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WORKING PAPER

ACCELERATING PARIS-ALIGNED FINANCIAL FLOWS: A TYPOLOGY FOR FACILITATING A PARIS-ALIGNED COVID-19 RECOVERY

LORENA GONZÁLEZ, NISHA KRISHNAN, CAITLIN SMITH, JULIE BOS, AND NATALIA ALAYZA

EXECUTIVE SUMMARY

Highlights

- The converging economic, health, and climate crises present a rare opportunity for the Group of 20 (G20) countries to align their economic policies with their climate commitments.
- This study analyzes the available literature and five existing COVID-19 stimulus trackers to build a typology of the policies and interventions available to G20 countries to promote Paris alignment domestically and internationally.
- Between March 1, 2020, and January 31, 2021, G20 members primarily used business-as-usual (BAU) policies, incentives, and investments during the COVID-19 response and recovery. BAU policies and investments benefit carbon-intensive activities, delay climate action, and lock in the use of high-carbon technologies and business models that will be more expensive to replace later.
- During the COVID-19 response and recovery, G20 countries have used a small subset of the levers and interventions available to reach their Paris goals.
- G20 members should ensure that their recovery interventions across all economic sectors are fully aligned with the Paris Agreement. We have nine years to cut emissions in half, as is required to limit global warming to 1.5°C.

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Context

While the world navigates the COVID-19 pandemic and its economic crisis, the climate crisis continues to worsen. Advanced and developing economies have announced COVID-19 spending measures worth roughly $12 trillion and $2.6 trillion, respectively, or 22.5 percent and 10.6 percent of their gross domestic product (GDP) (O'Callaghan and Murdock 2021). Governments have an unprecedented opportunity to integrate planning processes, policy frameworks, and investment patterns compatible with the Paris Agreement into their economic recovery packages.

The 2015 Paris Agreement sets three long-term goals that would ensure low greenhouse gas emissions and a climate-resilient future.[1] Article 2.1.c states the goal of making finance flows consistent with such a future. Literature has examined Paris alignment considerations and proposed policies and interventions that could drive the transformational change required to reach the Paris goals. The literature also clarifies that continuing to invest in BAU policies and investments raises the long-term costs of climate action. Consistent with the literature, BAU is defined as continued investments in carbon-intensive and non-resilient infrastructure systems, processes, and policies that have been shown to be misaligned with the goals of the Paris Agreement (OECD 2020; O'Callaghan and Murdock 2021; Hepburn et al. 2020; Vivid Economics 2020; Larsen et al. 2020; CarbonBrief 2020).

G20 countries have several roles to play in the COVID-19 economic response and recovery. One, enact domestic economic recovery spending and policy responses within their borders. Two, *receive* or *give* international aid. Three, lead by example and demonstrate that ambitious climate action can propel an economic recovery, including by creating a sizeable number of green jobs.

About this working paper

This working paper aims to help governments identify policies and tools to align COVID-19 economic recovery policies, finance, and investments with the Paris Agreement goals. To do this, it takes stock of how G20 countries have implemented Article 2.1c at home and in their international actions. After assessing which climate-related levers and interventions they used from March 2020 to January 2021, it provides forward-looking recommendations. It will inform the Italian G20 presidency and the G20 Climate Sustainability and Energy Transition working groups.

We conducted an extensive literature review to build a typology of Paris-aligned policies and interventions and tested this typology against five existing COVID-19 stimulus trackers to identify trends among G20 countries and their public financial institutions. We complemented this analysis with semi-structured interviews with governments to understand countries' and institutions' motivations, processes, and challenges. Through our analysis and discussion of implications, we aim to contribute to ongoing efforts to accelerate the alignment of global finance flows with the Paris Agreement.

This study identifies trends among policies and interventions used; it does not attempt to quantify the size of financial investments or their impacts. Although some of the reports and trackers in our literature review do quantify the financial investments, their data could not be compared or synthesized. Where relevant, we cite their findings, but our focus is on the polices and interventions. Additionally, because we rely on secondary sources—the COVID-19 stimulus trackers—for data about domestic and international actions, the data used to inform our findings are only as accurate and comprehensive as the trackers' data.

Key findings

Public sector policymakers and financial institutions can pursue a wider range of interventions to advance a greener recovery. Our typology of interventions (see Figure ES-1) provides decision-makers with a guide to the available tools that can advance a greener recovery and build a Paris-aligned future.

Emerging trends of the initial stimulus packages show a preference for BAU investments in COVID-19 recovery packages.[2] BAU policies and investments perpetuate carbon-intensive activities and threaten to derail efforts to reach the Paris goals. Despite the transformative opportunities presented by the recovery, countries are only using a small subset of the levers and interventions available to advance the transition to low-carbon and climate-resilient pathways.

Figure ES-1 | Typology of Paris-Aligned Interventions

MONETARY POLICY	FINANCIAL AND REAL- ECONOMY POLICIES AND REGULATIONS	FISCAL POLICY AND BUDGET SUPPORT	PUBLIC FINANCE (FROM GOVERNMENT-OWNED FINANCIAL INSTITUTIONS)	INFORMATION INSTRUMENTS
Addition of climate risks to macro-economic models and forecasting tools	Climate-informed stress testing of financial institutions	Consumer-specific subsidies and tax rebates for green goods and services	Investments in climate-positive infrastructure	Strategies, voluntary disclosures, standards or frameworks, roadmaps, guidance documents, etc. (nonbinding)
Adjustment of collateral requirements for financial institutions to reflect climate-related risks	Mandated disclosure of climate risks	Design or implementation of climate-driven budget process	Liquidity support to financial inter-mediaries, SMEs, or other institutions with decarbonization or climate conditions	
Adjustment of interest rates for financial institutions to reflect climate-related risks	New or reinforced climate or environmental policies or regulations	Divestment of public funds from emission-intensive holdings	Structure, issuance, or purchase of sovereign green bonds	
Analysis of climate-related implications for current monetary policy regimes and risk management practices		Establishment and/or reinforcement of carbon pricing mechanism		
Climate-informed quantitative easing		Investments in climate-positive infra-structure from government expenditures and public budget programs		
		Issuance of sovereign green bonds		
		Investments in workforce development, including skills training and provision of educational opportunities		
		Liquidity support for companies in carbon-intensive industries with decarbonization or climate conditions		
		Liquidity support with climate conditions for small and medium enterprises (SMEs), non-carbon-intensive businesses or institutions		
		Mandated green public procurement		
		Removal or reduction of publicly funded support for coal, oil, gas, or other fossil fuel subsidies		
		Research and development in green and/or sustainable technology		

Note: This typology is based on an extensive literature review and meant to be indicative, but not exhaustive, of the tools available to policymakers. These levers can be applied to all sectors. The trackers and literature review covered agriculture, buildings, disaster risk management, energy, finance, health, industry, information communications technology, nature, social protection systems, transport, urban areas, and water and waste management.

Sources: Authors, based on Whitley et al. (2018); Vivid Economics (2020); Buckle et al. (2020); Larsen et al. (2020); Hepburn et al. (2020); Allan et al. (2020); and Network for Greening the Financial System (2020, 2021).

Countries generally have used shorter-term BAU fiscal actions. Two levers—the fiscal policy and budget support lever and the financial and real-economy policy and regulation lever—are being used to invest in BAU infrastructure and economic pathways. These interventions have been concentrated in the energy, transport, and building sectors; little investment went to the agriculture, industry, nature, water and waste management, and disaster risk reduction sectors. Almost all countries are missing opportunities to invest in adaptation and resilience, and recovery packages showed no systematic consideration of climate risks.

Countries that implemented Paris-compatible interventions benefited from having "shovel-ready" projects and delivery mechanisms prior to the COVID-related crisis. All countries used their project planning processes to facilitate the rapid spending of stimulus packages. As a result, whether countries implemented Paris-compatible interventions largely depended on whether they had Paris-compatible "shovel-ready" projects at the start of the COVID-19 crisis. Thus, a lack of internal processes focused on advancing Paris-compatible investments and policies hindered a country's ability to design and implement a robust green recovery.

Bilateral agencies and multilateral development banks (MDBs) reconfigured their portfolios to respond to the immediate needs of their client countries. MDBs mainly offered governments support for the health crisis and liquidity support to financial intermediaries to provide financial relief to small and medium enterprises (SMEs) and other institutions. Multilateral climate funds' portfolios were more supportive of nature and other adaptation-related activities than the portfolios of bilateral agencies or MDBs.

Implications

G20 countries should consider a multifaceted approach to Paris alignment and recovery, leveraging the full suite of policy levers and tools available (see Figure ES-1). Based on our analysis, countries should examine the following questions and recommendations:

How should economic and financial systems be structured to accelerate Paris alignment?

- Chart the macroeconomic, fiscal, real-economy, and labor market transformations required to accelerate a Paris-aligned transition. Such a transition will require policymakers to embark on economy- and society-wide structural changes, including retooling skills available in labor markets.
- Ensure that labor policy facilitates a green and just transition. Governments, supported by companies, unions, and other stakeholders, should identify the skills and sectors that will be in high demand in a Paris-aligned economy and establish mechanisms to help displaced workers receive the training and knowledge they need.
- Take specific actions to align national financial systems and government operations to ensure that all investments address growing climate impacts, particularly physical risks and transition needs, and proactively adapt existing infrastructure, systems, and communities.
- Mandate and provide climate disclosures for public and private sector companies and financial entities in line with the recommendations developed by the Task Force on Climate-Related Financial Disclosures.

How should a robust vision and internal processes be set to implement the Paris Agreement?

- Establish or enhance national goals, policy frameworks, and strategies in line with the Paris Agreement. These should be informed by countrywide, science-based scenarios to reach net-zero emissions by 2050. This process must involve national, subnational, community, and corporate planners.
- Articulate consistent messaging and political backing to support and implement plans and policies compatible with the Paris Agreement.

How can G20 countries provide global leadership?

- Pursue ambitious climate action domestically, using the recommendations above. G20 countries and their public finance institutions should have the mandates and resources to systematically support projects and policies aligned with the Paris Agreement.
- Lead bilateral agencies and international development finance institutions, particularly MDBs, to achieve greater climate ambition and to scale up finance, including through innovative public and private financial instruments and concessional finance, without exacerbating existing debt constraints.

- For international and national finance institutions, expand on and pursue coherence in current efforts to develop ambitious criteria that can establish whether investments are compatible with the Paris Agreement.

INTRODUCTION

Five years after the adoption of the Paris Agreement, the world is navigating converging health, economic, and climate crises. Between early March 2020 and January 2021, the fifty largest economies announced roughly $14.6 trillion in economic recovery spending and are expected to continue spending significant amounts (O'Callaghan and Murdock 2021). This unprecedented stimulus spending presents a rare opportunity for Group of 20 (G20) countries to align their economic interventions with their climate commitments. For example, governments can use their recovery packages to accelerate the deployment of green technologies and create a significant number of green jobs.

This working paper aims to help G20 governments identify policies and tools to align finance and investments with the Paris Agreement goals, in line with Article 2.1c. This study also contributes to ongoing efforts to accelerate the transformation of finance flows toward low greenhouse gas (GHG) emissions and climate-resilient development pathways following the COVID-19 pandemic.

The paper begins with the context and then discusses our analytical approach. Next, we provide a typology of interventions that could facilitate alignment with the Paris Agreement, a synthesis of government-led COVID-19 response and recovery actions within this typology, and the trends, barriers, and challenges observed. Finally, we discuss the implications for governments and propose a set of measures that governments can implement to accelerate the Paris alignment of finance flows.

CONTEXT: PARIS ALIGNMENT AND COVID-19 RECOVERY EFFORTS

Implementation of the Paris Agreement and Alignment Efforts

The 2015 Paris Agreement sets a global vision, organized around three long-term goals, that would ensure low greenhouse gas emissions and a climate-resilient future. Known as Articles 2.1a, 2.1b, and 2.1c, respectively, these provisions set global temperature, adaptation, and finance goals (UNFCCC 2015). Achieving them will require an unprecedented systemic transformation of the global economy—particularly of the energy, industrial, food, and financial systems (IPCC 2018).

Article 2.1c states a global aim to make "finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development" (UNFCCC 2015). Under the Agreement, Parties (i.e., national governments) are responsible for designing and implementing the mechanisms to assess progress toward these long-term goals (see Box 1). In 2020, signatories began implementing their commitments under the Paris Agreement.

Box 1 | **Fundamentals of Article 2.1c in the Paris Agreement and the Process of the UN Framework Convention on Climate Change**

Article 2.1 of the Paris Agreement includes three long-term goals: "a) holding the increase in the global average temperature to well below 2°C above preindustrial levels and pursuing efforts to limit the temperature increase to 1.5°C, recognizing that this would significantly reduce the risks and impacts of climate change; b) increasing the ability to adapt to the adverse impacts of climate change and foster climate resilience and low GHG emissions development, in a manner that does not threaten food production; and c) making finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development" (UNFCCC 2015).

Efforts to operationalize Article 2.1c have largely tracked with the intergovernmental processes under the UN Framework Convention on Climate Change (UNFCCC). For example, several elements related to Article 2.1c were considered during negotiations for the Paris Agreement Rulebook. In 2018, the Standing Committee on Finance included elements on 2.1c in its Biennial Assessment and Overview of Climate Finance Flows (BA) technical report. The committee will publish a new BA before the 26th Conference of the Parties (COP26), with a chapter on 2.1c. Looking ahead, Parties will participate in the first Global Stocktake in 2023 and need to set a new collective quantified climate finance goal prior to 2025. Additionally, Parties will need to agree to processes that track and assess progress and that enforce accountability with regard to the Paris commitments. Countries are discussing planning processes, such as the deep decarbonization pathways, that could enhance implementation of the Paris Agreement. Above all, the operationalization of Article 2.1c must reflect equity and the principles of the Convention.

Sources: WRI authors, drawing on UNFCCC (2015, 2018a, 2018b).

Since the Paris Agreement was adopted, leading climate research institutions have published a robust set of literature examining how to achieve the Paris goals. This literature sets out various working definitions of and frameworks for how to consider consistency of finance flows (see Figure A1 and Tables A1 and A2 in Appendix A) and proposes policies and interventions that, if implemented, could drive the transformational change required to align with the Paris Agreement. Overall, two themes emerge from the literature.

First, national governments need to develop and implement national climate goals, policies, and plans that the best available science indicates will achieve the goals in Articles 2.1a and 2.1b. This should include national roadmaps for long-term low-GHG emission development, in keeping with Article 4.19 (UNFCCC 2015), across the four systems highlighted by the Intergovernmental Panel on Climate Change: energy, land, industry, and urban infrastructure. Such planning processes need a thorough consideration of the necessary investments and new productive areas; the necessary divestments and activities that are becoming obsolete or no longer profitable; and the policies across cross-cutting areas—such as finance, labor, education, and digital communication—needed to enable these transformations. Crucially, implementation will require structural and systemic changes to a country's regulatory, institutional, and policy frameworks, significant new investments in low-carbon and climate-resilient activities, the rapid and widespread rollout of green technologies, and a rapid reduction of high-emitting activities.

Second, operationalizing Article 2.1c is a complex, multidimensional process led by national governments and the international financial institutions (IFIs) they govern. This process must catalyze rapid systemic change in the structures and incentives of both the financial system, to ensure an adequate supply of funds, and the real economy, to ensure a corresponding demand for funds. National governments must lead, as they have the policy, regulatory, and pricing tools required to facilitate systemic change and have direct control over international institutions, such as the multilateral development banks (MDBs) and multilateral climate funds, and other regional and national development banks (NDBs). Ultimately, these systemic changes will impact operations and decision-making criteria across the entire financial industry, including capital markets, project finance, asset owners, and insurance.

In recent years, a diverse array of institutions and stakeholders have developed and launched various approaches to build the knowledge, tools, and processes required to achieve the goal in Article 2.1c. These lay out the contributions that public, private, and other stakeholders can make toward this goal. They often examine how to simultaneously scale climate-supportive investments and stop investments with negative climate outcomes (UNFCCC 2018a). The MDBs and the International Development Finance Club (IDFC) have each committed to align their operations with the Paris Agreement (see Table A1 in Appendix A).[3] The joint declaration of public development banks commits these institutions to aligning their activities with the Paris Agreement and working toward developing, operationalizing, and scaling up strategies and methodologies (Finance in Common Summit 2020).

The private sector is also launching voluntary initiatives, such as standards and reporting frameworks to support green financial instruments (Bhattacharya et al. 2020). The new Glasgow Financial Alliance for Net Zero, for example, brings over 160 firms participating in net-zero initiatives under one banner to raise ambition, enhance coordination, provide technical collaboration, and showcase individual and collective achievements (GFANZ 2021). As shown in Figure A1, private sector initiatives aim to establish common principles, set targets and commitments, design frameworks and toolkits, and establish reporting mechanisms.

National governments, financial institutions, and other stakeholders are committing to net-zero targets, with different degrees of stringency. The best plans are based on robust, science-based targets, but not all countries and stakeholders have access to the type of data needed to set these targets. These data gaps are sizeable and significant but beyond the scope of this paper. However, on their own, these trends are either voluntary, ambiguous, or too limited to catalyze the rapid transformation change required to reach the Paris goals.

COVID-19 Economic Impacts and Government Response

In 2020, the COVID-19 pandemic caused the global economy to contract by roughly 3.3 percent (IMF 2021b). In response, national governments, with support from IFIs, implemented a mix of rescue and recovery packages to cover their short-term needs or reinvigorate the economy (IMF 2021a; O'Callaghan and Murdock 2021).

The economic consequences of the pandemic have pushed 120 million people into extreme poverty and exposed racial and gender disparities in mortality rates, economic outcomes, and access to vaccines (Ferreira 2021; Institute for Policy Studies 2021). To contain the virus, most governments enacted restrictions on in-person activities, implemented lock-downs, and/or closed their borders. By January 2021, an estimated 93 percent of global workers lived in countries that had enacted some sort of workplace-closure measure (ILO 2021). Workers lost the equivalent of 255 million full-time jobs and $3.7 trillion in income in 2020 due to these restrictions (ILO 2021). As of June 27, 2021, 3 billion COVID-19 doses have been administered globally, but only 27 million doses, or 0.9 percent of all doses, have gone to people in low-income countries (Our World in Data 2021).

Government-led COVID-19 response and recovery interventions are unprecedented. According to the Global Recovery Observatory (O'Callaghan and Murdock 2021), the 50 largest economies announced $14.6 trillion in fiscal spending in 2020. Approximately 76 percent ($11.1 trillion) went to the immediate rescue efforts, while $1.9 trillion went to long-term recovery measures (O'Callaghan and Murdock 2021a).[4] IFIs approved roughly $240 billion in COVID-19-related assistance, of which the MDBs approved between $135 billion and $147 billion (Segal 2021; Lee and Aboneaaj 2021). The $1.9 trillion is almost three times the $681 billion in global public and private climate finance invested in 2016, the most recent official estimate (UNFCCC 2018a).

The spending in advanced economies was worth over 22 percent of combined gross domestic product (GDP), while emerging market and developing economies (EMDEs) introduced spending measures worth a little over 10 percent of their GDP (O'Callaghan and Murdock 2021). This has exposed a significant gap between those with fiscal means and those without. EMDEs handled the pandemic amid debt-sustainability pressures and constraints on their room for fiscal maneuver and had less capacity to under-take additional spending.

Build Back Better and a Sustainable Recovery

COVID-19 recovery spending could, if appropri-ately directed, advance efforts to align with Article 2.1c. But, if carbon-intensive business-as-usual (BAU) measures take precedence, alignment will become illusive or more expensive.[5] Recent estimates of green recovery spending in 2020 range from $336 billion (OECD 2020) to $368 billion (O'Callaghan and Murdock 2021), representing roughly 17.6 percent to 20 percent, respectively, of global recovery spending and nearly half of the 2016 climate finance flows.[6]

As the world faces the overlapping crises, it must build back better and pursue a sustainable and inclusive recovery. We have nine years to cut emissions in half and get on the low-carbon and climate-resilient trajectory required to limit warming to 1.5°C (IPCC 2018). G20 governments' leadership can demon-strate that addressing climate change drives inclusive economic growth.

The direct economic gains of a low-carbon pathway could, by 2030, lead to a global GDP 4 percent higher than current trends, due to a surge in clean energy investments (IEA 2021). Realizing these gains will require the systematic and ambitious integration of climate considerations into investment decisions, including project development processes and budget allocations. However, these planning processes are still being developed in most countries. The recovery is a prime opportunity to accelerate efforts to develop these processes, address inequality, and accelerate Paris-aligned investments.

RESEARCH APPROACH

G20 countries have several roles to play in the COVID-19 response and recovery: (1) enact domestic stimulus within their borders; (2) receive or give inter-national aid through their bilateral agencies or as share-holders of MDBs; (3) lead by example and demonstrate that ambitious climate action can drive an economic recovery and create new jobs.

This study modifies an existing framework, cat-egorizes which tools and policies G20 countries have used domestically and internationally, and presents a typology of actions. This study examines actions by G20 governments, their bilateral aid agencies, the MDBs (of which G20 members are shareholders), and multilateral climate funds between March 1, 2020, and January 31, 2021.

Analytical Framework for Developing Typology

The analytical framework in this working paper is based on an extensive literature review of reports and trackers that define and analyze both what it means to align with the Paris Agreement and what we know about the climate-related implications of the COVID-19 recovery. The reviewed studies include *Making Finance Consistent with Climate Goals*, published by the Overseas Development Institute, World Resources Institute, Rocky Mountain Institute, and E3G (Third Generation Environmentalism) (Whitley et al. 2018); Vivid Economics' "Greenness of Stimulus Index" (Vivid Economics 2020); the Organisation for Economic Co-operation and Development's *Addressing COVID-19 and the Climate Crises* (Buckle et al. 2020); and the Rhodium Group's *It's Not Easy Being Green* (Larsen et al. 2020). We also reviewed Hepburn's (2020) paper on COVID-19 fiscal recovery packages, a UK-specific analysis for a net-zero economic recovery (Allan et al. 2020). Table A2 compares these reports.

The *Making Finance Consistent with Climate Goals* report provides the only comprehensive framework that systematically analyzes and categorizes public and private financial and economic interventions based on efforts to align with Article 2.1c (Whitley et al. 2018). Since no other reviewed report provided a similarly comprehensive approach to Article 2.1c, we modified and applied its framework in our analysis.

The Whitley et al. framework outlines four policy levers that governments can use to change behavior. Based on our literature review, this paper added several elements to this framework to encapsulate the latest thinking on how public authorities can accelerate Paris alignment. The original four policy levers include financial policies and regulations, fiscal policy and budget support, public finance, and information instruments. We added "real economy" to the first lever to encompass sector-based regulations and policies that shape financial flows beyond the financial sector.[7] We added "monetary policy" as a separate lever as central banks are increasingly exploring and testing ways to use their tools to address climate change and to jump-start the economic recovery (Network for Greening the Financial System 2020). However, we categorize central banks' macro- and microprudential regulation and policies as "financial policies and regulation." Box 2 describes each of these levers and lists them by decreasing stringency.

Box 2 | Explaining the Typology's Five Policy Levers

The *Making Finance Consistent with Climate Goals* report describes four policy levers governments can employ to shift finance flows. Building on this framework, we make two additions. We introduce a new *monetary policy* lever and we incorporate *real economy* to the lever for financial policies and regulations.

Monetary policy: Central banks and other banking authorities are increasingly using their tools to provide the right price signals and incentives to align finance flows with climate goals. Monetary policy addresses interest rates and the supply of money in circulation. These tools will likely become more important as alignment efforts accelerate.

Financial and real-economy policies and regulations: This lever influences behavior through force of law, where mandatory and enforced. It covers law-based requirements or standards in the financial sector and real economy. In most G20 countries, the real-economy (i.e., sector-based) policies and regulations are critical to investment decisions.

Fiscal policy and budget support: Governments can use this lever to influence behavior by changing prices. This could be through taxes, subsidies, price support or controls, or even direct budget allocations and expenditures.

Public finance: This lever aims to influence behavior by shifting financial risk and is provided by public pension funds, sovereign wealth funds, and international and national public finance institutions (like national development banks). This includes instruments like grants, loans, equity stakes, or guarantees.

Information instruments: These aim to influence behavior by raising awareness. Examples include nonbinding recommendations or certification processes, transparency initiatives, corporate or national strategies, plans, or frameworks.

Source: WRI authors, adapted from Whitley et al. (2018).

Approach to refining the typology and synthesizing stimulus trackers

We used the aforementioned studies on Paris alignment, the COVID-19 recovery, and five stimulus trackers (see Table 1) to develop a set of interventions that corresponded to the policy levers. While *Making Finance Consistent with Climate Goals* provides an overarching framework, we used other publications to identify recommended government interventions across various sectors, match each with a lever, and build a typology. We used several criteria to identify the interventions. First, they had to be within a government's jurisdiction and have a direct impact on the Paris Agreement goals. Second, they needed to be discussed in the policy studies and/or trackers reviewed. Third, the interventions had to be specific to one of the five policy levers and could not overlap.

We then reviewed four policy trackers that categorized G20 countries' domestic stimulus actions, and one international action tracker to test and refine our typology. These trackers provided a comprehensive look at the climate-relevant stimulus and international actions. Looking at multiple trackers provided corroborative and complementary information. These are the Energy Policy Tracker (2021), CarbonBrief (2020), New Climate Institute (Moisio et al. 2020), and a forthcoming WRI database and publication "Are COVID-19 Stimulus Packages Building Climate Resilience?" (Krishnan and Brandon forthcoming), which is the only tracker that analyzes adaptation and resilience in stimulus packages. Devex's "Funding the Response to COVID-19" database provided data on actions internationally (Devex 2021). Table 1 summarizes these trackers.

The interventions identified could be climate-positive or contribute to business as usual. As this study focuses on interventions with direct implications for mitigation or adaptation goals, we categorized them as positive (advancing the Paris goals) or as BAU (continuing the current economic and social systems).

The international database provided more specificity to the intervention list. First, the Devex database indicated support for small and medium enterprises (SMEs), thus leading us to create specific interventions that could accommodate such actions domestically and internationally. Second, we determined that for international actions, only the public finance lever applied (due to its institutional nature).

We then categorized the five stimulus trackers' data according to our modified and expanded framework. These trackers cover various sectors, countries, or geographic regions, as well as different time periods. The following section outlines how we expanded and modified the core framework to provide more specificity to government and international institutions' actions.

Table 1 | **Comparison of Stimulus Trackers Used**

TITLE	ENERGY POLICY TRACKER	NEW CLIMATE INSTITUTE	CARBONBRIEF	"ARE COVID-19 STIMULUS PACKAGES BUILDING CLIMATE RESILIENCE? AN ANALYSIS OF 66 COUNTRIES"	DEVEX INTERNATIONAL TRACKER
LINK	"ENERGY POLICY TRACKER: G20 COUNTRIES"	"OVERVIEW OF RECENTLY ADOPTED MITIGATION POLICIES AND CLIMATE-RELEVANT POLICY RESPONSES TO COVID-19: 2020 UPDATE"	"CORONAVIRUS: TRACKING HOW THE WORLD'S 'GREEN RECOVERY' PLANS AIM TO CUT EMISSIONS"	FORTHCOMING	"FUNDING THE RESPONSE TO COVID-19"
Date released and/or updated	Released: July 15, 2020 Updated: May 12, 2021	Released: October 1, 2020	Released: June 16, 2020 Updated: April 1, 2021	Released: December 2020 Updated: January 31, 2021	Released: March 26, 2020 Updated: June 23, 2021
Main approach	Showcases publicly available information on public money commitments and enacted policies that affect energy production and consumption.	Presents an overview of recently adopted climate policies, climate-relevant responses to the COVID-19 pandemic, and a state of play of nationally determined contribution and long-term strategy submissions in 25 countries.	Tracks the energy-, environment-, and climate-related measures proposed, adopted, and implemented by major economies around the world.	Examines whether climate risks are integrated into COVID19 stimulus packages. Identifies opportunities for countries to improve integration of climate risks with subsequent packages.	Showcases contributions of bilateral and multilateral donors, development banks, philanthropic organizations, and the private sector to the response. (We only considered G20 bilateral donors and all MDB actions.)
Dates covered	January 1, 2020–March 31, 2021 (updated weekly)	July 2019–August 2020	January 5, 2020–March 31, 2021	March 2020–November 11, 2020	March 2020–June 20, 2021*
Countries or regions covered	Australia, Bangladesh, Brazil, China, Colombia, European Institutions, France, Germany, India, Italy, Japan, Mexico, Norway, Poland, Republic of Korea, Saudi Arabia, South Africa, Spain, the Netherlands, Turkey, Ukraine, United States, Vietnam	Argentina, Australia, Brazil, Canada, China, Colombia, Egypt, Ethiopia, European Union, India, Indonesia, Iran, Japan, Mexico, Morocco, Republic of Korea, Russian Federation, Saudi Arabia, South Africa, Thailand, Turkey, Ukraine, United Arab Emirates, United States, Vietnam	Canada, Chile, China, Colombia, Denmark, European Union, Finland, France, Germany, India, Ireland, Italy, New Zealand, Nigeria, Norway, Poland, South Korea, Spain, Sweden, United Kingdom, United States	Global Commission on Adaptation's Convening Countries, G20, V20, and UN Climate Action Summit Adaptation and Resilience champions	All countries

* Devex released an update of its tracker on June 20, 2021. We used the data included in Devex's database as of March 5, 2021.

Table 1 | **Comparison of Stimulus Trackers Used, continued**

TITLE	ENERGY POLICY TRACKER	NEW CLIMATE INSTITUTE	CARBONBRIEF	"ARE COVID-19 STIMULUS PACKAGES BUILDING CLIMATE RESILIENCE? AN ANALYSIS OF 66 COUNTRIES"	DEVEX INTERNATIONAL TRACKER
LINK	"ENERGY POLICY TRACKER: G20 COUNTRIES"	"OVERVIEW OF RECENTLY ADOPTED MITIGATION POLICIES AND CLIMATE-RELEVANT POLICY RESPONSES TO COVID-19: 2020 UPDATE"	"CORONAVIRUS: TRACKING HOW THE WORLD'S 'GREEN RECOVERY' PLANS AIM TO CUT EMISSIONS"	FORTHCOMING	"FUNDING THE RESPONSE TO COVID-19"
Scope and methodology	Collects and aggregates data on individual energy policies that are enacted by national, subnational, or municipal governments, central banks, majority state-owned public finance institutions, majority state-owned enterprises, and other government-related bodies.	Includes over 60 mitigation policies that were adopted or under development in specific countries.	Tracks the measures proposed, adopted, and implemented with a direct bearing on climate change. Does not include measures that support fossil fuels and other high-polluting sectors, unless the money helps them become cleaner; leaves out governments' initial "rescue" packages.	Analyzes enacted COVID-19 response and/or recovery packages in 66 countries to assess how resilience is incorporated.	Collects data about funding-related opportunities, activities, and news from bilateral and multilateral donors, philanthropic organizations, and the private sector that are focused on responding to and recovering from the COVID-19 pandemic.
Sectors covered	Energy production and consumption, namely the extraction or transport of energy resources (oil, gas, coal, etc.); electricity; buildings; and transport	Energy, transport, land use, land use change and forestry, buildings, agriculture, industry, waste, cross-sectoral	Agriculture, buildings, employment, energy, industry, nature, R&D, transport	Equity, urban areas, water resources management, food security, nature-based adaptation, disaster risk management, infrastructure, physical climate risks	Uses the following "focus areas" as categories: economic, response, small and medium enterprises, health, vulnerable, vaccine or treatment, gender, education, food security, equipment, prevention, environment, research, tourism, detection, water and sanitation, manufacturing, communication, and violence.

Table 1 | **Comparison of Stimulus Trackers Used, continued**

TITLE	ENERGY POLICY TRACKER	NEW CLIMATE INSTITUTE	CARBONBRIEF	"ARE COVID-19 STIMULUS PACKAGES BUILDING CLIMATE RESILIENCE? AN ANALYSIS OF 66 COUNTRIES"	DEVEX INTERNATIONAL TRACKER
LINK	"ENERGY POLICY TRACKER: G20 COUNTRIES"	"OVERVIEW OF RECENTLY ADOPTED MITIGATION POLICIES AND CLIMATE-RELEVANT POLICY RESPONSES TO COVID-19: 2020 UPDATE"	"CORONAVIRUS: TRACKING HOW THE WORLD'S 'GREEN RECOVERY' PLANS AIM TO CUT EMISSIONS"	FORTHCOMING	"FUNDING THE RESPONSE TO COVID-19"
Nomenclature used for energy sector	Five energy buckets: "fossil unconditional (no climate targets)"; "fossil conditional (climate targets); "clean unconditional (low-carbon and negligible environmental impacts)"; "clean conditional (stated to support energy transition, but unclear environmental safeguards)"; "other energy (everything else)"	Tries to identify sustainable "green" measures and unsustainable "gray" measures. Does not categorize energy sector measures in any standard way. Measures are described as-is. Lists the country, policy title, policy description, sector, and a reference.	Energy subsectors: carbon capture and storage, electricity bills, energy efficient, hydrogen, renewable energy Provides the country, sector, subsector, policy description, date, status, amount, and type of support (direct spending, loan, policy, regulation, subsidy, or tax).	Examines adaptation measures in energy sector classified under "Infrastructure" but does not provide a systematic nomenclature.	Does not include the energy sector specifically.

Sources: WRI authors, based on Energy Policy Tracker (2021); CarbonBrief (2020); Moisio et al. (2020); Krishnan and Brandon (forthcoming); and Devex (2021).

Data Collection and Analysis

We developed a database of domestic and international actions, based on the sources described below. We then applied our typology to this database to identify trends in interventions by countries and international development finance institutions (DFIs) and used the early insights to conduct semi-structured interviews with key stakeholders.

Domestic measures

For our synthesis of domestic interventions, we used the four trackers' mapping of domestic policies and tools identified as climate-relevant (see Table 2). This helps distill the vast amount of information available into relevant and accessible data, providing a birds'-eye view of actions across countries, sectors, and interventions.

We categorized countries' actions based on the descriptions in the trackers. For each country, we identified the policy lever type, the intervention used, and the sector (if relevant). If a sector was not specified, then the general, non-sector-specific intervention was tagged. We also recorded brief descriptions of the intervention, amounts allocated (if available), and the date enacted. Since countries are just beginning to implement these measures, there are not yet enough consistent data to understand or evaluate effectiveness. If more than one tracker provided information on a specific intervention, we used the tracker with the most comprehensive information. The other trackers were used to corroborate available information. We only recorded each action once.

We used this synthesis to identify the levers, interventions, and sectors—and combinations thereof—used most and least frequently. These trends provide insights into governments' actions and

which levers, interventions, and sectors were overlooked and could provide opportunities for future action. We used these results in our interviews to understand their challenges and where further action could be possible.

International measures

This study is the first to analyze international aid interventions initiated during the pandemic in 13 sectors. We focus on actions by G20 bilateral agencies and all MDBs (G20 countries are shareholders), within the specified time frame and across all recipient countries. We added projects and programs approved and financed by four multilateral climate funds.[8]

When this study began, Devex maintained the only tracker of bilateral and MDB COVID-19-related response and recovery aid. We used the multilateral climate funds' websites to collect their information. The Devex tracker provides basic information about the project title, donors, total budget, and financial instruments used. Where needed, we verified the collected data with light-touch research (from bilateral or multilateral institutions' websites) into project-related information. Financing instruments include loans, grants, equity stakes, guarantees, aid in-kind, technical assistance, or any combination.

We then categorized international data using the same policy levers, interventions, and sectors as the domestic actions. This provides comparability across the two spheres. As we did for the domestic actions, we identified the most and least common policy levers, interventions, and sectors and analyzed the financing instruments used. We used interviews to better understand these trends and challenges.

Interviews

The study complemented the literature review and data analysis with semi-structured interviews with over 30 representatives from G20 member countries, across the environment and finance portfolios, their bilateral agencies, and the MDBs. Within G20 countries, we targeted senior representatives from teams responsible for developing stimulus packages and for maintaining oversight of and relationships with MDBs. In the bilateral agencies and MDBs, we targeted senior representatives who managed their institutions' climate change portfolios.

Using our findings, we systematically probed countries on institutional motivations, their approaches to the COVID-19 recovery, choice of interventions and policies, and political or technical challenges. The interviews provided contextual details about actions in the recovery packages, perspectives on climate ambition, insights into the motivation behind some decisions, and an opportunity to test early recommendations. The full interview protocol is in Appendix B.

Limitations

In our synthesis, we rely on secondary sources for their data on domestic and international actions. Thus, the data we used to inform our findings are only as accurate and comprehensive as theirs. We limited our synthesis to the already identified climate-relevant actions and did not rely on primary information from governments. If the trackers failed to include certain actions or institutions due to their methodological approaches, then our analysis also fails to include them.[9] By relying on several similar trackers, we hope to have mitigated this limitation.

All four domestic trackers study the climate relevance of stimulus announcements, providing a very specific view of countries' stimulus actions. Three—Energy Policy, New Climate Institute, and CarbonBrief—are primarily focused on mitigation efforts, with the first being sector-specific. The New Climate Institute tracker only covers policies from July 2019 to August 2020, and thus does not capture later recovery packages. The fourth tracker, by WRI, is solely focused on adaptation and resilience actions.

This study does not attempt to quantify the size of financial investments in interventions or their outcomes and impacts. While Energy Policy Tracker and CarbonBrief provide information regarding finance allocations, they do not consistently provide information on the total size of stimulus packages. Neither New Climate Institute nor the adaptation tracker provide financial information. Thus, this study cannot confidently provide statistics on total finance flows. Additionally, we do not evaluate the efficacy of interventions or levers as this was not the purpose of this study and there is neither sufficient information available nor sufficient hindsight to conduct such analysis.

We used the Devex tracker to help provide basic information on international recovery efforts. These data often had to be corroborated through independent research. Even then, insufficient data sometimes hindered a confident assessment of whether the project was related to climate or how interventions should be tagged.

Interviews were limited to more advanced G20 economies. Despite multiple efforts to interview emerging economies' representatives, the study team was not able to engage them.

SYNTHESIS OF GOVERNMENT-LED COVID-19 RESPONSE AND RECOVERY EFFORTS

Typology of Interventions

Our typology provides decision-makers with a guide to the tools available to advance a Paris-aligned recovery. It also indicates where BAU actions can perpetuate the status quo and detract from efforts to achieve the Paris Agreement goals. Our typology identifies five policy levers, each with a set of mutually exclusive interventions, that policymakers could use on their own and in combination with each other to advance a greener recovery. Figure 2 showcases the full typology, while Table A3 provides definitions of each intervention.

The interventions highlight lever-specific actions that governments, their public financial institutions, and multilateral financial institutions can use to effect policy or regulatory change, to accelerate or remove investments and incentives, or to increase awareness. These interventions include mandatory disclosure requirements, new or reinforced climate or environmental regulations, liquidity support to industries and SMEs, consumer subsidies, establishing carbon pricing mechanisms, or issuing green sovereign bonds. The interventions also include developing non-binding or voluntary strategies or standards.

The typology outlines interventions across 13 sectors. These sectors, and the sector-specific sub-interventions, are derived from reviewed studies. The sectors include energy, buildings, nature, agriculture, transport, urban areas, water or waste management, disaster risk management, industry, health, social protection systems, finance, and information and communications technology. The study uses a "non-sector-specific" category to capture economy-wide interventions. If a country has invested in climate-positive, sector-specific interventions (say, the energy sector), then the typology stipulates specific sub-interventions (e.g., renewable energy generation). Table A3 provides definitions for each intervention and sector.

Figure 1 | Typology of Misaligned and Paris-Aligned interventions

MONETARY POLICY	FINANCIAL AND REAL- ECONOMY POLICIES AND REGULATIONS	FISCAL POLICY AND BUDGET SUPPORT	PUBLIC FINANCE (FROM GOVERNMENT-OWNED FINANCIAL INSTITUTIONS)	INFORMATION INSTRUMENTS
Addition of climate risks to macro-economic models and forecasting tools	Climate-informed stress testing of financial institutions	Consumer-specific subsidies and tax rebates for green goods and services	Investments in climate-positive infra-structure from government-owned financial institutions	Strategies, voluntary disclosures, standards or frameworks, roadmaps, guidance documents, etc. (nonbinding)
Adjustment of collateral requirements for financial institutions to reflect climate-related risks	Mandated disclosure of climate risks	Divestment of public funds from emission-intensive holdings	Liquidity support to financial inter-mediaries, SMEs, or other institutions with decarbonization or climate conditions	
Adjustment of interest rates for financial institutions to reflect climate-related risks	New or reinforced climate or environmental policies or regulations	Design or implementation of climate-driven budget process	Structure, issuance, or purchase of sovereign green bonds by government-owned financial institutions	
Analysis of climate-related implications for current monetary policy regimes and risk management practices	Frozen or repealed climate or environmental policies or regulations	Establishment and/or reinforcement of carbon pricing mechanism	Investments in BAU infrastructure from government-owned financial institutions	
Climate-informed quantitative easing	New or reinforced business-as-usual (BAU) real-economy policies and regulations	Issuance of sovereign green bonds	Liquidity support to financial intermediaries, SMEs, or other institutions without decarbonization or climate conditions	
Carbon-intensive quantitative easing		Investments in climate-positive infra-structure from government expenditures and public budget programs	Liquidity support for companies in carbon-intensive industries without decarbonization or climate conditions	
		Investments in workforce development, including skills training and provision of educational opportunities	Liquidity support without climate conditions for SMEs, businesses, or institutions that are not carbon-intensive	
		Liquidity support for companies in carbon-intensive industries with decarbonization or climate conditions		
		Liquidity support with climate conditions for small and medium enterprises (SMEs), non-carbon-intensive businesses or institutions		
		Mandated green public procurement		
		Removal or reduction of publicly funded support for coal, oil, gas, or other fossil fuel subsidies		
		Research and development in green and/or sustainable technology		
		Investments in BAU infrastructure from government expenditures or public budget programs		
		Liquidity support for companies in carbon-intensive industries without decarbonization or climate conditions		
		Liquidity support without climate conditions for SMEs, non-carbon- intensive businesses or institutions		

Note: This typology is based on an extensive literature review and meant to be indicative, but not exhaustive, of the tools available to policymakers. These levers can be applied to all sectors. The trackers and literature review covered agriculture, buildings, disaster risk management, energy, finance, health, industry, information communications technology, nature, social protection systems, transport, urban areas, and water and waste management.

Sources: Authors, based on Whitley et al. (2018); Vivid Economics (2020); Buckle et al. (2020); Larsen et al. (2020); Hepburn et al. (2020); Allan et al. (2020); and Network for Greening the Financial System (2020, 2021).

Key Takeaways from Synthesis of COVID-19 Recovery Trackers

Domestic measures

In their recovery efforts, G20 countries are only using a small subset of the levers and interventions available to align with the Paris Agreement. No country is using the full range of available policy levers and interventions at its disposal. Few advanced G20 countries, for example, have used the recovery to mandate disclosures of climate risks. Only three countries and the European Union are using the recovery to support research and development (R&D) in green technologies across various sectors. Additionally, countries without existing carbon pricing mechanisms did not implement them during the recovery. Other unused interventions include divesting public funds from emission-intensive holdings or reducing subsidies for fossil fuels. There are few investments in retraining the workforce, either by investing in skills training or by providing educational opportunities.

Despite the transformative opportunities in the COVID-19 recovery and response, countries generally relied on shorter-term fiscal actions that largely maintained the status quo. All G20 governments mostly used their fiscal policy and budget support lever, followed by the lever to enact financial and real-economy policies and regulations. They relied least on domestic public finance modalities (i.e., from government-adjacent institutions like public pension funds or an NDB). Governments are tending to rely on positive incentive-based measures (e.g., subsidies) rather than mandatory and enforceable actions (e.g., enacting new or reinforced climate-positive policies or regulations) that may be perceived as too stringent or burdensome but are crucial to advancing a longer-term systemic transformation.

Under the most commonly used levers, the preferred interventions generally invested in current infrastructure and economic development pathways, indicating significant systemic inertia. Most interventions across the levers continued supporting BAU activities—whether through investments in maintaining current infrastructure or through liquidity support without climate conditions for carbon-intensive industries, SMEs, and financial intermediaries. While this support is understandable given the urgency of the economic crisis engendered by the pandemic, governments are also missing an opportunity to leverage their significant financial support to incentivize a systemic transition.

By far, most interventions were targeted at the energy sector, followed by the transport and buildings sectors. These include both climate-positive and BAU investments and policies. Governments used real-economy policies and regulations to advance support for renewable energy but also froze or repealed existing environmental or climate regulations. Through tax incentives (e.g., exemptions or deferrals), subsidies, and direct budget support, countries are advancing renewable energy generation (e.g., battery storage, solar, wind, and green hydrogen), retrofitting public buildings and private homes, and accelerating the transition to low-carbon road transport systems (e.g., support for cycling, pedestrian lanes, or electric vehicles). Simultaneously, governments targeted liquidity support at carbon-intensive industries (e.g., oil and gas, coal, or aviation) to alleviate their financial pressures. These were largely enacted without decarbonization or climate conditions, pointing again to governments' reluctance to advance climate ambition and action through strict mandates.

Countries have invested minimally in the agriculture, industry, nature, water and waste management, or disaster risk reduction sectors. Despite policy objectives and pronouncements to the contrary, these sectors do not yet appear to be priorities during the early phases of the response and recovery. As some interviewees stated, the economic returns from investing in most of these sectors are not as clear, particularly with the pressures to jump-start the economy, recoup job losses, and rapidly disburse funds.

Almost all countries are missing opportunities to invest specifically in adaptation and resilience, and none are systematically considering the resilience of all investments, risking maladaptation. Only four countries are investing specifically in adaptation and resilience as part of their recovery, and these investments are primarily concentrated in the agriculture, water, and disaster risk management sectors (Krishnan and Brandon forthcoming). There are no systematic processes to screen all investments for future physical climate risks within G20 countries, potentially exposing new investments to increased physical climate risks.

International measures

Generally, bilateral agencies and MDBs reconfigured their portfolios to respond to the immediate needs and demands of their client countries, including bolstering the health system and providing additional aid for social protection systems. These immediate responses delayed, but did not completely derail or cancel, the continued development of climate projects in the pipeline.

International actions use the public finance and information instrument levers. Over the study period, interventions primarily focused on providing liquidity support to financial intermediaries, SMEs, or other institutions without explicit decarbonization or climate conditions and investing in both climate-positive and BAU infrastructure. Many of these interventions were targeted at staunching the immediate economic and social devastation of lockdowns. Financial intermediaries, for example, on-lend to smaller businesses and institutions within their jurisdictions. While this helped cushion the economic lockdown, it also perpetuated the climate status quo.

MDB support was targeted at the agriculture, energy, health, and transport sectors, whereas bilateral aid supported social protection systems, energy, and water or waste management. MDBs supported climate-positive activities through agriculture projects, energy efficiency programs, and water resource management efforts in client countries. As BAU investments, MDBs supported efforts to decentralize management of extractive sectors, expand road networks, and support aviation and shipping expansion with no explicit climate conditions. Bilateral agencies supported cash transfer and employment protection programs and expanded the use of renewable energy and water and sanitation efforts.

MDBs mainly provided governments with support for the health crisis and liquidity support to financial intermediaries to provide financial relief to SMEs and other institutions. Most of this support was through loans. Loans may reduce countries' room for fiscal maneuver (depending on their level of concessionality), particularly since many developing countries were already facing high levels of debt stress. Debt concerns could undermine these countries' recovery from the pandemic and their ability to invest in the systemic transformation needed to reach the Paris goals. Bilateral agencies generally provided humanitarian or emergency assistance to support early response measures to eligible countries.

Over the last year, multilateral climate funds' portfolios provided more support to nature and other adaptation-related activities than the portfolios of bilateral agencies or MDBs. Their portfolio size—in terms of volume of projects or financing—does not completely close the adaptation- or nature-financing gap created by the current lack of MDB and bilateral support, but it does underscore the critical role the climate funds play in providing initial financing for nature-based solutions and other adaptation-related efforts.

Enabling factors and challenges

Countries that advanced Paris-compatible recovery interventions benefited from having "shovel-ready" projects and delivery mechanisms prior to COVID-19. Interviewed country representatives cited existing economy-wide and/or sectoral strategies, budget processes, and political commitments as the factors that enabled their efforts for a green recovery. Several interviewees emphasized that a pipeline of Paris-aligned investments allowed them to quickly identify effective and proven interventions (such as retrofitting buildings for energy efficiency improvements) that would boost jobs and reduce emissions.

However, this very reliance on existing frameworks, pipelines, and processes is also a challenge to advancing the transformation needed. As our literature review and interviewees suggest, current frameworks and submitted nationally determined contributions are not in line with the Paris goals, and investments in the pipeline are, at best, supporting incremental change. Policymakers' current reliance on incremental strategies is likely blocking more transformative climate action and indicates a variety of domestic and international financial and political challenges. Additionally, most countries have not yet developed sufficiently granular roadmaps or internal processes that can both advance Paris alignment and guide their economic or investment policies.

Interviewees acknowledged that there are political, technical, and fiscal challenges associated with the transition. Several interviewees pointed to the need for data, models, and tools that could advance sectoral planning and evaluate aligned interventions for efficacy and impact. Some mentioned the fiscal constraints

of financing the transition, particularly given the pandemic's costs and concerns about sovereign debt sustainability. Interviewees and the literature emphasized that the domestic political pressure to boost the economies and avoid exacerbating job losses resulted in support for carbon-intensive industries.

Some interviewees pointed to the challenges of motivating and leveraging all public actors, particularly NDBs, to support alignment with the Paris Agreement. The NDBs are a significant source of investment capital in many countries that could fuel Paris-aligned economic recoveries.[10] However, relevant governments' reluctance to mandate or incentivize Paris alignment by these banks sends mixed signals and disincentivizes domestic businesses and industries from investing in low-emission or climate-resilient activities.

IMPLICATIONS

Cross-Cutting Implications for Governments

The failure of G20 countries to rapidly shift COVID-19 recovery spending toward Paris-compatible pathways will make all Paris goals, including that of Article 2.1c, unattainable. The rapid outlay of COVID-19-related funding has largely followed BAU patterns, rather than promoting alignment with the Paris Agreement. Although some countries used climate considerations in their recovery packages, these were counterbalanced by BAU interventions. Given that we must cut emissions in half by 2030 to reach the Paris temperature goal (IPCC 2018, 358), this COVID-19 recovery-spending profile risks putting Paris goals out of reach.

G20 members have a unique chance to consider the options and approaches available but are not using the interventions across all policy levers and sectors that would catalyze the Paris transformation. This typology could provide a starting point.

G20 countries should consider ways to better leverage the full suite of policy levers and tools, based on their capacities. G20 countries are primarily relying on their fiscal policy tools and direct budget support. While these are effective at lowering the cost of capital—they must be complemented with binding laws, regulations, and investments in internal processes to systematically integrate the mitigation and adaptation goals into governments' decision-making and investment processes. This should include a systematic assessment of the national skills base to identify gaps in the workforce that could hinder the Paris-aligned transformation.

Proposed Considerations for Specific Measures

G20 members may consider three groups of proposed measures to accelerate alignment with the Paris Agreement through their recovery packages.

How should economic and financial systems be structured to accelerate Paris alignment?

Governments need to chart the macroeconomic, fiscal, real-economy, and labor market transformations required to support and accelerate the transition. Alignment requires economy- and society-wide structural changes, including how macroeconomic, fiscal, and procurement policies are developed, how labor markets are retooled, and how innovation is incentivized (see Table 2). Doing this will require G20 countries to use interventions from all five levers in a manner that supports both immediate and longer-term economic and climate goals.

The structural changes required will bring significant social and economic changes to all G20 countries, and labor policy will need to reflect these considerations. Equity, economic growth, and social considerations require that job losses in carbon-intensive sectors be estimated and managed, and that mechanisms be established to support displaced workers with either retraining in green sectors or compensation if retraining is not suitable.

G20 countries can take specific actions to rapidly align their national financial systems. Countries need to develop and implement operational understanding of Paris-aligned financial flows (including for sovereign wealth funds, public pension funds, and NDBs), follow the Group of Seven (G7) by requiring climate risk disclosures in line with the Taskforce on Climate-Related Financial Disclosures, and transparently report progress. Countries should collaborate with the World Bank, International Monetary Fund, and other stakeholders to ensure that all countries have access to high-quality climate data.

NDBs can strengthen their alignment processes and financing. Resources and support should be made available to NDBs to help their alignment processes.

Clear mechanisms are needed to ensure that derisking, incentives, tools, and other types of support from the international financial system reach local investors. Regulations, guidelines, and capacity building to private financial institutions, and their leading clients, should lay out the incentives and processes to build Paris-compatible national development pathways.

Governments should ensure that all investments consider future physical climate risks and proactively adapt their infrastructure, systems, and communities. There is an alarming lack of adaptation and resilience considerations in recovery packages. Continuing this trend will jeopardize the longevity, reliability, and value of any investment made. Governments should systematically use screening tools to consider the physical and social impacts of current and future climate risks, to evaluate the direct benefits of a resilient investment, and to analyze the social, economic, and environmental benefits through their resilient investments and programs.

Table 2 | **Sample Investments and Interventions to Accelerate Systems Transformation, Drawing on the Typology**

SYSTEMS TO BE TRANSFORMED	SAMPLE INVESTMENTS AND INTERVENTIONS
System-wide	Integrate climate-related considerations into public decision-making processes, including macroeconomic modeling, fiscal policy, and public budgeting. Establish or strengthen carbon pricing mechanisms. Mandate climate risk disclosure for publicly listed companies and other public institutions. Invest in green workforce development, including skills training and educational opportunities. Develop and provide climate risk and emission data.
Agriculture, land, and water	Scale investments in climate-smart agriculture (less land, water, or energy intensive). Enact new or reinforced policies and regulations for water use efficiency (across sectors). Invest in natural infrastructure services (cross-linked with Infrastructure).
Buildings	Incentivize or finance retrofit buildings to improve energy efficiency, resilience, and reduce urban heat-island effects. Raise energy efficiency and disaster resilience standards for public and private buildings, particularly for new construction.
Energy	Enact new or reinforced regulations and policies regarding emission and resilience standards for energy producers, transmitters, and distributors. Finance expansion of renewable energy and research and development (R&D) for similar technologies (battery storage). Shift fossil fuel subsidies to support renewable energy.
Finance	Enact new or reinforced policies and regulations regarding ■ Paris alignment for public pension funds, sovereign wealth funds, national and multilateral development banks, and other government-adjacent financial institutions; and ■ green and resilient procurement.
Industry	Incentivize or finance phaseout of inefficient appliances and equipment. Strengthen energy efficiency and emission standards for industrial and manufacturing processes, including cement, steel, and aluminum production. Finance R&D for technologies in low-carbon cement, steel, and other manufacturing processes.
Infrastructure	Enact new or reinforced regulations and policies regarding emission and resilience standards for new infrastructure construction. Establish systemic risk assessment processes to inform infrastructure design and investments, including for green infrastructure.

Table 2 | **Sample Investments and Interventions to Accelerate Systems Transformation, Drawing on the Typology, continued**

SYSTEMS TO BE TRANSFORMED	SAMPLE INVESTMENTS AND INTERVENTIONS
Transport	Invest in low-carbon road transportation, including for electric vehicles, charging infrastructure, public transport, cycling, and walking. Finance climate-resilient road infrastructure, ports, and shipping facilities. Finance R&D for low-emission shipping and aviation fuels.
Urban areas	Invest in low-carbon transportation and waste systems. Invest in urban nature reserves or green spaces; intensify land-use requirements.

Source: WRI authors.

How should a robust vision and internal processes be set to implement the Paris Agreement?

G20 countries need Paris-aligned national goals and strategies. Where members have yet to announce Paris-aligned roadmaps and national goals, they should do so promptly. These should be informed by countrywide, science-based scenarios to reach net-zero emissions by 2050. This process must involve national, subnational, community, and corporate stakeholders.

These plans must be backed with political will and consistent messaging. Doing so will help ensure that investors, businesses, and other stakeholders view them as priorities for planning and investment.

How can G20 countries provide global leadership?

G20 countries can use their bilateral agencies and shareholding or client power at the MDBs to strongly and collectively advocate for greater climate ambition and to provide more concessional finance. G20 countries should make full use of existing mechanisms to leverage development finance, concessional finance, and financial support from DFIs to maximize the flow of private finance into Paris-compatible activities. Specific instruments or initiatives to derisk investments in developing countries are crucial to supporting capital-intensive renewable energy deployment and should be scaled. Toolkits and capacity-building should help national policymakers and financial systems direct financial flows to Paris-aligned initiatives.

IFIs and NDBs should rapidly develop criteria to establish whether investments are compatible with the Paris Agreement. Paris-compatible investment criteria should be agreed on and used to filter and stop BAU investments. As implementation moves forward, reporting systems will need to be established. Transparency and accountability will be key features of a global system that supports the Paris Agreement.

G20 countries should use other political platforms to encourage peers to pursue and demand Paris-aligned investments. A reinvigorated multilateral approach requires solidarity and an unwavering commitment to achieving the Paris goals. In the current context, a collective political signal from the G20 can help build a foundation of trust, support global efforts to build back better, and achieve an inclusive Paris-aligned recovery.

APPENDIX A. SUPPLEMENTARY FIGURES AND TABLES

Table A1 | **Overview of Alignment Efforts of Multilateral Development Banks and International Development Finance Club**

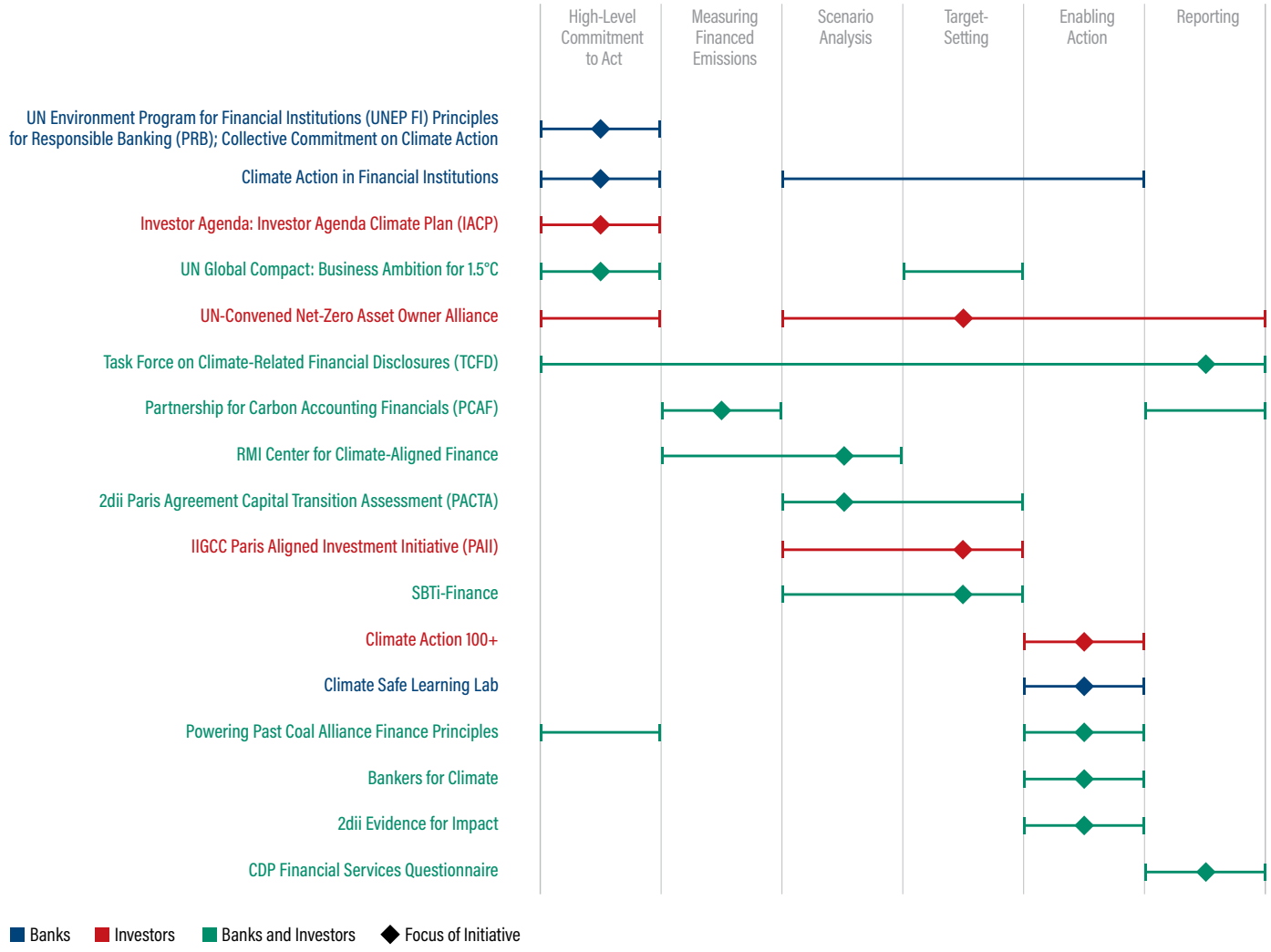
PARIS AGREEMENT ALIGNMENT			
PARIS ALIGNMENT APPROACH		MULTILATERAL DEVELOPMENT BANKS: Process of agreeing to a common framework that will apply to all institutions and is based on six building blocks.	INTERNATIONAL DEVELOPMENT FINANCE CLUB: Process of agreeing to a shared set of activities to promote alignment that each institution will implement on its own.
Framework components	Definition	All financing and investment portfolios are consistent with the Paris adaptation and mitigation goals.	Entire financing and investment portfolios, beyond what is directly beneficial to climate and traditionally classified as climate finance, need to be consistent with the Paris goals.
	Alignment commitments	1. Align with mitigation goals. 2. Commit to adaptation and climate-resilient operations. 3. Accelerate support for the transition through climate finance. 4. Support engagement and policy development. 5. Report. 6. Align internal activities.	1. Commit to increasingly mobilize finance for climate action. 2. Support country-led climate-related policies. 3. Catalyze investments and mobilize private capital. 4. Recognize the importance of adaptation and resilience, especially in most vulnerable countries. 5. Support the transition away from fossil fuels to renewables. 6. Internally transform the institutions.
	Country-driven approach	Commit to help their clients deliver on their nationally determined contributions and the goals of the Paris Agreement.	Support country-led climate-related policies to enable policy and regulatory environments. Develop long- and short-term strategies and actions to zero net emissions and resilience.
	Operational commitments	Within the six building blocks, ensure that their future internal operations, including facilities and other internal policies, are aligned with the Paris Agreement.	Embed climate change considerations in their strategies and activities. Redirect internal financial flows to support low-carbon and climate-resilient sustainable development.
	Financial targets	Climate finance: US$65 billion annually by 2025, with $50 million for low- and middle-income economies. Adaptation finance: $18 billion annually by 2025. Private sector leverage: $40 billion in climate investments mobilized annually by 2025 from private sector investors.	Climate finance: $1 trillion by 2025. Climate facility: $10 million to implement the first four-year pilot phase, with the objectives to foster knowledge sharing and provide capacity building to members of the International Development Finance Club.

Table A1 | **Overview of Alignment Efforts of Multilateral Development Banks and International Development Finance Club, continued**

RISK ASSESSMENT TOOLS			
Data sets and frameworks	Metrics to be finalized or improved	Develop climate mitigation and adaptation metrics. Quantify climate risks. Develop methodology for tracking the shift from brown to green finance.	Update investment criteria. Update risk management framework.
Investments transition	Mainstream climate into project design	Identify mitigation and adaptation options and include them in project economic analysis (where possible).	Assess all activities financed for positive or negative climate impacts.
	Decarbonization and a just transition	(a) Help public and private clients develop long-term low-greenhouse-gas-emission and climate-resilient strategies. (b) Work with NDBs and other financial institutions to develop financing and policy strategies for a just transition.	Support the transition from fossil fuels to renewables financing, including by supporting expansion of clean and efficient technologies.
MONITORING AND TRANSPARENCY			
Monitoring and reporting	Monitoring	MDB-IDFC Common Principles for Climate Change Mitigation and Adaptation Finance Tracking, established in 2015, will inform a similar approach for Paris alignment.	
	Reporting	Periodic joint report on MDBs' climate finance: will inform a similar approach for Paris alignment.	Periodic mapping of member institutions' green finance flow contributions: Paris alignment approach being discussed.

Source: WRI authors; ADB et al. (2018); AfDB et al. (2019); IDFC (2018); Larsen (2018).

Figure A1 | Overview of Private Sector Climate Initiatives



Source: PCAF (2020).

Table A2 | **Working Definitions for Making Finance Flows Consistent with the Paris Agreement**

ARTICLE OR REPORT	PUBLISHING INSTITUTION(S)	PUBLICATION DATE	DEFINITION, ALIGNMENT WITH PARIS AGREEMENT ARTICLE 2.1C
Making Finance Consistent with Climate Goals: Insights for Operationalising Article 2.1c of the UNFCCC Paris Agreement	Overseas Development Institute, Rocky Mountain Institute, World Resources Institute, and E3G (Third Generation Environmentalism)	December 2018	Increased public and private finance for low-emission and climate-resilient development away from climate-incompatible investments. Governments and other stakeholders can operationalize Article 2.1c by driving action, raising ambition, and tracking progress. "Driving action" requires identifying and applying tools to shift and mobilize finance toward low-greenhouse-gas (GHG) and climate-resilient development. "Raising ambition" means sharing leadership and increasing ambition to shift and mobilize finance. "Tracking progress" means tracking action and outcomes to shift and mobilized finance.
"Biennial Assessment and Overview of Climate Finance Flows" (2018)	UNFCCC Standing Committee on Finance	December 2018	Although climate finance flows obviously must be scaled up, it is also important to ensure the consistency of finance flows as a whole (and of capital stock) pursuant to Article 2.1c. This does not mean that all finance flows must achieve explicitly beneficial climate outcomes but rather that they must reduce the likelihood of negative climate outcomes.
"Tracking Finance Flows towards Assessing Their Consistency with Climate Objectives"	OECD Research Collaborative on Tracking Finance for Climate Action	March 2019	Most activities undertaken by households, companies, and governments involve financial transactions. Hence, as called for in Article 2.1c, meeting climate objectives requires "making finance flows consistent with a pathway towards low GHG and climate-resilient development." Doing so implies implementing and monitoring public actions and privately led initiatives that have an effect on investment and financing patterns and decisions.
"A Framework for Alignment with the Paris Agreement: Why, What and How for Financial Institutions?"	Article 2.1c introduces a specific focus on the transformative potential of financial flows and the importance of their "consistency" with a low-GHG, climate-resilient development pathway. It represents an important departure from previous climate action frameworks: for the first-time financial flows do not simply appear in the negotiations as a "means of implementation." The mandate for country Parties to ensure the consistency of financial flows as a goal in and of itself recognizes the importance of reorienting finance and investments away from non-consistent activities—and of scaling up finance and investments for consistent activities across the entire economy.	September 2019	Article 2.1c introduces a specific focus on the transformative potential of financial flows and the importance of their "consistency" with a low-GHG, climate-resilient development pathway. It represents an important departure from previous climate action frameworks: for the first-time financial flows do not simply appear in the negotiations as a "means of implementation." The mandate for country Parties to ensure the consistency of financial flows as a goal in and of itself recognizes the importance of reorienting finance and investments away from non-consistent activities—and of scaling up finance and investments for consistent activities across the entire economy.

Table A2 | **Working Definitions for Making Finance Flows Consistent with the Paris Agreement, continued**

ARTICLE OR REPORT	PUBLISHING INSTITUTION(S)	PUBLICATION DATE	DEFINITION, ALIGNMENT WITH PARIS AGREEMENT ARTICLE 2.1C
Climate Transparency Report 2020	Institute for Climate Economics	November 2020	This will require a structural shift in finance flows away from investments and consumption patterns that are incompatible with climate goals—specifically fossil fuels and related infrastructure. Public and private spending must shift away from projects with climate risks and toward green alternatives.
"Aligning Finance with the Paris Agreement: An Overview of Concepts, Approaches, Progress, and Necessary Action"	Climate Transparency	December 2020	"Paris alignment" involves aligning public and private financial flows with the objectives of the Paris Agreement. Article 2.1c defines this alignment as making finance flows consistent with a pathway toward low greenhouse gas emissions and climate-resilient development. This will help to scale up the financial flows needed to strengthen the global response to the threat of climate change. It can be considered at a strategic level, where we can ask if the public and private sector are doing what is needed to ensure that financial decisions take climate change into account and align with the objectives of the Paris Agreement.

Source: WRI authors, from sources listed in the table.

Table A3 | Typology Interventions and Description

Context: This typology builds on the four-lever framework discussed in Making Finance Consistent with Climate Goals. This typology updates the levers and then categorizes the policy interventions discussed in literature that examined alignment with the Paris Agreement and how to ensure a sustainable and resilient COVID-19 recovery, according to five levers that governments can use to shift finance flows. This typology includes positive and negative policy interventions that can be applied to specific sectors. Sector-specific actions included in this typology are indicative, and not exhaustive, of the types of actions that could help align with the Paris Agreement's Article 2.1c.

LEVER	DEFINITION
Monetary policy	This lever influences behavior through central bank and regulatory authority policies that manage the money supply in an economy (e.g., interest rates, quantitative easing [QE]).
Financial and real-economy policies and regulations	This lever influences behavior through force of law, where mandatory and enforced. It covers law-based requirements or standards in the financial sector and real economy. Real-economy (i.e., sector-based) mandates and regulations are critical to influencing investment decisions in specific sectors.
Fiscal policy and budget support	This lever influences behavior by changing prices, including the cost and availability of capital. This could be through taxes, subsidies, price supports or controls, or even direct budget expenditures.
Public finance (from government-owned financial institutions)	This lever aims to influence behavior by shifting financial risks and is provided by public pension funds, sovereign wealth funds, and public finance institutions (like national development banks [NDBs]). This includes instruments like grants, loans, equity stakes, or guarantees.
Information instruments	This lever aims to influence behavior by raising awareness. Examples include nonbinding recommendations or certification processes, transparency initiatives, corporate or national strategies, plans, or frameworks.

LEVER	INTERVENTIONS (NONEXHAUSTIVE)	DESCRIPTION OR USE
Monetary policy	Addition of climate risks to macroeconomic models and forecasting tools	This covers steps by central banks to incorporate climate change impacts into their current macroeconomic models and forecasting tools. This could include expanding integrated assessment models or forecasting or nowcasting models to include climate impacts or developing new macroeconomic modeling tools that are more effective at incorporating climate risks.
	Adjustment of collateral requirements for financial institutions to reflect climate-related risks	Central banks could charge a lower (or higher) interest rate to financial institutions that pledge a higher proportion of low-carbon (or carbon-intensive) assets as collateral. Central banks could also set up a credit facility (potentially at concessional rates) accessible only for low-carbon assets.
	Adjustment of interest rates for financial institutions to reflect climate-related risks	Central banks could make the interest rate for their lending facilities conditional on how much a financial institution's lending, relative to a benchmark, is contributing to climate change mitigation and/or whether the financial institution is decarbonizing its business model.
	Analysis of climate-related implications for current monetary policy regimes and risk management practices	Central banks need to understand how climate change could introduce new risks—particularly in the form of stranded assets, economic shocks, or increased credit risks—that could undermine interest rates, financial stability, or economic growth. This could include additional research or analysis so central banks can understand their climate exposure.

Table A3 | **Typology Interventions and Description, continued**

LEVER	INTERVENTIONS (NONEXHAUSTIVE)	DESCRIPTION OR USE
Monetary policy	Climate-informed quantitative easing	QE (asset purchasing) programs that focus on supporting companies that will thrive in a Paris-aligned future. Examples could be exclusively supporting companies that specialize in low-carbon, decarbonized, or climate-resilient technologies or business models.
	Carbon-intensive quantitative easing	QE programs that support companies in carbon-intensive industries, such as those that specialize in fossil fuel resources.
Financial and real-economy policies and regulations	Climate-informed stress testing of financial institutions	Central banks or other regulators use a range of climate scenarios to conduct forward-looking "stress tests" to asset or collateral values of financial institutions.
	Mandated disclosure of climate risks	Regulation requiring disclosure of climate risks as outlined by the Task Force on Climate-Related Financial Disclosures or according to similar standards.
	New or reinforced climate or environmental regulations or policies	Announcement of new or reinforcing existing climate or environmental regulations or policies (e.g., on air, water, pollution) that are either economy-wide (non-sector-specific) or sector-specific.
	Frozen or repealed climate or environmental regulations or policies	Repealing, delaying, or temporarily freezing application of existing climate or environmental regulations and policies, non-sector-specific.
	New or reinforced business-as-usual (BAU) real-economy policies and regulations	Announcement of new or adjustment of existing policies, standards, or regulations that continue BAU activities and that do not support stricter actions to accelerate transition to low-carbon and resilient economies.
Fiscal policy and budget support	Consumer-specific subsidies and tax rebates for green goods and services	Tax rebates, subsidies for consumers in support of purchasing and incentivizing green goods and services.
	Divestment of public funds from emission-intensive holdings	Sale or transfer of holdings (stock or equity, removal of guarantees) from emission-intensive industries (e.g., public stakes in oil, gas, coal, steel manufacturing companies).
	Design or implementation of climate-driven budget process	Design and implementation of green or climate budget processes, including expenditure tagging or reporting, using climate-related performance measures.
	Establishment and/or reinforcement of carbon pricing mechanism	Implementation or strengthening of a carbon pricing or carbon tax and/or trading mechanism (through higher prices, more sectors included).
	Issuance of sovereign green bonds	Launch of green bonds to raise resources for climate-related activities.
	Investments in climate-positive infrastructure from government expenditures or public budget programs	Investments in climate-positive interventions through direct government action (i.e., through budgets or extraordinary allocations). Investments can be economy-wide or sector-specific.
	Investments in workforce development, including skills training and provision of educational opportunities	Investments in skills retraining, educational or vocational opportunities, and other workforce development programs.
	Liquidity support for companies in carbon-intensive industries with decarbonization or climate conditions	Tax rebates, interest payment deferrals or moratoriums on subsidies for oil and gas, industry, or airline and other transport, or other carbon-intensive industries with decarbonization or other climate-related conditions (e.g., more efficient water use).
	Liquidity support with climate conditions for small and medium enterprises (SMEs), non-carbon-intensive businesses or institutions	Tax rebates, interest payment deferrals, subsidies, or moratoriums for SMEs or businesses that are not carbon-intensive (e.g., textiles, food processing) with decarbonization or other climate-related conditions (e.g., more efficient water use).

Table A3 | **Typology Interventions and Description, continued**

LEVER	INTERVENTIONS (NONEXHAUSTIVE)	DESCRIPTION OR USE
Fiscal policy and budget support	Mandated green public procurement	Implementation of environmentally or climate-aware procurement policies, including, for example, minimum standards for suppliers.
	Removal or reduction of publicly funded support for coal, oil, gas, or other fossil fuel subsidies	Removal or reduction of subsidies and other forms of publicly funded support (e.g., removal of payment moratoriums, lowered interest rates, guarantees) for oil and gas, coal, or other fossil fuels.
	Research and development (R&D) in green and/or sustainable technology	Investment in R&D of climate and/or environmentally friendly or environmentally positive technologies (batteries, water- or energy- efficient technologies, soil improvement, etc.).
	Investment in BAU infrastructure from government expenditures or public budget programs	Investments in non-climate positive or neutral interventions (i.e., BAU) in infrastructure through direct government action (i.e., through budgets or extraordinary allocations).
	Liquidity support for companies in carbon-intensive industries without decarbonization or climate conditions	Tax rebates, interest payment deferrals or moratoriums, central bank or federal reserve buyback of shares or stakes in companies (QE), industry, airline or transport, or other carbon-intensive industries without decarbonization or other climate-related conditions (i.e., BAU support). This includes new subsidies or other forms of publicly funded support for carbon-intensive industries (e.g., coal, oil and gas, or other fossil fuel production).
	Liquidity support without climate conditions for SMEs, non-carbon-intensive business or institutions	Tax rebates, interest payment deferrals or moratoriums, central bank or federal reserve buyback of shares or stakes in companies (QE), subsidies for SMEs or non-carbon-intensive businesses (e.g., textiles, food processing) without decarbonization or other climate-related conditions (e.g., more efficient water use).
Public finance (from government-owned financial institutions)	Investments in climate-positive infrastructure from government-owned financial institutions	Investments (e.g., loans, equity stakes, guarantees, etc.) in climate-specific or positive interventions funded by public pension funds, sovereign wealth funds, NDBs, international financial institutions (IFIs), or other government-owned financial institutions. Can be economy-wide or sector-specific.
	Liquidity support to financial intermediaries, SMEs, or other institutions with decarbonization or climate conditions	Loans, grants, or other financial instruments issued to SMEs, businesses, or other institutions with decarbonization or other climate-related conditions (i.e., climate-positive support). This support is designed to help businesses, SMEs, or other institutions maintain financial cash flow or operation while supporting climate-positive pathways. It is provided by public pension funds, sovereign wealth funds, NDBs, IFIs, or other government-owned financial institutions.
	Structure, issuance, or purchase of sovereign green bonds by government-owned financial institutions	Includes support for structuring, launching and issuing, or purchasing of sovereign green bonds by public pension funds, sovereign wealth funds, NDBs, IFIs, or other government-owned financial institutions.
	Investments in BAU infrastructure from government-owned financial institutions	Investments in interventions that are not climate-positive or neutral (i.e., BAU and that are provided by public pension funds, sovereign wealth funds, NDBs, IFIs, or other government-owned financial institutions. Investments can be sector-specific or economy-wide.

Table A3 | **Typology Interventions and Description, continued**

LEVER	INTERVENTIONS (NONEXHAUSTIVE)	DESCRIPTION OR USE
Public finance (from government-owned financial institutions)	Liquidity support to financial intermediaries, SMEs, or other institutions without decarbonization or climate conditions	Loans, grants, or other financial instruments issued to SMEs, businesses, or other institutions without decarbonization or other climate-related conditions (i.e., BAU support). This support is designed to help businesses, SMEs, or other institutions maintain financial cash flow or operations or to minimize the economic impact of the COVID pandemic. It is provided by public pension funds, sovereign wealth funds, NDBs, IFIs, or other government-owned financial institutions.
	Liquidity support to financial intermediaries, SMEs, or other institutions without decarbonization or climate conditions	Loans, grants, or other financial instruments issued to SMEs, businesses, or other institutions without decarbonization or other climate-related conditions (i.e., BAU support). This support is designed to help businesses, SMEs, or other institutions maintain financial cash flow or operations or to minimize the economic impact of the COVID pandemic. It is provided by public pension funds, sovereign wealth funds, NDBs, IFIs, or other government-owned financial institutions.
	Liquidity support for companies in carbon-intensive industries without decarbonization or climate conditions	Tax rebates, interest payment deferrals or moratoriums for carbon-intensive companies or industries without decarbonization or other climate-related conditions (i.e., BAU support). This includes new subsidies or other forms of publicly funded support for carbon-intensive industries (e.g., coal, oil and gas, or other fossil fuel production). It is provided by public pension funds, sovereign wealth funds, NDBs, IFIs, or other government-owned financial institutions.
	Liquidity support without climate conditions for SMEs, businesses, or institutions that are not carbon-intensive	Tax rebates, interest payment deferrals, moratoriums, or subsidies for SMEs or businesses that are not carbon-intensive (e.g., textiles, food processing) without decarbonization or other climate-related conditions (e.g., more efficient water use). It is provided by public pension funds, sovereign wealth funds, NDBs, IFIs, or other government-owned financial institutions.
Information instruments	Strategies, voluntary disclosures, standards or frameworks, roadmaps, guidance documents, etc. (nonbinding)	Nonmandatory strategies, disclosure frameworks, standards, or frameworks. Can apply to specific sectors or to the economy or organization as a whole.
Climate-positive, sector-specific sub-interventions	Renewable energy generation	Investment, policy support, and/or R&D for renewable energy resources, including solar, wind, green hydrogen, and geothermal energy and battery storage or other supportive infrastructure.
	Electricity system (technology or fuel-neutral)	Investment, policy support, and/or R&D for electricity systems (transmission and distribution, technological improvements).
	Reducing emissions from the oil and gas sector	Investment and/or support for improved efficiency and thus reduced emissions from oil and gas sectors.
	Energy efficiency programs, including for buildings and home renovations and retrofits	Investment, policy support, and/or R&D for energy efficiency retrofits or upgrading of existing or new buildings and homes.
	Nature-based solutions	Investment, policy support, and/or R&D in actions that protect, sustainably manage, and restore natural or modi-fied ecosystems for mitigation or adaptation purposes.
	Low-carbon road transport	Investment, policy support, and/or R&D for electric vehicles, cycling and walking infrastructure, fuels research.

Table A3 | **Typology Interventions and Description, continued**

LEVER	INTERVENTIONS (NONEXHAUSTIVE)	DESCRIPTION OR USE
Climate-positive, sector-specific sub-interventions	Low-carbon aviation and/or shipping	Investment, policy support, and/or R&D for reducing carbon or fossil fuel intensity of aviation and shipping.
	Climate-smart urban areas	Investment, policy support, and/or R&D for climate-smart and more efficient urban areas—including planning, climate-smart revitalization efforts, digitization.
	Water efficiency or resource man-agement	Investment, policy support, and/or R&D in water and wastewater resource efficiency or management, including drinking water or riverine management, improving efficiency in industrial use.
	Waste efficiency or resource man-agement	Investment, policy support, and/or R&D in waste efficiency or management, including sanitation facilities, waste disposal and recycling.
	Disaster management, finance, or preparedness	Investment, policy support, and/or R&D for disaster preparedness (e.g., early warning systems, shelters), related financial services (e.g., sovereign insurance funds, individual emergency assistance), and overall disaster man-agement (e.g., improving governance and coordination systems).
	Climate-smart agriculture	Investment, policy support, and/or R&D for agricultural interventions that are less resource-intensive (e.g., wa-ter, land, energy) and improve climate resistance of seeds (e.g., drought-, flood-, or pest-resistant).
	Carbon removal or industrial carbon capture and storage (CCS)	Investment, policy support, and/or R&D for CCS, development of carbon sinks or storage.
	Green consumer goods and services	Investment, policy support, and/or R&D for green consumer goods and services.
	Low-carbon cement, steel, aluminum, other industry	Investment, policy support, and/or R&D for advancing low-carbon cement, steel, aluminum, and other industrial processes.

Source: WRI authors, with lever descriptions adapted from Whitley et al. (2018).

APPENDIX B. INTERVIEW PROTOCOL AND QUESTIONS

Overview

1. Thank you for agreeing to chat with us. (Introduce team.)
2. **Brief background and objective:**

- At the request of the Italian presidency and for the Climate, Sustainability, and Energy Transitions working group, we are working on a paper that seeks to identify (a) policies and tools to align finance and investment with Paris Agreement goals, in line with Article 2.1c and (b) ways to accelerate it through the COVID-19 recovery.
- We're keen to understand more about your motivations, constraints in designing or financing activities aligned with the Paris Agreement, and your intentions moving forward. Findings will be presented and communicated in a working paper to the G20 CS/ET working group in June.

3. **Confidentiality:** We will not be disclosing or attributing any positions or information to individual names, positions, or institutions in our paper and analysis.

Questions

General

How does your [country or institution]'s commitment to the Paris Agreement influence your view of investment opportunities in the short, medium, and long term?

1. Do you have a sense of the scale of investment required by the Paris Agreement goals?

- Does your [country or institution] recognize the Paris Agreement as a motivation for immediate investment plans?
- *Alternative Wording: In what manner are IPCC or CAT statements on the need for unprecedented transformational change by 2030 reflected in your national or organization investment plans for the next five years?*

2. Has your [country or institution] engaged with its customer or beneficiary base regarding climate action as a huge opportunity to capitalize the economy? Is the link between this accelerated capitalization and job creation recognized? Is it reflected in your actions, strategies, and goals?

How can the delivery of Paris play a greater role in day-to-day decision-making in your work?

1. Are these ideas accepted as relevant concepts for your [country or institution] that should inform short- and medium-term action?
2. Do the changes required to achieve these goals influence targets, processes, and milestones in your [country or institution]?
3. Have specific opportunities in your target markets been identified, sized, costed, and planned?
4. Have partner and stakeholder roles and engagement strategies been mapped out?

What policy recommendations would you make to accelerate this process?

5. Examples (if needed):

- Establish more ambitious short-term national or sectoral climate goals
- Establish mechanisms to ensure that climate-friendly investments achieve payback
- Carbon pricing, markets, and/or border adjustments
- Product regulatory measures
- Communication and creation of confidence in the broad-based and accelerated nature of the transition to build "momentum"
- Advertising, communications, endorsements
- Fund clubs, niches, or other mechanisms to allow small-scale examples of low-carbon business to flourish and inspire

Domestic

1. **Countries are broadly investing in energy, transport, and buildings.**

- What are the reasons for these priority sectors in the response or recovery packages so far?
- Were projects or investments already in the pipeline that were waiting for funding? [More generally, how were these investments initiated?]
- Are some sectors priorities, but it was not possible to get investments lined up in time for the stimulus packages?

2. **Countries that are investing in decarbonization or adaptation have some mainstreamed planning or financing measures in place.**

- Are there processes within your ministry and/or intergovernmental processes that help evaluate or screen potential investments for emission reductions, support, or contribution to shifting to a lower-carbon pathway, or physical climate risk exposure?
- Are there other elements that helped prepare ministries to invest in mitigation or adaptive measures (e.g., procurement policies, mandates or targets, UNFCCC reporting guidelines)?

3. **Challenges in identifying investments or policy levers:**

- What are constraints in identifying suitable investments across ministries or sectors? (e.g., technology availability or research and development, lack of time or capacity, transition priorities, vested interests in certain industries)
- (Why) Are there certain types of policy levers—like regulations versus subsidies—that are more often used as an instrument?
- Are there constraints associated with using stricter policy levers?

4. **We've seen less investment in nature, agriculture, industrial decarbonization, and adaptation or resilience. What are upcoming investment or sectoral priorities that you've identified that need support or action to move toward Paris alignment?**

- What more can be done to advance action here?
- Gaps currently include nature, water, agriculture, industry (to some extent).
- Many of these—particularly industry—are hard to decarbonize.
- Adaptation and resilience is largely missing.

International

Bilateral

1. How are the pressures to green the recovery affecting priorities, approach, and/or projects?
2. Has there been a change in how climate-related priorities were considered this year?
- How were investments affected for priorities that are not related to health, particularly investments for climate?
3. Are there bilateral giving targets related to the Paris Agreement?
4. Are there processes associated with identifying or screening potential investments with respect to emission reductions and adaptation within the bilateral portfolio?
5. do you decide which instrument is best suited for a certain program or project? (For example, have you noticed that mostly grants were used this past year? How sustainable is this?)
6. What are the challenges you face in prioritizing or identifying programs that are "additive" and/or transformative?

MDBs and DFIs

Governance

1. Has there been a change in how shareholders engage with the bank's leadership or processes?
2. For this past year, how were priorities decided that were not related to COVID-19?

Processes

1. How were targets related to the Paris Agreement used in this past years' activities?
2. How are the pressures to green the recovery affecting priorities, approach, and/or projects?
3. Were the existing processes associated with identifying or screening potential investments with respect to emission reductions and adaptation within the portfolio? Were there constraints in getting climate-aligned projects approved?
4. What are the challenges you face in prioritizing or identifying programs that are "additive" and/or transformative?

Project-level

1. How do you decide which instrument is best suited for a certain investment? (For example, have you noticed that mostly loans were issued this past year, despite potential debt crises?)

ABBREVIATIONS

BA	Biennial Assessment and Overview of Climate Finance Flows
BAU	business as usual
CCS	carbon capture and storage
COP	Conference of the Parties
COVID-19	coronavirus disease 2019
DFI	development finance institution
EMDE	emerging market and developing economy
GDP	gross domestic product
GHG	greenhouse gas
G20	Group of 20
IDFC	International Development Finance Club
IFI	international financial institution
MDB	multilateral development bank
NDB	national development bank
QE	quantitative easing
R&D	research and development
SME	small and medium enterprise
UNFCCC	UN Framework Convention on Climate Change
WRI	World Resources Institute

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ENDNOTES

1. The Paris Agreement goals are articulated in Article 2, which reads, "This Agreement, in enhancing the implementation of the Convention, including its objective, aims to strengthen the global response to the threat of climate change, in the context of sustainable development and efforts to eradicate poverty, including by: (a) Holding the increase in global average temperatures to well below 2 C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5 C above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change; (b) Increasing the ability to adapt to the adverse impacts of climate change and foster climate resilience and low greenhouse gas emissions development, in a manner that does not threaten food production; and (c) Making finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development." (UNFCCC 2015)
2. We define *business as usual* as continued investments in carbon-intensive and nonresilient infrastructure systems, processes, and policies that have been shown to be nonaligned with the goals of the Paris Agreement. This definition is consistent with how BAU has been defined in the literature (OECD 2020; O'Callaghan and Murdock 2021; Hepburn et al. 2020; Vivid Economics 2020; Larsen et al. 2020; CarbonBrief 2020).
3. IDFC members include the Agence Française de Développement, Banco del Estado de Chile, Bancóldex SA (Colombia), Banco Nacional de Desenvolvimento Econômico e Social (Brazil), Banque Ouest Africaine de Développement, Black Sea Trade and Development Bank, Development Bank of Latin America, Caisse de Dépôt et de Gestion (Morocco), Cassa Depositi e Prestiti (Italy), Central American Bank for Economic Integration, China Development Bank, Corporación Financiera de Desarrollo SA (Peru), Croatian Bank for Reconstruction and Development, Development Bank of Southern Africa, Eastern and Southern African Trade and Development Bank, Industrial Development Bank of Turkey, Islamic Corporation for the Development of the Private Sector, International Investment Bank, Japan International Cooperation Agency, KfW Bankengruppe (Germany), Korean Development Bank, Nacional Financiera (Mexico), Small Industries Development Bank of India, and State Development Corporation (Russia).
4. Literature defines the term *rescue packages* in various ways. However, it is often used for short-term spending aimed at achieving stability, while recovery spending usually refers to interventions aimed at reinvigorating the economy once stability has been achieved.
5. We define *business as usual* as continued investments in carbon-intensive and nonresilient infrastructure systems, processes, and policies, that have been shown to be nonaligned with the goals of the Paris Agreement. This definition is consistent with how BAU has been defined in the literature (OECD 2020; O'Callaghan and Murdock 2021; Hepburn et al. 2020; Vivid Economics 2020; Larsen et al. 2020; CarbonBrief 2020).
6. A green spending policy is one that is likely to reduce GHG emissions, reduce air pollution, and/or strengthen natural capital, compared to a scenario in which the policy was not implemented" (O'Callaghan and Murdock 2021). The OECD green recovery database assesses the environmental implications and categorizes the interventions by positive, negative, or mixed. *Green recovery* refers to positive recovery measures (OECD 2021).
7. The addition of the phrase "real economy" to the financial policies and regulations lever was guided, in part, by a point included in the original report from ODI, WRI, and RMI, which acknowledged, "There are also various policies and regulations that are focused on the real economy (infrastructure, housing, manufacturing, energy, etc.), which will be critical to shaping and shifting investment in those sectors. These are too numerous and diverse for this paper to explore in a useful level of detail but could be taken up as part of a wide research agenda on this topic" (Whitley et al. 2018).
8. The multilateral climate funds reviewed are the Green Climate Fund, the Adaptation Fund, the Global Environment Facility, and the Climate Investment Funds.
9. For example, although some trackers included investments from the domestic national development banks of the G20, we didn't pursue a systematic or comprehensive analysis of their investments and actions independently of what was covered in the trackers.
10. The Climate Policy Initiative's *Updated View on the Global Landscape of Climate Finance 2019* found that the NDBs provided approximately $134 billion in climate finance in 2017–18 (Macquarie et al. 2020).

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ABOUT THE AUTHORS

Lorena González is a Senior Associate in WRI's Sustainable Finance Center.

Contact: Lorena.gonzalez@wri.org

Nisha Krishnan is a Senior Finance Action Track Associate in WRI's Climate Resilience Practice.

Contact: Nisha.krishnan@wri.org

Caitlin Smith is an Associate in WRI's Sustainable Finance Center.

Contact: Caitlin.smith@wri.org

Julie Bos is a Research Analyst in WRI's Sustainable Finance Center.

Contact: Julie.bos@wri.org

Natalia Alayza is a Research Analyst II in WRI's Sustainable Finance Center.

Contact: Natalia.alayza@wri.org

ABOUT WRI

World Resources Institute is a global research organization that turns big ideas into action at the nexus of environment, economic opportunity and human well-being.

Our Challenge

Natural resources are at the foundation of economic opportunity and human well-being. But today, we are depleting Earth's resources at rates that are not sustainable, endangering economies and people's lives. People depend on clean water, fertile land, healthy forests, and a stable climate. Livable cities and clean energy are essential for a sustainable planet. We must address these urgent, global challenges this decade.

Our Vision

We envision an equitable and prosperous planet driven by the wise management of natural resources. We aspire to create a world where the actions of government, business, and communities combine to eliminate poverty and sustain the natural environment for all people.

Our Approach

COUNT IT

We start with data. We conduct independent research and draw on the latest technology to develop new insights and recommendations. Our rigorous analysis identifies risks, unveils opportunities, and informs smart strategies. We focus our efforts on influential and emerging economies where the future of sustainability will be determined.

CHANGE IT

We use our research to influence government policies, business strategies, and civil society action. We test projects with communities, companies, and government agencies to build a strong evidence base. Then, we work with partners to deliver change on the ground that alleviates poverty and strengthens society. We hold ourselves accountable to ensure our outcomes will be bold and enduring.

SCALE IT

We don't think small. Once tested, we work with partners to adopt and expand our efforts regionally and globally. We engage with decision-makers to carry out our ideas and elevate our impact. We measure success through government and business actions that improve people's lives and sustain a healthy environment.

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