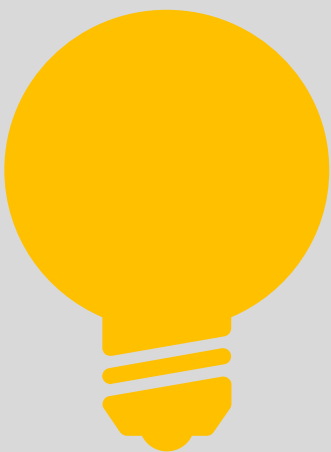


The Big Push for Transformation through Climate and Development

Recommendations of the High-Level Advisory Group on Sustainable and Inclusive Recovery and Growth

February 2023



© 2023 The World Bank Group
1818 H Street NW, Washington, DC 20433
Telephone: 202-473-1000; Internet: www.worldbank.org

For The World Bank Group:

This work is a co-publication of The World Bank Group, the International Monetary Fund, London School of Economics and Political Science and the Brookings Institution. “The World Bank Group” refers to the legally separate organizations of the International Bank for Reconstruction and Development (IBRD), the International Development Association (IDA), the International Finance Corporation (IFC), and the Multilateral Investment Guarantee Agency (MIGA).

The World Bank Group does not guarantee the accuracy, reliability or completeness of the content included in this work, or the conclusions or judgments described herein, and accepts no responsibility or liability for any omissions or errors (including, without limitation, typographical errors and technical errors) in the content whatsoever or for reliance thereon. The boundaries, colors, denominations, and other information shown on any map in this work do not imply any judgment on the part of the World Bank Group concerning the legal status of any territory or the endorsement or acceptance of such boundaries. The findings, interpretations, and conclusions expressed in this volume do not necessarily reflect the views of the organizations of the World Bank Group, their respective Boards of Executive Directors, or the governments they represent.

The contents of this work are intended for general informational purposes only and are not intended to constitute legal, securities, or investment advice, an opinion regarding the appropriateness of any investment, or a solicitation of any type. Some of the organizations of the World Bank Group or their affiliates may have an investment in, provide other advice or services to, or otherwise have a financial interest in, certain of the companies and parties named herein.

Nothing herein shall constitute or be construed or considered to be a limitation upon, or waiver, termination or modification of, any privilege and immunity or exemption, as applicable, of any of the organizations of The World Bank Group, all of which are specifically reserved.

For the International Monetary Fund (IMF):

The views expressed in this co-publication are those of the authors and do not necessarily represent the views of the IMF’s Executive Directors, its management, or any of its members.

Rights and Permissions



This work is licensed under a [Creative Commons Attribution-NonCommercial 3.0 IGO License](https://creativecommons.org/licenses/by-nc/3.0/igo/). Under the Creative Commons--NonCommercial license, you are free to copy, distribute, transmit and adapt this work, for noncommercial purposes only, under the following conditions:

Attribution—Please cite the work as follows:

World Bank Group. 2023. *The Big Push for Transformation through Climate and Development—Recommendations of the High-Level Advisory Group on Sustainable and Inclusive Recovery and Growth*. Washington, DC: World Bank. License: Creative Commons Attribution NonCommercial (CC BY-NC 3.0 IGO).

Noncommercial—You may not use this work for commercial purposes.

Translations—If you create a translation of this work, please add the following disclaimer along with the attribution: *This translation was not created by The World Bank Group and should not be considered an official World Bank Group translation. The World Bank Group shall not be liable for any content or error in this translation.*

Adaptations—If you create an adaptation of this work, please add the following disclaimer along with the attribution: *This is an adaptation of an original work by The World Bank Group. Views and opinions expressed in the adaptation are the sole responsibility of the author or authors of the adaptation and are not endorsed by The World Bank Group.*

Third-party content—The World Bank Group does not necessarily own each component of the content contained within the work. The World Bank Group therefore does not warrant that the use of any third-party-owned individual component or part contained in the work will not infringe on the rights of those third parties. The risk of claims resulting from such infringement rests solely with you. If you wish to re-use a component of the work, it is your responsibility to determine whether permission is needed for that re-use and to obtain permission from the copyright owner. Examples of components can include, but are not limited to, tables, figures, or images.

All queries on rights and licenses should be addressed to World Bank Publications, The World Bank Group, 1818 H Street NW, Washington, DC 20433, USA; e-mail: pubrights@worldbank.org.

CONTENTS

ACKNOWLEDGMENTS	iii
ACRONYMS	iv
A CALL FOR ACTION	v
EXECUTIVE SUMMARY	1
1. INTRODUCTION	8
2. AN INVESTMENT PUSH TO DELIVER ON DEVELOPMENT AND CLIMATE	10
3. ACCELERATING A JUST ENERGY TRANSITION IN EMDEs	14
4. INNOVATION AND INSTITUTIONS	19
4.1 Innovation	19
4.2 Institutions	21
5. CREATING FISCAL SPACE BY SCALING UP FINANCING FOR DEVELOPMENT AND ENHANCING THE QUALITY OF SPENDING	26
5.1 Public Financing: Domestic Resource Mobilization, Efficient and Effective Public Spending, and Debt	29
5.1.1 Mobilization of domestic resources	30
5.1.2 Efficient and effective use of government resources	31
5.1.3 Revamping fiscal rules and broadening debt sustainability analyses	32
5.1.4 Increasing access to low-cost financing	33
5.2 Channeling Private Financing	35
5.2.1 Turning momentum into credible pledges	35
5.2.2 Managing risk and cost of capital	35
5.2.3 Developing market instruments at scale and ensuring whole-of-system alignment	36
5.2.4 Risks of private financing	37
5.3 Role of MDB, IMF, and Bilateral Financing in Supporting GRID	38
6. CONCLUSION	43
REFERENCES	44

INDEX OF TABLES

Table 2.1. Estimated Investment and Development Spending Needs in EMDEs Other Than China, 2025 and 2030	12
Table B4.1.1. Sources and Type of Financing Announced for Just Energy Transition Partnership (US\$, millions)	23
Table 5.1. Bhattacharya et al.'s (2022) Proposed Increases in Financing Sources to Meet \$1.3 Trillion Incremental Financing Needs by 2025	29

INDEX OF FIGURES

Figure 2.1. Yearly Investment and Spending Needs for Climate Action by 2030	13
Figure 2.2. Additional Investment Needs for Resilient and Low-Carbon Pathway, 2022–30	14
Figure 3.1. Virtuous Cycle to Propel Power Sector Transition Away from Coal	17
Figure 3.2. Using Concessionality to Remove Barriers to the Virtuous Cycle, Leading to More Private Financing for Clean Energy Deployment	18
Figure 4.1. Innovation Triangle	20
Figure 5.1. Incremental Financing Required, 2019–25, by Source of Financing, to Meet \$1.3 Trillion Incremental Financing Needs by 2025, as Proposed by Bhattacharya et al. (2022)	28
Figure 5.2. Multilateral Development Banks’ Climate Commitments in Low- and Middle-Income Economies, 2019–21	39

ACKNOWLEDGMENTS

This report has been prepared under the leadership of Mari Pangestu, Ceyla Pazarbasioglu, and Nicholas Stern as the cochairs of the High-Level Advisory Group (HLAG) on Sustainable and Inclusive Growth. The report summarizes the insights derived from 10 meetings of the HLAG over its one and a half years of existence, from a series of consultations, and from the reports produced to inform these meetings and consultations.

The HLAG consists of experts representing various research institutions, private sector, and governments, as well as senior World Bank Group and International Monetary Fund (IMF) staff. The original list of HLAG members included Philippe Aghion, Montek Ahluwalia, Masood Ahmed, Timothy Besley, Amar Bhattacharya, Laurence Boone, Ottmar Edenhofer, Gita Gopinath, Homi Kharas, Eliana La Ferrara, Joaquim Levy, Zhu Min, Maria Ramos, Carmen Reinhart, and Andres Velasco. The list has also included at different times the following experts: Chatib Basri, Vitor Gaspar, Indermit Gill, Merit Janow, Hans Peter Lankes, Susan Lund, Mahmoud Mohieldin, Edward Mountfield, Riccardo Puliti, Pablo Saavedra, Juergen Voegelé, and Stephanie von Friedeburg. A team across the World Bank, IMF, London School of Economics (LSE), and Brookings Institution served as the Secretariat of the group and included Enrique Aldaz-Carroll, Amar Bhattacharya, Qimiao Fan, Kristina Kostial, Danae Kyriakopoulou, and Valerie Layrol.

Group members were chosen based on their personal expertise and experience relevant to the task while ensuring gender, geographic, and thematic balance. Members were asked to contribute insights serving in their individual capacity, not as part of the institutions or organizations they represent.

Special thanks go to Enrique Aldaz-Carroll for leading the drafting of this report, together with a team including Amar Bhattacharya, Danae Kyriakopoulou, and Neil Meads. Thanks go also to the large number of colleagues from the Brookings Institution, LSE, International Finance Corporation, IMF, and World Bank who provided inputs and feedback, with special thanks to Philippe Aghion, Timothy Besley, Qimiao Fan, Homi Kharas, Somik Lall, Valerie Layrol, Alessandro Legrottagnie, Demetrios Papathanasiou, and Friedemann Roy. The teams across the LSE and Brookings would like to acknowledge funding from the Children's Investment Fund Foundation and Brookings, in addition to the Open Society Foundation.

The report has further benefited from a range of consultation processes on its emerging insights with experts across the global economic governance and finance community, including multilateral institutions and private sector organizations and coalitions including the Energy Transitions Commission, the Global Infrastructure Facility, the Glasgow Financial Alliance for Net Zero, the International Solar Alliance, the Network for Greening the Financial System, the Coalition of Finance Ministers for Climate Action, Systemiq, and the United Nations Economic Commission for Africa.

ACRONYMS

CCDR	Country Climate and Development Report	IFC	International Finance Corporation
COP	Conference of the Parties (United Nations Climate Change)	IFI	international financial institution
COVID	coronavirus disease	IMF	International Monetary Fund
EMDEs	emerging markets and developing economies	LIC	low-income country
G7	Group of Seven	MDB	multilateral development bank
G20	Group of Twenty	MIC	middle-income country
GDP	gross domestic product	PROGREEN	Global Partnership for Sustainable and Resilient Landscapes
GRID	green, resilient, and inclusive development	SCALE	Scaling Climate Action by Lowering Emissions
GW	gigawatt	SDG	Sustainable Development Goal
HLAG	High-Level Advisory Group on Sustainable and Inclusive Recovery and Growth		

All dollar amounts are US dollars unless otherwise indicated.

A CALL FOR ACTION



Mari Pangestu

Managing Director for Development Policy and Partnerships, the World Bank



Ceyla Pazarbasioglu

Director, Strategy, Policy, and Review Department, International Monetary Fund



Nicholas Stern

IG Patel Chair of Economics and Government, London School of Economics

Countries were buffeted by the twin crises in 2021: the COVID-19 pandemic and climate change. The pandemic hit emerging market and developing economies (EMDEs) hard, exacerbating structural weaknesses and worsening poverty and inequality. Many vulnerable countries were abruptly thrown off their path of economic convergence with advanced economies. Lack of fiscal space and limited access to financing, which significantly restricted the policy scope to correct course, were major concerns. Difficulties in responding to the pandemic also highlighted and exacerbated the challenges from the accelerating climate crisis, with shocks coming at higher frequency and with greater intensity.

Against this backdrop, the High-Level Advisory Group (HLAG) on Sustainable and Inclusive Recovery and Growth came together to provide policy analysis and practical proposals for actions that could help countries secure a strong recovery from the pandemic and a successful green transition.

The need for action has only increased since we first met in mid-2021. Russia's war in Ukraine slowed growth and intensified inflationary pressure, placing additional strain on vulnerable countries with limited policy space, preexisting vulnerabilities, and structural rigidities. And the world has fallen further behind the actions required to reach the Paris Agreement goals. But the challenges of postpandemic recovery also provide a unique opportunity for change. We must seize the moment.

Over the past 18 months, the HLAG has met 10 times. This report pulls together key findings from the deliberations at those meetings and provides actionable recommendations to support a pathway to green, resilient, and inclusive development (GRID).

The HLAG started by assessing the scale and nature of investment and financing challenges. It was immediately clear that investment needs require rapid and sustained scaling up: conservative estimates presented to the HLAG by Bhattacharya et al. (2022) suggest that EMDEs other than China have aggregate investment and development spending needs on the order of at least \$1.3 trillion per year by 2025 and \$3.5 trillion per year by 2030. These figures far exceed existing financing and call for urgent action.

The story cannot be just about scale: investments need also to be resilient and transformational. HLAG deliberations have emphasized the centrality of prioritizing investments and policies—including carbon pricing—in support of an energy transition with a shift to renewables. At the same time, we have recognized the need to bolster vulnerable countries’ resilience to climate shocks and acknowledged that developments in the past couple of years have further accentuated the importance of achieving energy security.

To achieve the required transformational changes and shifts in financing of the scale required, the entire system needs to pull together. The HLAG’s discussions and recommendations are, therefore, focused on identifying actions that governments, the private sector, multilateral development banks (MDBs), the International Monetary Fund (IMF), and the broader donor community should take.

Countries themselves have the most important role. Building and maintaining institutional capacity will be critical to support innovation, identify opportunities, implement necessary policies, and provide the confidence needed for investment to flow to where it is required. While policy priorities must be tailored to country circumstances, efforts to strengthen mobilization of domestic resources and ensure efficient and effective use of scarce resources are universal and can support a virtuous cycle.

The international community must also play its part in encouraging, facilitating, financing, and supporting countries’ efforts. Countries need appropriate policy space to undertake required long-term investments. Priorities here include providing needed debt treatments in a timely manner—including by improving implementation of the Group of Twenty’s Common Framework for Debt Treatment—and to ensure the flow of sufficient new concessional financing.

The good news is that the MDBs and the IMF are already supporting the GRID agenda, given its consistency with their mandates. They provide much-needed technical expertise to governments; in addition, MDBs have met their collective 2025 climate financing goals early, and the International Monetary Fund has started providing financial support to address macro-critical longer-term challenges. But HLAG deliberations have highlighted the need for MDBs to build on these efforts and significantly increase their financial capacity, including further optimizing balance sheets, securing additional concessional funds, and leveraging increased donor resources, and for international financial institutions more broadly to better catalyze critical private financing. Support from the broader donor community is also imperative.

Our call for action is clear: we must work together to meet the challenge of our times!

EXECUTIVE SUMMARY

A critical time for development and climate action

This decade presents an opportunity to make a breakthrough on both development and climate goals.

The past decade's slowdown in poverty reduction has been accentuated by the recent coronavirus disease (COVID-19) pandemic and the war in Ukraine. This slowdown is further compounded by the deepening climate crisis. A continued slowdown in poverty reduction and shared prosperity would erode global prosperity, as the current historic demographic transition will place virtually all the global population increases over 2020–50 in emerging markets and developing economies (EMDEs) where most of the poverty is concentrated. Collective action must therefore be taken to avert catastrophic climate change and address the slowdown in development gains. Greater awareness worldwide of the climate change challenge offers a unique opportunity for a reset, setting countries on a high-growth green, resilient, and inclusive development ([GRID](#)) path that goes hand in hand with environmental goals and social inclusion and addresses the risks to people, the planet, and the economy in an integrated manner tailored to country needs and objectives.

This report makes the case for a big investment push for EMDEs' sustainable recovery and development, assesses the magnitude and composition of such investment, presents actions needed for an energy transition, looks at the role that innovations and state capacity can play in facilitating GRID, and proposes actions that governments, the private sector, MDBs, the IMF, and donors can undertake to mobilize financing at the large scale needed.

The report summarizes the insights derived from the meetings of the High-Level Advisory Group (HLAG) on Sustainable and Inclusive Recovery and Growth, jointly led by Mari Pangestu, Ceyla Pazarbasioglu, and Nicholas Stern, and composed of experts from research institutions, the private sector, and governments, as well as senior World Bank Group and IMF staff members. The work of the HLAG, and thus this report, focuses on EMDEs and delves in greater depth into climate investment and financing, particularly for energy transition, as it is a less researched area. While doing so, it recognizes that policy and investment decisions in high-income countries, which accounted for only 16 percent of the global population in 2019 and yet for 32 percent of total greenhouse gas emissions (World Bank 2023a, 2023b), will be critical to whether the Paris Agreement goals can be reached. It also recognizes that these countries must play a key role in contributing financially to EMDEs' transition to low-carbon economies.

A big and urgent investment push is needed, but the investments need to be resilient and transformational, not incremental. Investments in human, physical, natural, and social capital must be delivered at unprecedented scale and pace and cut across priority areas that are critical for development and climate. They must be designed to deliver on economic growth, as well as social and environmental needs, and create more sustainable, inclusive, and resilient systems.

Among key systems transformations, energy is critical, with energy access, affordability, and security as key considerations for delivering a just energy transition that meets development and sustainability goals. Energy efficiency and renewable energy must be scaled up massively to meet growing demand in EMDEs so that coal can be phased out as an energy source. The urgent phase out of the existing fleet of coal-fired power stations in high-emitting middle-income countries (MICs) and advanced economies is critical to achieving the Paris Agreement goals in regard to greenhouse gas reduction. A shift to renewables can empower EMDEs to catch up on development: solar and wind power can be expanded across EMDEs more rapidly and more easily than can fossil fuels when network infrastructure is strengthened, energy storage is made available, affordable financing is available, and policies and

institutions (including off-takers) are strengthened. For instance, the scaling up of affordable clean energy will lower energy operating costs for EMDEs and facilitate the removal of fuel subsidies, preserving fiscal space for development spending.

Adaptation and resilience measures must complement investments in mitigation to respond to the growing vulnerability to climate change. Boosting adaptation and resilience is an urgent and integral part of development and poverty reduction, especially in low-income countries (LICs) and vulnerable MICs, which have contributed little to past carbon emissions and still account for a very small share of global emissions but will be hardest hit by the impacts of climate change.

Policies, institutions, and platforms for delivering investment

The starting point for the sizable investment push required must be strong country leadership and coordinated action. All countries need well-articulated investment programs, anchored in sound and convincing long-term strategies, to stimulate economic recovery and transformation and deliver on development and climate goals. GRID, climate action, and technology innovation and diffusion will require enhanced coordination across government branches and among government, firms, and citizens, as well as at the international level. There is no global optimal arrangement for institutional frameworks of the type needed; they must be designed in an individually tailored way to fit their contexts. Country ownership is key, as well as greater monitoring and evaluation work on governance to better assess progress.

The realization of needed human, physical, natural, and social capital investments requires an enabling environment with a strong emphasis on development and sustainability. A policy package to address structural weaknesses that constrain action must comprise improvements in regulations and institutions, including measures to correct market failures as well as to reform state-owned enterprises, particularly in the energy sector, to become positive agents of change and help drive the shift to low-carbon alternatives and higher growth. It also entails promoting rapid technological advances and new business models. Public policy has a strong role in providing firms with incentives to redirect innovation toward green technologies. Failure to act promptly will widen the gap between dirty and clean technologies and will make change more expensive. International collaboration and coordination to foster new technologies and set clear direction for the private sector will bring strong gains.

Given the urgency of action, coordination mechanisms to support investment and transition strategies in priority sectors offer a promising way to impart momentum. Countries can benefit from creating mechanisms that help set out clear strategies and investment programs, tackle binding policy impediments, put in place structures for scaling up project preparation, and create replicable and scalable models of financing. It enables countries to ensure that a commensurate scale and mix of financing accompanies their ambitious development and climate commitments. Mixed results of past country platforms have demonstrated that coordination mechanisms must be country-owned and country-led, to ensure trust and legitimacy, and focused on a particular sector or theme, to avoid diluting efforts.

Financing the big investment push

For the investments and structural transformation described in the foregoing to take place, EMDEs will require additional financing in the trillions, not the billions. Though estimates of the magnitude of additional investments necessary to deliver on the Sustainable Development Goals (SDGs) and climate goals vary widely, all are in the trillions. Conservative estimates presented to the HLAG by Bhattacharya et al. (2022) suggest that aggregate additional investment and development spending needs of EMDEs

other than China¹ are at least on the order of \$1.3 trillion per year by 2025 and \$3.5 trillion per year by 2030. These figures far exceed existing financing, and they will be magnified further if the interventions are delayed or performed in an inefficient way or if policies are inadequate.

Different sources of financing will be needed given the different types of investment required. The private sector, including institutional investors, will finance bankable investments. Some projects entail elevated risks, high preparation costs or both, requiring de-risking, technical assistance, or grants from concessional resources. Public-goods investments will need to be supported with more highly concessional resources. And social investments and compensations must be financed through public resources, including concessional or grant support, particularly in LICs. Public resources will also be needed to maintain some of the new assets created.

Concessional financing for public goods in MICs needs to be additional and not come at the expense of the huge needs of LICs. Concessional resources for LICs are already under strain and need increasing as these countries deal with the setbacks to poverty reduction and growth prospects resulting from the pandemic and the food and energy price crisis associated with Russia's invasion of Ukraine.

An integrated debt and financing strategy is needed to overcome constraints to financial access, particularly for climate financing, and mobilize the necessary scale and mix of financing for GRID. The difficult macroeconomic context EMDEs are currently facing constrains access to financing through two channels. First, the deteriorated macroeconomic context and perceived higher risks for mitigation and adaptation investments in those countries relative to advanced economies reduce the attractiveness of climate projects in EMDEs to potential financiers. Second, depleted fiscal space reduces the level of domestic public resources available for climate action, especially as governments face pressure to respond to other pressing development challenges. The HLAG's work has provided a first attempt at setting such a debt and financing strategy to draw the needed financing from domestic and international sources, both public and private, and on both concessional and nonconcessional terms. The strategy, which focuses particularly on raising climate financing for mitigation and adaptation, is based on three pillars:

1. Public financing

A large share of the needed financing for GRID can be expected to come from domestic sources. For this to happen, however, domestic resource mobilization for public investment and services will need to be improved, and sustainable local capital markets in EMDEs will need to be scaled up and deepened to fund investments in support of GRID. Repurposing of inefficient subsidies in both the food and energy sectors could free up resources; globally, governments spend about \$1.2 trillion on subsidies in the agricultural sector and those for fuel.² However, some of these funds would need to be used to ensure that reforms to the food and energy sectors do not affect vulnerable groups disproportionately. Carbon taxation would raise government revenue while boosting clean industry output and employment. A more supportive international environment that reduces tax evasion and tax optimization would also be helpful.

An immediate challenge is to address debt vulnerabilities and bring down the cost of capital for new investments in EMDEs. Country-specific responses will be required, including new financing to address rollover risk in countries facing short-term liquidity pressures and deep debt reduction for countries facing solvency issues, as well as expanded grant and concessional financing, especially for LICs and climate-vulnerable MICs. Overall, international partners will need to strengthen the implementation of the Group

¹ While China is extremely important to global climate goals, accounting for 27 percent of total greenhouse gas emissions in 2019 (World Bank 2023a, 2023b), its high level of savings enables it to more than cover its investment requirements, and it does not require external financing in the same way as other EMDEs. Hence the reason for the grouping "EMDEs other than China."

² These subsidies include those in high-income countries as well, though as of 2021, MICs accounted for the highest share of aggregate global energy subsidies (World Bank Group 2022d).

of Twenty Common Framework for Debt Treatment and collaborate on developing stronger mechanisms for resolving debt difficulties.

2. Private sector financing

There is great potential, opportunity, and need for a sizable stepping up in private investment and financing. The private sector can now undertake a growing proportion of sustainable investments in EMDEs, such as those related to the transition to clean energy through commercial-scale solar and wind power. The International Energy Agency (2021a) estimates that about 60 percent of energy transition financing will need to come from private sector.³ To date, however, investments in this area have been small relative to the scale of the need. To open up the pipeline of private capital for the transition, governments need to tackle binding constraints to the investment climate, including the many national barriers to foreign investment and policies that distort competition. Private-sector-led initiatives launched over the past two years to scale up financing for sustainable investments in EMDEs will need to work together proactively and in partnership with countries, multilateral development banks (MDBs), and the International Monetary Fund (IMF) to tackle policy impediments.

Concessional finance to de-risk private investment will also be needed at scale. This is the case for investments in new technologies whose costs are still high but will fall with large-scale adoption and for public-goods investments, which despite clear public benefits (at the national or global level or both) can translate to relatively lower private returns compared to nongreen investments. Greening industrial operations such as cement and steel, for instance, generates a clear public benefit not reflected in private investors' financial returns. In low-income and fragile nations, macroeconomic risks may outweigh commercial returns available, also requiring concessional financing.

Beyond mobilizing private financing, emphasis must be placed on aligning the financial system with climate and development objectives. Efforts by supervisors and financial regulators are particularly important for ensuring that physical and transition risks do not become realities, helping avert a disorderly transition. Such efforts can strengthen incentives for private financial institutions to align their portfolios with net-zero emissions (while avoiding greenwashing), to shift flows to EMDEs where needs for investment in support of GRID are highest, and to disclose the volume and scope of their contributions in a timely and transparent way.

3. Financing from MDBs, the IMF, and donors

Although MDBs met their collective 2025 financing goals for climate change mitigation and adaptation four years early ([Joint Report on Multilateral Development Banks' Climate Finance](#)) and have significantly stepped up their commitments for financing climate change mitigation and adaptation, the gap between financing and investment needs remains large and growing. Given their comparative advantages, MDBs have significant scope to do more and to evolve so that they can better address global public-goods challenges, building on synergies with the agenda on poverty reduction and other SDGs. First, MDBs will have a key role in helping countries to integrate climate and development and in scaling up investment, but they will need to adjust their tool kits in a variety of ways in order to do so, and they must build on their country focus to support global coordination. The required new approach would imply an expanded use of concessional financing, including grants, and blended financing not only in LICs, but also in MICs, to provide incentives for public-goods investments or investments that entail elevated risks, high preparation costs or both. Second, MDBs should enhance private capital mobilization through an enabling environment and scaling up the use of instruments like guarantees and insurance products.

³ This estimate does not account for the costs of phasing down the use of coal for energy generation, which further increase private sector's share of financing.

Third, they can explore with shareholders financial innovations to make further use of their balance sheets without affecting their credit ratings so as not to raise the cost of financing for clients. Fourth, they will need greater shareholder financial support to significantly expand their financing—particularly concessional financing—given the gap between the scale of financing needed and current balance sheets. MDBs will need to do “more with more.” The World Bank Group’s (2022c) [Evolution Roadmap](#) can help chart its course for responding to the challenges of poverty reduction, shared prosperity, and global challenges.

The IMF will also need to do more to support these efforts. This includes stepped up efforts with the Group of Twenty to improve the Common Framework for Debt Treatment, together with the World Bank. Swift rollout of support through its newly established Resilience and Sustainability Trust will help increase access to financing in many of its members. This trust is supported by the channeling of special drawing rights from countries with strong external positions to help LICs and MICs create an enabling environment for complementary MDB and private sector financing and help address longer-term macro-critical structural challenges, including climate change and pandemic preparedness. Scaled-up focus on carbon taxation and elimination of fossil fuel subsidies as part of Article IV work and increased analytical work in several key areas—policy design to arrest emissions of greenhouse gases and ways to mobilize domestic and foreign private sector financing for climate change mitigation and adaptation as a complement to climate-related policies—will also contribute to needed support.

Donors will also need to significantly step up their efforts to help EMDEs finance their investment requirements. Advanced economies will need to address the shortfall in their commitment to provide and mobilize \$100 billion per year to developing countries in financing for climate change mitigation and adaptation and go far beyond it, doubling—at least—mitigation and adaptation financing, including concessional financing, by 2025, compared with their 2019 levels, and steadily increasing them further by 2030, to make the available financing commensurate with what EMDEs need to do. Overall development financing will also need to increase significantly. Greater alignment with countries’ climate and development goals and lower fragmentation in the provision of concessional financing can enhance the effectiveness of donors’ assistance, as can increased use of bilateral guarantees from highly rated countries to de-risk loan exposures and help release capital, as well as greater use by donors of MDBs’ capacity to leverage each dollar of funding to mobilize additional resources—as compared to direct donations and trust funds—to address common public goods like climate change mitigation and action, pandemic preparedness, and response to fragility and conflict.

The urgency, complexity, and transnationality of existing challenges requires all relevant stakeholders to do much more and in a more coordinated manner, working in tandem toward joint agreed-upon goals. This means that governments, donors, MDBs, IMF, and the private sector need to assume agreed-upon roles and responsibilities and take more ambitious actions, to jointly reap associated rewards. This in turn implies going beyond comfort zones and working closely together to design innovative solutions befitting a variety of crisis-induced scenarios. EMDEs will need to undertake far-reaching policy reforms; advanced economies must provide quality financing at scale; the private sector will need to step in with investments and technologies; and MDBs, the IMF, and donors will need to update their vision for development financing and delivery. A coordinated effort will help maximize synergies and enhance impact. Despite the challenging conditions, there are tremendous opportunities for growth-enhancing investments, for benefiting from rapid technological advances, and from acting together at a time of fractured geopolitics. Bold actions can unlock the growth story of the twenty-first century: strong, sustainable, resilient, and inclusive.

Box ES.1 summarizes the report’s key recommendations. More detailed actionable recommendations can be found at the end of each subsection.

Box ES.1. Summary of Recommendations

Strategies and policies

- **Policymakers and development partners adopt an effective approach to growth and development**, one that eschews the damaging ways of the past, considers interlinkages among people, the planet, and the global economy in policy making, and seizes the opportunities new technological possibilities offer to promote strong, resilient, inclusive, and sustainable growth.
- **Countries urgently initiate a major investment push to transform their energy systems, adapt and build resilience to climate change, protect and restore natural capital**, promote development, avert the rising cost of climate inaction, and seize the opportunities for growth in the new global green economy.
- **Governments create demand for energy transition projects through ambitious long-term strategies underpinned by sound planning**. Governments enhance the financial viability of their power utilities, strengthen network infrastructure, set the framework for a just transition away from coal, provide an enabling environment for clean investments, accelerate coal plant retirement, attract the private sector, and compensate losers as needed, particularly the most vulnerable.
- **Stakeholders at the global and country levels adjust the policy environment to correct systemic failures**. Governments develop long-term investment strategies and undertake reforms to improve the investment climate, deepen financial markets, and tackle political economy, governance and market failures. Carbon pricing, appropriate standards and regulations, or both are key elements of a policy package embodying the needed corrections. Regulators and supervisors develop a supportive international sustainable financial architecture that creates the incentives, tools, and information framework to enable financial institutions to internalize climate-related physical and transition risks.
- **Governments promote green technological innovation and diffusion, with support from the development partner community**, and provide a clear sense of direction and policy certainty to encourage firms to redirect innovation toward green technologies. While policy approaches to support climate policies and the energy transition may differ across countries, it is important to avoid beggar-thy-neighbor policies, which result in lower trade in green goods and services, lower technological transfers, and an inefficient allocation of resources. Development partners could also explore multicountry mechanisms to support technological breakthroughs in clean technologies for their diffusion to emerging markets and developing economies.

Institutions

- **Governments adopt a whole-of-government institutional approach** to help address fragmentation of governance systems, develop the required new skills within government, and facilitate the needed coordinated action across government branches and among government, firms, and citizens, as well as at the international level.
- **Governments set up or strengthen country-led and country-owned coordination mechanisms to accelerate investments in green, resilient, and inclusive development and the transformation of key systems**, bringing together key stakeholders to tackle binding policy constraints and enhancing coordination and the mobilization of the necessary financing.
- **Governments adopt second-generation fiscal rules to improve fiscal policy and rebuild fiscal space to support critical investments in a fiscally sustainable way**. These new fiscal rules are comprehensive, use a debt anchor, include a small number of operational rules and simple escape clauses, provide enhanced transparency, and place more emphasis on expenditure composition. MDBs, the IMF, and other development partners provide technical assistance as needed.

Integrated finance

- **An integrated financing strategy is adopted at the country and global level**, employing the complementary strengths of different pools of finance and supported by five actions:
 - **Donors double—at least—mitigation and adaptation financing, including concessional financing**, by 2025, compared with their 2019 levels, and steadily increase them further by 2030; improve access and transparency; align support behind country priorities; and bolster support for multilateral funds. Overall development financing will also need to increase significantly.
 - **MDBs and the IMF are supported in evolving in the face of multiple crises**, increasing their provision of technical expertise and financial assistance, particularly concessional financing, through innovative solutions (including MDB balance sheet optimization) that do not affect their credit ratings, as well as additional financial resources from their shareholders.
 - **The private sector, MDBs, and the IMF help scale up private sector financing for climate and development** through an enhanced partnership between the private sector, MDBs, and the IMF and an active role for the private sector.
 - **Stakeholders support debt restructuring**, including deepening of common understanding of debt-restructuring challenges and enhancing creditor coordination.
 - **Governments bolster domestic resource mobilization** by removing wasteful fuel and agricultural subsidies and redirecting resources and increase fiscal space by deepening tax reforms, modernizing revenue systems, strengthening tax administration, and enhancing the quality of spending.

1. INTRODUCTION

Emerging markets and developing economies (EMDEs) experienced high potential output growth during 2000–09, marking a decade of substantial development progress. In the following decade, however, a slowing global economy and growing structural weaknesses resulted in a broad-based slowdown in potential output growth. Slower total factor productivity growth accounted for almost half of the decline in global potential output growth in 2010–19, weaker capital accumulation just over one-quarter, and slower labor supply growth the remainder (World Bank 2021a). Progress in poverty reduction and shared prosperity slowed down markedly as a result.

The subsequent coronavirus disease (COVID-19) pandemic and war in Ukraine had a severe impact on EMDEs, sharply constraining their policy space and further worsening their growth prospects. Growth and investment fell sharply across EMDEs, and debt overhang from elevated pandemic-related public spending, combined with capital flight from EMDEs, worsened their debt, fiscal, and financing conditions. These factors have led to a slower pace of recovery in EMDEs, compared with that in advanced economies, and to a reversal in development gains that a spike in food and fuel prices has further intensified. The short- and medium-term macroeconomic context remains challenging, with countries facing elevated and rising debt, high inflation, and tightening financial conditions. This challenging context implies a loss of momentum in EMDEs toward meeting the Sustainable Development Goals (SDGs): 7 percent of the world’s population will likely still struggle in extreme poverty in 2030, falling far short of the global goal of reducing that to 3 percent (World Bank 2022a). International Monetary Fund (IMF) (2022c) analysis estimates that \$440 billion in additional financing is needed to enable low-income countries (LICs) to resume and accelerate convergence of their incomes with those of advanced economies in 2022–26, with an additional \$57 billion required in 2022–23 owing to the war in Ukraine.

Meanwhile, the dangers from climate change are deepening. Unaddressed, they will deliver more frequent climate-change-related crises and higher risk of such crises, with the effects already evident. From Pacific Island nations facing rising sea levels, to Pakistan recently facing floods, to the Sahel region struggling with longer dry seasons, climate change is changing the lives of the poor and vulnerable across the world. Its costs and risks have been systematically underestimated. Recent estimates suggest that it has reduced agricultural productivity growth by 21 percent, with the greatest decreases in Sub-Saharan Africa (Ortiz-Bobea et al. 2021). Diminishing water supplies and water-related losses in agricultural and other output could slow growth in some of the world’s regions by as much as 6 percent of gross domestic product (GDP) by 2050 (World Bank Group 2016). Unchecked, climate change could cause more than 216 million people to migrate within their own countries and millions of others to migrate internationally, exacerbating existing vulnerabilities and fragility.

Carbon-intensive growth also risks stranding industries and jobs when polluting sectors are rapidly retired to avert catastrophic climate change. The longer decarbonization is delayed, the more disorderly future shocks will be. Estimates by [Deloitte \(2022\)](#) suggest that insufficient action on climate change could cost the global economy \$178 trillion over the next 50 years in net present value terms—almost double the current global GDP—whereas appropriate action on climate change to reach net-zero emissions by midcentury would expand the global economy by \$43 trillion over that same time period in net present value terms.⁴ And those countries that are set to suffer the most from climate change have contributed—and continue to contribute—least to it. Climate change has starkly exposed the interdependences among the planet, its people, and the economy.

⁴ Global GDP (in current US dollars) is \$96.1 trillion, based on data from the World Bank [Databank](#).

Climate action delivers not only on managing risks, but also on realizing opportunities. The world must come together without delay on a new approach to growth and development that sets countries on a path to green, resilient, and inclusive development (GRID) (see [World Bank 2021b](#)). Climate action, coupled with a significant scaling up of investments in human, physical, natural, and social capital, is an attractive—indeed, the only—path to high growth that is sustainable, resilient, and inclusive. It takes advantage of rapid technological advances and provides an opportunity to act together in a time of fractured geopolitics. It is an investment in delivering growth, development, and jobs, not a cost (Stern 2021). World Bank Group [Country Climate and Development Reports](#) (CCDRs) have shown that greenhouse gas emissions could be reduced by 70 percent by 2050 in the more than 20 countries covered so far, without any negative impact on economic growth; in fact, in many of these countries, climate action would even *accelerate* growth. Climate action can boost economic recovery in the aftermath of the COVID-19 pandemic and the war in Ukraine by providing an immediate impetus to economic demand, creating millions of jobs and opportunities for training and investment. Over the medium term, it can spur innovation and discovery and foster new ways of producing and consuming that can drive stronger and more sustainable development. It can also lift many millions out of poverty and reduce income inequalities, while delivering multiple environmental cobenefits, notably improved health and resilience and preserved natural wealth (Meckling and Allan 2020; Stern 2015). In addition, it enables EMDEs to tap into—prevent being forced out of—a future global economy that is increasingly green. Over the longer term, decisive climate action provides the only path to a sustainable future, as it stabilizes climate and makes economies more resilient. Indeed, it can, as the title of a [New Climate Economy \(2018\) report](#) underscored, “unlock the inclusive growth story of the 21st century.”

Setting countries on a path toward GRID will require an integrated approach to development that takes account of the interlinkages among the planet, its people, and the economy, pursuing the SDGs in an integrated manner. A GRID approach departs from previous development strategies in that it promotes economic growth that goes hand in hand with environmental goals and social inclusion. Such an approach addresses the risks to people, the planet, and the economy in an integrated manner tailored to country needs and objectives. It sets a path that achieves lasting economic progress shared across the population, providing a robust recovery and restoring momentum toward the SDGs.

To realize the opportunities associated with a GRID approach, however, EMDEs require a sizable investment and innovation push, supported by strong policies and institutions and the right kind of financing. These are the channels that will deliver on development goals and avert a lost decade, keep the Paris Agreement goals within reach, and achieve the SDGs. Climate action will require large up-front investments, particularly in the energy sector, which needs to transition to greener energy sources.

The materialization of these investments, in turn, requires an integrated debt and financing strategy for tackling debt vulnerabilities and using the complementary strengths of different pools of financing. All sources of financing—official and private, bilateral and multilateral, domestic and foreign—need to be mobilized, and financial access needs to be improved for countries and firms, involving the private sector and financial institutions in mobilizing green financing. Multilateral development banks (MDBs) and the International Monetary Fund (IMF) will need to evolve in ways that enable them to help countries integrate climate and development, strengthen private capital mobilization, and greatly expand their financing to both LICs and MICs. Beyond mobilizing financing, efforts on the part of these organizations and other stakeholders should also focus on aligning the financial system with climate and development objectives and on ensuring that the transition toward a green economy is orderly, just, and affordable, with due consideration to different country circumstances and to socioeconomic impacts. Policy must be calibrated to provide incentives for, investment in, and financing for transition. Climate action will involve dislocation, so it will be important to ensure a green transition in which the benefits and opportunities are shared widely and the most vulnerable are protected.

The realization of this vision requires practical, strong action now, shaped by a clear, shared, and purposeful strategy, as well as global coordination. There is a need to build a shared vision among all stakeholders—including developed and developing countries, MDBs, the IMF, and the private sector—and to identify purposeful actions.

The context described in the foregoing paragraphs led to the launch in 2021 of the High-Level Advisory Group (HLAG) on Sustainable and Inclusive Recovery and Growth, jointly led by Mari Pangestu, Ceyla Pazarbasioglu, and Nicholas Stern. Composed of experts from research institutions, the private sector, and governments, as well as senior World Bank Group and IMF staff members, the HLAG aims to propose ideas for national and global action that contribute to a strong economic recovery and a path to GRID. Over its one and a half years of existence, the HLAG has held 10 meetings focusing on assessing the scale and nature of investment and financing needed to implement the vision discussed in this report and identifying actions that governments, MDBs, the IMF, and donors can undertake to facilitate the needed financing, with particular focus on channeling private capital.

This report summarizes the insights derived from the meetings and from the reports produced to inform discussions at the meetings. While the actions needed to achieve GRID encompass a broad set of interventions (described in World Bank 2021b), the HLAG’s discussions, and thus this report, have been limited to the most salient: the need for urgent investment at scale, particularly in the energy sector, and the required institutional support and financing. The insights have been mainstreamed, informing discussions in international forums like the Group of Twenty (G20), Group of Seven (G7), 26th and 27th United Nations Climate Change Conferences of the Parties (COP26 and COP27, respectively), Network for Greening the Financial System, and Glasgow Financial Alliance for Net Zero, and among philanthropies as well. The report’s objective is to capture the insights in one document.

The report is structured as follows. This section has provided an introduction. Section 2 makes the case for a big investment push for EMDEs and assesses the magnitude and composition of such investment. Section 3 presents actions needed for an energy transition. Section 4 looks at the critical role that innovations and state capacity can play in facilitating GRID. Section 5 proposes actions to mobilize domestic and external financing at the large scale needed. The last section concludes.

2. AN INVESTMENT PUSH TO DELIVER ON DEVELOPMENT AND CLIMATE

The present trajectory in many, if not most, EMDEs of slow growth, low investment and public spending, rising debt service burdens, and weak resilience calls for a new approach. A big-push investment strategy in regard to all forms of capital (human, physical, natural, and social) can center a much more attractive growth model that can deliver on both sustained and resilient development and climate change mitigation. A major, rapid, and sustained expansion in green and resilient investments can drive a sustainable recovery, unlock stronger growth, and ramp up climate action. Such an investment push is necessary to reduce greenhouse gas emissions and build resilience against climate change, and it is part of a bigger story that embodies a new approach to sustainable, resilient, and inclusive development.

How a big-push investment is implemented in EMDEs, and the quality of the investments, will be critical for meeting development and climate goals. EMDEs will account for the vast preponderance of new physical capital in the coming three decades. How physical investments are undertaken will determine whether countries are set on a path toward GRID, avoid a lost decade on development, reach net-zero emissions by midcentury, build resilience, restore natural capital, and achieve the SDGs. Human capital investments in EMDEs will also be critical for global well-being. The world population is projected to

increase by 1.9 billion between 2020 and 2050, with more than 80 percent of the increase taking place in EMDEs. Investing in human capital will be the most powerful contribution these countries can make to poverty reduction, global prosperity, and peace.

The investments needed to enable EMDEs to meet development and climate goals are urgent, large, and transformational. Key systems will need to be transformed across energy, agriculture, food, water, land, cities, transport, and manufacturing—collectively accounting for more than 90 percent of greenhouse gas emissions. Without significant change in these sectors, neither climate change mitigation nor sustained and resilient development is possible. Such a transformation requires large up-front investments, and the resulting new assets should be designed and built in a way that is resilient and able to perform in tomorrow’s climate. Actions to boost resilience and adaptation must complement investments in mitigation and will involve (1) rapid and inclusive development, especially poverty reduction and broad access to infrastructure and social services; (2) a whole-of-society approach to resilience and adaptation to ensure climate risks are considered in all decisions and investments; and (3) targeted sectoral interventions covering human capital, infrastructure, and various economic sectors. Though the estimated value of the required investments differs based on the methodology used and the intended goals, the magnitudes are all large: in the trillions, not the billions, of dollars per year.

Bhattacharya et al. (2022) undertook for the HLAG a broad assessment of the investment needs in four priority areas to deliver on development and climate goals:

- Human capital (health and education) needed to meet health and education SDGs.
- Sustainable infrastructure (power, transport, water, and digital infrastructure, including mitigation measures) required to meet growth and development goals.
- Adaptation and resilience.
- Restoration of natural capital through sustainable agriculture, food, and land use practices; forestry; and biodiversity.

Aggregate investment and development spending of EMDEs other than China⁵ in these four areas would need to increase from 11.3 percent of GDP in 2019 to at least 15.1 percent in 2025 and 18.2 percent in 2030 (see table 2.1): an incremental increase of at least \$1.3 trillion per year by 2025 and of \$3.5 trillion per year by 2030.⁶ Investment and development spending at the resulting levels would help meet the SDGs on health and education as well as provide the urgent scaling up of sustainable infrastructure needed for growth and greenhouse gas mitigation, climate adaptation and resilience, and natural capital protection and restoration.

Building on this analysis, [Songwe, Stern, and Bhattacharya \(2022\)](#) focus specifically on the main investment and spending priorities for ramping up climate action and delivering on the related SDGs, encompassing three elements:

- **Transformation of the energy system**, which is vital for both development and climate (including investments in electrifying demand and decarbonizing supply as well as managing just transitions).⁷

⁵ While China is extremely important to global climate goals, accounting for 27 percent of total greenhouse gas emissions in 2019 (World Bank 2023a, 2023b), its high level of savings enables it to more than cover its investment requirements, and it does not require external financing in the same way as other EMDEs. Hence the reason for the grouping “EMDEs other than China.”

⁶ These numbers are on the conservative side. Other studies like World Bank Group (2021) estimate that an aggressive transition to low-carbon pathways in large MICs in Asia alone would require \$650 billion annually or \$13 trillion over 20 years.

⁷ The cost of managing just transitions is not included among Bhattacharya et al.’s (2022) sustainable infrastructure costs.

Table 2.1. Estimated Investment and Development Spending Needs in EMDEs Other Than China, 2025 and 2030

	Gross spending 2019		Spending needs 2025		Spending needs 2030	
	US\$, billions	Percent of GDP	US\$, billions	Percent of GDP	US\$, billions	Percent of GDP
Human capital	1,470	7.0	2,000	8.2	3,065	9.5
Sustainable infrastructure for growth and mitigation	730	3.5	1,160	4.8	1,840	5.7
Adaptation and resilience	35	0.2	180	0.7	325	1.0
Agriculture, food, land use, and nature	150	0.7	355	1.4	650	2.0
Total	2,385	11.3	3,695	15.1	5,880	18.2

Source: Bhattacharya et al. (2022).

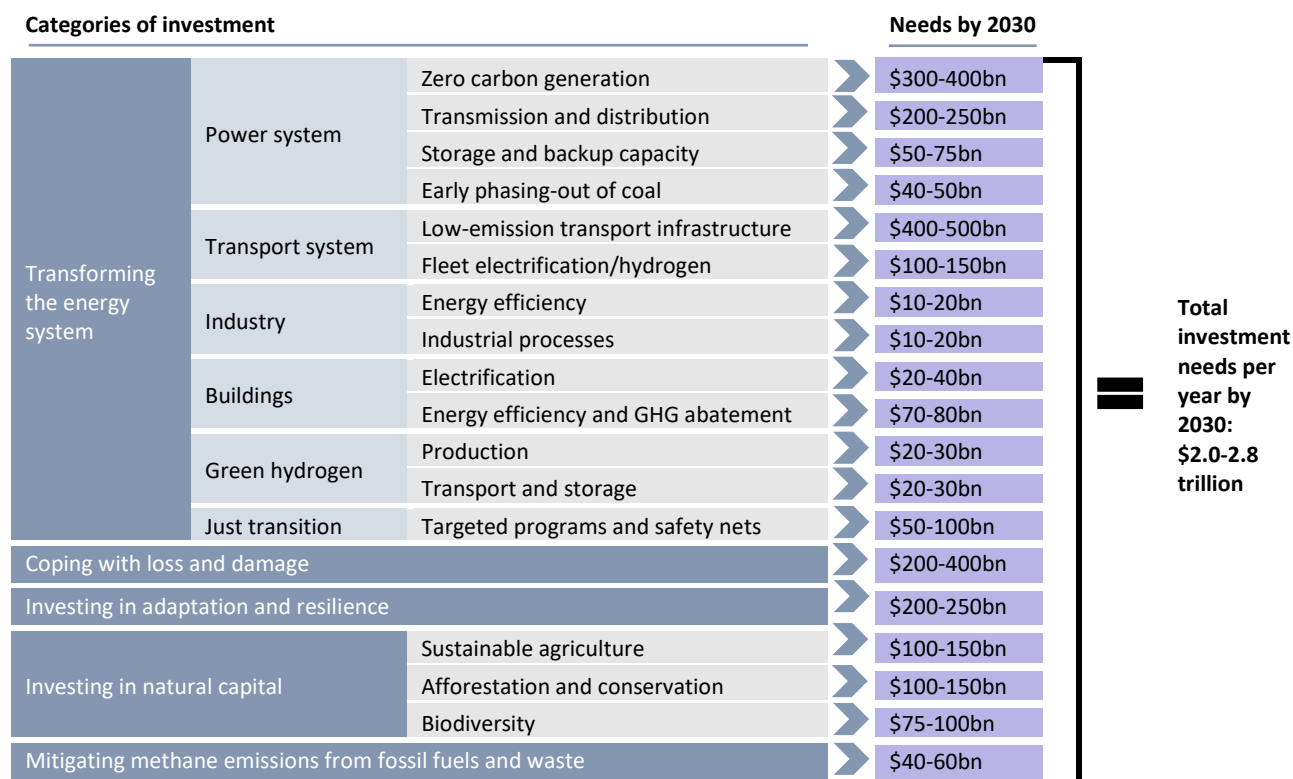
Note: The estimates for human capital investment are based on analysis by Kharas and McArthur (2019). Those for sustainable infrastructure investment build on analysis by Bhattacharya et al. (2016), incorporating the additional investment required for the energy transition. Those for adaptation and resilience investment are based on analysis by Systemiq (2021). As noted by Bhattacharya et al. (2022), the estimated spending for sustainable infrastructure overlaps somewhat with the estimated spending on adaptation and resilience, as many investments encompass mitigation, adaptation, and resilience. The estimates for investment in agriculture, food, land use, and nature combine analysis of agriculture spending by Kharas and McArthur (2019) and analysis of investments to protect and restore nature by Systemiq (2021). GDP = gross domestic product.

- **Responding to the growing vulnerability of developing countries to climate change** through much better mechanisms for dealing with loss and damage, as well as greatly accelerating investments in adaptation and resilience.
- **Investing in sustainable agriculture**, which will be key to mitigation, adaptation, and development, as well as protecting and restoring natural capital: degraded land, deforestation, and biodiversity.

Songwe, Stern, and Bhattacharya (2022) estimate that EMDEs other than China will need to spend about \$1 trillion per year by 2025 (4.1 percent of GDP, compared with 2.2 percent in 2019) and about \$2.4 trillion per year by 2030 (6.5 percent of GDP) on the specific investment and spending priorities noted in the preceding paragraphs (figure 2.1). The largest component of the spending requirements is for energy transformation, about \$1.5 trillion per year by 2030. Only a fraction of this spending will be additional from a climate perspective, as the requirements for investment in sustainable infrastructure for development already embody a substantial amount of the requirements for investments in sustainable infrastructure for clean energy transition. In contrast, much of the necessary investments in natural capital, adaptation, and resilience and spending in repair of loss and damage will be additional, as spending in these areas today is very modest compared with prospective needs. The needs estimated in figure 2.1 are broadly consistent in magnitude with those in other assessments, including those of the [Energy Transitions Commission \(2022\)](#), the [International Energy Agency \(2021a\)](#), the [UNEP \(UNEP, WEF, ELD, and Vivid Economics 2021\)](#), and the [World Bank Group \(2022a\)](#).⁸

⁸ The World Bank Group estimates that LICs and MICs (including China) would need between \$1.7 and \$3.4 trillion in financing for climate change mitigation and adaptation per year by 2030.

Figure 2.1. Yearly Investment and Spending Needs for Climate Action by 2030



Source: Songwe, Stern, and Bhattacharya (2022).
 Note: bn = billion; GHG = greenhouse gas.

Estimations at the country level derived from a sample of CCDRs are also large, though slightly smaller than the aggregate estimates. According to the CCDRs, achieving resilient low-carbon development (comprising only sustainable infrastructure, which includes mitigation, adaptation and resilience, and water resources) will require on average an additional investment of 1.1 percent of GDP in upper-middle-income countries, 5.1 percent of GDP in lower-middle-income countries, and 8.0 percent of GDP in LICs by 2030 (figure 2.2).⁹ The actual figures could differ, however, because investment needs will increase if the interventions are delayed or performed inefficiently or policies are inadequate. Infrastructure investment needs can double without appropriate planning and policies (Rozenberg and Fay 2019).¹⁰

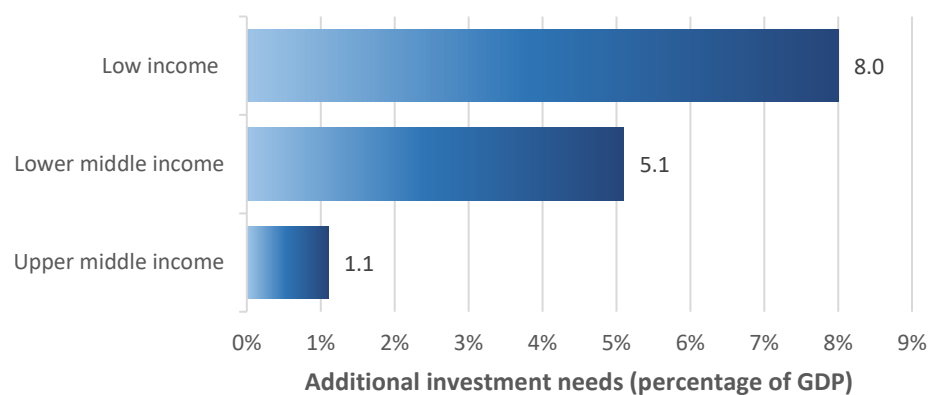
The estimated financing needs to fund the identified investment and spending priorities far exceed present financing. As noted in [World Bank Group \(2022a\)](#), annual average financing for climate change mitigation and adaptation in EMDEs reached about \$425 billion in 2019–20. More than 85 percent of this financing was directed toward mitigation. Public actors, such as national development financial institutions (27 percent), state-owned financial institutions (11.5 percent), and MDBs (7.5 percent), provided almost 60 percent of this mitigation financing. Adaptation financing for EMDEs is less than 10 percent of financing for climate change mitigation and adaptation, reaching only about \$41 billion in 2019–20, and has also been provided almost exclusively by public actors, such as MDBs (36 percent) and

⁹ In many CCDRs, these investment needs include development needs, especially those linked to closing infrastructure gaps—such as solar minigrids to provide energy access—and cannot be considered entirely “additional” to preexisting financing needs. That the CCDRs identify a larger share of investment needs in low- and lower-middle-income countries partly reflects larger unmet development needs in these countries.

¹⁰ The estimate includes infrastructure investments in water, power, transport, and flood protection.

national development financial institutions (36 percent). Fragile countries received far less of this financing than others, even though they are the most vulnerable to climate-related impacts.

Figure 2.2. Additional Investment Needs for Resilient and Low-Carbon Pathway, 2022–30



Source: [World Bank Group \(2022b\)](#).

Note: Investment needs are presented as a share of baseline gross domestic product (GDP) accumulated over the same period. Estimates are from published and in-press World Bank Group Country Climate and Development Reports and present investment needs as a percentage of baseline GDP accumulated over the same period.

The scale of urgent investments is large, but such investments are the only way to deliver on the identified development and climate goals. Delay would be deeply dangerous, given a shrinking window to act and the mounting costs of climate change. For example, in LICs and MICs, delaying resilience-enhancing policies in infrastructure sectors could cost an additional \$100 billion each year in avoidable disaster impacts (Hallegatte, Rentschler, and Rozenberg 2019).

3. ACCELERATING A JUST ENERGY TRANSITION IN EMDEs

As explained in the preceding section, EMDEs will need a major scaling up and transformation of energy systems to deliver both sustained and resilient development and climate change mitigation goals. The demand for energy in EMDEs to support economic growth, reduce poverty, and increase shared prosperity is rapidly increasing. This demand could translate into a significant increase in human-caused greenhouse gas emissions, as energy consumption is by far the biggest contributor, responsible for 75.6 percent (37.6 gigatons of carbon dioxide equivalent) of these emissions worldwide in 2019.¹¹ Energy and economic policies and public and private energy financing must transform to deliver affordable, reliable, clean energy while expanding energy services for the poor.

A just energy transition to a low-carbon economy would need to ensure energy access, affordability, and security, providing a crucial foundation for EMDEs' development and growth agendas while laying the groundwork for emissions reduction targets. Justice is required not only to make it less feasible for political opposition to undermine or slow the transition, but also because justice, social cohesion, and a

¹¹ According to the World Resources Institute, the energy sector includes transportation, electricity and heat, buildings, manufacturing and construction, fugitive emissions, and other fuel combustion (<https://www.wri.org/insights/4-charts-explain-greenhouse-gas-emissions-countries-and-sectors>).

strong and mutually supportive community are, for most countries, valid objectives in themselves. Violation of countries' right to development would be a clear injustice.

In the context of climate change, injustice can arise in at least four ways. First, it arises across generations: emission of greenhouse gases damages future generations' development opportunities. Second and third, it arises across countries and within communities, as richer countries and income groups damage the opportunities for all, but particularly for poorer people and key groups (including women and some ethnic groups), through greenhouse gas emissions. Richer countries and income groups thus bear a disproportionate responsibility for funding climate action, given their disproportionate contribution to global greenhouse emissions at present and in the past. And fourth, injustice arises if policies to reduce emissions, designed for the good of communities and the world, dislocate and disrupt lives and livelihoods of certain groups without supporting and enabling their adjustment to changed conditions. Action to combat this type of injustice would usually involve investment in people and places to create opportunity, but also, where necessary, some social support.¹²

Energy transformation must therefore ensure a just transition to a low-carbon economy that promotes affordable energy supply, job creation, and more-inclusive growth. Just transitions to a more resilient, inclusive, and low-carbon future must take account of country-level development priorities as well as the full global public-goods agenda embodied in the SDGs. These include meeting the needs of the 733 million people in Sub-Saharan Africa and South Asia lacking access to electricity, as well as the nearly 3 billion people who lack access to clean energy for cooking. The poor and vulnerable are at risk not only from climate change's physical impacts, but also from the consequences of actions to mitigate climate change. Addressing economic distortions to deliver a just transition will promote greater economic efficiency and reduce adverse productivity and health impacts, leading to better development outcomes. But the fruits of the transition may not be evenly distributed, which will require a range of social and labor market policies that address adverse impacts and facilitate new economic opportunities for affected workers and communities. To support a just transition of workers and protect affected livelihoods, governments will need to invest in human capital, social protection, and regional development programs. A key focus in energy transition will be on coal mine closures, but support will need to extend to other sectors affected by the shift toward a low-carbon economy. Strong preclosure planning and preparedness is needed, as well as comprehensive support, covering mine closure, land rehabilitation, skills retraining, labor mobility, and local economic development.

At the heart of the needed energy transition must be a massive increase in energy efficiency and renewable energy, to ensure that electricity demand is met by clean energy sources to the maximum extent possible. Energy efficiency and demand-side management is critical to reducing investment requirements of transition. Energy efficiency and renewable energy need to be expanded to meet growing demand and to offset the phasing-out of fossil fuels, including coal, in power sectors' energy mix. The war in Ukraine has put pressure on energy security, prompting a short-term temporary return to some fossil fuels for energy generation, but has further underscored the importance of accelerating the transition to clean energy. Growing demand for energy in the developing world has increased the importance of providing clean, affordable, accessible, and reliable energy for everyone, although the time frame for getting to net-zero emissions in EMDEs will remain significantly longer than that in advanced economies.

The phasing-down and phasing-out of coal are critical for cutting global carbon emissions. Early retirement of existing coal-fired electricity generation capacity in line with achieving net-zero global emissions by midcentury could strand approximately US\$1 trillion in unrecoverable capital investment, 89 percent of which is in recently commissioned coal plants in EDMs. Substituting other energy sources for

¹² See World Bank, "Social Dimensions of Climate Change" (<https://www.worldbank.org/en/topic/social-dimensions-of-climate-change>).

coal power use and meeting growing demand is realistic only if solar and wind power generation capacity increases rapidly, from 1,400 gigawatts (GW) today to 17,000 GW by 2040, with two-thirds of new solar and wind power development in EMDEs. For many countries, natural gas may remain part of the energy mix as an intermediate source during the transition, to ensure power supply reliability and grid stability.¹³ To support the integration of renewable energy into countries' energy mixes and provide reliable energy supply, electricity networks will need to double in length, and annual deployment of energy storage will need to increase 100 times. Experience among MDBs' private sector arms has shown transmission to be the biggest bottleneck to renewable-energy uptake in EMDEs, followed by off-takers' lack of creditworthiness. In addition, more up-front capital investments will be needed in hydro-, solar, and wind power, power storage, vehicle-charging stations, and residential and industrial electric heat.

EMDEs have tremendous potential for development of low-carbon technologies, including the expansion of green hydrogen, as well as transformation of demand through improvements in energy efficiency, and can participate in developing new technologies along these lines. A strong and coordinated global effort (through policies, standards, and cooperation) can greatly accelerate the development and deployment of new technologies and drive down costs. Green hydrogen production is set to increase over the next decade in response to European announcements of significant green stimulus funding. For example, the EU aims to build 40 GW of green electrolyzer capacity by 2030. With support from member countries of the Organisation for Economic Co-operation and Development, green hydrogen technologies could rapidly reach maturity, increasing deployment in EMDEs (IFC 2021). The common ownership and nature of public facilities, such as schools and hospitals, offer unique opportunities for bundling energy efficiency projects. For example, India's 2010 Energy Conservation (Amendment) Bill (amending the 2001 Energy Conservation Act) and its National Mission for Enhanced Energy Efficiency provided for the establishment of Energy Efficiency Services Limited, which has helped transform the energy efficiency market. Just the deployment of more than 366 million LED bulbs alone has helped India avoid having to build more than 9.5 GW of new generation capacity and saved the country more than \$10 billion.

If facilitated, investing in the energy transformation at the scale and pace needed for inclusive and sustainable development and climate change mitigation and adaptation goals would represent the biggest investment opportunity ever for the world economy and especially for EMDEs. Green recovery measures in 21 major EMDEs between 2020 and 2030 could generate \$10 trillion in investment opportunities and more than 200 million jobs and reduce greenhouse gas emissions by 4 billion tons (IFC 2021).

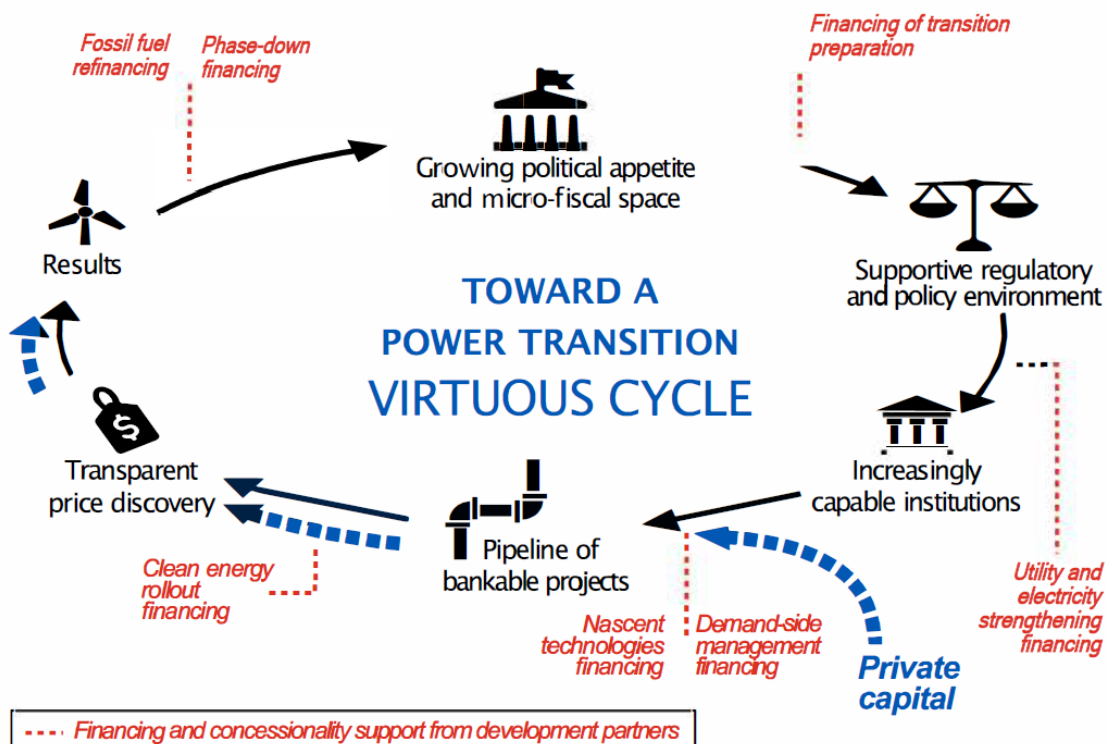
The private sector can undertake the bulk of the additional investment required for energy transition, complemented by concessional financing as well as up-front public investments in grid development and energy storage and backup capacity. The scale of private investment needed underscores the importance of government commitment to reforms to provide direction and long-term confidence for private investors (figure 3.1). All countries will need to take a comprehensive and long-term approach to energy transformation anchored in long-term decarbonization strategies and enhanced nationally determined contributions to greenhouse gas reduction. Strengthening regulatory frameworks and pricing policies and reforming utilities will be key in giving confidence to private investment. Elimination of fossil fuel subsidies and introduction of carbon pricing will be of crucial importance in driving incentives and generating private or public revenues.¹⁴ At a minimum, repurposing current subsidies that sustain carbon-

¹³ As noted in section 4.2, it is important in such cases to reinforce public support for clean innovation to ensure that the introduction of the intermediate source of energy is temporary.

¹⁴ The [IMF \(2022a\)](#) has estimated that fossil fuel subsidies stood at \$5.9 trillion or 6.8 percent of global GDP in 2020, with more than 90 percent of this amount reflecting an undercharging for environmental costs and foregone consumption taxes. Similarly, the UN ([UNEP 2021a](#)) has called for a repurposing of \$470 billion in agricultural subsidies that it has concluded are distorting prices and are harmful to nature and health.

intensive activities as resources supporting climate action can mitigate potential distributional impacts from reforms of the type needed.

Figure 3.1. Virtuous Cycle to Propel Power Sector Transition Away from Coal



Source: "Scaling Up to Phase Down: Financing Energy Transitions in the Power Sector" (forthcoming World Bank White Paper).

While clean energy investments often have lower economic costs than fossil fuel alternatives over their lifetimes and provide compelling benefits in terms of energy security, net job creation, and reduced pollution, they require more capital as well as access to long-term and affordable financing. By the end of the 2020s, annual capital needs for clean energy in EMDEs other than China must expand more than six times, from less than \$150 billion in 2020 to more than \$1 trillion in 2030 (IEA 2021a). Such an expansion will depend on careful long-term planning, given the looming mismatch between investment needs and the availability of critical minerals that are essential for delivery, as the [International Energy Agency \(2021b\)](#) has warned. Maintaining a robust, supportive, highly transparent and well-coordinated global trade system will be critical to facilitating the movement of goods and services needed to address climate change (WTO 2022). The January 2023 launch of the Coalition of Trade Ministers on Climate can provide impetus for a "green trade" agenda.

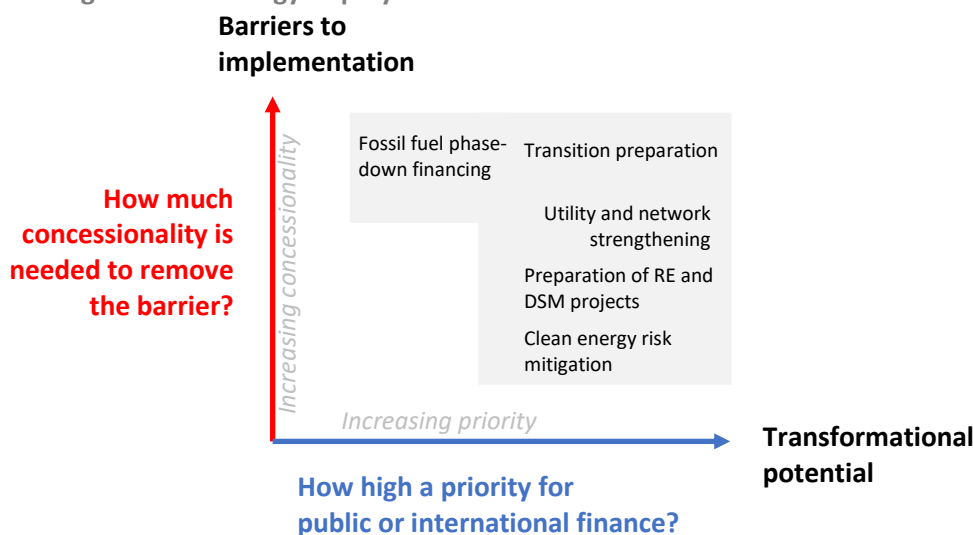
Effective decarbonization will require a delicate balance between technical effectiveness and political feasibility, highlighting the critical importance of a just transition. A just transition will require financial resources for decommissioning coal plants and mines, undertaking environmental cleanup, and supporting affected people and communities. Retiring or repurposing potentially stranded coal power plants by 2040 would cost \$1 trillion, according to World Bank estimates.¹⁵ Because the coal fleet in the developing world is 20 years younger than the global average, 89 percent of the global capital at risk of being stranded in coal power plants is in EMDEs. The global nature of benefits from retiring coal power

¹⁵ The costs involved would include the remaining financial value of the assets (although their economic value would be lower), the costs of decommissioning coal power plants, and the costs of social and job dislocation. These costs will be country specific and need further analysis and specification, as estimates vary widely.

plants in EMDEs provides strong incentives for advanced economies to contribute financially to accelerate the transition away from coal.

The size of the energy transformation needed will require a major scaling up of private and international development financing. A comprehensive and bold approach to strengthening the global financial architecture will be required to unlock private financing at the needed scale and at the right tenor and cost. Adequate concessional financing will also be needed to accelerate energy access and transformation in poor and vulnerable countries and communities, meet the costs of just transition to a low-carbon economy, and channel development financial institution and private financing (figure 3.2). Section 5 lists measures that can be undertaken to mobilize, scale up, and align financing for the transition.

Figure 3.2. Using Concessional Financing to Remove Barriers to the Virtuous Cycle, Leading to More Private Financing for Clean Energy Deployment



Source: "Scaling Up to Phase Down: Financing Energy Transitions in the Power Sector" (forthcoming World Bank White Paper).

Note: DSM = demand-side management; RE = renewable energy.

The current decade will be decisive. The diminishing window of opportunity to act requires that all countries make a concerted push to accelerate a just energy transition and that the international community make a concerted effort to provide the necessary support.

Actionable recommendations:

- *Governments in EMDEs create demand for energy transition projects through their nationally determined contributions, underpinned by sound planning, while strengthening their institutions, enhancing the financial viability of their power utilities, and setting frameworks for a just transition away from coal.*
- *Development partners respond to EMDEs' ambition with significant scaling up of financing for climate change mitigation and adaptation while helping them strengthen implementation plans, create an enabling environment for clean investments, accelerate coal plant retirement, attract the private sector, and compensate losers.*
- *Policy approaches to support climate policies and the energy transition vary as needed to fit differing country contexts but avoid beggar-thy-neighbor policies, which result in lower trade in green goods and services, lower technological transfers, and an inefficient allocation of resources.*
- *International collaboration is strengthened to help establish robust carbon markets to create new revenue streams.*

4. INNOVATION AND INSTITUTIONS

Technology and institutions are key determinants of the success of the investment push that will be needed to deliver on both sustained and resilient development and climate change mitigation and adaptation. Technology innovation and diffusion are essential for investments to yield low-carbon growth. Institutional strengthening will increase trust, improve coordination, and enhance government expertise, magnifying the impact of the investment push.

4.1 Innovation

Green innovation and diffusion, rather than a degrowth agenda, are central to solving issues related to climate change. “Green innovation” involves developing cleaner sources of energy, more energy-saving devices for housing and transportation, and new ways of organizing production and consumption. As previously mentioned, the energy sector is the dominant source of human-caused global greenhouse gas emissions. However, human-caused greenhouse gas emissions per capita vary substantially across the globe in ways that can only be partly attributed to differences in income levels. “Green diffusion” involves the adoption of the latest green technologies and will help narrow these large differences, unlocking potentially large emission reductions. Thanks to rapid technological advances and diffusion, low-carbon solutions, such as solar panels, are now less costly than fossil-fuel-based investments across a broad segment of economic activity. And as the [Paris Effects report](#) (Systemiq, University of Exeter, and Simon Sharpe 2023) shows, the boundaries between established and niche markets have also been shifting for hard-to-abate sectors such as steel, cement, and aviation.¹⁶ The process of structural and systemic change will take a number of decades to play out, but the current decade will be decisive, and artificial intelligence is creating real opportunities for accelerating action (Stern and Romani 2023). Ensuring successful implementation of technology transfer from developed to developing economies, as committed to in the [Glasgow Breakthrough Agenda](#), will, however, be challenging. Unlike degrowth, green innovation and diffusion to advance climate goals helps drive economic development and increases citizen well-being.

There is empirical evidence of path-dependence in firms’ choice between clean and dirty innovation and thus a role for public policy. Firms that have innovated in dirty technologies generally continue doing so and need to be actively and urgently provided with incentives to redirect toward green innovation (Aghion, Antonin, and Bunel 2021). Failure to act promptly in this area will imply slow progress in reducing the gap in level of adoption between dirty and clean technologies and will make change more expensive. Financing the energy transition now will provide firms and governments with a clear advantage: the longer the delay, the higher the amount of required financing will be.

Government policy must consider both pollution and knowledge externalities. The former is obvious; the latter is associated with both the path-dependence just mentioned in regard to individual firms and the fact that innovators operating *in countries* that lean toward dirty innovation tend toward dirtier innovation *themselves*. Pollution externalities can be addressed through carbon pricing. But knowledge externalities require reinforcing public support for clean innovation.

Public investments need to be managed carefully. The use of intermediate sources of energy between coal and renewables (i.e., those that are less polluting than coal but more polluting than renewables) during the transition away from coal-based power generation involves two effects in the short term: a substitution effect—introducing an intermediate source of energy leads firms and consumers to

¹⁶ Systemiq (2020, 2021; Systemiq, University of Exeter, and Simon Sharpe 2023) finds that as sectors move toward tipping points where low-carbon solutions can outcompete legacy high-carbon businesses on price, by 2030 the former can become competitive in sectors accounting for nearly three-quarters of emissions.

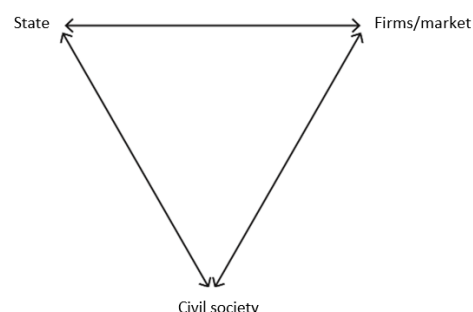
substitute away from both coal and renewables—and a scale effect: introducing an intermediate source of energy can make energy as a whole cheaper, as the aggregate supply of energy is increased, which in turn encourages more energy consumption and therefore more pollution. In the United States the shale gas revolution reduced carbon dioxide emissions in the short term, as the substitution effect dominated the scale effect. However, the introduction of an intermediate source of energy tends to divert research resources from renewables toward the intermediate source, which is detrimental in the long term. Reinforcing public support for clean innovation when the intermediate source of energy is introduced, to ensure it is temporary, therefore becomes more important.

Governments need, then, to facilitate clean innovation and diffusion. Such facilitation requires a whole-of-society approach linking the three vertices of the innovation and diffusion triangle: firms (the innovators, as well as adopters), governments (which redirect firms' innovation and technological adoption toward clean technologies), and civil society (which monitors government behavior and puts social pressure on firms to behave virtuously) (figure 4.1).

Energy innovation efforts will likely be concentrated in advanced and emerging market economies. These economies are in a better position to bear the cost and inherent risks of innovation. Additionally, piloting of almost-mature technologies will have a greater impact than piloting of more remote technologies. Advances in long-distance energy transmission, batteries, green steel, cement substitutes, greener mining practices, and drought-resistant and low-carbon agricultural practices hold great promise in the transition to a green economy. A combination of supply-side innovation support and demand-side support to create niche markets and start dissemination can facilitate innovations, as happened with solar energy in the EU.

Advanced economies should play a key role in facilitating the diffusion of clean technology. Germany, Japan, Korea, and the US have accounted for most of the high-value innovations in this area in recent decades. It is important that this knowledge be shared with developing countries through technical assistance and capacity building to spread the benefits from technological innovations for climate adaptation and mitigation. As proposed by the [Sharm El Sheikh Guidebook for Just Financing](#) (Egyptian Ministry of Investment and International Cooperation 2022), a reform of the International Investment Agreement regime could help promote green innovation and diffusion in developing countries by (1) limiting or eliminating prohibitions of performance requirements in regard to green technologies, to encourage the development of local technological capacities; (2) promoting and facilitating investment in clean technologies, including through limiting or excluding high-emission investments; (3) recognizing investors' responsibility to contribute to the green transition; and (4) applying various standards of corporate social responsibility to foreign investors. Sovereign funds are a promising tool for helping diffuse knowledge from developed to developing countries while compensating innovators. The successful role of national agencies, like the [Defense Advanced Research Projects Agency](#) in the US, in promoting technological breakthroughs could be replicated at the multilateral level. Further research is needed on how best to deliver technological diffusion while avoiding greenwashing.¹⁷ Diffusion of technologies will need to be adapted to the varying circumstances in developing countries (for instance, simple

Figure 4.1. Innovation Triangle



Source: Aghion, Antonin, and Bunel (2021).

¹⁷ Becker-Olsen and Potucek (2013) define greenwashing as “the practice of falsely promoting an organization’s environmental efforts or spending more resources to promote the organization as green than are spent to actually engage in environmentally sound practices” (1318).

technological approaches to warn the population of forthcoming shocks have proven successful as an adaptation measure in countries like Bangladesh).

Actionable recommendations:

- *Governments establish clear public policies to provide a strategic direction for the private sector and also provide incentives to firms to redirect innovation toward green technologies.*
- *Development partners explore multicountry mechanisms to support technological breakthroughs in clean technologies for their diffusion to EMDEs.*

4.2 Institutions

Institutional capacity will be a key determinant of countries' success in pursuing GRID, climate action, and technological innovation and diffusion. Government effectiveness in such pursuits will largely depend on three institutional aspects: the degree of *fragmentation* of governance systems, the degree of institutional *trust*, and the availability of the right kind of *expertise*.

Strengthening these institutional aspects will require a new approach to governance. A first key action will be to ensure clear strategic direction for, long-term commitment to, and shaping of investment programs that will span decades in the face of short-term political cycles and fiscal pressures. Long-term strategies and enhanced nationally determined contributions to greenhouse gas reductions can help set direction and secure political commitment. A second key action will be addressing fragmentation of governance systems (particularly given that climate change action involves many ministries and government bodies) through an integrated and whole-of-government approach, across functions, through multilevel governance, and through coordinated action among governments, firms, and citizens, as well as at the international level.

The fight against the COVID pandemic, as well as climate change and the adoption of new technologies to fight it, have made it clear how important institutional trust is in successful implementation of policy measures. During the pandemic, trust in institutions was an important determinant of governments' ability and success in implementing unprecedented social measures, like distancing and the use of face masks. Mutual trust in others to follow rules and reciprocate in prosocial behavior bolsters the intended effects of government policy. Trust is also key in determining the effectiveness of policy changes to stimulate firms and consumers to adopt green practices. Attitudinal evidence across countries suggests a strong correlation between trust and willingness to act on climate. Having clear and credible policy commitments also helps focus innovative activity. Many reform programs in support of GRID require governments to make long-term commitments, which, if perceived to be credible, are expected to induce behavioral change and private investment to complement public investment.

Government expertise in supporting policy implementation also needs to be developed. It is important to formulate long-term policies that are carefully budgeted and backed by a cadre of officials with appropriate expertise for implementing and monitoring them. While the private sector's role is innovation and diffusion, government also has a central role in research and in ensuring new technologies are adapted to local contexts. Getting the balance right between centrally directed technical change and harnessing private initiatives is key (AIIB 2022).

Institutional frameworks play an important role in the development and implementation of policies relating to GRID and climate change adaptation and mitigation. They resolve credibility issues (they are the most important factor in determining sovereign creditworthiness) (Kharas and Rivard 2022), enable

formulation of meaningful long-term strategies, and help implement and monitor government commitment to those strategies. Efforts to develop solid institutional frameworks will need to span key structures, such as finance ministries, as highlighted in the work of the [Coalition of Finance Ministers for Climate Action \(2022\)](#).

There is no global optimal arrangement for such institutional frameworks. They must be tailored to fit their contexts given diversity across EMDEs (LICs, MICs, small-island developing states, and those in fragile and conflict-affected situations). They require some measure of independence, as well as effective monitoring and information systems. For example, the success of the UK's net-zero emissions strategy has derived heavily from independent analysis by the country's Climate Change Committee. Institutional frameworks work—in terms of their governance structures, including their leadership and staff—only when they are embedded in countries' political systems; they should not be purely technocratic. Furthermore, where such institutions feed into decision making, whether directly into executive decision makers or legislatures, is key. In gaining people's trust, it is also important for institutions to have *direct* access to citizens, businesses, and civil society. Additionally, institutional change can take place at a pace that supports whatever level of emergency a particular country is facing.

A distinct challenge in implementation of the needed green transition will involve giving the private sector the confidence it requires to invest in the long-term transformation toward a green economy while enhancing governance. Neither of these is a simple task, but some promising approaches have emerged. Strong leadership from the top is an important prerequisite, and country ownership is also key.

Greater monitoring and evaluation work on climate governance will also be needed. Civil society organizations handle a large part of the existing monitoring and evaluation work on climate governance. Such work is valuable and important. MDBs can support systems for measuring and evaluating the capacities and credibility of state action. This will allow an evaluation of whether governments are indeed acting systematically to support the climate governance agenda. Project financing can be used to support institutional changes, particularly when there are clear indicators and an appreciation of the role of critical mass required for investments to yield higher returns. The European Bank for Reconstruction and Development model is a very good example of how to build a targeting system to monitor reform progress, in this case in the transformation of post-Soviet eastern Europe. In its early years, the bank developed a clear set of transition indicators to support the move away from planned economies. The indicators went beyond looking purely at conventional quantitative project returns to examine transition impact as well, including efforts to support institution building for a sustainable and inclusive market economy. Building an analogous monitoring framework for supporting the green transition could be an important step forward, and MDBs are well placed to support such an effort.

Policy monitoring will be an important part of the framework for monitoring and evaluating implementation of the green transition, but it is essential to reach out beyond the government. For example, the London School of Economics and Political Science is working with Gallup to establish a global barometer to monitor how citizen knowledge of and behavior in respect to climate action is changing across 140 countries. Another example is World Data Lab's World Emissions Clock, which presents estimates of all emissions (across 5 sectors and 24 subsectors) for all countries in three scenarios (business as usual, nationally determined contributions, 1.5 degrees) until 2050.

Both short- and long-term institution-building efforts will be needed to ensure impact. Creating solid policy and institutional frameworks will require long-term structural reforms with impact horizons beyond the urgent climate crisis timetable. These reforms must therefore be complemented by initiatives and governance arrangements that will have an immediate impact.

One short-term measure that government can undertake is the establishment of mechanisms for stakeholder coordination to support investment and transition strategies in priority sectors. Such coordinating mechanisms can provide incentives for a country to set out clear strategies and investment programs, tackle binding policy impediments, put in place structures for scaling up project preparation, and create replicable and scalable models of financing. Crucially, strong coordination mechanisms can enable a country to engage with all stakeholders, including donors, international financial institutions, the private sector, and philanthropic organizations, to ensure a scale and mix of financing commensurate with ambitious country commitments.

Momentum has been building on the use of such coordination mechanisms to support greater ambition on climate action and investment, with a focus on transition to cleaner energy. Calls for the use of such mechanisms have come from both the official sector (G7 and G20) and the private sector, including one by Mark Carney, UN Special Envoy on Climate Action and Finance, to use “enhanced country platforms” to mobilize private financing at scale for EMDEs’ climate action. The pioneering country platforms of the Arab Republic of Egypt, Indonesia, South Africa, and Vietnam (box 4.1) provide pilot cases that other countries could build upon and enhance and that could be extended as well to priority sectors other than energy.

Box 4.1. Recent Examples of Country Platforms across Regions: South Africa, Egypt, Indonesia, and Vietnam

South Africa’s Just Energy Transition Partnership

The government of South Africa, along with an International Partners Group consisting of the EU, France, Germany, the UK, and the US, as well as the Climate Investment Fund Accelerating Coal Transition Investment Program, led by the World Bank in partnership with the African Development Bank and International Finance Corporation, launched the Just Energy Transition Partnership at the 26th United Nations Climate Change Conference of the Parties (COP26) in November 2021. The partners in the Just Energy Transition Partnership committed to mobilizing \$8.5 billion over three to five years across multiple sources of financing to support South Africa’s decarbonization, with a strong focus on just transition to a low-carbon economy. South Africa combines high vulnerability to the effects of climate change, strong dependence on carbon-intensive industries (particularly coal), and abundance of natural resources suitable for producing renewable energy.

The country-led investment plan seeks to put a high priority on decarbonizing the country’s energy system while protecting affected workers and communities, as well as financing the shift to a greener future through mine repurposing and technological innovation such as green hydrogen and electric vehicles. Over the course of 2022, the South African Green Finance taxonomy was launched, and South Africa’s cabinet adopted a Just Transition Framework, in addition to energy sector reforms to promote renewable technologies.

The finance committed by the International Partners Group includes more than \$5 billion in concessional loans (table B4.1.1). Given identified investment needs of \$98 billion over the five years of the program, South Africa’s Presidential Climate Finance Task Team, together with the International Partners Group, has been engaging with complementary sources of financing, including philanthropies (particularly on the just components of the transition) and international and domestic private sector organizations.

Table B4.1.1. Sources and Type of Financing Announced for Just Energy Transition Partnership (US\$, millions)

	Grants and technical assistance	Concessional loans	Commercial loans	Guarantees	Total (source)
Climate Investment Fund/Accelerating Coal Transition ^a	50	2,555	0	0	2,605
European Union/European Investment Bank	35	1,000	0	0	1,035
France	2.5	1,000	0	0	1,002.50
Germany	198	770	0	0	968
United Kingdom	24	0	500	1,300	1,824
United States	20.15	0	1,000	0	1,020.15
Total (instrument)	329.7	5,325	1,500	1,300	8,455.70

Source: UK Foreign, Commonwealth, and Development Office (2022).

^a \$500 million to channel an additional \$2.1 billion.

Egypt Country Platform for Nexus of Water, Food, and Energy: Pledges for Implementation

The Arab Republic of Egypt's Country Platform for the Nexus of Water, Food and Energy (ن جي سٽوف) was launched in July 2022 on the back of the announcement of the country's National Strategy for Climate Change 2050. The platform provides opportunities for mobilizing financing for climate change mitigation and adaptation and private investments to accelerate the national agenda for adaptation to and mitigation of climate change around the nexus of its water, food, and energy pillars.

About \$15 billion in concessional development funding has been announced, including \$10 billion for energy, \$1.35 billion for water, and \$3.35 billion for agriculture and food security. The funding includes projects to replace thermal power plants with renewable energy, invest in a just transition to clean energy, enhance small farmers' adaptation to climate risks, increase crop yields and irrigation efficiency, build the resilience of vulnerable regions, develop water desalination capacity, establish early climate risk warning systems, and modernize farming practices.

At COP27 in Sharm El Sheikh, a consortium of partners including Denmark, the European Commission, France, Germany, the Netherlands, the UK, and the US issued a declaration of support for the platform's energy pillar, including installation of 10 gigawatts of solar and wind energy by 2028 and retirement of 5 gigawatts of inefficient fossil fuel capacity by 2025. The European Bank for Reconstruction and Development is acting as the key partner for the energy pillar, with the International Fund for Agricultural Development as the key partner for the food pillar and the African Development Bank as the key partner for the water pillar. During COP27, Egypt's Ministry of International Cooperation announced the signing of an additional nine joint development cooperation agreements with Germany worth €160 million.

Indonesia Energy Transition Mechanism Country Platform to Accelerate Just and Affordable Energy Transition

The Energy Transition Mechanism Country Platform was launched at the Group of Twenty meetings in Bali in November 2022 as a vehicle for coordinating and delivering Indonesia's nationally determined contribution commitment to a 43.2 percent emissions reduction by 2030 and for helping drive the country's just and affordable transition from fossil fuels to clean energy.

The mechanism, which leverages a blended finance approach, is supported by grant partners (mainly philanthropies), financing partners (including multilateral development banks, national development banks, and private financial institutions), knowledge and technical partners (including think tanks and international and country development agencies), and the Indonesia Investment Authority as the investment partner.

Priorities include the early retirement of more than 15 gigawatts of coal-fired power plants, with \$500 million in concessional funds already committed. The concessional funding is intended to mobilize more than \$4 billion to accelerate the retirement of up to 2 gigawatts of these plants, to reduce the country's carbon dioxide emissions by an estimated 50 million tons by 2030 and an estimated 160 million tons by 2040. A Memorandum of Understanding with the Asian Development Bank, setting in motion a process to accelerate the retirement of Cirebon-1, a 0.66 gigawatt coal-fired power plant in West Java, complemented the launch.

Vietnam's Just Energy Transition Partnership

In December 2022, Vietnam, along with an International Partners Group consisting of Canada, Denmark, the EU, France, Germany, Italy, Japan, Norway, the UK, and the US, launched the country's Just Energy Transition Partnership, with the aim of supporting the decarbonization of Vietnam's electricity system and developing new economic opportunities from a just transition to net-zero emissions.

The partners announced their intention to mobilize at least \$15.5 billion over the following three to five years, split equally across public and private sector financing, with the former offered on more attractive terms than what would be available in the capital markets and the latter supported through catalytic public sector finance.

The mobilized financing will partly address Vietnam's investment needs for the transition, which are to be outlined and adopted in a Just Energy Transition Partnership Resource Mobilization Plan by November 2023. Complementary measures will include policies to improve regulatory frameworks to expand public and private investment, particularly in renewable energy, energy efficiency, and strengthening of the electricity grid.

Mixed results of past country platforms have clearly demonstrated that coordination mechanisms must be country owned and country led, to ensure trust and legitimacy, and focused on a particular theme or sector, to avoid diluting efforts. To succeed, they should be driven by government priorities, based on a well-defined structure with balanced responsibilities, and include relevant stakeholders. In a context of multiple sources of public and private financing, such mechanisms can help governments discuss investment programs, coordinate program financing, and line up policy reforms around a coherent, outcomes-driven, and evidence-based framework with clearly delineated priorities that facilitates program monitoring and course corrections. Thus designed, the mechanisms should help reduce transaction costs and help match investment opportunities with financing, accelerating the pace toward GRID and global climate goals.

Governments seeking to establish such a coordination mechanism should begin by defining the roles, responsibilities, and division of labor across participants (government, private sector, and development partners):

- Government will need to know the type of financing available, the level of access to technical assistance, and private sector requirements regarding eligible projects and enabling environments. Government will establish clear focal points to help strengthen efforts at coordination, both within government and with development partners. Critical considerations will drive the specific mechanism design—which should be tailored to the specific country context—including the depth of market and financial development and the nature of the development challenges, among others.
- Development partners and the private sector should coordinate—under government leadership—to align their assistance with the country's priorities, identify key policy and institutional reforms for climate transitions, and define a pipeline of feasible investment projects and their potential source of financing (official or private). The private sector can help mobilize resources at the scale needed by identifying the policy constraints and desirable reforms. The actions of other official development financing providers (including MDBs) need also to respond to country demand.

Existing country diagnostics will inform country mechanisms. Internationally recognized diagnostics produced by the MDBs (e.g., the World Bank Group's CCDRs and Country Private Sector Diagnostics) and other institutions (e.g., the IMF's Climate Macroeconomic Assessment Programs) offer a tangible opportunity to support a meaningful dialogue among government, development partners, and the private sector on how to connect policy reforms to development and climate actions to increase investments in feasible projects. The private sector is also deepening assessments and engagements on impediments to green investments through Country Private Sector Diagnostics pilots and the involvement of private sector initiatives like the Glasgow Financial Alliance for Net Zero in country platforms and regional partnerships.

Actionable recommendations:

- *Governments develop long-term investment strategies, step up institutional frameworks that enhance country coordination, and enhance staff expertise with support from development partners, particularly in the case of vulnerable and low-capacity states.*
- *Governments establish or strengthen country-led and country-owned coordination mechanisms to accelerate investments in support of GRID and the transformation of key systems. Such mechanisms bring together key stakeholders—the government, private sector, foreign investors, MDBs, the IMF, and donors—around ambitious energy transition programs to tackle binding policy constraints, enhancing coordination and mobilization of the necessary financing.*

5. CREATING FISCAL SPACE BY SCALING UP FINANCING FOR DEVELOPMENT AND ENHANCING THE QUALITY OF SPENDING

Delivering on the GRID agenda presented in this report requires a debt and financing strategy. Supply- and demand-side constraints are limiting the flows of financing for climate change mitigation and adaptation across all sources, but particularly those from the private sector. From the supply side, EMDEs are facing a difficult macroeconomic context—indebtedness, exchange rate volatility, elevated borrowing costs, and a depleted fiscal space—that constrains their access to financing through two channels. First, this deteriorated macroeconomic context and perceived high risks for mitigation and adaptation investments in EMDEs (Prasad et al. 2022) reduce the attractiveness of climate projects in those economies to financiers. Current financing flows for climate change adaptation measures are estimated to be one-fifth to one-tenth of developing countries’ needs ([UNEP 2021a](#)). Second, depleted fiscal space in EMDEs reduces the level of domestic public resources available for climate action, especially as governments face pressure to respond to other pressing development challenges.¹⁸ From the demand side, there is limited institutional capacity to put in place investment programs and develop a robust pipeline of projects, in part because of lack of funding for project preparation. EMDEs will need to enhance their institutional capacities, boost public domestic resources, and address impediments to mobilizing domestic and foreign capital for investments.

An effective debt and financing strategy must aim at delivering financing at the right scale and with the right composition. The nature of the investments needed will dictate which sources of financing—domestic and international, public and private, concessional and nonconcessional—are best suited to address the needs.

In broad terms, there are four types of project investments, requiring differing financing and assistance:¹⁹

- **Bankable project investments** are those for which private returns exceed costs. Investments of this type should be financed by the private sector. Multilateral institutions can provide helpful assistance in two ways: by supporting improvement of the business environment in the country involved to ensure that potential returns of projects materialize and by facilitating the matching of projects with private financing through measures like supporting the establishment of coordination mechanisms.
- **Riskier project investments** are attractive for private investors but entail elevated risks, high preparation costs or both, requiring de-risking, technical assistance, or grants from concessional resources. Technical assistance and grants for feasibility studies play an important role in ensuring the right project design. Similar support is required to prepare master plans for infrastructure that provide a sound basis for the development of projects.²⁰ Established trust funds and financial-intermediary funds (e.g., the Global Infrastructure Facility, climate investment funds, the Energy Sector Management Assistance Program, the City Climate Finance Gap Fund, the Global Facility for Disaster Reduction and Recovery, and the Public-Private Infrastructure Advisory Facility)

¹⁸ Work by the [IMF](#) (Prasad et al. 2022) highlights that, beyond depleted fiscal space, debt distress can indirectly lead to the entrenchment of extractive growth models and the locking-in of emissions, undermining emissions reduction efforts.

¹⁹ The last three categories require financial support and were developed by [Voegele and Puliti \(2022\)](#).

²⁰ For instance, the Energy Sector Management Assistance Program has supported power sector planning, a prerequisite for integrating renewable energy into the power grid. And Global Facility for Disaster Reduction and Recovery grants help governments ensure that their investments are resilient against current and future climate and disaster risks, thereby reducing future maintenance and repair costs and increasing expected returns.

already provide such support, but in amounts insufficient to support transition needs, so the support must be scaled up.

- **Public-goods project investments** generate public goods but are not commercially viable if only private benefits are taken into account, for example, investments in electricity grids or storage that will enable private investments in renewable energy. Public goods require public investment, and global public goods (those whose benefits extend across borders) require global public investment. Monetization of the public-goods and global public-goods benefits through subsidies from domestic or international sources (the latter being particularly needed in LICs and some MICs) can make these investments commercially viable. Funds like the Green Climate Fund; trust funds like the World Bank’s Global Partnership for Sustainable and Resilient Landscapes (PROGREEN), PROBLUE, and the Climate Emissions Reduction Facility; and the grant component of financial-intermediary funds and climate investment funds, such as the Forest Carbon Partnership Facility and the World Bank’s Global Concessional Financing Facility and International Bank for Reconstruction and Development Global Public Goods Fund, provide a subsidy to cover projects’ public-goods components. But these funds lack the financing volume to meet the large needs of the transition to clean energy. Carbon markets may, however, over time provide a complementary flow of financial benefits to increase expected returns of projects that reduce carbon emissions. Scaling Climate Action by Lowering Emissions ([SCALE](#)), a multidonor fund launched by the World Bank, catalyzes transformative climate action by deploying results-based climate finance, providing grant payments to client countries for lowering greenhouse gas emissions, and helping countries build a track record of projects that can help those countries unlock private sector funding through international carbon markets.
- **Social project investments** provide compensation to support a just transition. They have no commercial benefit and must be financed through public resources, including concessional or grant support, particularly in the case of LICs and some MICs. They entail explicit (for instance, renegotiation of power purchase agreements and compensations to asset owners when coal-fired power plants close before the end of their lifetimes) or implicit (such as social expenditures, for instance, support provided to workers and communities affected by the closure of carbon-intensive activities like mining) liabilities for governments.

Each country’s debt and financing strategy will need to match its investment priorities and sources of financing. The categories just discussed involve a spectrum of concessions: at one end are investments with relatively robust revenue streams requiring shorter-duration financing that the private sector can largely provide. These investments include an increasingly large set of sectors and countries, thanks to improvements in technologies and data that reduce information barriers. Risk reduction mechanisms become progressively more important as investments move across this spectrum or “bankability frontier”²¹ in regard to both its technology (from mature to pioneering) and country (from investment grade to frontier) dimensions. Even further along the spectrum, investments involving revenue streams that are inadequate to attract private financing or large spillovers will require greater support from MDBs and donors to catalyze private financing, whereas those in areas such as adaptation and resilience or loss and damage will require concessional or even grant financing.²² Determining and securing the right debt and financing strategy is a dynamic process, with the composition of financing constantly shifting as technologies mature, sustainable financing assets are scaled up and become mainstream, and climate-related risks evolve.

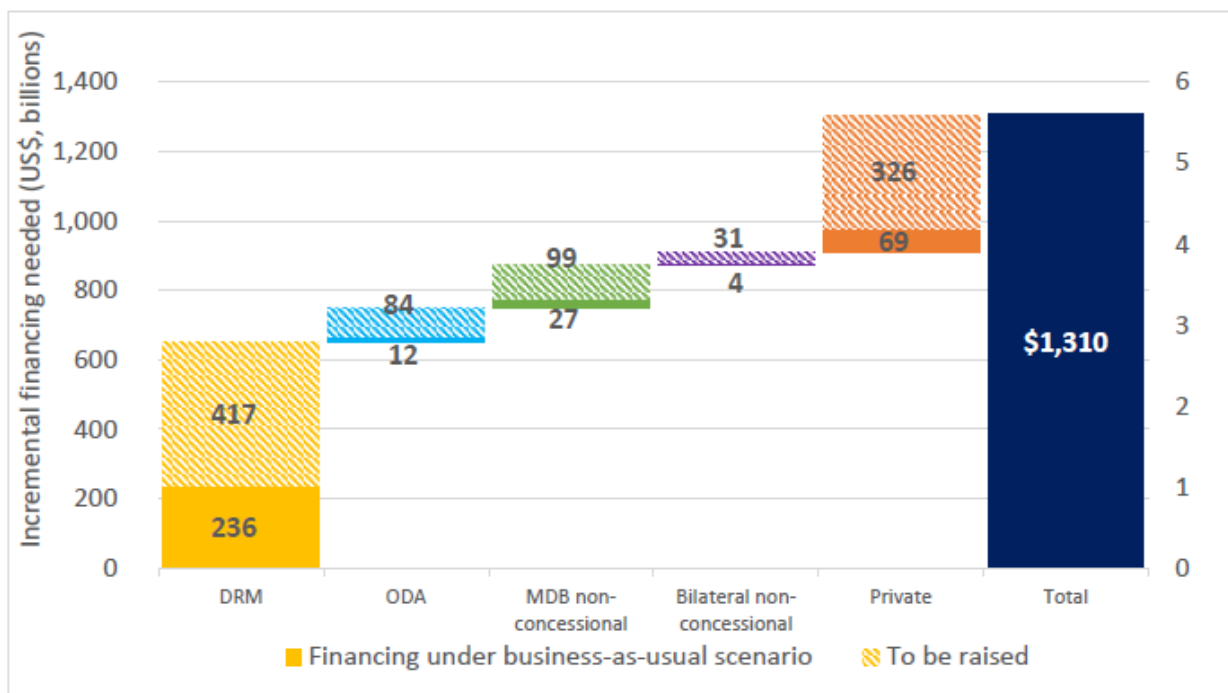
Given the scale of investment needed and the differing nature of investments in support of GRID, significant financing will be required from domestic and international sources, both of a public and

²¹ See section 7 in [Lankes \(2021\)](#).

²² For a detailed mapping of financing needs to investment and spending priorities, see figure 5.1 in [Songwe, Stern, and Bhattacharya \(2022\)](#).

private nature and on both concessional and nonconcessional terms. As noted in section 2, Bhattacharya et al. (2022) conservatively estimate that EMDEs other than China will need at least \$1.3 trillion in incremental financing through 2025 to implement a subset of investments in support of GRID, namely, those in the priority areas of human capital; sustainable infrastructure and the acceleration of energy transitions; adaptation and resilience; and the restoration of natural capital through sustainable agriculture, food and land use practices, forestry, and biodiversity. According to these authors' assessment, significant increases in different types of existing financing could provide the needed funds (see figure 5.1 and table 5.1). Even larger increases would be required, however, to cover the full set of investments needed in support of GRID.

Figure 5.1. Incremental Financing Required, 2019–25, by Source of Financing, to Meet \$1.3 Trillion Incremental Financing Needs by 2025, as Proposed by Bhattacharya et al. (2022)



Source: Bhattacharya et al. (2022).

Note: Solid areas denote financing under business-as-usual scenario, which refers to how financing can be expected to increase under business-as-usual trends. Shaded areas indicate the gaps that need to be filled to meet the proposed allocation. Financing covers the four priority areas in Bhattacharya et al. (2022): human capital; sustainable infrastructure; adaptation and resilience; and the restoration of natural capital through sustainable agriculture, food and land use practices, forestry, and biodiversity. DRM = domestic resource mobilization; EMDE = emerging market and developing economy; GDP = gross domestic product; MDB = multilateral development bank; ODA = bilateral and multilateral official development assistance.

The following subsections review measures that can help raise the public and private financing needed to support a GRID agenda and examine the supportive role that MDB, IMF, and bilateral concessional and nonconcessional financing can play in securing the requisite financing.

Table 5.1. Bhattacharya et al.'s (2022) Proposed Increases in Financing Sources to Meet \$1.3 Trillion Incremental Financing Needs by 2025

Source	2019 gross financing (2019 US\$, billions)	2025 incremental financing target (2019 US\$, billions)	2025 gross financing target (2019 US\$, billions)	Increase needed by 2025 relative to 2019
Domestic resource mobilization	5,311	653	5,964	Additional 2.7 percentage points of EMDE country GDP
Private financing	377	395	772	Doubling of 2019 lending
Bilateral and multilateral official development assistance	192	96	288	50 percent increase
Multilateral development banks nonconcessional	63	126	189	Tripling of 2019 lending
Bilateral nonconcessional lending	35	35	70	Doubling of 2019 lending

Source: Bhattacharya et al. (2022).

Note: Values do not include China among emerging markets and developing economies (EMDEs). Financing covers the four priority areas in Bhattacharya et al. (2022): human capital; sustainable infrastructure; adaptation and resilience; and the restoration of natural capital through sustainable agriculture, food and land use practices, forestry, and biodiversity.

5.1 Public Financing: Domestic Resource Mobilization, Efficient and Effective Public Spending, and Debt

EMDEs are confronted with large investment needs and limited fiscal space to accommodate them without undermining overall debt sustainability. Most EMDEs have run up public indebtedness in response to the global recession induced by COVID-19. Many are in debt distress, or at high risk for it, and are not able to finance critical investment in public goods, like climate change mitigation and adaptation, pandemic preparedness, food security, and conflict and fragility. Many developing countries require sustained investments at levels about 4 percentage points of GDP higher than the current ones, to support climate mitigation and adaptation objectives, health and education systems, resilience, nature-based solutions, and agriculture, forestry, and land use (Bhattacharya et al. 2022). Increased international support, in addition to improved domestic revenue mobilization and expenditure efficiency measures are needed (Kharas and Rivard 2022).²³ In the absence of these measures, the accumulation of debt will lead to a fiscal crisis, undermine growth, and depress incomes.

Policy priorities need to be tailored to country circumstances. Many countries face multiple simultaneous challenges and therefore delicate policy trade-offs. For instance, although development

²³ The determinants of debt sustainability are multiple and vary by country. They include the efficiency of investments undertaken with debt, debt-to-GDP and other ratios, the real interest rate on debt, and real growth. Where debt is external, the country's capacity to generate foreign exchange also matters. For market-access countries, the IMF's Sovereign Risk and Debt Sustainability Framework includes a longer-term (up to 30 years) climate change module for analyzing debt sustainability risks and the related costs to the government for financing climate-related investments. The framework also includes stress-testing on natural disaster shocks that can support the analysis of shorter-term impacts of climate-related hazards. For low-income countries, the IMF–World Bank Debt Sustainability Framework can also be extended (to 30 years) and complemented with a climate change module.

spending will exert fiscal pressure in the short term, it will favor economic growth. But for development spending to take place, access to lower-cost long-term financing is essential.

The enormous degree of heterogeneity in debt and growth across EMDEs requires a different, context-dependent emphasis in each EMDE:²⁴

- Economies with unsustainable debt that need to restructure their debt (for example, Sri Lanka and Zambia) should give priority to debt restructuring.
- Economies with low growth (38 EMDEs—for example, South Africa—have estimated or projected growth rates below 3 percent for 2022–27) should emphasize structural reforms and improving governance to boost growth as priorities.
- Economies with large fiscal deficits (36 EMDEs had deficits above 6 percent in 2022) that cannot readily expand fiscal spending (for example, countries of the Sahel, small-island developing states, Egypt, India, and Kenya) should emphasize fiscal consolidation or fiscal neutrality,²⁵ with these measures complemented by international support, so that priority spending can take place.
- Economies experiencing high interest rates (nominal market rates on 10-year bonds were less than 7 percent in only 16 EMDEs as of mid-January 2023; Brazil, Colombia, Pakistan, and Uganda, for example, face double-digit rates) should work to identify ways to ease the cost of borrowing, including by supporting efforts to strengthen policies and frameworks, as well as by expanding official financing and by using official flows to de-risk private financing.

Four key measures, applied with differing intensity as determined by each country’s situation, will help generate or free up financing and increase fiscal space: mobilization of domestic resources, efficient and effective use of government resources, revamping fiscal rules and broadening debt sustainability analyses, and increasing access to low-cost financing. Although many of the recommended actions under these measures are not new, the current context is different—in terms of urgency and scale—as is the integrated green, resilient, and inclusive approach that would design policies to respond to the crises while maintaining a focus on their long-term development impact.

5.1.1 Mobilization of domestic resources

Bold reforms to mobilize domestic resources will be critical. Building tax capacity is vital for building state capacity, which is a precondition for growth and development, as well as to repay borrowing—on concessional or nonconcessional terms—in the future. EMDEs could deepen structural tax system reforms by modernizing their revenue administration systems, including through greater digitalization, and by strengthening their tax policy frameworks to raise revenues without hurting the poor.

Policy efforts in this direction include more-progressive taxation of income and wealth, broadening tax bases, and strengthening compliance. Revenue can be mobilized without hurting the poor by making personal income taxes more progressive; by taxing capital income, capital gains, and corporate income more comprehensively; and through greater use of recurrent property taxes. Many countries can increase revenue from value-added taxes through broadening the base and removing poorly targeted concessionary tax rates (while compensating the most vulnerable households with cash transfers) ([World Bank 2022a](#)). Weaknesses in the international corporate tax system must also be addressed to reduce harmful tax competition, tackle tax avoidance, and enhance the fight against tax evasion. International corporate tax rules have been shaped without considering their full impact on developing countries (IMF 2019b). As a result, lower-middle-income countries lose an estimated \$200 billion per year to tax avoidance (profit shifting) by multinational companies—more than they receive in official development

²⁴ In the list that follows, values in parentheses are from [IMF \(2022d\)](#).

²⁵ “Fiscal neutrality” describes a policy designed to have no net effect on a country’s macroeconomy.

assistance (OECD 2020). Digitalization of revenue administrations in EMDEs will enhance taxpayers' access to services and improve tax compliance and enforcement. Fiscal reform has proved challenging in the past, however, and will require the support of sufficiently powerful domestic coalitions interested in pursuing GRID goals, as well as stepped-up global cooperation ([World Bank Group 2022a](#)).

Countries can increase their use of excise taxes on fossil fuels (including carbon taxes) to raise tax revenues while simultaneously addressing environmental goals. Cash transfers can address potential distributional impacts. Similarly, greater use of excise taxes on alcohol, tobacco, and sugar-sweetened beverages can raise revenue for countries while addressing health-related goals. Policy measures can also shift consumer behavior toward more efficient energy practices. Recent examples are the use of solar and geothermal incentives in the US and the promotion of LED lights in India ([World Bank Group 2022d](#)). Many countries can also raise revenue through more effective taxation of natural resources.

Broader institutional reforms will be needed to support efforts to mobilize domestic resources. Empirical evidence shows a positive correlation between the predictability of revenues and tax administration effectiveness and quality of governance, underscoring the importance of institutional reforms.

Actionable recommendations at the country level:

- *Governments increase fiscal space by deepening tax reforms in a progressive and fair manner, modernizing revenue systems and enhancing the quality of spending.*
- *Governments strengthen the credibility of public finances.*

5.1.2 Efficient and effective use of government resources

Better assignment of priorities in public spending can create fiscal space and accelerate progress toward key development and climate objectives. Improvement in this area will require a thorough review of spending programs to distinguish between expenditures that are well aligned with key development and climate objectives and those that are no longer a priority or have adverse impacts on achievement of those objectives. Examples of the latter include investment incentives that have no demonstrable impact on investment and employment and energy subsidies that have adverse effects on the transition to a low-carbon economy.

Existing subsidies need to be reallocated in a climate-friendly and productive way. Repurposing of inefficient subsidies in both the food and energy sectors could free up resources; globally, governments spend about \$1.2 trillion for subsidies in the agricultural sector and for fuel (\$635 billion in the agriculture sector and \$577 in repurposed fossil fuel subsidies).²⁶ However, some of these funds would need to be used to ensure that reforms to the food and energy sectors do not affect vulnerable groups disproportionately ([World Bank Group 2022d](#)). Measures of this type would have a large environmental impact: the IMF estimates that efficient fuel pricing would reduce global carbon dioxide emissions by 36 percent below baseline levels in 2025, increasing net economic efficiency gain by 2.1 percent of global GDP (Parry, Black, and Vernon 2021)—and would significantly raise agricultural productivity as well ([World Bank Group 2022d](#)). However, in the current context of elevated inflation, special attention will have to be given to ensuring that reforms of this type do not affect vulnerable groups disproportionately.

²⁶ These subsidies include high-income countries as well, though as of 2021, MICs accounted for the highest share of aggregate global energy subsidies (World Bank Group 2022d).

More efficient public spending offers another important opportunity to create fiscal space. There are significant opportunities to enhance the efficiency of public spending. Emerging markets lose 31 percent and low-income developing countries 39 percent of their resources to inefficiencies in the investment process (Schwartz et al. 2020). Inefficiencies in overall spending are estimated at 4.4 percent of GDP in Latin America and the Caribbean (Izquierdo, Pessino, and Vuletin 2018). Reducing leakages in transfers, procurement waste, and wage bill inefficiency and improving infrastructure governance will allow countries to do more with less.

Actionable recommendations at the country level:

- *Governments repurpose fuel and agricultural subsidies for more productive and sustainable investment, using some of the fiscal savings for targeted transfers to compensate vulnerable losers.*

5.1.3 Revamping fiscal rules and broadening debt sustainability analyses

Many countries have fiscal rules to constrain public indebtedness. These rules were often set aside during the pandemic, but the escape clauses making deficit spending legal are now expiring. For example, the EU's general escape clause for the Stability and Growth Pact was suspended, but only through 2022.

Although fiscal rules are an important mechanism for establishing credibility and play a powerful role in reassuring lenders, they could be revamped to better reflect investment's contribution to public finances' long-term sustainability. Revisiting fiscal rules once the crisis has passed also offers an opportunity to introduce second-generation fiscal rules. These rules should be comprehensive and include a debt anchor and a small number of operational rules that guide annual budgets, provide flexibility through simple escape clauses and greater emphasis on expenditure rules, and promote compliance through enhanced transparency that raises the reputational cost for noncompliers and provides better incentives for compliers (Eyraud et al. 2018). Fiscal rules should therefore take into account to a greater extent the composition of public expenditure, placing emphasis on climate investments and development spending directed at reducing poverty and promoting shared prosperity.

It would also be desirable for countries, when evaluating the sustainability of their debt, to place adequate emphasis on the impact of development and climate spending on the interest rate–growth rate differential and, through this avenue, on long-term debt dynamics. Doing so would give more weight to the positive effect of development and climate spending (noting that delaying spending on climate change will raise future debt costs and lower growth). To reflect uncertainties, it is also important to strengthen the analysis of estimates of climate change's impact on growth potential based on scenarios: both the Network for Greening the Financial System and Intergovernmental Panel on Climate Change offer useful scenarios and tools in this regard, while the IMF's Debt Sustainability, Public Investment, and Natural Resource model can also conduct such estimations.²⁷

²⁷ Climate scenarios, such as those developed by the Intergovernmental Panel on Climate Change, form a key part of scientific assessments and have been adopted by the Network for Greening the Financial System to help central banks and supervisors explore possible impacts of climate change on the economy and the financial system. The Network for Greening the Financial System Scenarios Portal offers a set of hypothetical scenarios for improving understanding of how climate change and climate policy and technology trends could evolve in the future.

Actionable recommendations at the country level:

- *Development partners and MDBs provide technical assistance on comprehensive second-generation fiscal rules (including a debt anchor, small number of operational rules, simple escape clauses, enhanced transparency, and more emphasis on expenditure) that incorporate increased investments in support of GRID in a fiscally sustainable way.*
- *Long-term growth projections used in debt sustainability analyses adequately consider the growth yield from development and climate investments.*

5.1.4 Increasing access to low-cost financing

In addition to the limited availability of financing, its affordability is a challenge for many EMDEs. Of financing for climate change mitigation and adaptation delivered in LICs and MICs in 2019–20, 60 percent was in the form of debt, including 40 percent as project finance debt at market rates, from national development financial institutions (25 percent), commercial financial institutions (6 percent), and private sector arms of MDBs (5 percent) (World Bank Group 2022a). EMDEs face significantly higher market rates than advanced economies, providing negative incentives for investments in development and climate change mitigation.

Strengthening liquidity management and tackling debt overhang are key to accessing lower-cost financing. Liquidity risks largely account for the higher spreads in developing countries and the difficulty they face in accessing credit. Strengthening liquidity management can thus help debt- and climate-vulnerable countries improve access to financing (Prasad et al. 2022). Finding a workable solution to reduce the debt burden in developing countries, where debt is limiting climate action, is also critical (Prasad et al. 2022). Recent efforts to gather key stakeholders in the Global Sovereign Debt Roundtable to build a common understanding on debt-restructuring challenges and address them via appropriate debt-restructuring mechanisms are therefore timely.²⁸ Strengthening the implementation of the G20 Common Framework for Debt Treatment will be crucial to support countries with unsustainable debt, protracted financing needs that require debt restructuring, or both. It would be advisable to open the framework to all EMDEs, not just those that were eligible under the Debt Service Suspension Initiative.

Political and macroeconomic risks also contribute significantly to developing countries' risk premiums. Government actions to mitigate such risks will be key to reducing the cost of financing. Reform in this area will need to include debt management, fiscal sustainability, and debt transparency. Central banks also have an important role to play in finding solutions to enhance the financial system's role in managing risks and mobilizing capital, with the Network for Greening the Financial System helping promote best practices that could be implemented.

When lenders trust that governments are fiscally responsible, governments can finance deficits more easily and more cheaply. Even when governments do not borrow from market sources, fiscal credibility can attract private investment and foster macroeconomic stability. Undertaking structural fiscal reforms; adopting budget rules; establishing institutions geared to promotion of fiscal prudence, inclusive politics, credible leadership, and debt transparency; and ensuring clear communication of policy priorities can build fiscal trust and signal commitment to sustainability. The Platform for Collaboration on Tax's Medium-Term Revenue Strategy, which provides for a comprehensive strategy for reforming a country's tax policy, revenue administration, and legal framework, embedded in its political reality, incorporates these elements.

²⁸ The Global Sovereign Debt Roundtable was initiated in February 2023 and is cochaired by the IMF, World Bank, and Indian G20 Presidency.

Financial innovation can help lower countries' risk premiums by reducing their vulnerability to debt from climate change shocks. Catastrophe bonds and other insurance-linked securities can help countries manage exposure to natural disasters. Catastrophe bonds help increase countries' financial resilience against disasters by providing them with funds in the immediate aftermath of an adverse event. MDBs have played an important role structuring these instruments. For instance, the World Bank has supported 17 catastrophe bonds, mainly covering earthquakes and hurricanes, for an aggregate value of about \$3 billion. The most recent of these catastrophe bonds provides Jamaica with \$185 million in insurance coverage for severe hurricanes, with donor funds from the Germany, the UK, and US used to finance the cost of this insurance. Natural disaster clauses in the issuance of sovereign bonds—pioneered by Barbados with the issuance of its 2022 blue bond—can help reduce debt vulnerability in issuing countries by allowing them to defer coupon payments when natural disasters occur.

Scaling up nonconcessional lending at below-market rates would help reduce the cost of borrowing and could provide a big payoff in terms of growth. In one simulation (Kharas and Rivard 2022), in which investment rises by 4 percent of GDP, with half this increase financed by external debt, the debt-to-GDP ratio rises by 10 percentage points, but income increases by 30 percent, solvency improves, and a larger share of official debt in the overall total mitigates the potentially higher rollover risk. For a payoff of this kind to take place, however, expanding the availability of nonconcessional official loans is essential, to reduce the cost of borrowing and provide project financing that private debt markets cannot supply. Analysis by Chamon et al. (2022) has found that debt-for-climate swaps can be useful in creating fiscal space, although in many cases, addressing debt and climate issues separately would be more effective.

Concessional financing is also critical, but it remains low relative to the gap in financing for adaptation and resilience, nature and biodiversity, support for poor and vulnerable countries, and loss and damage. As noted in subsection 5.3, MBDs, the IMF, and bilateral donors play a substantial role in providing and channeling increased concessional and nonconcessional low-cost lending.

Innovative solutions will also be needed to complement the use of grants. Complementary actions, like participation in voluntary carbon markets, will help reduce the cost of borrowing.

Actionable recommendations at the global level:

- *Stakeholders support debt restructuring by deepening common understanding of debt-restructuring challenges via the Global Sovereign Debt Roundtable and strengthening the G20 Common Framework—including by providing greater clarity on steps and processes—and by enhancing creditor coordination for non-G20 Common Framework debtor countries.*
- *Bilateral creditors consider, where it may be appropriate, debt-for-climate-and-sustainable-development transactions and facilitate donor-financed tripartite swaps that are additional and complementary to G20 Common Framework debt treatment.*
- *Stakeholders support the development of standards for third-party participation in voluntary carbon markets (debt-free financing).*

Actionable recommendations at the country level:

- *MDBs support the development of infrastructure for local bond markets to support capital market depth and liquidity, as well as the issuance of green, social, and sustainability bonds and sustainability-linked bonds.*
- *Bilateral official creditors and private creditors consider debt initiatives in the context of the G20 Common Framework for Debt Treatment, including scope for reprofiling of repayments falling due, at reasonable cost and long maturity, to reduce net present value significantly in a timely manner. Debt treatments could be linked to a program of reform such as a development policy operation or sector-based operation or to a time slice of incremental investments.*
- *MDBs and bilateral official creditors expand both concessional and nonconcessional financing (potentially with matching, as a way of mobilizing domestic resources) to support a big-push public investment program.*

5.2 Channeling Private Financing

The investments needed to address climate change and set countries on a path toward GRID represent a tremendous opportunity for private financing. This will be the growth story of the century for the global economy and for those firms that will reap the returns from financing it. Investors that fail to catch this wave risk not only missing out on opportunities, but also sustaining significant losses from exposure to the old economy and stranded assets. Collective failure on the part of the financial system to transition could lead to systemic exposure to climate-related financial risks and increase global financial instability, as the IMF (2022b) and others have warned.

With the planetary window of opportunity continuing to close rapidly (UNEP 2022) at the same time as global financial conditions for governments are tightening, this is a critical time for enabling private financing to play its part. The COVID-19 crisis has strained public budgets and increased inflation, leading to higher interest rates, which intensify competition for yield and tighten borrowing conditions for EMDE sovereigns. But despite increasing difficulties, private investors (particularly long-term investors such as pension funds) continue to search for investments that are sustainable over a longer horizon and assets that will be resilient in the net-zero transition, especially in today's high-inflation environment.

5.2.1 Turning momentum into credible pledges

Interest in green private financing is increasing, as reflected in the growing number of initiatives by governments, central banks, MDBs, and development financial institutions to support private sector financing efforts, in the growing issuance of sustainable assets such as green bonds, and in statements of ambition by the private sector itself. At least one-third of the world's publicly traded companies have pledged to reach net-zero emissions by 2050 or sooner,²⁹ and institutions representing more than \$130 trillion in assets have committed to aligning with net-zero emissions by 2050 through membership in the Glasgow Financial Alliance for Net Zero. Other notable initiatives in this area include the Climate Finance Leadership Initiative, the Global Investors for Sustainable Development Alliance, the Sustainable Markets Initiative, and the Climate Policy Initiative's Finance to Accelerate the Sustainability Transition—Infrastructure.³⁰

The focus now needs to shift rapidly from ambition to implementation and to scaling up classes of sustainable assets across all types of financing instruments, with an emphasis on integrity and impact. Recommendations from the UN Secretary-General's High-Level Expert Group on the Net-Zero Emissions Commitments of Non-State Entities provide a useful guide for ensuring net-zero pledges are credible and the entities that make them are accountable, as well as for safeguarding financial instruments' quality, integrity, and sustainability credentials (UN 2022).

5.2.2 Managing risk and cost of capital

Despite the momentum noted in the previous subsection, private financial flows to LICs and MICs pale in comparison to both their needs for financing for climate change mitigation and adaptation and the trillions of dollars in resources the private sector manages. Total private financial flows (including both those for climate-related and those for non-climate-related activities) have averaged only \$12 billion per year for LICs and \$800 billion for MICs over the past five years (World Bank Group 2022a). Private financing for climate change mitigation and adaptation for LICs and MICs remains very small and largely

²⁹ <https://zerotracker.net>.

³⁰ For a fuller list of initiatives, see appendix 4.A5 in [Stern and Lankes \(2022\)](#) and appendix 3 in [Songwe, Stern, and Bhattacharya \(2022\)](#).

concentrated in East Asia and the Pacific, which receives 70 percent of the flows of private financing for these purposes deployed in LICs and MICs.

Decisive and timely scaling up of private financing for climate change mitigation and adaptation requires targeted action to reduce the cost of capital by tackling real and perceived geographic, technology, and project-specific financing risks. These are macro- as well as microfinancial risks, on the supply as well as the demand side. They include a shortage of large investment-grade projects and liquid markets, with those that do exist hampered by high up-front capital and transaction costs. They also include significant project risk, exacerbated by macro-financial constraints, including persistent market failures (which promote fossil fuel investments) and country-level risks (partly because of information asymmetries and uncertainties about future climate policies and technology costs). A lack of a strong climate information architecture, including data, disclosures, and taxonomies, contributes added complexities and a lack of knowledge about opportunities and innovative options for financing them, further discouraging private sector investment.

Targeted solutions to these challenges must disaggregate financing risks across the project life cycle and across the investors involved. These solutions must focus on impediments upstream (the policy and regulatory environment, which translate into offtake and creditworthiness risk in respect to key players in the energy transition, such as utilities), midstream (project preparation and development and mitigation of construction risks), and downstream (developing market instruments and financial “highways” to connect institutional capital to investments).

Better sharing of data and information will be crucial to mitigating financing risks and reducing impediments, which if left unaddressed will significantly escalate the cost of capital. Cross-sectional risks range from exchange rate risk (particularly for infrastructure projects funded in hard currency but delivering revenues in local currency), scale risk (with a weak pipeline of potential investment projects creating difficulties for private sector commitments at scale), and fragmentation or lack of mitigation instruments.

Scaling up private financing for climate change mitigation and adaptation in EMDEs will also require employing financial instruments that help reduce the cost of capital. Most financing for climate change mitigation and adaptation in EMDEs currently takes the form of debt, in large part project-financing debt at market rates, which are substantially higher than those in advanced economies because of the greater risk involved. These higher rates reduce the attractiveness of investing in EMDEs. Because rates are high and the private sector cannot internalize climate externalities, attracting private sector investment in climate change mitigation and adaptation requires developing innovative financial instruments to help reduce the cost of capital. These instruments include those involving blended and structured financing and risk sharing, in which MDB resources can be deployed to reduce and mitigate risks.

5.2.3 Developing market instruments at scale and ensuring whole-of-system alignment

Large investors that would not otherwise be interested can be attracted to the types of investments needed if reliable and credible market instruments are developed through standardization (packaging information and liquidity). Scaling up issuance of green bonds and similar instruments in EMDEs involves strengthening awareness and capacity building, technical assistance, and aligning opportunities with institutional investor objectives and risk appetite. The World Bank provided technical assistance to the government of Colombia to develop a national green taxonomy and supported the development of such taxonomies in Indonesia, Malaysia, and Vietnam. It also provided assistance on three sovereign green bonds issued by Colombia, a sovereign green bond in Egypt, and the Indonesia Infrastructure Finance (state-owned enterprise) sustainability bond. International Finance Corporation (IFC) initiatives such as its

Green Bond Technical Assistance Program and its Green Banking Academy also provide successful examples to build on, and initiatives of this type need to extend across all types of instruments beyond fixed income. The launch in 2022 of the SDG-Focused Emerging Market Credit Fund (ILX Fund I), now valued at \$1.05 billion, offers a further promising example of leveraging MDB and development financial institution experience in investing in EMDEs to deliver attractive risk-adjusted returns for institutional investors such as pension funds.

A supportive international architecture for sustainable financing is also critical to give investors across the whole financial system incentives to align their portfolios with green and sustainable development, as committed to by the parties under Article 2.1c of the [Paris Agreement](#).³¹ Putting such an architecture in place should include developing a common language and sustainability standards for green investments to bring coherence to the pursuit of financial-system-wide alignment with climate and development objectives. The work of the International Sustainability Standards Board will be critical to avert fragmentation of standards and metrics while allowing for their proportional and sequenced implementation to reflect the variety of economic structures and sectoral profiles.

5.2.4 Risks of private financing

Channeling private financing to sustainable investments will bring great opportunities and necessary benefits but can also generate risks for the global financial system and for recipient countries. Initiatives in this area must avoid creating moral hazard from inappropriate application of public credit enhancements and de-risking that could privatize gains and socialize losses, as the IMF has warned ([Prasad et al. 2022](#)). Strong state capacity and legal frameworks, alongside mechanisms to monitor investment projects, will be key to safeguarding de-risking initiatives from fiscal losses.

Alignment of the financial system with climate and development objectives also means developing and deepening domestic financial markets and banking systems within EMDEs to help mobilize domestic resources. Developing and deepening these markets can help minimize balance of payments vulnerabilities that could arise from large external inflows of financing for climate change mitigation and adaptation. MDBs will be particularly critical in supporting an agenda along these lines, through providing technical assistance and advising on blended-financing aspects to share risk and build capacity, as outlined in the next subsection.

Actionable recommendations:

- *Regulators and supervisors develop a supportive international sustainable financial architecture that creates incentives, tools, and an information framework to enable financial institutions to internalize climate-related physical and transition risks. Such an architecture will include mainstreaming instruments such as climate stress tests and sustainable prudential regulation.*
- *Private financial institutions in advanced economies proactively commit to allocating portfolios to sustainable investments in EMDEs. Increasing these institutions' on-the-ground presence, to improve access to data and information and reduce perceived risk, as well as establishing local partnerships to help identify investment opportunities and jointly mobilize finance, will facilitate this commitment.*
- *Governments, development financial institutions, and the private sector increase their collaboration to develop a pipeline of bankable projects. Development of such a pipeline must include an emphasis on private sector engagement during the project preparation phase, as well as mechanisms to advance credibility and reduce uncertainty of government commitments, plans, and policies (including offtake risk for renewables).*
- *Governments employ blended-financing solutions to help unlock financing and address risks for long-term investments.*

5.3 Role of MDB, IMF, and Bilateral Financing in Supporting GRID

The support of the international community will be instrumental in helping EMDEs integrate climate with development and in helping them close the gap in their financing for implementing investments in support of GRID. MDBs, the IMF, and donors will all need to significantly scale up both their ambition and support in this area.

Recognition is growing of the central role that MDBs play in the GRID agenda, given their mandates, their instruments for supporting countries, and their financial strengths. MDBs support countries on their path to GRID by providing both financing to governments and financial instruments that lower risks to private investors. To help address the high interest rates and high up-front capital costs of infrastructure investments that require long payback periods, MDBs are contributing to the mobilization of financing through loans, de-risking, and blended-financing instruments, as well as by promoting new multistakeholder initiatives, including individually tailored cofinancing facilities that involve public and private first movers investing in piloting new approaches. They are also supporting offtake in green technologies and other interventions like those supporting GRID. MDBs are helping to leverage domestic and regional financial intermediaries through individually crafted risk-sharing facilities for green infrastructure (e.g., rooftop solar and e-mobility for small and medium enterprises). Their provision of concessional and blended financing for investments in sectors and markets in which finding financing is more challenging is also helping attract private investment. An example is the partnering of the Multilateral Investment Guarantee Agency (MIGA) with the European Bank for Reconstruction and Development (EBRD) in 2022 to structure an investment grade green bond in Egypt, which was fully subscribed by institutional investors, some investing for the first time in an EMDE economy.

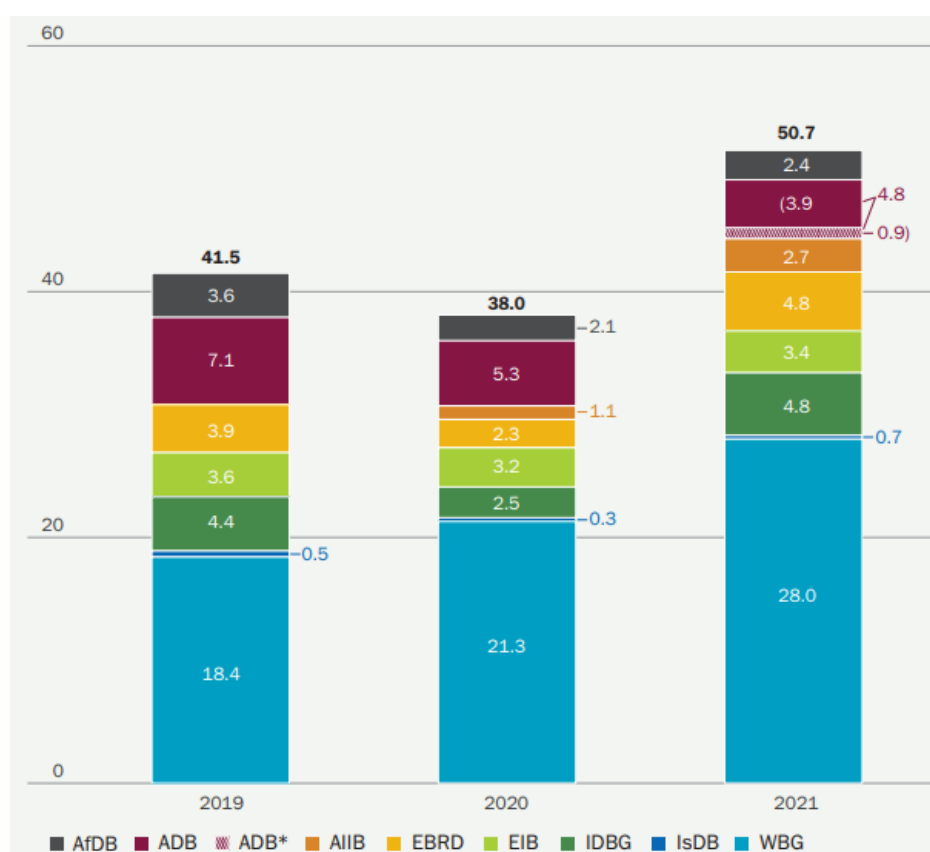
MDBs also provide much-needed technical expertise to EMDEs. They support the expansion of capital markets in developing countries and the development of new financial instruments to finance green investments, including green, social, and sustainability-linked bonds and loans, with a view to expanding opportunities for private sector investors, as well as sovereign and subsovereign entities (e.g., state-owned enterprises). Initiatives like the [Joint Capital Market Program](#), launched by the World Bank and IFC in 2017, have identified opportunities for expanding private sector engagement to deliver capital markets financing in areas such as climate and infrastructure.

In addition, MDBs help strengthen the preparation of development projects through targeted solutions and capacity building to governments and firms, for instance, in the areas of renewables, storage, and green hydrogen. Examples include the IFC's upstream project preparation support, the Global Infrastructure Facility's project preparation support and partnership with project preparation facilities, and the World Bank's support for renewables expansion. Concessional financing to help prepare riskier projects will help increase these projects' attractiveness to the private sector.

MDBs support governments in identifying binding constraints to private investment and financing, particularly in priority sectors that are key to the green transition and climate resilience. The Climate Finance Leadership Initiative, Global Infrastructure Facility country pilots, and the World Bank Group's Country Private Sector Diagnostics and CCDRs are informing and supporting such efforts. CCDR findings offer a strategic opportunity for governments, private investors, and donors to identify, sequence, and assign priority levels to policies and public and private investments that are progreen and progrowth and promote poverty reduction.

Furthermore, MDBs are promoting the use of more robust methodologies and definitions in reporting financing for climate change mitigation and adaptation to address weaknesses in quality, transparency, and consistency. Most actors in this realm, including public and private sector entities, do not track or report their financing for climate change mitigation and adaptation or are not following consistent methodologies in measuring and reporting their contributions. Through their private sector arms, MDBs play a significant standard-setting role in development of markets for assets related to climate change mitigation and adaptation. MDBs have agreed to “Common Principles for Climate Adaptation and Mitigation Finance Tracking” for annual reporting (AfDB et al. 2022). These principles offer governments, firms, and institutions an opportunity to standardize and publish disclosures regarding their contributions to financing climate change mitigation and adaptation.

Figure 5.2. Multilateral Development Banks’ Climate Commitments in Low- and Middle-Income Economies, 2019–21 (US\$, billions)



Source: AfDB et al. (2022).

Note: AfDB = African Development Bank; EBRD = European Bank for Reconstruction and Development; IDBG = Inter-American Development Bank Group; IsDB = Islamic Development Bank; WBG = World Bank Group.

Although MDBs met their collective 2025 goals for financing climate change mitigation and adaptation four years early (AfDB et al. 2022) (see figure 5.2) and have significantly stepped up their commitments in the area of financing for climate change mitigation and adaptation,³² the gap between available financing and investment needs remains large and growing. Given their comparative advantages, there

³² MDBs set their collective 2025 goal in 2019. They have since set new and more ambitious goals; see Annex C.6, “Post-2020 Targets Related to the Joint MDB Climate Finance Tracking Methodology,” of the [Joint Report on Multilateral Development Banks’ Climate Finance \(AfDB et al. 2021\)](#).

is significant scope for MDBs to do more. But to do more, MDBs will need to evolve, with support of shareholders and donors, so that they better address global public-goods challenges like climate change, global health, food security, and fragility, conflict, and violence, building on synergies with the agenda on poverty reduction and other SDGs. To enable the expansion of public investment necessary to cover needs in the area of climate change mitigation and adaptation and help channel the great increase in private investment and financing required to meet mitigation needs, MDBs must expand their scale of activities quickly, strengthen still further their focus on sustainability—commitments by MDBs to financing for climate change mitigation and adaptation reached \$58.8 billion in 2021 (AfDB et al. 2022)—and enhance their ability to support risk management, risk reduction, and risk sharing. This expansion has the potential not only to radically increase financing flows, but also to reduce the cost of capital required for investment in EMDEs.

Several measures will need to be undertaken to this end. First, MDBs will need to increase the coverage of their tool kits and expand them. This implies an expanded use of nonconcessional and concessional financing, including grants and blended financing, not only in LICs, but also in MICs, to provide incentives for investments in projects whose benefits extend beyond borders or in which risks are high because of large costs of project preparation. Diagnostic work and policy research will need to be deepened and translated into action through enhanced policy dialogue, capacity building, technical assistance, and policy and investment lending. Enhanced emphasis by MDBs on promoting robust methodologies and definitions for reporting financing for climate change mitigation and adaptation will help address weaknesses in quality, transparency, and consistency. MDBs can play an instrumental role in ensuring that international standards are applied globally in a proportionate and appropriate way that encourages capital to flow to countries, companies, and projects that are key to achieving the SDGs and Paris Agreement goals. More consistent application of these standards will help in estimating more accurately the financing gap for EMDEs and assess progress.

Second, expanding the focus of MDBs’ operating models and facilitating the raising of private capital will help them address global public-goods challenges. MDB’s operating model will need to build on and go beyond a country focus to further support global coordination. MDB efforts will also need to extend into supporting the expansion of capital markets in developing countries. Enhanced support will be needed as well to further expand financial instruments private sector investors can use to finance green investments, including green, social, and sustainability-linked bonds and loans, guarantees, and insurance products.

Third, urgently exploring with their shareholders financial innovations for optimizing use of their balance sheets without affecting their credit ratings could help increase MDBs’ development impact. MDBs have successfully innovated in the past. Back in 2018, the World Bank Group’s International Development Association began issuing bonds in capital markets, allowing it to leverage every dollar that donors contribute into almost four dollars of financial support for the poorest countries; as a result, \$23.5 billion in contributions generated a replenishment package that had reached \$93 billion by 2021. A G20-commissioned independent [review](#) in 2022 by the Panel for Independent Review of MDBs’ Capital Adequacy Frameworks suggested a list of additional innovations that MDBs are currently reviewing.

Fourth, as the scale of the challenge clearly exceeds the lending scope of current MDB balance sheets, an expansion of the overall envelope of concessional and nonconcessional financing available through MDBs would also be needed. MDBs were capitalized to address the type of crisis that happens once in a decade rather than compounding crises, and they are not set up to fill the sizable gap in financing needed to help set countries on a GRID path. Increased resources could enable MDBs to deploy much-needed support thanks to their leveraging capacity, including nonconcessional and concessional financing as well as grants.

The World Bank Group, led by its Board of Executive Directors, has developed an Evolution Roadmap to better address the scale of development challenges such as poverty, shared prosperity, and inequality, as well as cross-border challenges including climate change, pandemics, and fragility, conflict, and violence. The initial draft of the [Evolution Roadmap](#) outlines the approach that the World Bank Group (2022c) will take to (1) clarify and expand its vision and mission to broaden its twin goals (ending extreme poverty and boosting shared prosperity), recognize the importance of tackling extreme poverty and broader poverty and achieving clearly defined prosperity objectives, and emphasize the importance of sustainability and resilience to reflect more clearly that the mission includes global public goods, such as climate change mitigation and pandemic preparedness, prevention, and response; (2) review its operating model and consider enhancements to its country engagement model, analytics, financing instruments, and incentives, within an enhanced One World Bank Group approach; and (3) explore options to expand its resources and enhance its financial model. Work on the Evolution Roadmap is very timely and will be critical in enabling the World Bank Group to deliver the level of ambition needed to address the crisis facing development and to support countries in achieving GRID.

The IMF will need to increase its support as well, to raise access to financing by countries and to help catalyze private sector financing. Stepped-up efforts with the G20 to improve the Common Framework for Debt Treatment will help reduce debt pressures and enable countries to perform much-needed investment. Swift rollout of support through its newly established Resilience and Sustainability Trust will help increase access to financing in many of its members. This trust provides financial support to address longer-term macro-critical structural challenges (related to climate change and pandemic preparedness) that entail risks to countries' resilience and sustainability. Special drawing rights channeled from countries with strong external positions support the trust. About three-quarters of the IMF's membership—including all LICs and developing and vulnerable small states, as well as many MICs—are eligible for financing from the trust. Reforms supported under the trust (such as green public financial management and legislative improvements) can help LICs and MICs create an enabling environment for complementary private sector and MDB financing. A scaled-up focus on carbon taxation and elimination of fossil fuel subsidies as part of its surveillance (Article IV consultations and evaluations under the Financial Sector Assessment Program) and capacity development (including Climate Macroeconomic Assessment Programs) activities, as well as increased analytical work in several key areas will also contribute to needed support.³³ These include policy design to arrest emissions of greenhouse gases, including through carbon pricing or equivalent measures in combination with green investments, and to protect vulnerable groups in the energy transition. Another key area of work that should be expanded is the analysis of ways to mobilize domestic and foreign private sector financing of climate change mitigation efforts as a complement to climate-related policies.

More than ever, support from the donor community is needed to support climate change mitigation and adaptation investments (OECD 2021). The \$100 billion commitment on the part of advanced economies and their reinforced commitments for an increase in financing for climate change mitigation and adaptation at the G7 Carbis Bay Summit and again at COP26 in Glasgow represent encouraging steps in this direction. But advanced economies' financing to developing countries³⁴ in the areas of climate change mitigation and adaptation reached only \$83.3 billion in 2020, well short of the \$100 billion target. Advanced economies should now follow up this financing by ramping up their assistance significantly, together with other donors, doubling—at least—mitigation and adaptation financing, including

³³ The IMF's Article IV consultations cover (among other things) member countries' mitigation policies (including the consultations for the largest emitters), as well as management of climate change adaptation and the green transition, and evaluations under its Financial Sector Assessment Program are incorporating climate risk analysis. Meanwhile, its Climate Macroeconomic Assessment Programs provide comprehensive and granular assessments of country-specific vulnerabilities, adaptation policies, and financing needs to build resilience to climate shocks.

³⁴ During COP15 in Copenhagen, developed countries that are parties to the UN Framework Convention on Climate Change made a commitment to provide and mobilize \$100 billion in financing for climate change mitigation and adaptation per year for developing countries by 2020.

concessional financing, by 2025, from their 2019 levels, and steadily increasing them further by 2030, so that the financing provided is commensurate with what EMDEs need to do. Overall development financing will also need to increase significantly. Making greater use of the leveraging power of MDBs—as compared to direct donations and trust funds—as well as addressing the increasing proliferation, fragmentation, and earmarking in concessional aid (see World Bank 2022b) would help increase the effectiveness of funds. Supporting EMDEs’ energy transition provides value of a global nature, giving advanced economies strong incentives to contribute financially to accelerate EMDEs’ transition away from coal as a source of energy generation.

International transfers are needed to make adaptation investments affordable for EMDEs, in line with the principle of common but differentiated responsibilities. Concessional financing or de-risking instruments, including blended financing, may also be required for investments that are not yet commercially viable, such as new, unproven climate-smart technologies, or for investments in nascent markets. Increased use of bilateral guarantees from highly rated countries would help de-risk loan exposures, thereby releasing capital. Philanthropic capital can be a good complement to international public financing for climate change mitigation and adaptation, because philanthropies can deploy flexible and risk-tolerant funding tailored to specific country or regional contexts at affordable costs (especially in LICs). Despite recent major philanthropic pledges, however, only \$6 billion to \$10 billion in philanthropic capital (or 2 percent of global philanthropic giving) was dedicated to climate mitigation and adaptation in 2020 (Desanlis et al. 2021). Greater alignment with countries’ climate and development goals and bolstering support for key multilateral funds that address common public goods like climate change adaptation and mitigation, pandemic preparedness, and response to fragility and conflict can enhance the effectiveness of donor assistance.

International support is also needed for loss and damage in vulnerable countries. The way the international community addresses loss and damage is crucial to helping vulnerable countries cope and adapt, and it has major implications for the architecture of international financing for climate change mitigation and adaptation. Following the COP27 agreement on the establishment of a Loss and Damage Fund, potential recipient countries can begin developing credible mechanisms for identifying climate-related losses, assessing their magnitude, and establishing credible monitoring and verification systems. Even though the rules and size of the fund remain to be negotiated, establishing such mechanisms would be a no-regrets and beneficial strategy for vulnerable countries and assist in both the prevention and management of losses, irrespective of the fund’s governing rules.

Innovative solutions will be needed to complement the use of grants. Complementary actions like participation in voluntary carbon markets will help reduce the cost of borrowing. The World Bank’s new Scaling Climate Action by Lowering Emissions ([SCALE](#)) trust fund will help countries build a track record of projects, which can in turn help those countries unlock private sector funding through international carbon markets. The Energy Transition Accelerator proposal by US Climate Envoy John Kerry also has the potential to speed up energy transitions in developing countries using carbon offsets, but a strong emphasis on integrity and credibility will be a prerequisite for the accelerator’s effectiveness.

Actionable recommendations:

- *Developed countries urgently meet their commitment to deliver \$100 billion in financing for climate change mitigation and adaptation and further scale up their contributions, together with other donors, to double—at least—mitigation and adaptation financing, including concessional financing, by 2025, compared with their 2019 levels, and steadily increase them further by 2030. Overall development financing will also need to increase significantly.*

- *MDBs expand concessional and nonconcessional financing for both MICs and LICs through innovative solutions that do not affect MDB credit ratings, as well as additional financial resources from their shareholders, so as to step up engagements to support investments and policy actions for GRID.*
- *The IMF's swift rollout of support through its newly established Resilience and Sustainability Trust will help increase access to affordable long-term financing in many of its members to address climate-related challenges.*

6. CONCLUSION

Sustained global recovery from the COVID-19 pandemic and the compounding impacts of climate change and natural resources depletion require urgent investment at scale and comprehensive and innovative approaches that step up financing and innovation for GRID. A sustained postpandemic recovery will require coordinated action to invest in all forms of capital; implement macroeconomic and structural policies, strengthen preparedness, and implement institutional strengthening and technological innovation, to enable just transitions; and mobilize capital at scale, especially from the private sector. Existing public, private, and concessional financing for climate change mitigation and adaptation needs to be deployed in more transformative and catalytic ways—channeling additional capital to bridge the gap between available resources and needs. International solidarity—including significantly exceeding the (so far unrealized) aim to provide \$100 billion annually in financing to developing countries for climate change mitigation and adaptation—will be decisive. Transformative results at the country level will depend on effective cooperation with clients and development partners to maximize financing, promote innovation, implement policy reform, ensure transparency and accountability, and strengthen institutions.

There is both great urgency and great opportunity to propel a big investment push to drive recovery and transformation. The stakes for climate change mitigation and adaptation, as well as development, are extremely high, requiring both a transformation in policy and economic thinking and securing of the needed financing. Failure will mean not only a lost decade for development, but great danger for people all around the world over the coming decades.

Strong action is required now on the part of all stakeholders, shaped by a clear, shared, and purposeful strategy that includes global coordination and private sector participation. Strong and sustained commitment by the international community that channels private sector investment and financing will be the most critical determining factor in the years ahead. If successful, the financing strategy proposed in this report would provide a major boost not just to the development prospects of EMDEs, but to the global economy too, and would help mitigation of and adaptation to climate change.

REFERENCES

- AfDB (African Development Bank Group), ADB (Asian Development Bank), AIIB (Asian Infrastructure Investment Bank), EBRD (European Bank for Reconstruction and Development), EIB (European Investment Bank), IDB (Inter-American Development Bank), IsDB (Islamic Development Bank), NDB (New Development Bank), and WBG (World Bank Group). 2021. *2020 Joint Report on Multilateral Development Banks' Climate Finance*. London: EBRD. <https://thedocs.worldbank.org/en/doc/9234bfc633439d0172f6a6eb8df1b881-0020012021/original/2020-Joint-MDB-report-on-climate-finance-Report-final-web.pdf>.
- AfDB (African Development Bank Group), ADB (Asian Development Bank), AIIB (Asian Infrastructure Investment Bank), CEB (Council of Europe Development Bank), EBRD (European Bank for Reconstruction and Development), EIB (European Investment Bank), IDB (Inter-American Development Bank), IsDB (Islamic Development Bank), NDB (New Development Bank), and WBG (World Bank Group). 2022. *2021 Joint Report on Multilateral Development Banks' Climate Finance*. London: EBRD. <https://thedocs.worldbank.org/en/doc/ff6b5d75bf90ddf5ae693d884fdf22cc-0020012022/original/2022-0092-MDB-Report-2021.pdf>.
- Aghion, Philippe, Céline Antonin, and Simon Bunel. 2021. "Green Innovation and Sustainable Growth." In *The Power of Creative Destruction: Economic Upheaval and the Wealth of Nations*, 173–193. Cambridge, MA: Belknap.
- AIIB (Asian Infrastructure Investment Bank). 2022. *Moonshots for the Emerging World: Building State Capacity and Mobilizing the Private Sector toward Net Zero*. Asian Infrastructure Finance 2022. Beijing: AIIB. https://www.aiib.org/en/news-events/asian-infrastructure-finance/_common/pdf/AIIB-Asian-Infrastructure-Finance-2022.pdf.
- Bhattacharya, Amar, Joshua P. Meltzer, Jeremy Oppenheim, Zia Qureshi, and Nicholas Stern. 2016. "Delivering on Sustainable Infrastructure for Better Development and Better Climate." Brookings Institution, Washington, DC. <https://www.brookings.edu/research/delivering-on-sustainable-infrastructure-for-better-development-and-better-climate/>.
- Bhattacharya, Amar, Meagan Dooley, Homi Kharas, and Charlotte Taylor. 2022. *Financing a Big Investment Push in Emerging Markets and Developing Economies for Sustainable, Resilient and Inclusive Recovery and Growth*. London: Grantham Research Institute on Climate Change and the Environment, London School of Economics and Political Science, and Washington, DC: Brookings Institution. <https://www.lse.ac.uk/granthaminstitute/publication/financing-a-big-investment-push-in-emerging-markets-and-developing-economies/>.
- Becker-Olsen, Karen, and Sean Potucek. 2013. "Greenwashing." In *Encyclopedia of Corporate Social Responsibility*, edited by Samuel O. Idowu, Nicholas Capaldi, Liangrong Zu, and Ananda Das Gupta, 1318–23. Berlin and Heidelberg: Springer. https://doi.org/10.1007/978-3-642-28036-8_104.
- Chamon, Marcos, Erik Klok, Vimal Thakoor, and Jeromin Zettelmeyer. 2022. "Debt-for-Climate Swaps: Analysis, Design, and Implementation." IMF Working Paper 22/162, International Monetary Fund, Washington, DC. <https://www.imf.org/en/Publications/WP/Issues/2022/08/11/Debt-for-Climate-Swaps-Analysis-Design-and-Implementation-522184>.
- Coalition of Finance Ministers for Climate Action. 2022. "Strengthening the Role of Ministries of Finance in Driving Climate Action: A Framework and Guide for Ministers and Ministries for Finance." Draft for consultation. Coalition of Finance Ministers for Climate Action, Washington, DC. <https://www.financeministersforclimate.org/news/global-consultation-strengthening-role-finance-ministers-driving-climate-action>.
- Deloitte. 2022. "The Turning Point: A Global Summary." Deloitte Development LLC, London. <https://www.deloitte.com/global/en/issues/climate/global-turning-point.html>.

- Desanlis, Helene, Elin Matsumae, Hannah Roeyer, Anthony Yazaki, Muniba Ahmad, and Surabi Menon. 2021. *Funding Trends 2021: Climate Change Mitigation Philanthropy*. San Francisco: ClimateWorks Foundation. <https://www.climateworks.org/report/funding-trends-2021-climate-change-mitigation-philanthropy>.
- Dikau, Simon, Nick Robins, Agnieszka Smoleńska, Jens van 't Klooster, and Ulvich Volz. 2022. *Net Zero Transition Plans: A Supervisory Playbook for Prudential Authorities*. London: Grantham Research Institute on Climate Change and the Environment and Centre for Climate Change Economics and Policy, London School of Economics and Political Science.
- Egyptian Ministry of Investment and International Cooperation. 2022. *Sharm El Sheikh Guidebook for Just Financing*. Cairo: Egyptian Ministry of Investment and International Cooperation. <https://guidebookforjustfinancing.com>.
- Energy Transitions Commission. 2022. *Mind the Gap: How Carbon Dioxide Removals Must Complement Deep Decarbonisation to Keep 1.5°C Alive*. Version 1.1, March 2022. Keeping 1.5°C Alive Series. <https://www.energy-transitions.org/wp-content/uploads/2022/04/Mind-the-Gap-How-Carbon-Dioxide-Removals-Must-Complement-Deep-Decarbonisation-to-Keep-1.5C-Alive-1.pdf>.
- Eyraud, Luc, Xavier Debrun, Andrew Hodge, Victor Lledó, and Catherine Pattillo. 2018. "Second-Generation Fiscal Rules: Balancing Simplicity, Flexibility, and Enforceability." IMF Staff Discussion Note 18/04, International Monetary Fund, Washington, DC.
- Hallegatte, Stephane, Jun Rentschler, and Julie Rozenberg. 2019. *Lifelines: The Resilient Infrastructure Opportunity*. Washington, DC: World Bank. <http://hdl.handle.net/10986/31805>.
- IEA (International Energy Agency). 2021a. *Financing Clean Energy Transitions in Emerging and Developing Economies*. World Energy Investment 2021 Special Report. Paris: IEA. <https://www.iea.org/reports/financing-clean-energy-transitions-in-emerging-and-developing-economies>.
- IEA (International Energy Agency). 2021b. *The Role of Critical Minerals in Clean Energy Transitions*. World Energy Outlook Special Report. Paris: IEA. <https://www.iea.org/reports/the-role-of-critical-minerals-in-clean-energy-transitions>.
- IFC (International Finance Corporation). 2021. *A Green Reboot for Emerging Markets: Key Sectors for Post-COVID Sustainable Growth*. Washington, DC: IFC. https://www.ifc.org/wps/wcm/connect/26f79a1b-c191-494b-b2d9-c891e138bb37/IFC_GreenReport_FINAL_web_1-14-21.pdf?MOD=AJPERES&CVID=ns1JVaR.
- IMF (International Monetary Fund). 2019a. "Fiscal Policies for Paris Climate Strategies—From Principle to Practice." IMF Policy Paper 2019/010, International Monetary Fund, Washington, DC. <https://www.imf.org/en/Publications/Policy-Papers/Issues/2019/05/01/Fiscal-Policies-for-Paris-Climate-Strategies-from-Principle-to-Practice-46826>.
- IMF (International Monetary Fund). 2019b. "Corporate Taxation in the Global Economy." IMF Policy Paper 2019/007, International Monetary Fund, Washington, DC. <https://www.imf.org/en/Publications/Policy-Papers/Issues/2019/03/08/Corporate-Taxation-in-the-Global-Economy-46650>.
- IMF (International Monetary Fund). 2022a. "Climate Change: Fossil Fuel Subsidies." Webpage. International Monetary Fund, Washington, DC. <https://www.imf.org/en/Topics/climate-change/energy-subsidies>.
- IMF (International Monetary Fund). 2022b. *Global Financial Stability Report: Navigating the High-Inflation Environment*. Washington, DC, October. <https://www.imf.org/en/Publications/GFSR/Issues/2022/10/11/global-financial-stability-report-october-2022>.
- IMF (International Monetary Fund). 2022c. "Macroeconomic Developments and Prospects in Low-Income Countries—2022." IMF Policy Paper 2022/054, International Monetary Fund, Washington, DC. <https://www.imf.org/en/Publications/Policy-Papers/Issues/2022/12/07/Macroeconomic-Developments-and-Prospects-in-Low-Income-Countries-2022-526738>.
- IMF (International Monetary Fund). 2022d. *World Economic Outlook: Countering the Cost-of-Living Crisis*. Washington, DC, October. <https://www.imf.org/en/Publications/WEO/Issues/2022/10/11/world-economic-outlook-october-2022>.

- Izquierdo, Alejandro, Carola Pessino, and Guillermo Vuletin, eds. 2018. *Better Spending for Better Lives: How Latin America and the Caribbean Can Do More with Less*. Washington, DC: Inter-American Development Bank. <https://publications.iadb.org/en/publication/better-spending-better-lives?eloutlink=imf2adb>.
- Kharas, Homi, and John McArthur. 2019. "Building the SDG Economy." Global Economy & Development Working Paper 131, Brookings Institution, Washington, DC.
- Kharas, Homi, and Charlotte Rivard. 2022. "Debt, Creditworthiness, and Climate: A New Development Dilemma." Working Paper 180, Center for Sustainable Development, Brookings Institution, Washington DC. <https://www.brookings.edu/research/debt-creditworthiness-and-climate-a-new-development-dilemma/>.
- Lankes, Hans Peter. 2021. "Blended Finance for Scaling Up Climate and Nature Investments: Report of the One Plane Lab." Grantham Research Institute on Climate Change and the Environment, London School of Economics and Political Science, London. <https://www.lse.ac.uk/granthaminstitute/wp-content/uploads/2021/11/Blended-Finance-for-Scaling-Up-Climate-and-Nature-Investments-1.pdf>.
- Meckling, Jonas, and Bentley B. Allen. 2020. "The Evolution of Ideas in Global Climate Policy." *Nature Climate Change* 10: 434–38. <https://doi.org/10.1038/s41558-020-0739-7>.
- New Climate Economy. 2018. *Unlocking the Inclusive Growth Story of the 21st Century: Accelerating Climate Action in Urgent Times*. The New Climate Economy: The 2018 Report of the Global Commission on the Economy and Climate. Washington, DC: Global Commission on the Economy and Climate. <https://newclimateeconomy.report/2018>.
- OECD (Organisation for Economic Co-operation and Development). 2020. "Aid by DAC Members Increases in 2019 with More Aid to the Poorest Countries." OECD, Paris. <https://www.oecd.org/dac/financing-sustainable-development/development-finance-data/ODA-2019-detailed-summary.pdf>.
- OECD (Organisation for Economic Co-operation and Development). 2021. *Climate Finance Provided and Mobilised by Developed Countries: Aggregate Trends Updated with 2019 Data*. Climate Finance and the USD 100 Billion Goal. Paris: OECD Publishing. <https://doi.org/10.1787/03590fb7-en>.
- Ortiz-Bobea, Ariel, Toby R. Ault, Carlos M. Carrillo, Robert G. Chambers, and David B. Lobell. 2021. "Anthropogenic Climate Change Has Slowed Global Agricultural Productivity Growth." *Nature Climate Change* 11 (4): 306–12.
- Panel for Independent Review of MDBs' Capital Adequacy Frameworks. 2022. "Boosting MDBs' Investing Capacity: An Independent Review of Multilateral Development Banks' Capital Adequacy Frameworks." Group of Twenty. <https://www.southbgroup.com/publication-of-the-report-of-the-independent-review-of-mdbs-capital-adequacy-frameworks-boosting-mdbs-investing-capacity/>.
- Parry, Ian, Simon Black, and Nate Vernon. 2021. "Still Not Getting Energy Prices Right: A Global and Country Update of Fossil Fuel Subsidies." IMF Working Paper 21/236, International Monetary Fund, Washington, DC.
- Prasad, Ananthkrishnan, Elena Loukoianova, Alan Xiaochen Feng, and William Oman. 2022. "Mobilizing Private Climate Financing in Emerging Market and Developing Economies." IMF Staff Climate Note 2022/007, International Monetary Fund, Washington, DC. <https://www.imf.org/en/Publications/staff-climate-notes/Issues/2022/07/26/Mobilizing-Private-Climate-Financing-in-Emerging-Market-and-Developing-Economies-520585>.
- Rozenberg, Julie, and Marianne Fay. 2019. *Beyond the Gap: How Countries Can Afford the Infrastructure They Need While Protecting the Planet*. Sustainable Infrastructure. Washington, DC: World Bank. <http://hdl.handle.net/10986/31291>.
- Schwartz, Gerd, Manal Fouad, Torben Hansen, and Geneviève Verdier, eds. 2020. *Well Spent: How Strong Infrastructure Governance Can End Waste in Public Investment*. Washington, DC: International Monetary Fund. <https://www.imf.org/en/Publications/Books/Issues/2020/09/03/Well-Spent-How-Strong-Infrastructure-Governance-Can-End-Waste-in-Public-Investment-48603>.
- Songwe, Vera, Nicholas Stern, and Amar Bhattacharya. 2022. "Finance for Climate Action: Scaling Up Investment for Climate and Development." Report of the Independent High-Level Expert Group on Climate Finance.

- Grantham Research Institute on Climate Change and the Environment, London School of Economics and Political Science, London.
- Stern, Nicholas. 2015. *Why Are We Waiting? The Logic, Urgency, and Promise of Tackling Climate Change*. Lionel Robbins Lectures. Cambridge, MA: MIT Press.
- Stern, Nicholas. 2021. *G7 Leadership for Sustainable, Resilient and Inclusive Economic Recovery and Growth: An Independent Report Requested by the UK Prime Minister for the G7*. London: London School of Economics.
- Stern, Nicholas, and Hans Peter Lankes. 2022. *Collaborating and Delivering on Climate Action through a Climate Club: An Independent Report to the G7*. London: London School of Economics and Political Science. <https://www.lse.ac.uk/granthaminstitute/wp-content/uploads/2022/10/Collaborating-and-delivering-on-climate-action-through-a-Climax-Club.pdf>.
- Stern, Nicholas, and Mattia Romani. 2023. *The Global Growth Story of the 21st Century: Driven by Investment and Innovation in Green Technologies and Artificial Intelligence*. Policy Insight. London: Grantham Research Institute on Climate Change and the Environment, London School of Economics and Political Science; and Systemiq. <https://www.lse.ac.uk/granthaminstitute/publication/the-global-growth-story-of-the-21st-century/>.
- Systemiq. 2020. *The Paris Effect: How the Climate Agreement Is Reshaping the Global Economy*. London: Systemiq. <https://www.systemiq.earth/paris-effect>.
- Systemiq. 2021. *The Paris Effect—COP26 Edition: How Tipping Points Can Accelerate and Deliver a Prosperous Net Zero Economy*. London: Systemiq. <https://www.systemiq.earth/the-paris-effect-cop26-edition>.
- Systemiq, University of Exeter, and Simon Sharpe. 2023. *The Breakthrough Effect: How to Trigger a Cascade of Tipping Points to Accelerate the Net Zero Transition*. London: Systemiq. <https://www.systemiq.earth/breakthrough-effect/>.
- UK Foreign, Commonwealth, and Development Office. 2022. “Corporate Report: Twelve-Month Update on Progress in Advancing the South Africa Just Energy Transition Partnership.” UK Foreign, Commonwealth, and Development Office, London. <https://www.gov.uk/government/publications/advancing-the-south-africa-just-energy-transition-partnership-12-month-progress-update/twelve-month-update-on-progress-in-advancing-the-south-africa-just-energy-transition-partnership>.
- UN (United Nations). 2022. *Integrity Matters: Net Zero Commitments by Businesses, Financial Institutions, Cities and Regions*. Report from the United Nations’ High-Level Expert Group on the Net Zero Emissions Commitments of Non-state Entities. New York: United Nations. https://www.un.org/sites/un2.un.org/files/high-level_expert_group_n7b.pdf.
- UNEP (United Nations Environment Programme). 2021a. *The Gathering Storm: Adapting to Climate Change in a Post-pandemic World*. Adaptation Gap Report 2021. Nairobi, Kenya: UNEP.
- UNEP (United Nations Environment Programme). 2021b. “UN Report Calls for Repurposing of USD 470 Billion of Agricultural Support That Distorts Prices, Environment and Social Goals.” Press Release, United Nations Environment Programme, Nairobi, Kenya. <https://www.unep.org/news-and-stories/press-release/un-report-calls-repurposing-usd-470-billion-agricultural-support>.
- UNEP (United Nations Environment Programme). 2022. *The Closing Window: Climate Crisis Calls for Rapid Transformation of Societies*. Emissions Gap Report 2022. Nairobi, Kenya: United Nations Environment Programme. <https://www.unep.org/resources/emissions-gap-report-2022>.
- UNEP (United Nations Environment Programme), WEF (World Economic Forum), ELD (Economics of Land Degradation), and Vivid Economics. 2021. *State of Finance for Nature: Tripling Investments in Nature-Based Solutions by 2030*. Nairobi, Kenya: United Nations Environment Programme. <https://www.unep.org/resources/state-finance-nature>.
- Voegele, Juergen, and Riccardo Puliti. 2022. “How Can We Scale Up the Finance Needed for Climate Action?” *Voices* (blog), World Bank, April 21, 2022. <https://blogs.worldbank.org/voices/how-can-we-scale-finance-needed-climate-action>.

- World Bank. 2018. *Strategic Use of Climate Finance to Maximize Climate Action: A Guiding Framework*. Washington, DC: World Bank. <http://hdl.handle.net/10986/30475>.
- World Bank. 2021a. *Global Economic Prospects, January 2021*. Washington, DC: World Bank. <http://hdl.handle.net/10986/34710>.
- World Bank. 2021b. “Green, Resilient, and Inclusive Development.” Strategy Document, World Bank, Washington, DC. <http://hdl.handle.net/10986/36322>.
- World Bank. 2022a. *Poverty and Shared Prosperity 2022: Correcting Course*. Washington, DC: World Bank. <http://hdl.handle.net/10986/37739>.
- World Bank. 2022b. “Understanding Trends in Proliferation and Fragmentation for Aid Effectiveness during Crises.” Washington, DC: World Bank. <https://thedocs.worldbank.org/en/doc/ef73fb3d1d33e3bf0e2c23bdf49b4907-0060012022/original/aid-proliferation-7-19-2022.pdf>.
- World Bank. 2023a. “Total Greenhouse Gas Emissions (Kt of CO₂ Equivalent).” World Development Indicators. <https://data.worldbank.org/indicator/EN.ATM.GHGT.KT.CE?locations=XD>.
- World Bank. 2023b. “Total Population.” World Development Indicators. <https://data.worldbank.org/indicator/SP.POP.TOTL?locations=XD>.
- World Bank. Forthcoming. *Scaling Up to Phase Down: Financing Energy Transitions in the Power Sector*. Washington, DC: World Bank.
- World Bank Group. 2016. “High and Dry: Climate Change, Water, and the Economy.” World Bank Group, Washington, DC. <http://hdl.handle.net/10986/23665>.
- World Bank Group. 2021. “WBG Financing for Green, Resilient and Inclusive Development—Towards A Post Pandemic Approach.” Development Committee Paper DC2021-0007, World Bank Group, Washington, DC. <https://www.devcommittee.org/sites/dc/files/download/Documents/2021-09/DC2021-0007%20Final%20GRID%20paper.pdf>.
- World Bank Group. 2022a. “Achieving Climate and Development Goals: The Financing Question.” Development Committee Paper DC2022-0006, World Bank Group, Washington, DC. <https://www.devcommittee.org/sites/dc/files/download/Documents/2022-10/Final%20Achieving%20Climate%20DC2022-0006.pdf>.
- World Bank Group. 2022b. *Climate and Development: An Agenda for Action—Emerging Insights from World Bank Group 2021–22 Country Climate and Development Reports*. Washington, DC: World Bank Group. <http://hdl.handle.net/10986/38220>.
- World Bank Group. 2022c. “Evolving the World Bank Group’s Mission, Operations, and Resources: A Roadmap.” World Bank Group, Washington, DC. <https://documents1.worldbank.org/curated/en/099845101112322078/pdf/SECBOS0f51975e0e809b7605d7b690ebd20.pdf>.
- World Bank Group. 2022d. “The Food and Energy Crisis—Weathering the Storm.” Development Committee Paper DC2022-0005, World Bank Group, Washington, DC. <https://www.devcommittee.org/sites/dc/files/download/Documents/2022-10/Final%20Food%20and%20Energy%20DC2022-0005.pdf>.
- WTO (World Trade Organization). 2022. *World Trade Report 2022: Climate Change and International Trade*. Geneva: WTO. https://www.wto.org/english/res_e/publications_e/wtr22_e.htm.

