown below.

(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.[5]

(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. (UNEP, 2022, p22) 'Building Back Greener: International Environmental Protection and Achieving the Sustainable Development Goals in the Context of COVID-19' makes the direct link from nature investment to job creation - with examples of past approaches from El Salvador, Rwanda, Germany, Kenya and Malawi.

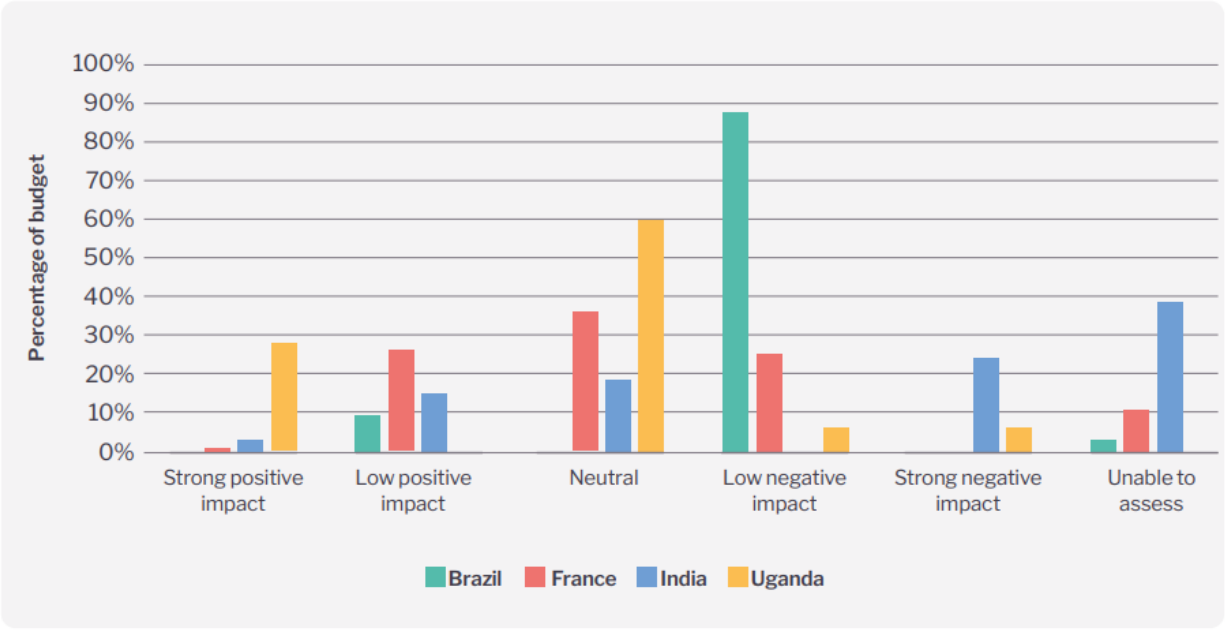
5 See Respect for nature must be at the core of the green recovery, by Ana María Hernández Salgar, chair of IPBES.

Figure 4 Funding by environmental impact per environmental dimension



Source: OECD, 2022b, Figure 5

Figure 5 Potential impact on natural capital from pandemic stimulus budgets



Source: GEC et al, 2022

(IUCN, 2021) estimates that economic investment in response to COVID-19 recovery should do no additional harm to nature to avoid exacerbating the biodiversity and climate crisis, and should direct at least 10% of the overall recovery investment to protecting and restoring nature, in addition to other green stimulus spending.

(World Bank, 2021) suggests that nature and biodiversity protection can be mainstreamed in recovery solutions by setting up systems where tourism can help fund protected areas. Governments can promote the tourism sector to grow back more inclusive and resilient while enhancing nature capital.

(GEC et al, 2022) 'Post-COVID Economic Recovery and Natural Capital: Lessons from Brazil, France, India, and Uganda' provides a detailed, country specific overview of budget and stimulus integration of natural capital measure. Their Figure 5 (above) demonstrates the highly variable impacts of packages in Brazil, France, India, and Uganda on natural capital, and shows the need for much more granular data along with higher ambition before a broad based and structurally positive impact on natural capital might be discernible.

Key lessons identified by (GEC et al, 2022) for policymakers from the Brazilian, French, Indian and Ugandan experience of mixed success of putting nature in green recovery measures include:

- Acknowledgment that recovery activities that do not support natural capital "will not be economically, environmentally or socially effective in the medium or long term."
- The clear need for "coherent national strategies that can underpin natural capital positive decision-making. This requires alignment across actors, policies, and sectors."
- Recognition that nature investments "bring long-term economic benefits and growth opportunities and drive social inclusion and equity."
- Governments should "as a minimum, take steps to mitigate the negative impact on natural capital of decisions based on business-as-usual approaches, including by introducing and applying regulations on environmental conditionality for industries and companies that are supported."
- Fiscal and procurement decisions by governments "should include a rigorous appraisal of the intervention's impact on natural capital. Standards should be set regarding the maximum level of negative impact on the environment and enforcements around monitoring and mitigating anticipated and unanticipated negative impacts."

Integrating inclusive sectoral policy for MSMEs / informal actors into a structural green recovery

Sectoral and sub-sectoral green recovery planning is often too granular and context specific to fit easily into a structural reform framework; especially as it regards those in informal sectors or MSMEs. (UNEP, 2022) provides a clear warning of how green recovery packages have "failed to target small green enterprises" as a priority. There is a clear barrier for governments in integrating targeted, micro support into green recovery plans - and it is a significant omission from the green structural reform literature reviewed in part 1 of this paper.[6]

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 recovery and green transition, especially in developing countries. However, decentralised cooperation for achieving local and regional green recovery actions are increasingly being proven effective and efficient policy instruments which allow for more flexibility in the development and implementation stages. Moreover, as the local government level is closer to the citizens and businesses, action can result in more inclusive results - though this is by no means automatic.[7]

(DevAlt, 2022a) provides details on India's approach to managing the challenging impact and assessment of support policies in the substantial informal MSME sector. It notes that "...the intensity of impact was higher on the informal economy, representing a significant proportion of the Indian economy... [and] almost 400 million informal workers are at risk of falling into severe poverty." From the literature, they identify loss of income, employment, and fulfilment of basic necessities of life as the most obvious and direct effects on informal actors, evidencing the much larger impact on marginalised and socially disadvantaged groups by the COVID-19 crisis, and the commensurate need for compensatory recovery policy.

Aside from the need for much wider structural responses around MSMEs in India, (DevAlt, 2022a, p6) recommends specifically that much greater budget allocation should have been made for energy efficiency schemes - such as Solar Charkha Mission - and support for capital expenditure for MSME supply chains could have been emphasised; as many developed countries did via bridging loans for business. They note the importance of natural capital and natural resource dependency for

6 (UNEP, 2022 p5,17,18) provides further details on alternative approaches to bringing green MSMEs to the forefront of structural recovery planning.

7 (CANARI, 2022) Statement submitted by Caribbean Natural Resources Institute in consultative status with the Economic and Social Council [forthcoming] submitted for the UN High-Level Political Forum 2022 provides further details on this experience in the Caribbean region.

Figure 6 Roles of green and social SMEs in Green Recovery Goals

Source: SEED, 2021

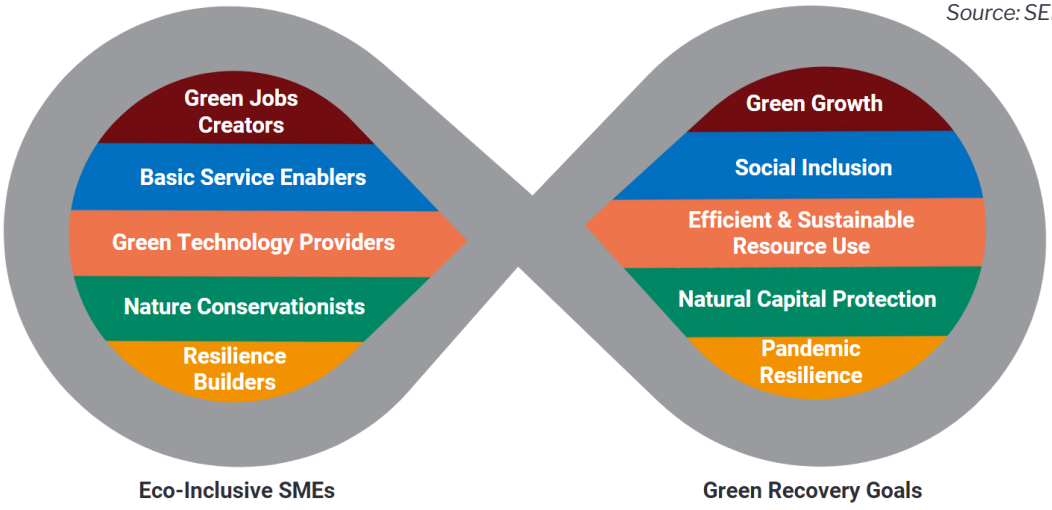
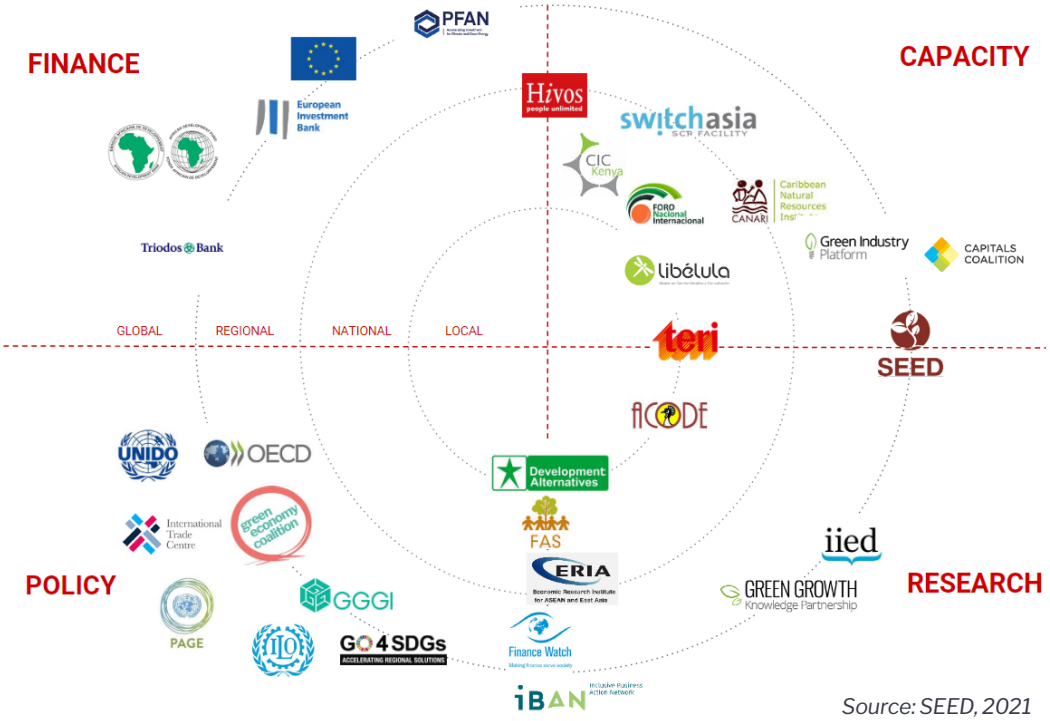


Figure 7 Universe of green recovery support programmes



Source: SEED, 2021

MSMEs and informal workers in India, with the need for incentives to maintain stocks of capital and avoid degradation of soils and watercourses, for example. Skill development and capacity building for MSMEs are idnetifed as a key structural catalyst for the ability of these actors to engage in a green transition - once again showing the missed opportunity of not focusing on generous, but green conditional support and training for the sector during COVID-19.

(SEED, 2021) 'Eco-inclusive Enterprises Driving Green Recovery Pathways' provides an essential overview of the experiences of small, green entrepreneurs around the world through the COVID pandemic, and guidance on the stronger role eco-inclusive enterprises can be empowered to play by the right enabling policy. The SEED 'Eco-inclusive SME nexus' (Figure 6, above) provides a summary of the important facilitating role small, green, businesses can have in structural green recovery.

Despite the previously identified lack of attention to small actors in green structural policy making and literature in this paper, (SEED, 2021, p18) makes note of the not insignificant 'universe' of green recovery support programmes aiming at supporting green entrepreneurial activities for small and informal actors, at global regional, national, and local levels (Figure 7, above). This ecosystem is in need of deeper, and more significant investment as a key step to cross-country learning on integrating MSME support into green recovery measures, and embedding the sector as a priority for structural intervention and capacity development.

Ultimately, adapting green conditionality requirements incentivising green outcomes during the green recovery phase for different sectors, and size of actors is a key challenge for a structural green recovery. For many countries with tight fiscal space, the implementation of recovery measures which must also ultimately generate revenue through taxes is a key constraint on action - and has led to neglect of MSME and informal sectors. (GIZ, 2022) provides a thorough overview of the fiscal options and challenges here, and - absent access to sufficient sources of concessionary international finance - domestic solutions must be found that are suited to these actors' needs.[8]

8 Section 3 provides more details on options here, but solutions such as refined, green conditional versions of Colombia's Monotributo, simplified 'single tax' for small, informal businesses are options to explore (World Bank, 2018, p54). Though useability and a lower effective tax rate for economic actors are essential for take-up.

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 and new approaches. 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 recovery and reform at scale.

The most ambitious and structural green policy agendas have been deployed by high income countries with permissive financing conditions. (GIZ, 2022, p4) 'Green Recovery for Practitioners Fiscal Policies for a Sustainable, Inclusive and Resilient Transformation' picks out specifically the EU Green Deal, and the 672.5 billion euro Recovery and Resilience Facility (RFF) for attention. Channelling at least 37% of EU member country spending toward measures actively supporting green transition, national Recovery and Resilience Plans (RRPs) are further guided by do-no-significant-harm (DNSH) criteria constraining the remainder of spending.

The simple fact is that the fiscal and monetary conditions available to G7, or even G20 economies, simply do not exist for a vast majority of economies facing a health and economic crisis, with little fiscal space, a constrained green monetary toolbox, and 'original sin' of needing to borrow in a currency they do not issue. During the COVID-19 crisis we have seen an almost perfect inverse correlation between places in the global south where green structural reforms - to leapfrog unsustainable infrastructure are most urgently needed - and the reality of their ability to finance a transition pathway.

A notable example of the compromising nature of this constraint comes from climate and development leader Costa Rica, where the national government in 2020-21 was forced to cannibalise $370 million in structural funds allocated for the 2019 National Decarbonisation Plan and redirect them towards immediate pandemic response measures, triage and reducing public debt[1].

(GIZ, 2022, p4) gives further detail on how Latin American and the Caribbean countries mobilised 'significant fiscal resources in response to the pandemic', amounting to $485 billion across 26 countries, and approximately 8.5% of GDP, on average. Though substantial, this appears to be less than half - as a proportion of GDP - what most advanced economies were able to harness, and and is skewed by the large packages in countries such as Brazil; and its set against "...emerging market economies incur[ing] USD 3.4 trillion in debt in 2020, which is 35% higher than the average of all five previous years."

Any solutions for credible green structural reform must tackle the real and substantive transactional political economy barriers identified at length in (Mealy et al, 2021) holding back funding an otherwise growth, nature and wellbeing enhancing green structural recovery. Principally, the failure to meet the annual $100 billion climate financing pledge from the Copenhagen 2009 Climate COP, and the trillions of dollars still uncommitted - but needed - for mitigation, adaption and biodiversity regeneration.

1 See (GEC, 2021a) Green Economy Tracker, Costa Rica, Green COVID-19 Recovery.

(Volz et al, 2021) provides an overview of essential debt-relief options that can help relieve burdens and align developmental and ecological outcomes. Their main proposal, which is seeing variable uptake, is to greatly increase alignment of debt restructuring by IFIs (principally the IMF and World Bank) with a green and inclusive recovery. They propose a "Guarantee Facility for Green and Inclusive Recovery managed by the World Bank… [which] would provide credit enhancements for new bonds that would be swapped for old debt… [while] Governments receiving debt relief would develop their own Green and Inclusive Recovery Strategy and commit to reforms that align their policies and budgets with the Sustainable Development Agenda and the Paris Agreement." This proposal is structural in breadth and impact, and would certainly merit alignment with a wider suite of international targets and objectives - such as the Convention on Biological Diversity (CBD) Kunming outcomes, once they arrive.

(Griffith-Jones & Carreras, 2021) and (Steel & Patel, 2020) provide further solutions and suggestions to address the 'triple crisis' of debt, climate, and nature post-COVID, built around comprehensive debt restructuring and debt for nature swaps. They identify beneficiaries for these arrangements far beyond indebted countries themselves, in particular climate negotiators, China (as the largest bilateral holder of relevant debt), private creditors with ESG mandates, OECD government creditors with outstanding climate finance obligations, and conservation organisations with extensive programmatic and technical support experience who can enable delivery.

(ESCAP & GGGI, 2021) also examines critical policy gaps and barriers to access climate finance for recovery projects in Asia and the Pacific. It outlines the most commonly utilised 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, and concludes on the importance of access to blended finance for early/high risk green investments, and ongoing mainstreaming of the sustainable development agenda at national level.

(Volz et al, 2022) in 'Scaling up Sustainable Finance to Enable Sustainable Economic Recoveries' provide perhaps the most coherent forward agenda for financing green structural recovery measures at a global level, identifying 10 key priority proposals for the G7.

GGGI's Sustainable Recovery Index study (publication pending) draws together much of the literature above to identify 10 good practices to finance a green and resilient recovery, specifically in developing countries with tight fiscal constraints[2]:

- Alling future economic stimulus packages with national climate and development policies and targets to increase long-term mobilisation of climate finance and quicker implementation.
- Prioritise 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.[3]
- Allow Development Finance Institutions (DFIs) to lead the collaboration with the private sector to drive more capital.[4]
- 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 labelled bonds market - to finance recovery measures whilst aligning long-term fiscal sustainability with economic

2 Though (UNEP, 2022, Box 4) makes clear the clear potential for self-finding green recovery measures, over the medium term - emphasising short term liquidity as the key constraint once again.

3 See: (UNDP, 2020) Latin America and the Caribbean#COVID-19 | Policy Documents Series UNDP LAC C19 PDS No. 21 Planning a Sustainable Post-Pandemic Recovery in Latin America and the Caribbean

4 See (Macquarie et al. 2019) The Global Landscape of Climate Finance: an Update (climatepolicyinitiative.org)

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 normalised
- Use of credit enhancements to de-risk certain investments that can be undertaken by the private sector.
- Utilise debt swaps either Debt for Nature (DFN) or Debt for Climate (DFC) swaps.[5]
- Restructure public-private partnerships.

Ultimately a structural recovery agenda cannot be operationalised without tackling liquidity constraints faced by governments at national level, and virtually all the solutions above involve multilateral actors and DFIs taking a clear role in clearing a path, despite the political hurdles. The stakes are also clearer than ever, with latest figures for 2022 showing that "Debt stocks in 40 sub-Saharan African countries increased by a third (33.4%) [as a percentage of GNI] early in the COVID-19 pandemic, leaving countries vulnerable to climate change and nature loss unable to address these crises."[6]

It is very clear from the foregoing analysis that given the multitude of potential options and pathways for financing immediate, and broad based long-term structural green recovery measures, it is hard to pin down the most likely approaches. (UNEP, 2022, p6) urges attention on multilateral actors and development/climate donor governments to break deadlock and meet existing commitments. Political viability is the key scarce resource and main constraint. Figure 8 attempts an illustrative mapping of some of the key proposals outlined above, arranged as an 'ambition matrix' in terms of impact and likelihood. A successful agenda for financing green structural policies and a wider recovery - that works for the global north and south - will likely need them all.

5 For more examples, of DFN initiatives in Pakistan, Belize, Antigua and Barbuda, and Seychelles, see (UNEP, 2022, Box13)

6 See https://www.iied.org/thirty-cent-increase-debts-leaves-african-countries-unable-fight-climate-change-nature-loss

Figure 8 Green structural finance ambition matrix

	Higher Likelihood	Lower Likelihood
Higher impact	Climate and development aligned stimulus packages Early investment in sectors with future fiscal dividends Sustainability or SDG-linked sovreign bonds Debt for Nature (DFN) or Debt for Climate (DFC) swaps	Substantive Special Drawing Rights (SDR) reallocation Aligned G7/G20 climate and development finance recapitalisation agenda Reformed Debt Service Suspension Initiative (DSSI) Guarantee Facility for Green and Inclusive Recovery
Lower impact	Do-No-Significant-Harm (DNSH) constraints Blended-finance to harness private capital for recovery, mitigation, and resilience Medium-term fiscal rebalancing, post-recovery Enhanced credit de-risking	Restructured public-private partnerships Enhanced private sector climate risk disclosure Align science-based green taxonomies to channel green investment

Table based on author's tentative assessment

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 aspirant green structural measures that have been - or are being - successfully deployed at ground level.

Given the limited timeframe to properly assess the success or failure of truly structural interventions, we also included case-studies of 'mixed success' (e.g France) and those revealing clear barriers (e.g Ghana) with the aim of helping illustrate barriers to structural recovery approaches, alongside the areas of potential progress.

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 2020-2022 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 and longer track records of implementation.

All 15 case study examples listed below have been linked to the closest applicable high-level green structural policy (or policies) mentioned in Table 1; or to the green structural prioritisation criteria in Table 2, section 1 . These are shown in [*square brackets*] below the title.

Sources and external links are embedded within each example, where available.

Broadly, the practical examples we have found can be grouped into thematic clusters around:

A. Strengthened green planning, strategies, and governance
Examples from UN Agencies, Senegal, Argentina and Peru.

B. Structural planning *and* investment
Examples from Ghana, India, South Korea, and Indonesia

C. Sectoral and regulatory interventions
Examples from the Philippines, France, Brazil, and Pakistan.

D. New prioritisation approaches
Examples from Colombia and the Czech Republic.

Section 4 aims to prescribe what a successful green recovery could look like, but from an empirical foundation of practical examples of aspirant green structural measures that have been - or are being - successfully deployed at ground level.

A. Strengthened green planning, strategies and governance

Coordinated multilateral planning (UN Agencies)

[1. Strengthened planning, strategies and governance]

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.

In 2021, PAGE established the Green Transformation Economic Advisory Mechanism (Green TEAM) to provide deeper support on economics to partner countries, aiming to deliver transformative results for the whole economy and the economic recovery from impacts of COVID-19. The Green TEAM brings together economists from UN Resident Coordinator Offices (RCOs), PAGE agencies, UN Regional Economic Commissions, and the Office of the UN Chief Economist to advise and inform PAGE country work as a joint planning and delivery mechanism for creating transformative impacts on national economies.

The Green TEAM began offering additional country-level support in 2021 to mainstream sustainability considerations to UN and national strategic plans, such as Common Country Analyses (CCAs) and Cooperation Frameworks. Four PAGE countries - Argentina, Indonesia, Morocco and Thailand - were selected as pilot countries for this support, with different thematic areas adjusted to the demand and needs of the countries.

In addition to supporting country work, the economists of the Green TEAM participate in the PAGE-hosted dialogue series "One UN for Accelerating a Fair and Green Economic Transformation", where they exchange ideas on inclusive and sustainable recovery options and green economic transformation. The first dialogue of the series on green recovery was held in March 2021 and highlighted green investments as a priority not only for recovery from the pandemic but also to ensure the future well-being of the planet and people, making a strong economic case for investing in the SDGs.

To support developing countries with recovery from the pandemic and ensure resilience to withstand future crises, the Indonesian G20 Development Working Group (DWG) identified blue economy and green economy through low carbon development as part of its main priority areas. Through the Ministry of National Development Planning (BAPPENAS), the Green TEAM will be providing the expertise acquired from supporting 20 emerging and developing countries in green economy, low carbon development, and circular and blue economy to inform the development of the "G20 Roadmap for Stronger Recovery and Resilience in Developing Countries, LDCs and SIDS". PAGE will also leverage the expertise of its 5 PAGE UN Agencies to offer integrated and holistic support in this area.

Embedding green economy principles into Senegal's recovery process

[1. Strengthened planning, strategies and governance]

In response to COVID-19, UN PAGE's programmatic work in Senegal required multiple adjustments to assist governance and planning processes in-country, ensuring the economic response was aligned with green economy principles.

Senegal embarked on a process of economic recovery through the development of a Programme for the Relaunch of the National Economy (PREN) and by redefining priorities in its Programme d'action prioritaire (PAP) of the Plan Sénégal Emergent (PSE) for 2019-2023. In collaboration with the Economic, Social and Environment Council, PAGE is developing a green recovery strategic orientation document focused on green taxation, sustainable public procurement, and green entrepreneurship.

Additionally, PAGE is providing 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

[1. Strengthened planning, strategies and governance]

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.

The PAGE Green TEAM is also supporting the development of Argentina's provincial blueprints to promote a more sustainable and inclusive productive model, based on the discussions, inputs and policy recommendations stemming from five regional dialogues to be conducted by UNDP during the first half of 2022. The blueprints will focus on issues such as sustainable value chains, circular economy, green finance and sustainable and resilient cities.

Senegalese National Green Growth Strategy applied to selected pilot 'secondary cities'

[1. Strengthened planning, strategies and governance]

A national Green City Development Guidelines Roadmap was developed, disseminated, and implemented with support of the GGGI. The Green Secondary Cities Development Framework Guidelines was endorsed by the Government of Senegal. As a result, an action plan was developed and submitted to the government. Its implementation led to the engagement of seven secondary cities which developed a Green city strategy and six of them a roadmap for its implementation.

This made it possible to develop and mobilise funding for the implementation of activities for 4 of the 7 cities by the end of 2020. In the same frame, capacity building activities were carried out with universities (3 -Dakar, Saint-Louis & Bambey), urban stakeholders (around 150) and young experts (4) trained in the development of green cities. Two (2) national platforms were set up: national green & sustainable cities platform, green cities expert panel.

Limitations of Peru's COVID-19 crisis and political instability on green recovery

[1. Strengthened planning, strategies and governance]

Domestic political instability and extreme lockdown since mid-march 2020 has had a severe impact on Peru's economy. This, added to the international economic crisis, situated Peru as one of the worst hit by the financial crisis in the world due to COVID-19. According to some indicators, in April 2020, economic activity fell around 40% compared to April 2019 data. Several factors caused, during the first months of the Pandemic, the loss of employment for 2.3 million people. Income vulnerability and informal employment exceeding 70% Peru's workforce (amongst the highest rates in the world) further exacerbated the economic situation.

Multiple policy responses were presented by the Ministry of Economy as part of a recovery plan which included economic packages with substantial fiscal stimulus (around 17% of GDP).

This was accompanied by the support of the Central Bank by reducing its interest rates to facilitate access to credit for business and entrepreneurs, as well as facilitating liquidity by reprogramming debts. Despite this, no new measures addressing a green recovery were identifiable during this period. See (UNEP, 2022, Box 1) for further information.

Compared with many other countries, Peru's policy and civil society debate regarding green recovery measures was extremely weak, and effectively did not exist. Local actors in Peru - Foro Nacional Internacional (FNI) - are pursuing green recovery dialogues to deepen understanding as to why - despite the vulnerable environment and vulnerable groups of people dependent on natural resources - Peru's engagement with green economic policy is lagging behind.

B. Structural planning and investment

Limits to Green Recovery Roadmaps in Ghana: Local Realities for Implementation

[1. Strengthened planning, strategies, and governance, 3. Green monetary tools]

Ghana's constrained fiscal space poses a significant challenge in executing the interventions aimed to reset the economy during and after COVID-19. This experience offers an illustrative example of the difficult financial circumstances within which governments are expected to manage new, green priorities.

To expand fiscal space, the government cut spending on goods and services and received a debt/interest repayment freeze. However, in 2020, overall fiscal deficit doubled to 15.2% and public debt increased to 81.1%, placing the country at a significant risk of debt distress. The $17bil Ghana-CARES programme cost about 25% of Ghana's 2019 GDP and 70% will be funded by the private sector through foreign direct investment (FDI) and public-private partnerships (PPP). The government and the private sector (local and foreign), however, are significantly resource-constrained. In addition, the use of tax waivers and incentives to attract FDIs and PPPs could challenge the fiscal position of the government and its spending on social services.

The programme, with mostly short-term interventions, focuses on immediate impact on job loss and livelihoods rather than green initiatives. As the fundamental structure of the economy is still resource-dependent (agriculture, minerals and commodities, which have significant environmental footprint in the country), recovery lacks targets for structural dimensions of the economy. Meanwhile, the Programme's medium-term strategies are yet to be elaborated, becoming 'business as usual.'

With potentially 97% of public spending on post-COVID green recovery is concentrated in OECD countries, countries in the global south like Ghana face challenges in ensuring the long-term implementation and monitoring of green recovery plans due to pre- and post- covid structural barriers in financing.The lack of rapid economic rebound and unsustainably accumulated levels of debt resulting from recovery spending could force countries toward long-term adverse impacts. The constrained green monetary toolbox, especially in countries where infrastructural long-term development is an urgent concern. Gaps are to be filled through structural policymaking that ensure structural socioeconomic barriers are not systemised.

Green budgeting at the sub-national level in Bihar, India

[1. Strengthened planning, strategies, and governance] [2. Green fiscal reform]

Bihar is one of India's most populous as well as poorest states in India, though it has recently realised a higher economic growth rate than India as a whole. Though newly demonstrating catch-up potential, systemic conditions have seen it historically lag behind other Indian states in terms of social and economic development. Apart from widespread poverty and under-development, Bihar is also one of the most climate-sensitive states in India, since a major part of the workforce is dependent on agriculture (NCAER, 2020).

In the recent economic survey (2019-20) of Bihar, it has been recognized that sustainable development is the key to the sustained economic growth of Bihar. The initiatives of the state government of Bihar also reflect this, with its announced intention to reach the Net Zero target by 2040 at state level. This decision to pursue a climate-resilient and low carbon development pathway will require immense support from the civil society actors and other stakeholders in the state. Along with this, Bihar was the first state in India to announce the Green Budget (Haryali budget) for the year 2020-2021. The latest Green Budget has been released for the year 2021-2022. Apart from Bihar, Karnataka is the only other state to present a Green Budget for the year 2021-2022.

The outlay for the Green budget in the total size of the annual budget is estimated to be 7.05% for the implementation of the green objectives. The Green Budget statement considered several objectives such as climate change adaptation, waste management, sustainable land use, pollution abatement, circular economy, biodiversity conservation, and natural resource management besides the promotion of clean energy in Bihar. The Green Budget is not a separate budget in itself, but a sub-component of the existing fiscal budget of the state composed of identified green components allocation in all the sectoral departments' schemes and policies.

This kind of budget tagging approach helps clarify how a particular scheme or policy is contributing toward a policy outcome based on its 'intent and objective', such as a positive natural capital impact. For example, 56.1% of the agriculture department budget is flagged as green; for the building construction department it is 12.09% and for the urban infrastructure housing department it is 29.2%. The planning and monitoring of the Green Budget implementation is in need of much further evolution for an effective green recovery at state level to be delivered.[1]

Green Emissions in South Korea's Post-Financial Crisis Recovery: Mixed Success and Lessons Learned

[1. Strengthened planning, strategies and governance, 8. Green Regulatory Strengthening and Deregulation, 9. Green infrastructure investment]

After the 2008-10 financial crisis, South Korea stood out amongst peers by allocating 69% of its stimulus to green measures (railroads, renewable energy, water management, etc); approximately the highest proportion globally. Despite this there have been a range of lessons learnt, and uneven impacts - economically and environmentally - in the years since.

The Four Major Rivers Project under the Korean Green Deal built dams, expanded sewage treatment facilities, and promoted extensive infrastructural interventions. While it led to reduced risks of flooding and improved water quality, it also caused algae growth, threatened aquatic species and destroyed wetlands. Jobs created were low-quality and low-paying and caused overwork and deaths.

South Korea saw carbon emissions increase by 35% from 2005 to 2018, while the share of renewables in generation grew 2.2% (2006-2016) despite a 2030 goal of 11%. There were no significant reductions in coal-fired generation, which had an electricity mix of 41% share, with renewables only accounting for 4% overall in 2017.

1 See (DevAlt, 2022b) for further details on this case study.

South Korea's Green New Deal (GND) for COVID-19 took a new turn, allocating heavily to fiscal investments (as a proportion of GDP) and job creation, but did not include specific emissions targets, timed commitments and lacked a net-zero target or specific legislation.

While South Korea's 2008-9 Global Financial Crisis stimulus package put forth commitments and funds to various green projects, Korea's 'greenness,' however, failed to guarantee divestment from brown growth. Capitalising on the temporary character of most rescue packages, Korea's energy policies placed emphasis on providing affordable energy to boost and maximise economic growth.

The long-term consequences of the 08-09 plan were substantial; environmental damage, increased emissions, and inequitable working conditions highlight how a lack of structural strategies can induce harmful adaptive consequences. South Korea's COVID-19 Green New Deal also focuses on immediate fiscal investments and does not provide specific emissions targets or commitments, risking a similar path of partial success without structural reforms in the energy sector, clear legislative frameworks and policies for long-term commitment in decarbonisation.

Strengthening Structural Green Recovery Policies in Indonesia's National Planning

[1. Strengthened planning, Strategies and Governance, 9. Green Infrastructure Investment]

Indonesia's long-term COVID-19 recovery plan focuses on integrating green objectives into multiple sectors, including agriculture, waste management, and renewable energy.
The waste sector is to be tackled at both the governance and entrepreneurial levels, leveraging both legal and financing mechanisms as well as the capacities of local businesses and stakeholders.

Whereas Indonesia's initial stimulus package addressed immediate needs around healthcare, the government aims to adopt a phased approach of implementation to augment structural recovery efforts through pre-existing agendas such as the 2019 Low Carbon Development Initiative. This more comprehensive approach to recovery planning can also be found in Colombia and Costa Rica's recovery plans.

What distinguishes comprehensive and flexible recovery plans is the clear c alignment of national planning and strategies with sustainable initiatives and goals. Mechanisms could include utilising existing pre-covid tools and/or initiatives and integrating green objectives into national financing and development strategies via green conditionality schemes.

Indonesia's plan in particular supports multiple sectors by engaging stakeholders from diverse levels, including the governance and entrepreneurial levels. It explicitly addresses broader mechanisms for synergizing long-term goals and recovery needs, as well as local participants and beneficiaries like smallholder farmers.[2]

2 See (UNEP, 2022, p17) for more details on the Indonesian Green Recovery Roadmap.

C. Sectoral and regulatory interventions

Supporting the construction of a Provincial Agriculture Center (PAC) in the Province of Oriental Mindoro, Philippines

[6. Green skills and qualification measures, 8. Green regulatory strengthening and deregulation]

GGGI and the Korea International Cooperation Agency (KOICA) support the development of the recovery project: "Climate Resilient and Inclusive Green Growth for Poor Rural Communities: Accelerating Implementation in the Agriculture Value Chain Project" in the Province of Oriental Mindoro, Philippines, designed to be implemented from 2020 until 2024.

The project seeks to address three interlinked challenges that hinder sustained and inclusive development of rural communities in the Province of Oriental Mindoro, which are: low adaptive capacity against short and long-term risks of climate change among rural communities and agri micro-enterprises in Oriental Mindoro; poor development of agri micro-enterprises; and, limited capacity of government and non-government stakeholders to design and implement climate resilient green growth initiatives at scale.

In support to the local government, GGGI developed a "Feasibility study" – composed of policy advisory, business model development, market access strategy, financial model development, and plant, property, and equipment (PP&E investment) plan on the Provincial Agriculture Center (PAC): The PAC aims to: 1) formulate and implement a strategic program for the development of technical skills and entrepreneurship of farmers and farmer-group beneficiaries, 2) provide an FDA-compliant facility intended to give access to specific services needed to establish, upscale, and support agripreneurs, 3) strengthen the promotion of agribusiness ventures and value-added products of the Province, and 4) streamline all hard and soft investments from both public and private sources in Oriental Mindoro. Based on the result in 2021, there will be on the ground implementation activities planned for 2022, e.g. construction of a new facility, business operation, among others.

Equity in the move away from fossil fuel reliance: Gilets Jaunes and French COVID-19 Recovery

[2. Green Fiscal Reform, 5. Just Transition and Inclusion Policies, 8.Green Regulatory Strengthening and Deregulation]

In November 2018, France's attempts at reformation of fossil fuel taxes were thrown into chaos by the emergency of the rural and anti-establishment 'Gilets Jaunes' protest movement, which did not abate until the emergence of COVID-19 pandemic in March 2020. Though responding to a range of issues and grievances, the movement was widely considered a reaction to 'green' reforms and policies pushed from the centre by policymakers and President Emmanual Macron.

In September 2020, France announced that 30% of its 2021-22 EUR 100bn COVID recovery plan ("France Relance") will target investments in decarbonisation, green hydrogen R&D, etc. Since early 2020, France has spent or allocated at least $27.85bn in conditional and unconditional fossil fuels. Relative to the 2014-16 average, France's overall support for fossil fuels increased by 17% and public finance for fossil fuels jumped by 87%. The Government has not made any commitments to phase out public finance for oil and gas production. The package is characterised by some green conditionality measures, but they are relatively weak, and private companies will tend not be penalised if obligations are not met. Though by international standards, the package remains relatively ambitious.

Reflecting on lessons learned from the political and economic implications of the 'Gilets Jaunes' Movement, policymakers have observed that structural and long-term green reforms in France will have to ensure that groups reliant on fossil fuel do not bear the costs of an energy transition inequitably, and that benefits redistributed more equally.

While France's economic stimulus plan for COVID-19 recovery allocates investments into green technologies and initiatives, it lacks the full suite of structural incentives and political urgency in promoting a just transition. The chastening experience of the 2018-19 protests has highlighted the importance, and difficulty of delivering a structural package of green measures that can match the needs of political coalitions divided on economic or regional lines.

Greening family agriculture in Mato Grosso, Brazil

[5. Just Transition and Inclusion Policies]

Working with the 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.

Green Stimulus and Brown Growth: Pakistan's Covid-19 Recovery

[7. Nature based solutions, 8. Green Regulatory Strengthening and Deregulation, 5. Just Transition and Inclusion Policies]

As part of its 2020 green stimulus package, Pakistan's 2019 '10 Billion Tree Tsunami' project aims to plant 10 billion trees by 2023. While this fiscal response has improved afforestation efforts, elsewhere in the package deforestation is simultaneously ongoing to support the construction of large-scale infrastructural projects.

With heavy investment in coal and fuel subsidies, the construction sector remains a large driver of emissions; heavily male-dominated, it also risks perpetuating gender inequities (the package particularly lacks commitments to social spending).

In April 2020, Pakistan introduced a PKR 100 billion incentive package for the construction industry, providing it with: 1) exemption from all lockdown restrictions, 2) increased public spending and 3) tax relief measures. Under a unique amnesty measure in the Naya Pakistan Housing Development Authority (NAPHDA), the country encouraged investment flows with a 'no-questions-asked' policy regarding the source of funds used.

For Pakistan, estimates are for around $164.4-$246.6 billion per annum being needed until 2030 to achieve the SDGs. This is an inconceivable amount for the resource-constrained country. With frequent natural disasters and low tax collection, its extremely constrained fiscal space puts feasibility into question, with debt in the economy already at 87.2% in 2020.

The Pakistani experience shows that without proper structural policy and frameworks, stimulus packages with green aspirations can sometimes lead to brown growth and unintended harmful consequences, such as deepened social inequities. During late 2020, Pakistan was severely hit by urban flooding, resulting in mass damage and displacement of 2.5 million people affected by the floods, destroyed agricultural land, infrastructure and deepened food insecurity; especially amongst women driven to seek economic opportunities in the informal sector.

While Pakistan's stimulus package made crucial investments in nature and afforestation, it missed the opportunity to strengthen social protection measures and address long-term mitigation/ adaptation plans, and re-skilling the local labour force.

The simultaneous investments made in bolstering large emitters in the construction sector, as well as exacerbated working conditions and livelihoods in coal mines, emphasise the cross cutting nature of green structural reform, and how individual policies cannot be viewed in isolation.

D. New prioritisation approaches

Job creation in Colombia's national recovery package

[Conventional criteria - Job creation (short term, long term)]

Many governments have made job creation and support outcomes the key metric of success for their COVID-19 stimulus measures, but fewer have made the priority the creation of green jobs.

Colombia's comprehensive national recovery package, 'Compromiso por el Futuro de Colombia', shows that countries with the necessary fiscal space can integrate stimulus investments and green transition goals in order to promote sustainable development, job creation and nature-based solutions.

At its core, the plan integrates climate action through investments in clean technologies and nature-based solutions. In addition, a specific National Policy on Sustainable Recovery (CONPES document 4023) was finalised in February 2021, with a complementary green recovery strategy planned to follow. As a result, the country has begun to witness expansion of jobs in its clean energy sectors, though long term outcomes remain unclear.

Limited state and absorptive capacity for green recovery in the Czech Republic

[Conventional criteria - Absorptive capacity]

Absorptive capacity - the ability of an economy as whole (or particular sectors) to rapidly absorb new investment and policy priorities - is a prioritisation criteria for structural green recovery. Unless governments can identify areas where their economy is primed for green investment, and bureaucracy has the knowledge capacity to administer it, rapid progress is impossible even with financial constraints lifted.

An example of this constraining factor on green structural recovery comes from Green Recovery Tracker's assessment of the Czech Republic, where though investments in energy efficiency and climate adaptation have proceeded the lack of a strategic vision on green transition has held back desired outcomes. This, they attribute to due to "the absence of a public debate and proper participatory processes" throughout their national Recovery and Resilience Plan's (RRP) development.

Other countries may face other socioeconomic constraints linked to civil service expertise, capacity, or bureaucracy; or a private sector with shallow access to credit or skills to ramp up new industries.

Conclusion & recommendations

This paper has opened up the concept of a structural, green recovery and identified some of the reforms and policies that might propel recovery debate beyond the immediate moment of crisis, helping to avoid the mistakes of post-2010 where support was too shallow, short lived, and not sufficiently green - as argued in (UNEP, 2020).

We have identified a nascent policy agenda, with a wide breadth of policy solutions that aim to be not just green, but systemic, long-lasting, and general purpose. But also an agenda with clear blind-spots and significant opportunities for deeper alignment with existing multilateral frameworks and environmental treaties.

Governments face an unmissable opportunity to change their approach and rethink the policy priorities they pursue. To refocus and deliver inclusive, green economy transitions in a way that also helps them manage multiple domains of risk - including the acude risks we face as we build back from COVID-19. There is fertile soil for a policy response that can bring to bear the 'advanced structural criteria' identified in Section 2 in a way that increases productivity while addressing the 'critical challenges' identified in Risk Reports, year after year.

With green stimulus on the wane, green recovery tracking and monitoring tools starting to phase out, governments are looking beyond green recovery to new challenges and priorities. Green structural thinking must be resilient to these new contexts, or will be redundant in its aim of framing a context and a policy case for investment over 5-10 years and multiple political cycles.

The key solutions needed are financial (liquidity, in the global south), political (multilateral will to deliver investment in the context of fraught political economy), and administrative (familiarity, collaboration and innovation to do new kinds of green-conditional policy).

As (OECD, 2022b) argues, "...well-designed green recovery plans can generate the double dividend of increased energy security and better environmental outcomes. In the current context triggered by the war in Ukraine, the ambition of green recovery measures should stay the course and not be scaled back as the urgency to address climate change, air pollution, biodiversity loss, and other environmental challenges continues to grow."

Green structural thinking, with a broad range of integrated policies, addressing several priorities and managing multiple risks, is well suited to this new terrain. But it is a difficult initial 'lift' for governments. The G20, G7 and UN are persevering with a green recovery framing as the most politically tractable approach to the challenges still faced by governments around the world.

To take the next step, it is essential that the suite of green structural reform policy is expanded, refined, and operationalised in ways that are meaningful for governments. As the examples and case-studies in Section 4 show, delivering against such a complex challenge is far easier said than done. The vast majority of examples are of mixed success, at best. But these cases teach important lessons.

A capitals-framing offers one way to think about the returns on long-term investment in financial, natural, social and human capital. The rewards of greater fiscal return, environmental restoration, deeper social cohesion, and high investability in a world looking for sustainable returns (of both kinds) are out there for agile and innovative bureaucracies and government ministries who take up the challenge. As always, it will be cheaper and easier to manage our economies to avoid downside risks and crises as they grow, than learn to adapt as we fight fires - as with COVID-19.

Green structural reforms, and any green structural recovery we can achieve, will be built on forward-looking precautionary governance and provision the investment we desperately need in both nature and people. Pace John Maynard Keynes, "anything we can actually do, we can afford." For green structural reform - anything we must therefore do, we must afford.

Key Recommendations for Policymakers

Policymakers must:

1. **Strengthen the emerging framework of green structural reform measures** to create a coherent superstructure for national-level action on green recovery beyond the current phase.
2. **Strengthen joint planning processes to promote dialogue** with key national actors and enhance institutional capacity to achieve green and inclusive recovery.
3. **Develop integrated toolkits and scenario planning to guide national policymaking** and institution building, and ensure that new policies align with existing treaties and commitments.
4. **Seize the opportunity to invest early** in fiscal reform, nature-based solutions, and the green skills agenda, and integrate green measures into governance approaches.
5. **Address key gaps in green structural thinking,** especially around nature, gender inclusion, support for MSME/informal actors, and viable financing solutions.
6. *(G7/G20 governments only)* **Step up to deliver finance for the global south**, political will for multilateral coordination, and green innovation at national level.

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 (NCDs) 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 policie**s 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 improvement**s to provide an opportunityfor governments to activelymanage 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 includessupport 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 offossil 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 (*general - specific examples for each*)	**Description (organisation, link)**
1) Strengthened planning, strategies and governance (general)	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) [EU] Link to EU Green Deal measures. (GEA, pg 6) 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.; 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)
1a) Integrated beyond-GDP metrics (specific)	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. Priority Option 1 - The Green Economy Principles of Wellbeing, Justice, Sufficiency & Efficiency, Planetary Boundaries, and Good Governance (PIGE, pg 2) 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)
1b) Cross-ministry coordination (specific)	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) PAGE and GIZ each emphasise the core importance of reforms in national ministerial cooperation for successful mainstreaming of green economy and green growth solutions.
1c) Multilateral cooperation (SDG17) (specific)	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) 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.
2) Green fiscal reform (general)	Green tax reform, fossil fuel subsidy reform, domestic/international fossil fuel moratoriums, green public procurement; interalia. Ghana, Nigeria, Indonesia. (GIZ, pg 7) 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)
2a) Higher CO2 pricing (specific)	Higher CO2 price... provides the necessary economic incentives for sustainable investments, business models and consumption decisions. (GEA, pg 8) 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) 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)

2b) Fossil fuel subsidy reform (specific)	Subsidy reform to fix under pricing, deployment of carbon and green taxation. (Barbier, pg 14) 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) 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) 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)
2c) Fossil fuel funding moratorium (specific)	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) 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)
3) Green monetary tools (general)	Green conditionality on central bank lending, climate stability mandates, green bond programmes, env. stress tests, brown-penalising capital ratios. Egypt. (GIZ, pg 7)
4) Sustainable financial system (general)	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)
4a) Broadened corporate reporting (specific)	Broadening of corporate reporting to include environmental and social aspects, creating transparency to support sus. business models.(GEA, pg 8)
5) Just transition and inclusion policies (general)	Public work programmes, social dialogues & worker representation, green skills development, marginalised group engagement - indigenous groups, women and girls. Ethiopia. South Africa. (GIZ, pg 8) 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) 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)
5a) Just transition plans for sunset industries (specific)	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) GEC has highlighted the importance of sector specific just transition plans, especially for the fossil fuel industry.
5b) Intersectional environmental policymaking (specific)	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. Priority Option 8: Apply a gender-responsive lens to the recovery to effectively address underlying issues of gender inequality... (PIGE, pg 3)

6) Green skills and qualification measures (general)	Green qualification measures, especially training, further training and continuing education. (GEA, pg 6,8) 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) 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.
7) Nature based solutions (general)	Forest preservation and afforestation, enhanced biodiversity conservation, ecosystem based adaptation, sustainable agriculture, and pooled, parametric insurance mechanisms. Pakistan, India. (GIZ, pg 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. (GGGI, pg 46)
7a) Natural capital investment (specific)	Measures considered in this report include support for forestry, waterways, public parks, and general conservation initiatives. (O'Callaghan, pg 32) 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. (GEC 2020a, Nature policy) 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)
8) Green regulatory strengthening and deregulation (general)	Removal of regulatory barriers / regulatory requirements for green investment; upper limit on renewables removals, quotas for EVs. (GEA, pg 6,8)
8a) Mainstream green conditionality thresholds (specific)	Beyond stimulus, cross-cutting for fiscal, monetary policy - brown weighting, raising sectoral targets. 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)
8b) Zero carbon power and transport targets (specific)	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)
8c) Environmental non-regression commitments (specific)	Avoid weakening of environmental policies to reduce policy uncertainty for businesses, to achieve co-benefits and to reduce political economy barriers. (OECD, pg 12)
9) Green infrastructure investment (general)	Building green infrastructure. (GEA, pg 6) Invest in low-carbon infrastructure and avoid locking-in emission intensive technologies, to combine job creation with durable emission reductions. (OECD, pg 12)

9a) Green innovation, R&D investment (specific)	Allocating any fossil fuel repricing revenue to public support for green innovation, R&D and key infrastructure investments. China, South Korea. (Barbier, pg 23) Systematic support for environmental innovations and their introduction to the market (e.g. through pilot projects) (GEA, pg 6,8) 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) Step up green R&D and bring innovations to market rapidly through direct public support, risk capital and open markets. (Stern, pg 51) 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) 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)
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)	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) 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)

Annex 3

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

Conventional prioritization criteria	
Prioritization criteria	*Description (by, linked)*
Fiscal multipliers	'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) 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. 'Select amongst public green infrastructure, investment projects based on multiplier effects.' (GIZ, pg 7) '...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)
Benefit-cost ratios	'... 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)
Sovereign credit impact	'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)
Up-front cost	'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)
GHG Emissions intensity	'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)
Climate resilience	'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)
Job creation (short term, long term)	'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) 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.

Absorptive capacity	Identified as a potentially important criteria during the post-covid stimulus and recovery phase by GEC, in discussion with PIGE partners. The ability of public and private actors to respond to new policy priorities, absorb investment, and deliver policy change.
Private sector alignment	NOTE: The importance of this criteria is contested given that all measures involve varying degrees of alignment with and involvement of public/private actors. '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 development[10]. [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)
Supply chain impact	'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) 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)

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	Identified as a potentially important emerging criteria by the GEC, in consultation with PIGE partners - for details, see (GGKP, pg 9). '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)
Income support (informal)	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).' ILO Director-General Guy Ryder, speaking at the April 2021 Annual Meetings of the World Bank and the IMF.
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	'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) '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)
Pandemic prevention	'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)
Planetary boundaries	'The Green Economy Principles of Wellbeing, Justice, Sufficiency & Efficiency, Planetary Boundaries, and Good Governance should guide recovery plans and actions.' (PIGE, pg 2)
Intergenerational impact	'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)
Wellbeing	Identified as a particular priority by the OECD. '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) 'The Green Economy Principles of Wellbeing, Justice, Sufficiency & Efficiency, Planetary Boundaries, and Good Governance should guide recovery plans and actions.' (PIGE, pg 2)
Social inclusion	See comprehensive overview in (OECD, 2021b) The Inequalities Environment Nexus - TOWARDS A PEOPLE-CENTRED GREEN TRANSITION.
Optimal technical sequencing	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.
Food security	Identified by the ILO as a potentially important prioritisation criteria. '[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) '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)
Digitalization synergies	'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) 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.
Energy security	Identified by the ILO as a potentially important prioritisation criteria.

Whole-system and Political criteria	
'Easy to start with'	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. '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)
Necessity / slow impact	Sequencing matters, and path dependency means early investment in difficult to green sectors can be necessary - least cost can mislead. '…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)
Systemic risk	Identified by PIGE partners as an important, if high level prioritisation frame - captured by economy and society-wide interactions, and tipping points. '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)
SDG alignment	'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)
'Societal demand'	Identified by GEC as a key prioritisation criteria for green structural reform; alignment with societal demand for change, or a popular democratic agenda.
Win-win / multi-criteria impact	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.

References

Agarwala et al, 2020	Building Forward: Investing in a Resilient Recovery
Barbier, UNEP, 2020	Building A Greener Recovery:
Batini et al, IMF, 2021	Building Back Better: How Big Are Green Spending Multipliers?
CANARI, 2022	Statement submitted by Caribbean Natural Resources Institute in consultative status with the Economic and Social Council [offline[
Cohen et al, 2017	The Wealth of Nature: Increasing national wealth and reducing risk by measuring and managing natural capital
Dasgupta, 2021	The Economics of Biodiversity: The Dasgupta Review
DevAlt, 2022a	Green Economic Recovery of India: Scopes and Opportunities for Selected Key Sectors
DevAlt, 2022b	A pathway to attain Green Recovery in India [offline]
EASAC, 2018	Negative emission technologies: What role in meeting Paris Agreement targets?
ESCAP & GGGI, 2021	Green and Climate Finance Options to Support the Post COVID-19 Pandemic Recovery and Climate Action
GEA, 2020	The Green New Consensus - Study Shows Broad Consensus on Green Recovery Programmes and Structural Reforms
GEC, 2020a	Green Economy Tracker | Home
GEC, 2020b	Green Economy and COVID-19: the policies
GEC et al, 2022	Post-COVID Economic Recovery and Natural Capital: lessons from Brazil, France, India, and Uganda
GGGI Indonesia, 2018	Green Growth Assessment & Extended Cost Benefit Analysis
GGGI, 2020	GGGI Post Covid
GGGI, 2021	Gender Equality and Social Inclusion Strategy 2021-2025
GGKP, 2020	The 3Returns Framework: A method for decision making towards sustainable landscapes
GIZ, 2020a	Green Recovery for Practitioners Setting the Course Towards a Sustainable, Inclusive and Resilient Transformation
GIZ, 2020b	Position paper of the sectoral department: Green Recovery
Griffith-Jones et al, 2021	Whose debt is it anyway? A sustainable route out of the crisis for low-income countries
Hepburn et al, 2020	Will COVID-19 fiscal recovery packages accelerate or retard progress on climate change?
ILO, 2015	Guidelines for a just transition towards environmentally sustainable economies and societies for all
ILO, 2020	Sustainable supply chains to build forward better
IUCN, 2021	IUCN Issues Brief: Nature-Based Recovery
Lancet, 2021	Lancet COVID Commission - Transforming Recovery into a Green Future
Lucas & Vardon, 2021	Greening The Recovery To Make It Last: The role of natural capital accounting
Macquarie et al. 2019	Updated view on the GlobalLandscape of Climate Finance 2019
Mealy et al, E3G, 2021	Mapping The Political Economy Of The Global Financial Ecosystem
NCAER, 2020	Annual Report 2019-20, NCAER India Centre

O'Callaghan, Oxford, 2021	Are We Building Back Better? Evidence from 2020 and Pathways for Inclusive Green Recovery Spending
OECD, 2019	The OECD Technical Report on Progress on Structural Reform under the G20 Enhanced Structural Reform Agenda (ESRA)
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, 2020d	Youth and COVID-19: Response, recovery and resilience
OECD, 2021a	OECD Green Recovery Database
OECD, 2021b	The inequalities-environment nexus: Towards a people-centred green transition
OECD, 2021c	Gender-relevance of policies in the OECD Green Recovery Database
OECD, 2022a	OECD Green Recovery Database
OECD, 2022b	Assessing environmental impact of measures in the OECD Green Recovery Database
PIGE, 2020	COVID-19: Ten Priority Options for a Just, Green & Transformative Recovery
Pinzón & Robins et al, 2020	The sovereign transition to sustainability: Understanding the dependence of sovereign debt on nature
SEED, 2021	Eco-Inclusive Enterprises Driving Green Recovery Pathways
Steel & Patel, 2020	Tackling the triple crisis. Using debt swaps to address debt, climate and nature loss post-COVID-19
Stern, 2021	G7 leadership for sustainable, resilient and inclusive economic recovery and growth
UNDP, 2020	Planning a Sustainable Post-Pandemic Recovery in Latin America and the Caribbean
UNEP, 2022	Building Back Greener: International Environmental Protection and Achieving the Sustainable Development Goals in the Context of COVID-19
UN PAGE, 2020a	New Findings: Green Recovery Options Perform Better, but Biodiversity Still at Risk | PAGE
UN PAGE, 2020b	UN PAGE 2020 Annual Report
UN PAGE, 2021	UN PAGE Brochure 2021
UN, 2020	A UN framework for the immediate socio-economic response to COVID-19
UNSDG, 2020	Economic Transformation Cooperation Framework Companion Piece - May 2020
Vivid Economics, 2021	Greenness of Stimulus Index, 5th Edition
Vogt-Schilb et al, 2018	When starting with the most expensive option makes sense: Optimal timing, cost and sectoral allocation of abatement investment
Volz et al, 2021	Debt Relief for a Green and Inclusive Recovery
Volz et al, 2022	Scaling Up Sustainable Finance To Enable Sustainable Economic Recoveries
WEF, 2022	The Global Risks Report 2022: 17th Edition
World Bank, 2021	Promoting Sustainable Tourism In Protected Areas: A Key To Green RecoverY
World Bank, 2018	COLOMBIA Policy Notes
ZOE, 2022	Policy Ideas Database for Sustainable Prosperity