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Global Financial Crisis and Climate Change:

A Playbook for Action

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From October 16–18, 2019, the Stanley Center for Peace and Security gathered participants at the Airlie Center outside of Washington, DC, for the 60th annual Strategy for Peace Conference. In the roundtable "The Next Global Financial Crisis and Climate Change: A Policy Agenda to Align with the Paris Agreement," participants examined the complex relationship between the financial system and the threat of climate change and identified which aspects of the regulatory and economic framework must change to deliver a climate-safe world.

As the impacts of a warming world are increasingly felt, the language of climate crisis is permeating more corners of everyday life. At the same time, volatility in global markets and international trade disputes have driven financial news to the front pages, raising concerns of a recession or even a full-blown global financial crisis, just over a decade after the last one. A critical mass of major central banks is seriously thinking through how to use their powers to deal with looming systemic financial risks from climate change. They are driven by growing concern that companies, investment portfolios, and entire countries are vulnerable to economic growth shortfalls, abrupt asset repricings, balance sheet impairment, and destabilizing market volatility caused by a rapid shift to decarbonization. Whether it be from recession, financial crisis, or climate-related shock, decision makers must prepare for the unique effect each may have on the global economy.

While it is difficult to predict exactly how or when an economic downturn will occur, there is a growing sense that one is looming. Even on good days, the economy is operating in a context of heightened uncertainty. Based on the assumption that a crisis is a fertile moment for a shift in paradigm, the climate community would be remiss if it was not well prepared and poised to act at its onset. To be clear, nobody is suggesting climate advocates wait for a crisis to act; rather, this is a recognition that a crisis is an opportunity to set a different trajectory. Envisioning what fundamental changes can take place to align the financial system with the Paris Agreement is imperative at this point, while also consolidating all the good efforts underway and working toward those changes to the financial system in the meantime.

In Times of Crisis

During the 2008 global financial crisis, governments responded with immediate measures to stabilize the situation. Only once the initial heart attack was under control did attention turn to getting the patient healthy again and setting up a new, more resilient regime.[1] Examining the 2008 global financial crisis raises key areas and moments for potential interventions around the next crisis to leverage the systemic change needed in the context of climate change.

The immediate stabilization measures in 2008 saw governments recapitalize large financial institutions and central banks inject liquidity into the system to stop it from grinding to a halt. "Too big to fail" was the rationale given to provide unparalleled government backing to certain corporations or financial institutions in the belief that they were so large and so interconnected that their failure would lead to economic collapse. As central banks continued to strive for inflation targets, interest rates remained close to zero, leaving central banks with fewer monetary policy options in the event of a downturn. In terms of the effect of those actions on climate change, while they promoted financial stability and some countries coupled them with green stimulus measures, on balance the offering of low-interest bank loans perpetuated a business-as-usual, high-carbon economic system.[2] Further, immediate fiscal responses to the crisis sought to create demand to offset the global contraction, but with balance sheets in such dire health, the years after the crisis saw many governments begin austerity measures to rebalance the books. This derailed funding and investments for climate action and had significant detrimental impacts to the poorest in society.

Only after this period of government and central bank stimulus did attention turn to financial regulatory reforms and "getting the patient healthy." This was the remit of the Basel Committee on Banking Supervision—the primary global standard setter with a mandate to strengthen the regulation, supervision, and practices of banks worldwide with the purpose of enhancing financial stability. The deficiencies in financial regulation revealed by the crisis were addressed in a third installment of the Basel Accords. Basel III, as it is called, included new rules on bank capital requirements, stress testing, and market liquidity risks. While these rule changes have resulted in a more stable and resilient financial system, in retrospect many believe the structural reforms did not go far enough and may have actually stymied financial flows for green investments, as they were considered riskier.[3] If there is another instalment of the Basel Accords, what can be done to satisfy growing demands for widespread systemic change? Any future Basel package would need to reorient the banking sector and financial system so it is not only more resilient to shocks, including those from climate change, but is fundamentally rewired to produce more social and sustainable outcomes.

For sure, any future response to a financial crisis or recession demands changes to the rules of the game if the world is to avoid locking in unsafe levels of greenhouse gas emissions or locking out large swathes of society. Beyond the decarbonization challenge, factors such as the onset of digitalization—which is introducing new factors in monetary policy—and growing inequality—which is increasingly calling into question the legitimacy of institutions governing the global economy—must be accounted for in the future. This will require an approach that brings in experts from other policy areas.

To reiterate, nobody suggests waiting for a crisis to act, but imagining a crisis scenario may provide ideas for decarbonizing the financial system at the pace and scale of reform commensurate with the Paris Agreement goals. Also, the moment of a crisis must not be one when knee-jerk reactions seek to restore business as usual.

Current Efforts and Preparation

Preventing a knee-jerk reaction requires the global financial system to be governed in a more green and responsible way. A growing body of work is being done today to make the financial system more resilient to shocks, including climate impacts. Recent initiatives are to be commended and supported, such as:

- Coalition of Finance Ministers for Climate Action.
- Network of Central Banks and Supervisors for Greening the Financial System.
- International Platform on Sustainable Finance.[4]

They provide reason for optimism and have enormous potential, considering finance ministers and central bankers are key budget holders and chief architects of the entire economic system. Concerning themselves with growth, stability, inflation, investment, and so forth, their mandates are increasingly intertwined with being able to achieve the goals of the Paris Agreement. Indeed, they are increasingly finding that climate change matters in meeting their mandate. These initiatives are not silver bullets, but by building a policy package for implementation across the global financial system, we can better understand how to avert a crisis.

Far more attention is needed, and urgently, from policymakers and decision makers to be ready to respond in a crisis moment and ensure that climate action is not crowded out by economic considerations from the last paradigm or a knee-jerk reaction. It is in the world's collective best interest to prepare a policy package of reform measures to build on current initiatives and fundamentally rewrite the rules so the global financial system is able to meet its net-zero objectives. We need to develop top-drawer ideas that are comprehensive and coherent, well formulated, and widely socialized for political and financial actors to adopt as the linkage between climate change and the financial system becomes unavoidable.

A Policy Agenda to Align with the Paris Agreement

Recognizing the value of pulling together these efforts in a comprehensive vision, the Stanley Center for Peace and Security convened a roundtable at its 60th Strategy for Peace Conference in October 2019 titled "The Next Global Financial Crisis and Climate Change: A Policy Agenda to Align with the Paris Agreement." Comprising experts from the climate and finance communities and beyond,[5] the roundtable examined the complex relationship between the financial system and the threat of climate change to identify which aspects of the regulatory and economic framework must change to deliver a climate-safe world. To this end, the group began to collate, categorize, and prioritize a draft reform package for coherent, transformational, and deliverable changes to the global financial system.

For shorthand, the collection of measures was referred to as "the playbook," and it is intended as a guide or script to which decision makers could turn in the moment of crisis. A crisis could occur as a result of any shock to the system—economic, regulatory, technological, or political—however, the Stanley Center chose to use the framing of a financial crisis, and the reform opportunity it offers, to think through and develop a wide range of ideas to transform the global financial system to be robust in a climate-challenged world. This report introduces the concept of the playbook and elaborates on some of the initial "plays" the group came up with. This is intended as a conversation starter and is by no means an exhaustive list. After an overview of the playbook and the measures in it, this report offers reflections and recommendations for urgent follow-up actions, since time is of the essence.

The Need for a Playbook

The playbook is a menu of options to be applied by policymakers for a Paris-aligned and equitable global financial system.

Momentum toward change in the financial system is building, but systemic—rather than piecemeal—change is required to shift capital flows from high- to low-carbon economic activities that meet the world's climate change objectives. Many of the recommendations in the playbook are ready for implementation now if decision makers can muster the political will. The planet is in a climate crisis, and the related physical and transition risks will affect capital allocations and the financial system. It is essential to get ahead of and manage the change in an orderly fashion, before asset price collapse and chaos.

The playbook contains a combination of structural, monetary, and fiscal policy reforms necessary to achieve the objectives of the Paris Agreement, which the Intergovernmental Panel on Climate Change concluded would require a halving of global greenhouse gas emissions from 2020 to 2030.[6] The level of change in people's lives and to societies all around the world implicit in achieving this means that the playbook has to incorporate measures that offer a more socially just, fair, and inclusive financial system. Any coherent policy package will have to take this into account.

Much work is still needed to align global financial flows with the goals of Article 2.1.c of the Paris Agreement. International and national initiatives to boost sustainable finance abound and are welcomed, but the climate finance field—along with investing using environmental, social, and governance (ESG) factors more broadly—continues to be seen in many quarters as a niche issue rather than as a system requirement. Reforms are not yet strongly embedded in regulatory systems or in financial sector culture and processes. Under pressure of severe crisis there is a risk that reforms could stall, or even be reversed, as climate-related and ESG rules are blamed for inhibiting necessary investment.

The playbook's recommendations are meant to be implemented to bring about tangible benefits. It will bring systemic change to rebalance the economy, reduce inequality, raise living standards, widen access to the financial system, and accelerate the global financial system toward a sustainable planet and climate objectives. The playbook is designed from a global perspective but can be tailored for different countries based on their region, political system, or state of economic development. More work is needed on developing adaptation measures, as the recommendations are aimed more at mitigation than adaptation.

Climate Risk

The global financial system faces three major types of climate risk: physical climate risks, transition risks, and liability risks.

Physical Climate Risks

Climate change is leading to more frequent and severe weather events such as wildfires, hurricanes, and floods, which affect the operation of economies. This can be through supply-chain disruption, destruction of assets, or loss of livelihoods and homes.

Transition Risks

Transition risks appear as reforms are made to policy and law, changing for people and businesses the terms of operating in the economy. As policy changes seek to make economies green and sustainable, the values of existing assets and costs of operating can change. For example, the Paris Agreement foresees reductions in the use of fossil fuels, making investments in this sector less valuable at some point.

Liability Risks

These risks come from people or businesses seeking compensation for losses they may have suffered from the physical or transition risks from climate change. The compensators will be those who are in part responsible for the physical climate events.

Source: Bank of England, *Climate Change: What Are the Risks to Financial Stability?* https://www.bankofengland.co.uk/knowledgebank/climate-change-what-are-the-risks-to-financial-stability.

Guiding Coordinated Change

The recommendations of the playbook are organized into three sections that address the objectives of the Paris Agreement while seeking to build a just global financial system:

1. **Change the rules and norms for a fair, just, and 1.5°C-aligned global economy.**
2. **Guide a financial stimulus to expand and build the green economy.**
3. **Implement a structural end to the use of fossil fuels.**

The Playbook

The following recommendations are a collection of rule changes, fiscal and monetary policies, and changes in financial incentives, perceptions, and global norms that support the delivery of net-zero economies and provide a boost in the transition to a 1.5°C trajectory. This is an initial list of ideas, far from exhaustive. The Overton window, or the range of policy ideas acceptable to the political mainstream, needs to expand to include more radical ideas that challenge current orthodoxy to build a better, more-equitable financial system.

Change the Rules and Norms for a Fair, Just, and 1.5°C-Aligned Global Economy	
Finance and Planning Ministries	Develop new metrics to define economic well-being and progress
Central Banks	Include climate change in mandate for economic stability
	Stress test all portfolios against climate risks
	Develop an international observatory to share approaches and underlying models
Corporate Governance	Report on balance-sheet exposure to climate risk and decarbonization indicators
	Include environmental and social stakeholders in composition of corporate boards
	Prohibit dividend payments for companies exposed to climate risk
	Tie executive remuneration to ESG and decarbonization metrics
	Deposit climate-scenario models with a global risk observatory
Credit Ratings	Mandate inclusion of climate risk in credit rating agency methodologies
	Form public credit rating agency with a long-term vision rather than short-term cycle
Institutional Investors and Sovereign Wealth Funds	Align portfolios with achieving the Paris Agreement
	Deposit climate-risk models with a global observatory
International Institutions	Include review of climate-related financial risk and stranded assets, and develop tools for restructuring in International Monetary Fund Article IV

Guide a Financial Stimulus to Expand and Build the Green Economy	
Financial Regulators	Develop taxonomy to screen out brown and identify green investments
Monetary Policy	Decarbonize central bank balance sheets
	Implement green quantitative easing
	Formulate green-targeted refinancing schemes offering lower interest rates
	Capitalize public investment banks and/or national government green investment funds
Fiscal Policy	Green the development finance institutions (e.g., mandate clean development)
	Form public investment banks and/or national government green investments funds
	Expand green industries and markets through government purchasing
	Internationally coordinate carbon taxes with support for the most vulnerable in society
	Form planning capacity for green industrial policy and pipelines for infrastructure projects

Implement a Structural End to the Use of Fossil Fuels	
Finance Ministries	Impose moratorium on fossil fuel investments
	Remove fossil fuel subsidies and replace with green subsidies
Central Banks	Set capital ratios, with higher ratios for holding brown assets
	Penalize brown assets in collateral frameworks
	Cap lending for fossil fuels
International Financial Institutions	Create new finance vehicle(s) and international framework to buy out fossil fuel assets and wind down over time
	Create just transition funds for economic and social regional development
Insurers	Update policies to exclude fossil fuel projects and infrastructure

1. Change the Rules and Norms for a Fair, Just, and 1.5°C-Aligned Global Economy

Delivering a fair, just, and inclusive global economy aligned to 1.5°C will require systemic change to the global financial architecture and its rules. The purpose of the global financial system as stated by the G20 is to deliver fair and balanced growth. It is delivering neither. And the very concept of growth as the singular metric of success is being called into question, and what was once considered a fringe argument is becoming mainstream. This section of the playbook seeks to refresh and reframe the very purpose of the global financial architecture and rewrite the rules of the game accordingly.

Risk, Regulation, and Changing Norms

Acknowledging the inherent threats posed by climate change has never been more important. A number of companies can testify to this, including the utilities Pacific Gas and Electric Company in California and Eskom in South Africa.[7] The new head of the International Monetary Fund (IMF), Kristalina Georgieva, spoke on her inauguration of at least $12 trillion in assets at risk of being stranded, saying, “This is now a category of risk that absolutely needs to be front and center in our work. The criticality of addressing climate change for financial stability, for making sure that we can have sustainable growth, is so very clear and proven today that no institution, no individual can stand back from the responsibility to act.”[8]

Companies are at risk from climate change in myriad ways. The best means of preparing and defending against the three types of risks—transition, liability, and physical—is to acknowledge, assess, and build strategies to mitigate against them. There is already methodology to build on from the Financial Stability Board’s Task Force on Climate-related Financial Disclosures.[9] The playbook foresees changes to the way the private sector incorporates climate risk and scenarios into its capital allocation strategies, and to the way the financial system assesses the desirability of investing in a high-carbon dependent company, or country, as a result. By including long-term impacts and externalities as systemic risk to be accounted for and mitigated in strategy, companies will be better prepared and make better decisions to avoid the impact of climate change and preserve long-term value. To fortify this, central banks should model and mandate assessment of climate risk on the balance sheet, as signaled by the Bank of England.[10] A new global observatory to aggregate and integrate climate-risk models and assumptions should be created and used by central banks, regulators, asset managers, insurers, and credit rating agencies to develop robust science-based scenarios and standardized frameworks to more efficiently embed climate risk into budget planning and capital allocation decisions.

Changes to the global financial system can be made through hard and soft measures. Where change in behavioral norms struggle to take hold, harder measures in the form of regulation can be introduced. A combination of the two will enable a smoother transition toward cleaner and fairer economies. Softer measures that steer capital, such as credit ratings and assessing risk, can be more effective than harder measures and can organically enable a transition, but they may take longer.

Companies that are better prepared for climate risk are likely to be better prepared to maintain their credit lines by virtue of taking a longer-term view on where the business and its operations could be affected. Linking the cost of credit to preparedness and strategies for climate risk would create incentives for companies to take it seriously and enable creditors to offer preferential rates to those deemed most resilient to climate shocks. A powerful means of doing this is to mandate the inclusion of climate risk in credit rating agency methodologies. By creating a formal means to assess the creditworthiness of a company linked to climate change, lenders and companies will have a clearer means of understanding a debtor’s ability to absorb shocks from climate risk and service debt.

Creating a credit rating system based on climate risk would benefit from standardized practice to provide certainty and a level playing field. A public credit rating agency with a long-term vision rather than focus on a short-term cycle would enable a shift in capital to long-term lending and investing. This could be created by national governments with global standardization to protect the level playing field.

Changing perspectives and recognizing new priorities in economies will be imperative to delivering on climate commitments. Central banks are typically mandated to manage monetary policy and financial stability while maintaining neutrality over the market. With climate change now recognized as a material threat to financial stability, many argue that central banks' mandates should be reinterpreted and revised to take into account the financial volatility and instability from climate change and rapid decarbonization.[11] Giving central banks a climate change mandate has been controversial, as it is seen as politicizing central bank decisions, however, the impact of climate risk on financial stability brings climate change within scope of their responsibilities. Some regulators have begun the process of stress testing the institutions under their supervision, but this is embryonic. To expedite and expand this process, policymakers need more knowledge exchange and shared learning platforms along with a new institution or observatory to aggregate and integrate models used to stress test portfolios against net zero. A change in mandate would enable financial institutions to apply their toolkits with a new lens to a greater effect, as explored further in the following section.

As countries begin transitioning to net-zero economies, the roles of international institutions will be important to ensure financial stability. Existing financial and economic assessments, such as the IMF's Global Financial Stability Outlook and World Economic Outlook, are pivotal warning mechanisms for global instability and will be complemented by the IMF's Article IV country surveillance process, which is to be adapted to assess weaknesses in economies relating to climate risks. This should include reviewing stranded assets and liabilities on government balance sheets, which pose challenges to economic and financial stability. Policymakers need to start thinking more deeply about the cascading effects if an Article IV communication identifies or quantifies material country-level macroeconomic climate risks. And, more generally, there is also a need to develop a robust international architecture to build resilience throughout the system and to avoid the very real risk of capital flight.

Governance and Process Reforms

The playbook sees a role for changes to corporate regulation to encourage deeper, faster decarbonization. For example, companies reporting on their asset decarbonization would assist consumers and investors in understanding the status of corporations as they transition. In the European Union (EU), the Sustainable Finance Action Plan is a momentous intervention clarifying expectations for disclosure, asserting what a green investment is, and providing benchmarks to encourage the corporate transition.[12]

Regulatory structures for corporate stewardship can be further strengthened to ensure there is sufficient understanding at the highest levels of strategic decision making within a company. The presence of a climate change and social policy lead on corporate boards would bring a level of understanding that would enable corporations to elevate and consider the tensions between operations and changing global attitudes on inclusive capitalism and climate change. In August 2019, the US Business Roundtable agreed in a new statement to commit to an economy that serves all Americans, superseding all previous statements on the primacy of shareholders.[13] Combined with tying executive remuneration to hitting decarbonization metrics, the operation incentives for corporations can be changed dramatically to align with global objectives.

Extra leverage could be applied by institutional investors and sovereign wealth funds since they, allegedly, have long-term benefits at the heart of their investment decisions. Protecting value for the long term requires recognizing the material impact of climate change. The definition of fiduciary duty needs updating to unambiguously take account of the reality of climate change and long-term financial risks. All trustees need training to this effect and to stress test their portfolios accordingly. Institutional investors need to constantly review and revise how they harness their power to radically up the ante and accelerate the pace of corporate alignment with the Paris Agreement. Several voluntary means to do this already exist and are mobilizing the market, such as the Net Zero Asset Owner Alliance and the Paris Aligned Investment Initiative of the Institutional Investors Group on Climate Change (IIGCC),[14] but capturing the whole of the global financial system will require regulatory incentives to ensure it is supporting and not hindering climate change targets.

New Zealand's "Wellbeing Outlook"

In 2019, the New Zealand government became the first country to adopt a "Wellbeing Outlook" to complement its budget after a period of growing GDP but diminishing living standards and opportunities for people. The Wellbeing Outlook provides priorities for the budget that include improving sustainability in the economy, reducing child poverty and family violence, addressing mental health, and developing the skills and opportunities for Maori and Pacific people.

Source: New Zealand Government, *New Zealand's Wellbeing Outlook*, https://www.budget.govt.nz/budget/2019/wellbeing/outlook/index.htm.

Defining the Objectives of the Economic System

Previous assessments on the success of an economy have rested on gross domestic product (GDP). GDP is a simple indicator in a complex world. It fails to account for negative externalities and is generally a poor indicator of the welfare of people. Nor does it relate to the impact of the economy on the environment and climate change. New composite indicators and metrics for success of an economy must be drawn to reflect modern priorities and realities, including economic inequality, technological change, and climate change. Existing economic indicators that reflect issues like the concentration of wealth or the carbon intensity of the economy, such as the Gini coefficient and natural capital, should be elevated. New indicators, for example, a national decarbonization rate, are needed to provide clarity and transparency and to prioritize political attention and international cooperation to pressing priorities. Ultimately, any new group of indicators must collectively surpass the limited picture painted by the GDP and used to inform government decisions.

2. Guide a Financial Stimulus to Expand and Build the Green Economy

Rule changes will enable policymakers to make better decisions, which will "shift the trillions" of dollars toward decarbonization and clean economies. However, the transition to green and fair economies will need conscious monetary and fiscal efforts to create markets and project pipelines for the trillions of dollars to be invested in. Again, a crisis moment should not be necessary to change public spending for a clean economy and sustainable infrastructure. A wealth of data documents the infrastructure investment gap. Furthermore, with low to negative interest rates, it is an opportune time to borrow and invest to stimulate clean economies. When there is a crisis moment, the opportunity must be grasped to act and make impactful investments for climate change at scale.

Mobilizing Finance

Learning from the last crisis, quantitative easing (QE) resuscitated economies. In a time of crisis, green QE could provide the liquidity for governments to enact green industrial policies and build green project pipelines. Under a secondary mandate to support general economic goals of the government, green QE would enhance a central bank's standing as a responsive agency while adhering to its primary mandates.[15] What is more, there is an argument that expansionary monetary policy correlates with reductions in inequality.[16]

Central banks have several roles to play. To ensure there is liquidity where the private sector won't invest in the transition, central banks should support public investment by maintaining low borrowing costs for green, introducing a brown penalizing factor, and acting as a buyer of last resort for long-term debt issuance.

Reducing inequality could be supported more directly through "helicopter money," whereby central banks debit money directly to citizens. Greening this would mean providing terms for its use, which could lead to investments in new green infrastructure for domestic purposes, such as investments in home energy efficiency, renewable energy systems, or electric transportation.

Infrastructure in economically developing countries is at a crucial stage, where the private sector is rather conservative when it comes to riskier new technology. This is exacerbated by the higher levels of political risk in developing economies, providing a double deterrent to private investment. This makes it critical to ensure that capital is directed to sustainable areas. Development finance institutions (DFIs) play a key role in derisking investments to mobilize private capital; in fact, it is estimated that each US dollar invested by DFIs mobilizes between two and five US dollars of other capital. So far, lending by multilateral development banks (MDBs) has principally taken the form of loans. However, first-loss guarantees could be an efficient mechanism for drawing in greater levels of private sector capital. From 2013–16 the volume of first-loss guarantees given to fossil fuel projects exceeded that going to clean energy, and innovations around sustainable growth have been more at a project than a systemic level. The MDBs could also take a more active role in driving forward demonstration projects to build confidence in new technologies or business models.

More generally, DFIs are critical institutions and need to lead the way in building a climate-safe world. DFIs are standard setters and knowledge sharers. How they evolve will determine what development looks like in a carbon-constrained world and who gets offered protection in a world of climate impacts. DFIs have the capacity to develop a truly transformational long-term vision and to mobilize private capital using derisking instruments to deliver it. They are currently working on a collective framework to align their activities with the Paris Agreement. This is a step in the right direction but will take too long or could be too weak to garner universal agreement. The best leadership example to date is the European Investment Bank, which has agreed to phase out all lending to fossil fuel projects, including gas, by 2021, and become the first MDB with a clear mandate to support a climate neutral European economy by 2050.[17] Each multilateral development bank should lean into the transition and support its client countries to advance to low-carbon and resilient development.

Directing Financial Flows

Encouraging investment in the "right" things must be made easier and investment in the "bad stuff" and what is contributing most to climate change—the burning of fossil fuels—actively discouraged, most certainly not subsidized. The EU has been out in front in developing a classification system, or taxonomy, to define what can be considered environmentally sustainable economic activity. Together with relevant authorities from Argentina, Canada, China, and India, among others, the EU launched an International Platform on Sustainable Finance to socialize and standardize approaches in the areas of taxonomies, disclosures, standards, and labels, which are fundamental for investors to identify and seize green investment opportunities worldwide and create a common language for all actors in the financial system. The Network for Greening the Financial System encourages policymakers to develop a taxonomy that provides transparency on which economic activities are more exposed to climate- and environment-related risks, as well as those contributing toward the transition to a green and low-carbon economy. Any taxonomy should lead to transformative change through adoption by all investors and be robust enough to support the reallocation of capital flows away from brown activities. Solely supporting additional allocations to sustainable investments on its own won't be enough to reach a net-zero and climate-resilient economy. Additionally, the taxonomy will facilitate financial institutions' identification, assessment, and management of climate- and environment-related risks (both physical and transition), increasing financial resilience and stability.

Building the Pipeline for Generating Clean Assets

MDBs channel a significant proportion of their capital to and through national development banks. There's a wave of emerging interest in the greening of existing national development banks or in new green financial institutions tailored to the local context that are mission driven and investors of first resort. Green banks are market creators using limited public resources to mobilize private capital at greater pace and scale than without them. Because they have a clear mandate within the transition, they provide the policy certainty needed to drive change, as they are proof of government commitment to the transition. They are an important tool at the national level to drive the transformational change but to also act as a bridge between international finance (multilaterals, investors, and other bilateral development banks) and domestic contexts.

A multitude of levers should be used to shift the paradigm and increase the pace of change to a low-carbon development model. A global carbon tax, as advocated recently by the IMF, is an important tool to remove the perversity of markets and disincentivize investments in brown. The IMF's analysis advises that to meet the challenge of limiting warming to less than 2°C, large emitting countries should price carbon emissions at $75 per ton by 2030.[18] Revenues from a global carbon tax could be used to fund investment but also could be used to deleverage, invest for faster decarbonization, or create social programs to ease the transition. The IMF and World Bank are working on a set of rules, but it is not a panacea in the effort to eliminate carbon from economies.

Government commitments to the Paris Agreement should be supported by government-led green industrial policy, labor policy, and green transition pipelines. Governments should identify infrastructure gaps, reduce risk, and provide confidence and clarity for private sector investors to invest in green infrastructure and retrofits for future net-zero economies. Incorporating a just transition lens will be central in supporting the creation of new markets and when stimulating investment flows. The transition to a net-zero world requires more innovation, new and different jobs, job training schemes, and supply chains—all of which require public confidence and endorsement to deliver the green pipeline of the future. Too few developed and developing nations, if any, have put in place the required institutions and practices for the whole-of-economy transformation net zero implies. This is an area where support from developed countries is needed as well.

3. Implement a Structural End to the Use of Fossil Fuels

Investment in fossil fuels continues unabated. With $1.9 trillion of investments from 33 banks between 2016 and 2018, lending for fossil fuels has increased year on year since the Paris Agreement.[19] In too many jurisdictions there is no energy transition to speak off, with slightly more green investment alongside stubbornly high and sustained commitment to fossil fuels. Meeting the Paris goals and what the science says is required to shift to a different trajectory means the use of fossil fuels should be rapidly phased out.

The quantity of capital currently invested in fossil fuel exploration would be enough to create a huge system change toward clean energy.[20] The confounding point is that in most jurisdictions, clean energy is cheaper than fossil fuel.

Incumbency and a rigid system of economic growth fueled over a hundred years by the burning of fossil fuels has made it difficult to exact change. A significant transition is required by 2030 to prevent uncontrollable climate change and reach tipping points. The playbook for fossil fuels is written with this urgency in mind.

Make Carbon-Intensive Goods Less Profitable

Central banks have a leading role to play. As mentioned in the first section, including climate change in mandates—as a worthwhile priority on its own or as critical for economic stability—would enable central banks to enact new policies. However, many central bank mandates can already justify some policies without a change to reflect the climate risk associated with these investments and incentivize greener investing, such as higher capital ratios for banks with higher levels of brown investments on their balance sheets.

This could be supported by a cap for lending for fossil fuel investing. Private lending could be curtailed by changing incentives for corporations, for example, linking executive pay to decarbonization metrics. The mining company BHP, for example, has linked the chief executive's bonus to reducing carbon dioxide emissions.[21] Companies can also tie pay out of corporate dividends to progress toward Paris alignment. These are likely the most ambitious proposals in the playbook so far but must be considered if there is to be a step change in corporate behavior and a meaningful drive to decarbonization.

Stopping Fossil Fuel Investments

A moratorium on fossil fuel investments by governments would be a sharp signal to the markets. If combined with an accelerated phasing out of fossil fuel subsidies, clean and renewable energy production would become even more competitive. It is up to governments to set the direction of change, and change starts at home. Many governments are still exporting credit finance for fossil fuel exploration in developing countries,[22] which would benefit greatly from investment in high-quality clean economy jobs. Furthermore, governments should use their shareholdings in multilateral development banks to push their investment strategies away from fossil fuels.

Retirement of Fossil Fuel Assets

If the world is trying to halve global emissions in the decade from 2020 to 2030—as the Intergovernmental Panel on Climate Change says is required[23]—it needs innovative financial diplomacy, from state and nonstate actors, to craft a compelling financial offer and authoritative international framework for a managed decline and withdrawal from fossil fuel investments. That may be a tall order, but that's what climate ambition in the real economy requires.

Eliminating coal-power generation will likely be a target for the United Kingdom (UK) government as host of the 26th Conference of the Parties (COP26). Doing this will require appropriately sequenced diplomatic engagements, a technically sound and sufficiently financed proposition, and a credible political strategy. Countries with pipelines of coal plants must be encouraged to switch to renewable energy systems and invest in building modern economies of the future. Additionally, the existing fleet of coal plants, with their operational lives lasting 20 years into the future, must be retired.

Research has shown it is possible to retire coal. Creating a compelling offer for governments and investors to refrain from further building out the coal pipeline is imperative to restrict emissions, though it must be undertaken simultaneously with a conversation on the early retirement of existing coal infrastructure. The Rocky Mountain Institute has analyzed several countries and created financial approaches for a climb down from coal. Similarly, in South Africa solutions are in demand to enable Eskom, the state-owned public utility, to find a way out of coal and the government a way to transform the energy sector, which is presently in crisis, undermining economic growth and social inclusion.

Ideally these national efforts would inform similar conversations and inspire compelling, credible alternatives for countries with substantial coal production and coal infrastructure pipelines to build clean instead. For even greater impact, these nascent national efforts would have an at-scale finance vehicle to draw on and international framework to dock into. Conversations about a decommissioning financial offer and framework must be nurtured, and ambitious plans need to be prepared for catalytic moments of decision.

Reflections on the Playbook

This initial set of recommendations for changing the financial system and facilitating a global transition to decarbonized economies can aid preparedness in the event of another crisis and set the tone for the transition. To make these recommendations more effective and useful for decision makers, there must be further collaboration across policy sectors and institutions. This section examines some reflections from drafting the playbook.

Opening the Overton window was a primary objective of the roundtable. Through the window came a significant number of ambitious policy ideas; however, missing from the conversations were policies formerly considered outlandish, such as the financial transaction tax. Through the engagement process to build and develop an armory of policies to transform the financial system, the playbook will need to feature even-more-ambitious proposals that continue the drive toward the goals of the Paris Agreement and are, more broadly, in sync with the Sustainable Development Goals.

The Paris Agreement and Inequality

Climate change is intertwined with broader challenges in the global economy and can be part of fixing climate change if a broad coalition is built. The Paris Agreement and Sustainable Development Goals have set global priorities, and redesigning the financial system will respond to a call for change from a wide range of stakeholders and movements.

Making the recommendations more comprehensive requires a greater assessment of how they will affect social justice and inequality. Inequality is fast becoming a defining issue for modern economics, with a mounting number of works documenting this, such as Thomas Piketty's *Capital in the 21st Century.*[24]

As Oxfam recently reported, current levels of inequality are astounding, with 26 billionaires having consolidated more wealth than half the world's population.[25] In his book *Winners Take All*, Anand Giridharadas reveals that 82 percent of wealth created in the United States in 2017 went to the top 1 percent of income earners.[26] This economic inequality is undermining trust in institutions, and there is growing awareness that it is testing current models of market-based capitalism. Such vast inequality is undermining confidence in the liberal economic order and fueling a backlash and drag to climate ambition in many jurisdictions, as illustrated by the yellow vest movement in France and the latest protests in Santiago, Chile, which forced the relocation of the COP25 meeting.[27]

Financial regulatory change is necessary but not sufficient to tackle such deep, structural inequality. Legislation will also be required, including changes to tax policy and trade policy as well as adjustments to the social contract and macroeconomic policy. The need for these changes is reflected in domestic political discourse and processes, such as in the debate around the Green New Deal in Europe and the United States. However, these changes are also needed at an international level, whether in the form of a global Green New Deal or a Basel IV package.

Global Institutions and Geopolitics

Identifying the institutions that are home to the decision makers who can enable and guide discussions in the event of a crisis is imperative to the recommendations being adopted and implemented. International institutions such as the Bank for International Settlements and the International Monetary Fund played leading roles in the last crisis and will likely be at the center of future crises. However, these institutions must support strong adherence to a rules-based international order.

Geopolitics and global interconnectedness have changed since 2008 as national political landscapes have transformed. The loci of decision making is shifting to other geographies and the next generation. Global policymaking and international cooperation are likely to be very different given challenges to the existing global power structures, including the rise of China and dilution of the European Union with the United Kingdom's departure, and as protectionism and isolationism create tension. Political settings such as the G7 and G20 will fluctuate in importance depending on the presidency at the time, and emerging economies and developing countries will expect to be involved in global financial reform of a multipolar global economy.[28]

There are new global groupings and coalitions of the willing with specific agendas that will likely play a greater role. The Network for Greening the Financial System and the Coalition of Finance Ministers have both developed marked changes to the way central banks and government finance ministers consider their roles regarding climate change and inequality. These specialist organizations fulfilling niche roles and comprising powerful decision makers are essential to ensuring that the playbook's recommendations reach the top of the agenda.

Other Economic Issues to Consider

Technology has delivered a huge range of benefits and wealth. However, technology has also created difficulties for regulators and policymakers. Large multinational technology enterprises have created a global policy gap, and it is currently unclear how to fill that gap or manage the huge wealth they have accumulated. They are also changing the character of the financial system that the playbook proposes to transform. Their behaviors on climate change are significant as well. Apple's market capital hit $1 trillion in 2018, with cash stocks of $210 billion—it is also leading buyer renewable energy and has started issuing green bonds. Some of Apple's recent practices have seen the tech giant buy corporate debt from other organizations at one rate and issue its own at a lower rate in a modern form of shadow banking. With Facebook's Libra moving forward and Apple issuing a digital credit card with Goldman Sachs, digital currencies and increased remittances will undermine the control of central banks on financial stability.[29] Central banks have no means to control digital currencies, which can greatly affect cash transfers and international settlements. The Bank for International Settlements is recognizing these and other future challenges and has established an Innovation Hub to look at the future technological changes that will impact the global financial system,[30] a signal to the future that this playbook must take on board too.

International trade has been paramount to global development, but current international relations and the rising tide of populism and nationalism are creating friction. At the same time, the current rules of international trade have not taken into account its effects on climate change. Trade wars in a time of national difficulty can be appealing to governments but is usually inefficient and can severely undermine international cooperation and shared leadership on critical cross-border challenges, such as climate change. As the friction rises, in the event of another financial crisis the conversations between world powers will be harder, and there will be fewer economic levers to pull, considering the current positions of central banks and high indebtedness of countries.[31] Proposals around carbon border adjustments are gaining momentum as well and could either escalate trade conflicts or give shape to an environmentally sustainable global trade regime.[32] Changes to trade policy will need to complement implementation of the playbook in the financial system.

Growth as the Metric of Success

For people to live within the earth's planetary boundaries, a growing number of individuals argue that economies have to actually degrow. Imagine an economic system where the overarching goal is not growth, and the metric of success is not GDP. This was once a fringe concept, but the more evident it becomes that growth over the past decades has come at the direct expense of the natural ecosystems on which life depends, it is increasingly becoming a mainstream conversation. Vaclav Smil, in his recent book on the concept of growth,[33] argues that eventually Western advanced economies will have to structurally degrow, and their citizens will need to return to consumption rates of the 1960s and '70s. This would create room for the low-income countries to grow. In this scenario there would be more convergence, and more resources would go into lower levels of the value chain.

Criticism of GDP as the metric of success is not new. Then-US Senator Robert Kennedy gave a speech in 1968 detailing its limitations, saying GDP "measures everything…except that which makes life worthwhile."[34] Nobel Prize–winning economist Simon Kuznets was one of the main originators of GDP as the first analytical tool to measure the economy. He was also well aware of its limitations, saying "the welfare of a nation can scarcely be inferred from a measure of national income. If the GDP is up, why is America down? Distinctions must be kept in mind between quantity and quality of growth, between costs and returns, and between the short and long run. Goals for more growth should specify more growth of what and for what."[35] The definition of progress needs a refresh, and a meaningful new index, or indices, should be developed. The analytical work on potential alternatives is growing, and new data sets are emerging, like those on natural capital. This work should move beyond technical and academic circles and into the hands of policymakers for use by political and financial decision makers.

Recommendations and Next Steps

Building on the Playbook

This report recommends a range of actions for implementation in a variety of institutions. The demand for a response from decision makers will only increase as climate change impacts become more frequent and disruptive. Preparedness is key in the event of a crisis, and the recommendations of the playbook are actions for the policy and advocacy communities to grasp, develop, and champion.

The Stanley Center for Peace and Security and E3G will be partnering with others to take forward some of these recommendations in practical work packages. To make these recommendations actionable, the following next steps should be taken:

1. **Continue to support existing efforts to green the financial system and build on it.** Further determine what international cooperation is required to enhance the material impact of these initiatives and build on their momentum.

2. **Substantiate the playbook with deeper research and analysis** to understand more clearly the impact of the measures and ensure that the package in its totality is more comprehensive and coherent. As a priority, specific members of the academic community doing research, as well as public policy experts, should be in engaged in the following areas:

   a. **Develop the technical proposition and diplomatic roadmap for a decommissioning vehicle for fossil assets.** Also explore what a compelling financial offer might entail for critical jurisdictions, especially those with a significant pipeline of coal plants.

   b. **Develop a coordinated stimulus package that can move groups of countries away from the fossil fuel economy.** Current energy-transition efforts are insufficient to meet the Paris goals and displace fossil fuels. This would bring a new focus to fiscal policy as concerns grow about the efficacy of monetary tools in an era of low inflation, fears of stagflation, and prevalence of negative interest rates. The mobilization of financing from an economic stimulus would require a pipeline of green projects to absorb it that fundamentally reshapes the energy sector.

   c. **Distill the key lessons learned from the last stimulus package.** Do research on the effects on greenhouse gas emissions and climate policy, as well as inequality. A look at the impact 10 years later in the United States, China, and Europe would be a good place to start.

   d. **Develop, with the help of finance analysts and experts, a plausible scenario or scenarios of a financial crisis against which to test the playbook.** For it to be useful, the playbook will have to be relevant in a range of scenarios and be adaptable to different contexts, so it has to be highly flexible. To be politically salient it has to tackle climate change, inequality, and alienation. It also has to be durable. It is imperative to test and iterate the package of policies and instruments contained in the playbook.

   e. **Build out the playbook with measures to reduce concentrations of wealth and inequality, as well as climate change.** Actors and ideas in this policy area must be identified and incorporated more centrally in future conversations and follow-on work. The social contract between governments and people is under review providing a window for change. Governance processes will need to be more inclusive and not be captured by the most wealthy and the fossil fuel sector.

   f. **Convene a conversation on the new metrics of progress being developed to evolve a more holistic approach to "growth" that captures societal and environmental benefits and costs.**

   g. **Harvest and maintain a log of the most radical ideas for changes to the system of rules and institutions to lead to a shift in paradigm and transformative change.** The Overton window is shifting, and being mindful that the unimaginable keeps happening of late, there needs to be a conscious effort to think beyond orthodoxy and conventional wisdom. A concerted effort is also needed to seek out and include in this conversation those working on radical ideas for changes to the financial system and international set of rules to deal with unsustainable levels of inequality.

3. **Reach out to a wide range of actors from across the financial, economic, and climate communities** to develop, test, and iterate the playbook and broadly socialize the concept. This is important and urgent to prevent rollback at a time of crisis to the tried and tested responses that will produce more of the same—an unequal and exclusive fossil-fuel-based financial system, which does not support a transition to cleaner and fairer economies.

   a. **Identify and engage individuals who will be called on in crisis scenarios for advice and input.** This list will consist of those who were deeply involved during the last financial crisis, are in positions of authority presently, or are likely to be in the future. A network approach and peer-to-peer engagement models can be used to engage with this group in a timely and effective manner so they are familiar with and can inform the playbook ahead of a crisis moment.

   b. **Develop an inside-outside socialization and campaign strategy** so at a time of crisis a wide range of environmental and economic justice groups are broadly aligned in their demands and campaign strategies, and their asks are being reinforced on the inside by a cadre of influencers and advisers.

Developing Ideas: Scenario Working Groups

At the October 2019 Strategy for Peace Conference, the roundtable split into three groups to work on hypothetical scenarios in the financial sector to inform development of recommendations.

Scenario: Federal debt crisis sparked by climate-related disaster spending—credit to Paul Bodnar and Tamara Grbusic, Rocky Mountain Institute

Recognizing the growing level of public debt across the globe, this scenario addressed the potential trigger of a sovereign debt crisis caused by increased unexpected spending. US federal disaster recovery spending on climate-related disasters has risen dramatically in the last two decades and can be expected to increase nonlinearly in the future. The scenario premise examined how escalating costs borne by the federal government could shake market confidence in the sustainability of US debt levels, potentially triggering a sovereign debt crisis.

In this hypothetical situation, the government is hamstrung by the lack of affordable debt for economic stimuli. Solutions proffered focused on redressing public spending strategies:

- Cut fossil fuel subsidies.
- Grant concessions on a green basis.
- Reformulate the tax code—politically difficult, but scope for this in the United States where tax is low.
- Implement a revenue-neutral carbon tax with a dividend option.
- Reduce future costs related to climate change by investing in resilience and adaptation.

Scenario: Indonesian energy and economic crisis—credit to Melissa Brown, IEEFA

The commitments and expectations for developing countries are growing, and some countries are lagging in their preparedness for an energy transition. In Indonesia's hypothetical case, its stable economic fundamentals have permitted risks to accumulate related to the governance of the energy sector that have the potential to be destabilizing for the economy and negative for climate outcomes. This includes policies expanding state-owned enterprises in the resource extraction and processing sectors for export, increased dependence on coal-fired electricity to support domestic coal producers, and poorly designed power-purchasing agreements. These policies require huge subsidy, and when it is found Indonesia depends on this, its sovereign credit rating is affected, dissuading international investors and leading to slow economic growth.

In a context of high government fossil fuel investments and sliding credit ratings, the recommendation is for governments to change national policy and seek to green the energy sector by issuing emerging-market bonds and green bonds. However, this relies on a reorganization of government, removing a predisposition toward fossil fuel investment. This will avoid the long-term threat posed to fossil fuel investments by the falling costs of renewables.

Scenario: Climate change impacts, insurance, and economic crisis—credit to Cynthia McHale, CERES

The US insurance industry plays a central role in financial stability and economic vitality. Insurance companies fund a great deal of critical infrastructure, including roads, schools, and other public projects, investing $780 billion in 2017. An increase in the frequency and severity of extreme weather events could drive massive direct and indirect loss of property values in many parts of the United States. Multiple catastrophic events that take place in a short time could fuel huge US insurer financial losses on both sides of company balance sheets and would also trigger massive losses for banks and pension funds.

To address the rising risk of more-frequent and powerful climate change impacts, investment must be focused on resilience and adaptation of infrastructure. Enacting policy measures to fund this should be brought about through a shift in public opinion and political will to tax polluters.

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This Readout & Recommendations summarizes the primary findings of the roundtable as interpreted by the rapporteur, George Triggs; the organizers, Rei Tang and Mark Conway; and chair Claire Healy. Participants neither reviewed nor approved this publication. Therefore, it should not be assumed that every participant subscribes to all of its recommendations, observations, and conclusions.

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The Stanley Center for Peace and Security partners with people, organizations, and the greater global community to drive policy progress in three issue areas—mitigating climate change, avoiding the use of nuclear weapons, and preventing mass violence and atrocities. The center was created in 1956 and maintains its independence while developing forums for diverse perspectives and ideas. To learn more about our recent publications and upcoming events, please visit stanleycenter.org.

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E3G is a not-for-profit public interest organisation with offices in London, Brussels, Berlin and Washington DC as well as programmes in Latin America and Asia. E3G's mission is to accelerate the global transition to a climate safe world. E3G works in three ways: As a strategic hub – providing political intelligence and strategy for change; As a coalition broker – convener of powerful coalitions for change around issues of common interest, framing public debates and directly influencing key decision-makers; As a thought leader and system innovator, developing new political frames, innovative policies, institutions and systems for replication and learning for change. Founded in 2004 by senior members of the UK Government, we work on the politics and the policy to make the necessary possible.

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